U.S. EXPORT CONTROL POLICY AND EXTENSION OF THE EXPORT ADMINISTRATION ACT

HEARING

BEFORE THE

SUBCOMMITTEE ON INTERNATIONAL FINANCE

OF THE

COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS UNITED STATES SENATE

NINETY-SIXTH CONGRESS

FIRST SESSION

ON

S. 737

TO PROVIDE AUTHORITY TO REGULATE EXPORTS, TO IMPROVE THE EFFICIENCY OF EXPORT REGULATION, AND TO MINIMIZE INTERFERENCE WITH THE RIGHT TO ENGAGE IN COMMERCE

AND

S. 977

TO AMEND THE EXPORT ADMINISTRATION ACT OF 1969, AS AMENDED, AND FOR OTHER PURPOSES

PART II

MARCH 12, 1979

Printed for the use of the
Committee on Banking, Housing, and Urban Affairs

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PART II

MONDAY, MARCH 12, 1979

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING,
AND URBAN AFFAIRS,
SUBCOMMITTEE ON INTERNATIONAL FINANCE,
Washington, D.C.

The subcommittee met at 10:05 a.m. in room 5302, Dirksen Senate Office Building, Senator Adlai E. Stevenson, chairman of the subcommittee, presiding.

Present: Senators Stevenson and Tower.

Senator STEVENSON. The subcommittee will come to order. We continue this morning our hearings on U.S. export policy with particular reference to the Export Administration Act and export controls.

We are privileged today to be able to lead off our hearing with two of the Nation's Governors. We are grateful to them. Governor Busbee has been leading the effort on behalf of the Governors to improve the competitiveness of the United States, and to increase exports. Governor Clements has been part of that important effort, and as the former Deputy Secretary of Defense has had considerable firsthand experience with the subject of this hearing today: Export controls.

So we are very grateful to both of them, and I'm sure we will learn a lot from them.

Senator Tower, would you like to introduce our first witness?

Senator TOWER. Thank you, Mr. Chairman. I am delighted to welcome these two distinguished Governors to the committee today. I am particularly delighted to see my own Governor, Governor Clements; not only his experience as former Deputy Secretary of Defense, but in his business endeavors he has also had considerable experience in the international marketplace.

I think that we have some very worthwhile testimony, looking over the statements, and I think they have a great deal to say for the edification of the committee today. And I'm delighted to welcome them.

[Copies of bills S. 737 and S. 977, to be discussed at the hearing, can be found on p. 189 and p. 242.]

Senator STEVENSON. Thank you, Senator Tower.

Governor Clements?

STATEMENT OF WILLIAM P. CLEMENTS, JR., GOVERNOR OF THE STATE OF TEXAS, ON BEHALF OF THE NATIONAL GOVERNORS ASSOCIATION

Governor CLEMENTS. Mr. Chairman: Every several years Congress enacts well-intended legislation which enables the executive branch to restrain export trade through a process devoid of basic procedural safeguards. Subsequently, congressional committees take volumes of testimony critical of the effectiveness of the licensing process to achieve stated goals, its adverse impact on competitiveness of existing U.S. exports, and its retarding effect on potential exporters. Following such testimony, Congress reapproves its export licensing laws with little change.

Over the last two decades I have been in positions to see the export licensing issue from many different perspectives. As the head of a major oil drilling company, I had a direct interest in free trade and limited Government regulation. As Deputy Secretary of Defense, I was charged with insuring our country's defense and, pursuant to a Presidential delegation of authority, was empowered to block export licenses which threatened that security. Now I am Governor of Texas, a State embracing many Government facilities that insure our Nation's security as well as companies noted both for their aggressiveness in foreign markets and leadership in those high technology products most subject to export licenses. I now must simultaneously (1) promote domestic and foreign environments that will allow these companies to remain competitive in the world marketplace, (2) support Government programs that insure our citizens' interests in economic and political freedoms dependent upon military security from potential foreign aggressors, and (3) foster creative Government action that will provide public services to our citizens in a most efficient and effective manner. The discharge of these various responsibilities is difficult because often two or more of these goals are in conflict in some respect. I believe, however, that in the area of export licensing these various goals can be accommodated, but not through the present structure authorized by Congress, executed by the executive branch, and sanctioned by the judiciary.

Recently, processing delays and licensing decisions have hampered export of our most competitive products without demonstrably adding to our military security. Expanded use of licensing to pursue diverse and often changeable foreign policy objectives has allowed an ever-increasing cast of actors to intervene in the licensing process at the low and medium levels of Government, thus creating uncertainty and confusion both with the Government and external to it. This lack of predictability, when combined with the resulting secrecy generated by interagency decisionmaking, has caused many citizens to doubt the integrity of our governmental processes. Consumers of our products abroad have started to question whether American companies, especially in the technologically advanced areas, can be viewed as dependable suppliers. Finally, the Federal Government itself has seemingly lost a sense of direction about export expansion at precisely the time when economic strength is one of the few vehicles through which this country can, on a long-term basis, regain and maintain respect as a leader within the world's society. This need not be so. I believe the recom-

mendations adopted by the Nation's Governors have great potential for substantially reducing these problems and for blending important national goals of export expansion, efficient Government and national security.

The current Export Administration Act is vague both as to policy priorities and the allocation of authority among administrative authorities acting pursuant to the legislation. Further, it is indecisive on decision deadlines, is unspecific on procedural rights of license applicants and other affected parties like States, and is silent on definition of a decisional mechanism which naturally produces economically acceptable results from contending agency opinions. Consequently, listing and licensing decisions often lack consistency, timeliness, and sensitivity to those business and State interests substantially affected. Listing decisions are born in secrecy, licensing decisions evolve from consensus among an ever-increasing number of agencies, many with an effective veto, and the costs of licensing compliance are steadily eroding our competitiveness abroad.

Normally, in a political context where two or more groups champion different objectives, decision by consensus has distinctive attractions since it prevents extreme alienation of some representative parties. In the open forums of representative government potential voter dissatisfaction with persistent compromising of the issues insures that diverse opinion will periodically remain contrasted so decisive changes in direction can be achieved. Consensus within the bureaucracy is not subject to such constraints because the bulk of the affected parties are States and companies who have no elective power over the bureaucracy. We believe that it is inappropriate to continue to rely solely on consensus decisionmaking in export licensing.

Agencies expert in pursuing security, foreign affairs and trade goals should be allowed to asses the impact on their respective goals of lising and licensing requirements for various destinations, present their findings in an environment that separates fact from opinion, and promptly reach listing and licensing decisions by a majority vote. Agencies, applicants, and States substantially affected in an adverse way by the decision must have prompt recourse to senior policy-makers who can individually and collectively evaluate selective licensing decisions in a broader context. Their subsequent decisions will effectively determine major readjustments in priorities assigned to the three goals in the processing of future applications. In the rare event that consensus is not reached among senior officials because of basic differences, the President will of necessity need to determine the extent that priorities are readjusted.

Many medium and low level personnel in government contend that decision by vote is an inappropriate way to resolve inconsistencies among important national objectives. My answer to that is twofold. First, Congress and the courts are involved daily in making, by majority vote, important decisions that deal with conflicting local, State, and national interests. Second, in my experience, when the facts clearly establish that an important national goal will be jeopardized substantially by license approval or denial, responsible officials concerned with other goals will be deferential in most instances. Policy conclusions based on ambiguous facts will

not be accorded such deference, and the loser in the vote will normally find little merit in raising the issue to the secretarial level where ambiguous facts on a specific issue become even less compelling due to the competitition of other important issues for their attention. Thus, important defense goals which are clear will be safeguards, but all defense opinions will not be immune from these correlations between clarity of a fact and consensus of opinion. Ephemeral foreign policy goals will likewise be unimpressive to agencies normally concerned with nonforeign policy goals, especially if they bear adversely on such other goals. In summary, the majority vote approach is likely to prove a very efficient way for producing timely decisions from a milieu of conflicting agency opinions. The potential of resort to policymakers with broad perspectives is a reasonable safeguard against actions that are incompatible with the evolution of coherent policies involing security, foreign affairs, and trade. Recourse to the President insures a final hearing on the relative importance attached to each of these policies.

While the majority vote concept will bring needed clarity to policy choices and preclude minority opinion vetoes not enjoying clear Presidential support, it will not insure timely decisions unless absolute decisional deadlines are congressionally mandated. Thus, the Governors' recommendations incorporate deadlines much like Federal requirements for a "speedy trial." Such deadlines are essential for predictability in export transactions and should not produce unacceptable obstacles to the proper discharge of agency responsibilities.

Exports requiring extensive analysis of their impact on national security are normally identifiable in advance of individual license applications. Generic studies involving such exports can be done in advance of individual license applications. When such applications are filed, much of the time-consuming, baseline analysis of how much exports may affect security affairs will be complete. Distinctions can also be made between the export of products and the export of production technology in order to expedite the produce export applications and concentrate analytical reasources on technology areas where detailed study is required. Absolute time limits, and the resulting pressures they create for strategic studies that anticipate major licensing problems, are especially important if some of our most competitive exports, high technology products, are to remain a major source of export revenue.

Currently, high technology exports account for 32 percent of all U.S. exports. Many important products within this category are now subject to licensing procedures that routinely consume 180 days, although Congress has indicated 90 days should be the outside limit. During 1975 over 1,100 licenses issued involving over $200 million in exports took more than 90 days to process. High technology exports accounted for nearly $130 million of this total. Moreover, the number of applications delayed more than 90 days in any one month has increased steadily from 332 in January 1976 to 693 in December 1978. These increases seem to be flagrant violations of congressional intent. Some absolute limits on processing time are clearly needed.

Aside from the independent value of the majority vote and absolute deadline comcepts, there is a additional value in the simulta-

neous application of these concepts. Experience suggests that the higher the reviewing authority, the greater the priority assigned to processing material for decisionmaking. Presumably, the more difficult cases will tend to be appealed to the Secretary level. If the majority vote procedure moves such cases to the higher level due to the avoidance of the time-consuming consensus process, agencies will naturally assign higher priority to analyzing the issues involved. In essence, there will be a built-in time compression as the majority vote process expedites decisionmaking.

In summary, continuance of the cycle of increased licensing constraints on exports, criticism of their ineffectiveness, and congressional reaffirmation of increased restraint must come to an end if our Nation is to remain a respected power in world trade. Maintenance of this respect is perhaps one of the surest ways to insure long-term national security. In recent months, the importance of exports to our national security has been articulated by many of our Nation's prominent leaders both in Government and business. The administration, however, has so far shown little decisiveness in taking the steps within the executive branch necessary to insure expanded export trade. Commercial enterprises, and the States in which they are located, have done much to seek expansion of export trade, but these efforts alone will not succeed in face of the uncoordinated restraints imposed by the present licensing process.

Congress has been asked to approve the reduction of international barriers to trade. Foreign governments and their commercial enterprises are well equipped to take advantage of these reductions, especially as regards imports to the United States. We must be equipped to do likewise in our dealings with foreign countries. It would be unwise to wait for administrative initiatives to reduce domestic restraints on our own exports, since past experience indicates that this is a reform of words, rather than action. I believe Congress now has the opportunity to take the initiative in producing reform in action.

The present Export Administration Act is a symbol of Government preoccuptation with its own affairs without reference to its impact on the affairs of U.S. citizens and the States in which they reside. Clear, decisive action on your part is now required to mandate license processing deadlines and majority decisionmaking among a select few agencies charged respectively with national security, foreign affairs, and trade. We believe the Governors' recommendations, which are based on extensive study of practical politics, public administration, and basic business requirements, can form the basis for such action. The model legislation we have adopted in principle highlights many of the structural details for such legislation. We hope that you will give our recommendations serious and prompt consideration.

Senator STEVENSON. Thank you, sir. That is a strong statement of support for the Governors' recommendations, and it certainly will receive prompt consideration by this committee.

Can you remain long enough to hear Governor Busbee and then we might come back to both of you?

Governor CLEMENTS. Sure.

Senator STEVENSON. Governor, we welcome you again. You have led this effort on behalf of the Governors, and we hope to do our part.

Governor Busbee of Georgia.

STATEMENT OF HON. GEORGE D. BUSBEE, GOVERNOR OF THE STATE OF GEORGIA

Governor BUSBEE. As chairman of the NGA Committee on International Trade and Foreign Relations, I sincerely appreciate the opportunity to express the views of the Nation's Governors before your distinguished subcommittee.

Expansion of exports is an area of paramount importance to the States of this Nation, a fact that has committed the Governors to affecting substantive change in our present exporting system. For the purposes of my remarks today, I would like to focus on one particular aspect of the committee's work, significant reform of the Export Administration Act.

The recommendations of the National Governors' Association are incorporated in model legislation which has been circulated to your staff. These recommendations were adopted unanimously by the Governors when they met in Washington 2 weeks ago. The wording of the current Export Administration Act of 1969, as amended, suggests that its foundation rests upon Congress commerce clause powers and the foreign affairs responsibilities assigned to the Federal Government.

As you well know, only Congress is entitled to exercise commerce clause powers, although it may delegate some specific responsibilities to the executive branch regarding the foreign affairs powers. There is both constitutional and political confusion over the respective roles of the branches of the Federal Government.

Justice Sutherland in the *Curtiss-Wright* case in 1936 suggested that the executive branch is preeminent. Justice Jackson in the *Youngstown Steel Co.* seizure case in 1952 indicated that Presidential action taken on the basis of national security must be premised on the exercise of legislative authority.

From a practical standpoint, both the executive branch and Congress are highly interdependent regarding export trade restraints for national security and foreign policy purposes. This interdependence, however, should not obscure the fact that a clear understanding of separation of powers is necessary in order to properly restructure the Export Administration Act.

The relatively recent case, the *National League of Cities* vs. *Usery,* has suggested that in a constitutional context, the exercise of commerce clause power by the Congress ought not impair State programs which seek to provide for the people's fundamental health, safety and welfare. The courts since Jefferson's time have been especially sensitive to the value of allowing individual States to experiment with the programs designed to promote citizens' welfare.

These experiments give the Federal system insights on how to better discharge its responsibilities nationally. The value of this experimentation was underscored by President Carter 2 weeks ago at a seminar we sponsored in Washington, which was attended by some 35 of our Nation's Governors, when he noted that many State

programs regarding export expansion seem to be more effective than Federal programs.

Many States such as Georgia and Texas and others, in addition to encouraging high levels of exports for all of our enterprises, seek to develop an industry mix within our borders that not only best utilizes our resources but also helps during recessionary times by increasing sales to foreign markets.

Some States have sought to make high technology industries a cornerstone of their economy. For them the Export Administration Act has special significance since government action which ignores certain State's dependence on high technology products often materially impairs the State's economy, both in the short and long term.

Implementation of export controls is, and has been for a long time, insensitive to the needs of industries and their host States. Thus we urge Congress to take a major role in determining particular agency's responsibilities in implementing foreign policy, defense, and trade policies.

In making these allocations, we believe Congress should make clear that trade expansion is a cornerstone of our national security and foreign policy. In fact trade should be elevated to a basic right and impaired only when national security and foreign policy are clearly and demonstrably threatened.

In light of the escalating costs of overlapping agency jurisdictions and actions and their adverse impact on our inflation control effort, we believe that Congress must clearly articulate the policies to be implemented through executive branch action, and also establish better procedures for oversight of agency actions to ensure compliance with national policy.

Congress should insure the maintenance of an open decision making process that provides the parties substantially affected, including business and States, with notice of the action that bureaucrats intend to take, explanations of why they intend to take them, and an opportunity to inform the Government how such actions will affect businesses' and States' fundamental rights.

Unless such an approach is taken, the Federal agencies will continue to make decisions which optimize their parochial interests, often in disregard of the interests of the people they serve. Congressional delegations of authority to the executive branch must be based on a sound understanding of how the Federal agencies act under a variety of conditions. This is why much of the research underlying our recommendations has focused on theoretical and empirical studies of executive branch agencies from a public administration standpoint.

In an eight volume study, the 1975 Murphy Commission Report on organization of the Government for conduct of foreign policy noted that "organization affects more than just the efficiency of government. It can affect the very outcomes of decisions."

We believe that by clearly defining both organizational structure and fundamental procedures to guide export controls, Congress will do three things: one, retain oversight and control over implementation; two, maintain the integrity of of the governmental process by specifying the balance of agency discretion; and three, insure their

export control policies benefit the American people by making predictable and timely decisions.

There are a number of basic factors which characterize the existing export licensing process. Drawn from many studies, reports, and Congressional hearings, these factors are: one, depending on the nature of an export license application, as many as six or more agencies presently may become involved in the licensing process, each with its own view of the purpose of the controls, its own departmental mandate, and its own basic staff orientation.

This process is comparable to a moving train which grows longer and makes more stops each time a new Federal agency joins the train.

Two, there is a noteworthy lack of agreement among the actors on the hierarchy of national goals. It is unclear whether trade or security should rank first, and each time a controversial case comes up, the struggle arises as to which goals matter most.

Three, the complexity of the present interagency decisional process dictates a system that is totally unresponsive to the deadlines and other time constraints of the buyers and sellers involved in exporting.

Four, within and between the Federal agencies, there is diffuse authority which constantly shifts responsibility from managing applications. This causes a great amount of uncertainty for both buyers and sellers.

In light of these factors, most participants in the existing multiagency decisional system tend to think and act in terms of narrow perspectives shaped by their particular sets of responsibilities. In fact, the system encourages total avoidance of bureaucratic risks and interagency disagreements.

The present slow, cautious, risk proof process also ignores costs imposed on export transactions as well as on the applicant firms. These problems are magnified by the fact that this system allows participating agencies to avoid assuming final responsibility for the speedy management of applications.

The present organization has encouraged development of other substantive but undesirable changes in the licensing process. The diffusion of authority has allowed increased use of the licensing process as a signaling device for foreign policy interests. Such signaling is often achieved in complete disregard of basic due process rights of business. New actors in the licensing process, such as the Department of Energy, have also sought various policy objectives of their own, which have only tangential relevance to stated congressional export control policies. Finally, the confusion has apparently encouraged the National Security Council staff to directly influence the licensing process below the Secretary level.

All of these factors have led to a situation wherein Government bureaus make bargains among themselves for their own benefit at the expense of the public. Congressional reform is needed to allow both the costs and the benefits of a particular decision to be taken into account.

The model legislation suggested by the Governors was developed to deal constructively with these problems in the present export system. It would mandate three major structural reforms in the current system: first, the present consensus seeking system would

be replaced with a decision making system based on majority rule. Only three agencies, the Departments of Commerce, State and Defense, would be given a vote.

We believe the majority vote on licenses will speed up the resolution of hard cases and increase the sense of individual agency responsibility. Agencies denying a license would be required to specify the grounds for denial to the business applicant. Any agency outvoted by the other two can appeal to the President, if warranted.

Second, a stringent time requirement for application processing is needed. We believe 45 days is ample time for a decision with another 45-day deadline for resolution of appeals. As Dean Rusk has repeatedly stated, papers do not develop wisdom simply by sitting on someone's desk waiting for a consensus to be reached. It is usually the lack of consensus that causes applications to be delayed, and these first two reforms would thus be self-reinforcing.

Third, in our judgment there should be a mandate of regular and frequent, if not continuous, review of the unilateral entries onto the commodity control list which would bring about a reduction in the number of items and item coverage regarding country destination. This change would cause a decrease in the backlog as more commodity lines become decontrolled, making room for the processing of remaining controversial items.

Along with these reforms, the executive branch should be encouraged to staff critical points in the process with intelligent, creative personnel who have considerable operating discretion.

This concludes my prepared remarks, Mr. Chairman. And again, we appreciate the opportunity to present our views, and I have provided your staff with a summary of our legislation, and if you have no objections, I would hope that these could be included in the record of these proceedings.

Governor Clements and I would be delighted to answer any questions that you or any member of the committee might have.

Senator STEVENSON. The summary will be entered in the record.

[The information referred to follows:]

[National Governors' Association Policy Statement, passed Feb. 27, 1979]

EXPORT POLICY STATEMENT

I. RECOGNITION OF THE NEED FOR AN EXPORT POLICY

Deterioration in the vitality of American export trade and currency prompted the President in May of 1978 to establish a task force to formulate recommendations for an overall export policy that would renew confidence in America's preeminence in world trade. The National Governors' Association, in its policy statement adopted in Boston during August, 1978, supported the President's call for reform and identified substantive areas requiring positive action or deliberate inaction by various Federal departments and agencies. The Federal task force report was presented unpublished to the President in the summer of 1978. On September 26, 1978, the President announced his agenda for future action.

The President's establishment of the task force and his subsequent statement built on its analysis and recommendations were both significant events. The first signified recognition of the need to consider export promotion as a coherent subject demanding coordination among many agencies and interests. The second reflected the President's intent and determination to use the force of his office to stimulate the evolution of a coherent export policy.

Despite the significant, positive values of the President's actions to date, there remains much to be done. The Governors feel that there are several additional goals that must be addressed. Future actions must give the public confidence meaningful

reform is forthcoming and will eradicate two major sources of our deteriorating vitality in international trade:

First, much existing legislation endows the Federal agencies with broad discretion to further regulate the business activities essential for export expansion without regard to impact on business capacity to further engage in exports.

Second, responsibility for much regulation remains diffused among diverse agencies having neither the apparatus nor the incentives to coordinate their actions to achieve efficient regulation.

We renew our call for the specific substantive actions set forth in our policy statement of September, 1978. We also encourage the executive, legislative and judicial branches of the Federal Government to avoid uncoordinated delegation of discretion and diffusion of responsibility among agencies that could impair a vital national export policy; erode public support for the allocation of resources necessary to support such a policy; and reduce the traditional dedication of existing and potential exporters to dynamic exploration of foreign markets. Foreign countries, recognizing how this apathy and export conservatism adversely affect a country's financial strength will continue to lose faith with America's leadership in international trade. They will also be more aggressive in challenging our efforts to expand exports in old markets and penetrate new markets.

II. COMMITMENT TO PRINCIPLES WHICH UNDERLIE A PROGRESSIVE EXPORT POLICY

Export expansion is a major concern of the National Governors Association Committee on International Trade and Foreign Relations. The Governors believe such expansion must rest on a foundation of law and administrative reform that establishes expanded export trade as a durable object of U.S. policy, while stimulating reliance on governance principles that strengthen the domestic economy and maintain citizen confidence in governnment action. Thus, the following eight principles should help guide the future allocation of resources regarding Federal export expansion. (See appendix A at p. 15 for elaboration on principles.)

(1) Commerce, including export trade, by U.S. citizens should be impaired on a selective basis only when the benefits derived clearly exceed the total costs absorbed by the Government and private sector.

(2) Laws and regulations promoting and constraining export trade should be designed to reflect differences in enterprise size and export experience, industry type and product destinations in order to minmize the costs and maximize the benefits of such laws and regulations absorbed by the private sector.

(3) Federal laws and regulations affecting export trade should not be enacted until the Government makes reliable estimates of the consequences, both direct and indirect, of pursuing a particular objective in a particular manner.

(4) Multiagency decisionmaking regarding the structure and implementation or export constraints and export promotion efforts should be as efficient in terms of time, costs and benefits as a single agency decisionmaking alternative.

(5) Administrative discretion affecting export trade should be exercised as much as possible by personnel and agencies who exhibit high standards of creativity and effectiveness in achieving export expansion goals.

(6) People, including youth, in all regions of the country should be made aware of how export trade affects them individually, their local environment, their State and their Nation now and in the future.

(7) States should be given full access to and where appropriate full participation in the Federal decisionmaking and implementation processes controlling export restraint and export promotion programs when such processes significantly affect their interests in the economic, political and social welfare of their citizens.

(8) Basic citizen rights should be protected in ways that avoid foreign manipulation that may impede U.S. export trade.

III. RECOMMENDED ACTIONS FOR EXPORT EXPANSION

The Governors basic principles for export policy reform can be applied in many functional areas of export trade regulation and promotion. As the President's export policy is refined, diverse interests inside and outside government will advocate specific remedies for our declining export trade which will foster narrow interests. Such limited remedies and reasons can produce confusion, preclude careful consideration of truly creative, effective solutions, and might result in only minor modification of programs and practices. leaders in the legislative, executive and judicial branches of government should reflect modest changes in our export system and instead implement programs and approaches which will expand our export trade to its optimal limits. We urge the administration and the Congress to give serious consideration to the following applications of principles we have stated.

A. Licensing of exports

We recognize national security and foreign policy considerations require some trade restraints. Materials, information and technology having predominantly military application are licensed under munitions control regulations administered by the Department of State, while other exports are subject to Export Administration Act regulations administered by the Department of Commerce. Many studies, reports and congressional hearings have disclosed that interdepartmental coordination mechanisms inherent in the licensing processes often produce delays and denials of export requests not evident in countries whose enterprises directly compete with ours in most world markets. Thus, continued U.S. competitiveness depends on a change of result in some aspects of our licensing.

Commitment of foreign relations, military security, and export expansion objectives to different departments requires interagency coordination. differences in agency opinions and goals, however, often produce inaction or denial of legitimate requests for export approvals, or impose paperwork requirements on license applicants which are not essential for effective government action. We recommend that the interagency decisionmaking process for export licensing be governed by a majority vote of agencies participating in the licensing decision. Such majority vote decisions should be made according to a time schedule which balances government need and convenience with the applicants need for a timely and just decision. further, the need for interagency coordination and decisionmaking should not be allowed to dilute the applicants traditional rights of substantive and procedural due process. At the very least, applicants should be given explicit reasons for denial of license applications. Finally, export licensing procedures should reflect marketplace realities concerning the products and markets involved. The timing and conditions of licensing decisions should, whenever possible, seek legitimate government goals in ways most compatible with the competitive needs of U.S. exporters. Any regulation which imposes a delay or cost that significantly impairs exporter competitiveness should be justified on basis of cost and benefits achieved by each product category.

The Export Administration Act of 1969, as amended, will expire in 1979. In order to assist in generally interpreting the collective concerns and opinions of the Governors as expressed in this export policy statement (particularly regarding the Federal export licensing process), the nation's Governors offer the draft model legislation contained in Appendix B for Administration and Congressional consideration as the Export Administration Act is debated and perfected during the coming year. (NGA Proposed Amendments to the Export Administration Act is available from the National Governors Association upon request).

B. Extraterritorial application of antitrust laws

U.S. antitrust laws were intended to foster competition and insure that less than the largest firms in an industry continue to thrive. Unfortunately, antitrust law enforcement has an inherent complexity which imposes substantial compliance costs on small, medium and even large firms. Special programs designed to extend government resources to define compliance requirements for specific companies or industries have been limited in value because government agencies with concurrent jurisdiction refuse to be bound by advisory determinations of one another or even themselves. This complexity and lack of jurisdiction deference severely circumscribes company action in foreign markets where competitive standards differ, especially when criminal sanctions are applicable.

The impact of these constraints upon export expansion prompted the Governors to adopt in August 1978 several recommendations for substantial change in application of the antitrust laws. While these are being considered by the Congress, we request agencies responsible for extraterritorial application of antitrust laws coordinate closely to insure that joint jurisdiction does not impose unnecessary regulation and risk, and that each agency use its considerable enforcement and interpretive discretion to foster expansion of U.S. exports, especially by enterprises not fully committed to exports and to foreign markets where U.S. products have minimal presence but significant market potential. Ambiguity in enforcement and interpretive policy which has potential for significantly limiting export trade should not be allowed to persist without thorough evaluation of costs and benefits inherent to such policies.

C. Corrupt practices

Payments made abroad are subject to concurrent jurisdiction of the Securities and Exchange Commission (SEC), Internal Revenue Service (IRS) and Justice Department. In addition to direct jurisdiction, the Justice Department may attack certain payments as anticompetitive under the antitrust laws. The definitional lines between legal facilitating payments and illegal bribes are unclear in both the legisla-

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tion and interpretive regulations. Furthermore, the knowledge provisions triggering criminal penalties have been given little texture by the Justice Department.

Enforcement of these provisions regarding extraterritorial payments, in the absence of enforcement of similar provisions by other countries, may create a severe competitive disadvantage for American enterprises selling abroad. Also, the lack of meaningful interpretations of the Act's vague terms by the SEC and Justice Department have created much debilitating uncertainty for businessmen operating in areas where facilitating payments and agent fees are customary practice. At a minimum, applications of the Corrupt Practices Act should distinguish among diverse market regions and products so local customs are given cognizance. Further, the SEC and Justice Department should issue clarifying regulations regarding their enforcement intentions. Determinations by the IRS concerning disallowance for certain payments should also be synchronized with determinations of the SEC and Justice Department.

Long-term, unilateral enforcement of corrupt practice laws in foreign markets could seriously undermine programs for export expansion. Therefore, the Federal Government should diligently pursue an international code of practice which is uniformally enforced among companies of all nationalities. Until such uniformity is achieved, Corrupt Practices Act application in various market areas should be coordinated with the practices of other countries regarding policing such payments.

D. Human rights standards

Currently, all regulation and promotion laws regarding international trade which contain foreign policy objectives are potential vehicles for enforcement of human rights sanctions against foreign countries. There is now much uncertainty as to the laws used as vehicles for human rights enforcement or countries subject to this enforcement. This uncertainty has substantially hampered expansion of our exports. The Department of State should hold public hearings on the countries to be sanctioned through particular laws subject to foreign policy considerations. Determinations flowing from these hearings, should not be applied for a six-month notice period so exporters may adjust their plans accordingly. In instances where such advanced notice was not given, an equitable government indemnity program should be established for companies which have proceeded with export transactions. Further, human rights sanctions should be reviewed annually in public hearings.

E. Boycott regulations

U.S. company participation in boycotts by foreign countries is now governed by title II of the Export Administration Act. Other legislation enables the Internal Revenue Service to relate tax liability to boycott participation. Regulations promulgated pursuant to the Export Administration Act have sought to accommodate legislative policies while permitting major companies operating in boycott areas to continue business by filing appropriate paperwork.

The complexity of these regulations create, however, an almost insurmountable burden for small and medium size companies operating in boycott areas. The problem is especially severe for companies seeking to export to these areas for the first time. Special regulations or exemptions need to be developed promptly so these antiboycott certification requirements do not constructively bar exports to boycott countries by these small and medium size businesses. Further, steps should be taken to eliminate IRS jurisdiction over boycott issues or to make precise the determinations that the IRS is authorized to make pursuant to appropriate legislation.

F. Fiscal and tax policies

DISC's, foreign income deferral, section 911 of the Internal Revenue Code (Tax treatment of American workers overseas), and other tax provisions of the Internal Revenue Code are important incentives for many U.S. enterprises to pursue actively sales of goods and services abroad. While these provisions may reduce or defer Federal tax receipts, they produce many direct and indirect benefits, e.g., aggressive overseas sales of U.S. products, which from a national standpoint offset these revenue losses. Thus, modification of these provisions should rest on a clear finding that the total national benefits derived by these tax provisions are less than the cost associated with lost tax revenue. Also, special tax provisons such as automatic tax deferrals should be created to give substantial incentives to small and medium size companies considering entrance into an export market. These incentives will offset the significant risks and uncertainties faced by novice exporters. To minimize tax receipt losses, these new incentives should be carefully tailored to apply only to products and market destinations where such incentives are critical for expansion of American exports. Immediate attention should be given to the establishment of

incentives needed to encourage companies to enter new market areas already saturated with foreign competition.

G. Federal procurement, standard setting and research and development policies

Government procurement and standard setting, e.g., input-output channel standards for computers and fabric flammability standards, frequently involve a number of companies in most product lines which are now or can be substantial exporters of American goods. To the extent that Federal procurement and standard setting policies place serious constraints on product design, special study should be made to determine when and where these policies place unnecessary burdens on the flexibility of American companies to design and sell products that are competitive in foreign markets. Furthermore, Federal research and development policies should be carefully reviewed to insure they provide special assistance to industries and companies having a high potential for export expansion in foreign areas, especially if such research and development policies provide a major factor in their competitiveness in foreign markets. Finally, special studies should identify particular areas where highly focused research and development programs, subsidies or tax incentives, can materially aid the foreign competitiveness of American products and can substantially extend their competitiveness through a greater portion of the product life cycle.

H. Credit and insurance policies

Exim Bank, Overseas Private Investment Corporation (OPIC), Department of Agriculture and Small Business Administration have programs that attempt to encourage exports. In addition to expanding these programs and increasing their competitiveness with programs offered by other countries, each agency should initiate special procedures for facilitating satisfaction of small and medium size business credit needs. Special provisions should also be made for companies first entering the export market to particular regions. To the extent possible, credit should be extended automatically to small businesses, provided there is endorsement by the business's local credit institution. Also, to the extent consistent with national interests, these credit programs should not be made subject to the collateral demands of other Federal legislation and regulatory programs.

I. Trade intelligence and promotion

The 1978 NGA Policy Statement contains substantial recommendations concerning this subject. However, greater effort should be made with regard to all these programs to insure that information is collected and analyzed in ways which service the needs of specific classes of exporters dealing with particular world markets. Those implementing these programs should receive incentives keyed to how their efforts expand exports in particular product lines and in particular world markets. Furthermore, overseas commercial representations which substantially facilitate export expansion, especially in developing countries, and foreign tourism in the United States, should be improved. Overseas representatives should be given the authority and resources to facilitate coordination of credit and regulatory requirements of individual exporters. This service should be carefully coordinated with state government offices charged with promotion of trade and industry in overseas markets. At a national level, the Commerce Department's trade information programs should be designed to expand the capacity of state government offices servicing their residents abroad.

J. Educational policy

A durable program for export expansion cannot be maintained without substantial public support. Long-term support from the public is directly dependent upon their understanding of the importance of exports for the country's financial and economic vitality. The Government should adopt a broad-scale program for insuring this awareness, including enlisting the support of the private sector. Special effort should be made for cooperative state and federal programs dealing both with established educational systems as well as general media programs for dissemination of information to the public.

K. Foreign import and procurement practices

Significant expansion of U.S. exports will not occur unless the Federal Government takes concerted action to insure foreign nations do not engage in discriminatory import practices, including government procurement, which place American products at a competitive disadvantage. Apart from the traditional protection afforded by GATT and other multilateral and bilateral agreements, careful attention must be given to structures within major importers which have a direct bearing on purchase and distribution of products. Distribution practices and safety standards

are often designed to discriminate in addition to achieve stated purposes. Special mechanisms should be established to assemble complaints by American exporters and to act on them promptly to the extent there is a clear intent on the part of a foreign government to artificially restrict importation of American products or lessen their natural competitiveness in foreign markets.

L. Presidential oversight of an export expansion program

The President's September 1978 policy statement on exports sought many administrative reforms as well as ultimate legislative action. The Governors urge the President to establish a clear mechanism for predictable, periodic reporting to interested parties on the results flowing from his policy statements. Since State governments have a particular interest in many of these programs, it is important that as a part of this reporting mechanism the President designate particular government officals responsible for periodic briefing of state officials regarding specific programs. These individuals should also be the focal point for handling complaints and other comments by State officials concerning the effectiveness of certain promise reforms.

APPENDIX A

ELABORATION ON PRINCIPLES

(1) Commerce has been essential to the development of the Nation's political beliefs, social structures and economic depth and diversity; factors that determine the Nation's strength in a world context. Government growth has stimulated burdens on commerce, some of which are essential to pursue effectively other national values. They should, however, only be imposed when they clearly will produce intended benefits and they should be administered efficiently so they impose minimal costs and minimize uncertainty.

(2) Existing Federal export laws and regulations seldom differentiate basic realities of export trade; they fail to recognize or to react to the differences in types of products and market characteristics. Other countries that depend on export trade recognize the importance of differentiating between types of importing countries and types of export products. Thus, if the United States is to effectively compete with them, Federal action should not assume that export decisions are made by monolithic decisionmakers responding to monolithic markets. The internal business characteristics peculiar to particular types of industries must be appreciated together with the external factors relating to information processing, economic conditions, and legal-political conditions. The executive branch and Congress should give special priority to developing techniques for fashioning legislation and administrative action which would be consistent with constitutional principles, but also be capable of making these distinctions for the benefit of our national trade.

(3) Most legislation and administrative action pertaining to export trade is preoccupied with attainment of narrow governmental objectives. Under our existing system the pursuit of narrow agency objectives often adversely affects attainment of the broader national goals—the promotion of export trade. Often Federal legislation such as the National Environmental Policy Act explicitly recognizes this reality. NEPA requires that specific government actions by various agencies assess the impacts of achieving a specific goal in terms of environmental costs and benefits which flow indirectly and directly from government action. The governors believe this principle of recognizing the consequences, both direct and indirect, or pursuing a particular objective in a particular manner, must become a fundamental tenet for both legislative and administrative rule actions which relate directly to export trade or affect export trade indirectly. The application of this principle should include recognition of the fact that Federal legislation and administrative action affecting exporters may also have extreme impacts on particular states hosting various exporters. Adherence to this principle of responsible assessment of costs and benefits will establish a pattern of rational Federal action which will give exporters and their supporting State governments the confidence needed to make long-term commitments to substantial export expansion.

(4) Presently in many regulatory areas such as export licensing a variety of agencies can become involved in granting needed approvals. This diffusion of responsibility for government action often results in decisions and actions which: (1) lack predictability as to timing, (2) fail to achieve desired objectives and minimize adverse consequences, and (3) abridge basic constitutional tenets of participatory government and due process. The knowledge necessary to deal with these labyrinths of Federal agencies is not now present on the part of businesses. There needs to be a commitment on the part of the excutive or legislative branches of government to make that information available.

States and businesses no longer have the resources to operate without this knowledge, because other countries who are direct competitors have the knowledge and are diligently applying it by centralizing decisionmaking authority. Congress and the administration must rectify this deficiency and insure that if responsibility is allocated among two or more Federal agencies, the standards for its application are coordinated.

(5) Our constitutional form of government necessarily places a heavy responsibility on the executive branch of government to implement faithfully the policies of the legislative branch in ways that are efficient, effective and consistent with judicial standards for due process. The dynamics of international trade and complexities of domestice matters require that the legislature delegate much discretion to the executive branch to achieve policies. To discharge properly the responsibilities inherent in this delegation the executive branch should insure that the administrators of export regulation and promotion programs creatively use their administrative discretion to promote the overall objective of export expansion. Groups and individuals who exhibit high standards of creativity and effectiveness in achieving export expansion goals should be given special incentives and rewards as well as increased responsibility.

(6) America's vast resources and large domestic markets have limited our dependence upon export trade in most product and service areas. This prior, relative independence of exports has encouraged citizen insensitivity to the dynamics of international trade, the importance of exports to the continued financial integrity of this country, the relationship between jobs and export-import trade, and the importance of research and development to maintain U.S. competitiveness in world markets. The President's resolve to eradicate government apathy and inadequacy regarding export expansion cannot alone produce the needed results. The people must share a common understanding and commitment to an aggressive export posture. This cannot be achieved without long-term, creative, dedicated action at all levels of government. Government leaders must actively associate themselves with a commitment to substantial export growth. Government administrators must act diligently to achieve this growth. Educators, business persons, and the media must inform the general public of this government commitment and the public to the importance of their support. Special attention must be paid to the Nation's youth, who must eventually bear the major burden of translating this commitment into a continuous reality involving all sectors of our productive economy.

(7) Since the vitality of export trade is closely connected with the welfare of individual citizens, State government has a special responsibility concerning export transactions, present and future. Export transactions create jobs, require specially trained workers, stimulate information needs, and place peculiar demands on tax, credit and insurance structures. Past Federal legislation and administrative action concerning exports has given little if any recognition to these unique State responsibilities. Federal powers relating to foreign policy and national security should not be exercised without careful regard for these unique State responsibilities concerning the welfar of its citizens. Thus, procedures and channels must be developed on a priority basis which allow for simultaneous achievement of both Federal and State objectives regarding export trade.

(8) The continued vitality of our economy demands the export expansion be given a high priority on the agenda for national action. We must collectively insure, however, that priorities for national action concerning exports do not erode basic citizen rights deemed essential to representative government. Foreign governments competing with us in world markets may seek to use safeguards for our citizens to manipulate government action in this country in ways which blunt our export expansion efforts. While problem poses obvious responsibilities for creativity and intelligence on the part of legislative and executive branch activities, it also will require that our judicial branch of government understands and responds to a national commitment for export expansion policy.

Draft—Proposed Amendments to the Export Administration Act

FINDINGS

Section 1. The Congress makes the following findings:

(1) The right of United States citizens to engage in international commerce is a fundamental concern of United States trade policy.

(2) The stimulation of United States exports is vital to the national interests of the United States.

(3) The unrestricted right of United States enterprises to export materials, information and technology without regard to whether they make a significant contribu-

tion to the military power of any other nation or nations may adversely affect the military security and foreign policy of the United States.

(4) The uncertainty of policy regarding certain categories of exports and delays in the approval or disapproval of specific transactions have (A) curtailed the efforts of American businesses to export and (B) raised absolute barriers to exports by small businesses unable to absorb the risks and costs of exporting.

(5) The restriction of exports and the costs of export regulation to United States businesses may cause significant economic injury or foreclose significant economic opportunities in particular States.

(6) The restriction of certain exports from the United States may hinder American businesses without significantly furthering national interests when such exports are available in other countries.

(7) The availability of certain materials at home and abroad varies so that the quantity and composition of United States exports and their distribution among importing countries may affect the welfare of the domestic economy and may have an important bearing upon fulfillment of the foreign policy of the United States.

(8) Unreasonable restrictions on access to world supplies can cause worldwide political and economic instability, interfere with free international trade, and retard the growth and development of nations.

DECLARATIONS

Section 2. The Congress makes the following declarations:

(1) It is the policy of the United States that all persons shall have the right to engage in domestic and international commerce.

(2) It is the policy of the United States to promote the expansion of exports to further the economic, political, social and security interests of the United States.

(3) It is the policy of the United States that the right to export should be restricted only when the national interests which would be served by certain exports are outweighed by the dangers which such exports would pose to military, economic or foreign policy interests. (A) The President has personally determined that trade with certain countries is against the national security of the United States, (B) it is necessary to prevent the export of goods and technology that would make a significant contribution to the military power of any other nation or nations which would prove detrimental to the national seurity of the United States, (C) it is necessary to fulfill declared international obligations of the United States, or (D) it it necessary to protect the domestic economy from the excessive drain of scarce resources and to reduce the serious inflationary impact of foreign demand.

(4) It is the policy of the United States tht export controls should not be imposed on the export of any product or technology to a particular country without consideration of the economic impact of such controls on States.

(5) It is the policy of the United States (A) to formulate, reformulate and apply any necessary controls to the maximum extent possible in cooperation with all nations with which the United States has a common interest, and (B) to formulate a unified trade control policy to be observed by all such nations.

(6) (Boycott provisions, sec. 2402(5)).

(7) It is the policy of the United States that the desirability of subjecting, or continuing to subject, particular articles, materials or supplies, including technical data or other information, to United States export controls should be subjected to periodic review in hearings which permit the participation of representatives of appropriate United States government agencies, States and other affected parties.

AUTHORITY

Section 3. (a) There shall be established the National Export Administration Board (hereinafter referred to as the "Board") composed of three voting members, each designated by the Secretaries of Commerce, Defense and State, respectively, and non-voting, advisory members named by the heads of such other departments and agencies as the President may designate from time to time. The voting representative from the Department of Commerce shall preside over all Board meetings. The Board shall by a positive vote of at least two of its three voting members, make the decisions provided for under this Act or the rules and regulations promulgated by the Secretary of Commerce pursuant to this Act.

(b) There shall be established the Export Administration Review Council (hereinafter referred to as the "Review Council") composed of the Secretaries of Commerce, Defense and State. The Secretary of Commerce shall preside over all Review Council meetings. The Review Council shall by a positive vote of at least two of its three members, make the decisions provided for under this Act or the rules and regulations promulgated by the Secretary of Commerce pursuant to this Act.

(c) The President shall (1) decide appeals from decisions of the Review Council made pursuant to this Act, (2) annually review the activities of the Board, Export Administration Review Council, and the Secretary of Commerce to insure efficient implementation of the policies of this Act, and (3) coordinate activities of governmental agencies with responsibilities in international trade, so as to insure that there is full and effective compliance at all times with the policies of this Act.

(d) The Secretary of Commerce shall (1) maintain the organizational and procedural arrangements within the Department of Commerce necessary to support fully the decision-making functions of the Board and to implement Board decisions and other orders, rules and regulations promulgated by the Secretary pursuant to this Act, and (2) issue and maintain rules which provide for the licensing of the exportation of all articles, materials, information or technology subject to the jurisdiction of the United States. These rules shall establish two classes of export licenses:

(1) Validated licenses, authorizing the export of articles, materials, information or technology pursuant to a certificate issued by the Board upon the application of an exporter, subject to the rules and regulations prescribed by the Secretary of Commerce to this Act, and,

(2) General licenses, authorizing the export of articles, materials, information or technology without specific approval if the export is in accordance with the rules and regulations prescribed by the Secretary of Commerce pursuant to this Act. All articles, materials, information or technology not subject to control by a validated license shall be exportable under a general license.

(e) The Secretary of Commerce may prescribe additional rules and regulations necessary to the effective and efficient operation of the licensing procedure. To the extent necessary to achieve effective enforcement of this Act, these rules and regulations may apply to the financing, transportation, and other servicing of exports and the participation therein by any person.

PROCEDURES FOR ADOPTION OF RULES

Section (4)(a)(1) Proposed rules and regulations pertaining to general and validated licenses, including the identification of items subject to each license, shall be published in the Federal Register and the Export Administration Bulletin.

(2) Notice of proposed rules and regulations shall include:

(A) a statement of the time, place, and nature of public rule making proceedings;

(B) a statement of the policies, as enumerated in section 3 of this Act, which the proposed rule is intended to effectuate;

(C) either the terms or substance of the proposed rule or a description of the subjects, issues and exports involved, including the nature of any proposed restrictions on exports and the export destinations to which the restrictions will apply; and

(D) a description of the policies, as enumerated in section 2 of this Act, which the proposed rule is intended to effectuate, and the probable economic, political and social consequences of the proposed rule.

(3) This subsection does not apply:

(A) To interpretive rules, general statements of policy, or rules of agency organization, procedure or practice; or

(B) When the agency finds (and incorporates the finding and a brief statement of the reasons therefor in the rules issued) that because of urgent circumstances endangering United States military security, notice and public procedure thereon is contrary to the public interest.

(b) After notice required by this section, the Board shall give interested Federal agencies, States and other persons an opportunity to participate in the rule making through submission of written data, views or arguments with or without opportunity for oral presentation. The Secretary of Commerce shall designate interested parties with due consideration for the special concern of such parties, the probable impact of the proposed rules, and the special contribution which such parties may make to the rulemaking proceedings.

(c) After consideration of the relevant matter presented, the Board shall make its decision by majority vote. The Board shall incorporate in the rules adopted a concise statement of their basis and the policies, as enumerated in section 2 of this Act, which the rules are intended to effectuate, and the estimated economic, social, and political impact of the rules. Each rule which is reviewable under subsection (e) of this section shall include a statement of the date when the rule will be subject to such review.

(d) The required publication shall be made not less than thirty (30) days before its effective date, except:

(1) when the adopted rule is a substantive rule which grants or recognizes an exemption or relieves a restriction;

(2) when the adopted rule is an interpretive rule or statement of policy; or,

(3) When the agency finds (and incorporates the finding and a brief statement of the reasons therefor in the rules issued) that because of urgent circumstances endangering United States military security, enforcement of the rule must not be delayed.

(e) Any party substantially affected by the proposed rule or interested agency shall have the right to appeal to the Review Council on the grounds that a rule enacted or reenacted by the Board:

(1) Violates the policies set forth in section 2 of this Act; or,

(2) Was enacted or reenacted in violation of the procedural requirements of this Act.

No appeal shall be taken more than thirty (30) days after the enactment of the rule. The Review Council may in its discretion suspend the effect of the rule until the appeal is decided. Decisions of the Review Council shall be by a majority vote. Decisions shall either adopt the findings of the Board or shall include a brief statement of the basis for the decision.

(f) Any party appealing a rule enacted or reenacted by the Board shall be provided on request a copy of any documents on which the decision of the Board is based, unless such documents are classified as secret for purposes of national security.

(g) The Secretaries of Commerce, Defense, or State may petition the President for a review of any decision of the Council under subsection (e) of this section. The President may accept or reject such petition for review. The decision of the President with regard to the rule on which the petition for review is based shall be final.

(h) The Board shall review any rule restricting the exportation of any article, material, information or technology one year after the enactment of the restriction, and at two year intervals thereafter. Rules under review shall be terminated unless reenacted by a majority vote of the Board. The Board shall give interested persons an opportunity to submit written data, views or arguments with or without opportunity for oral presentation. The Board shall republish any rules reenacted with a concise statement of their basis and the policies, as enumerated in section 3 of this Act, which the rules are intended to effectuate, and the estimated economic, social and political impact of the rules.

(i) (monitoring of commodity supplies, old sec. 2403(c)).

PROCEDURES FOR VALIDATED LICENSE APPLICATIONS

Section 5. (a) The National Export Administration Board shall approve or deny export licenses under this Act, subject to review by the Export Administration Review Council.

(b) Each application for a validated export license required under this Act shall be finally approved or denied within ninety (90) calendar days of its receipt.

(c) (1) The Export Administration Office may automatically approve any application for a validated license under regulations enacted by the Secretary of Commerce pursuant to this Act. Applications not automatically approved shall be placed on the agenda of any meeting of the Board which occurs on or before the forty-fifth calendar day after receipt of the license application. The applicant shall receive timely written notice of the meeting and shall, to the maximum extent consistent with the national security of the United States, be informed in writing of specific questions raised and specific negative considerations or recommendations made by any agency or department of the government with respect to such license application, and of any descriptions of the item(s) to be exported provided by any government agency to the Board. The applicant shall have the opportunity to make written submissions to the Board responding to any government submissions within time for the meeting. In its deliberations, the Board shall take fully into account the applicant's submissions concerning any description of the item(s) and concerning the destination or end-use of the item(s).

(2) Approval or denial by the Board of all validated export license applications shall be made by a majority vote of the representatives of the Departments of State, Commerce, and Defense.

(3) (A) In the event that the validated license application is denied, the applicant shall be informed in writing within five (5) days of decision of the statutory basis for denial, the policies in section 2 of this Act and the specific circumstances which led to the denial, and of the applicant's right to appeal the denial under paragraph (d) below.

(B) In the event that the export license is approved, the representative of any of the three Departments represented on the Board may appeal the decision to the Review Council.

(C) If, through oversight or neglect, no action is taken on a validated license application, the application shall be considered appealed to the Review Council.

(d) (1) If any party appeals a decision of the Board or if no decision is made within forty-five (45) days of the date of application, the application shall proceed to the Review Council. The Review Council may review an export license application in any administratively convenient way, including review by telephone. Within seventy-five (75) days of application, the Review Council shall approve or deny the license application by majority vote. In its deliberations the Review Council shall take fully into account all written submissions made by the applicant.

(2) (A) The decision of the Review Council shall be final except that the Secretaries of Defense, State and Commerce shall have the right to ask the President to reverse the decision of the Review Council within ninety (90) days from the date of the application.

(B) In the event that the application is denied, the applicant shall be entitled to an explanation in writing as provided in Section 5(c)(3)(A) of this Act.

(C) In the event that the Review Council sustains the action taken by the Board it may simply adopt the findings, reasoning and result of the Board.

(D) In any decision under this subsection, the Review Council will set forth guidelines, as to both exported items and destinations, under which similar license applications can be approved automatically under section 5(c) of this Act.

(e) Upon the expiration of the ninety-day calendar period beginning on the date of its receipt, any export license application required under this Act which has not been approved or disapproved shall be conclusively deemed to be approved and the license shall be issued.

(f) In denial of an export license application except for Presidential veto, the applicant shall be informed in writing of the statutory basis for denial, the policies in section 2 of this Act which led to denial, and the specific circumstances, so far as conconant with national security, which led to denial of the application.

Summary: Changes in the Export Administration Act

The changes in the Export Administration Act proposed by the Dean Rusk Center for International and Comparative Law seek to tune United States export restrictions more closely to our need to increase exports in order to relieve our balance of payments deficit and generally strengthen the American economy. This is in keeping with a larger objective of the Rusk Center, that of rooting out deficiencies in governance activities. Substantial changes have been made in five areas, corresponding broadly to Sections 2, 3 and 4 of the present Act.[1] These areas are: Findings; Policy; the structure of the bureaucracy which deals with United States exports; the bureaucracy's rule making procedure; and the mechanism for processing validated export license application.

1. *Findings.* Several new findings have been added to Section 2 of the Act which entirely change the tenor of the section. The first finding (new) states that "the right of United States citizens to engage in international commerce is a fundamental concern of United States trade policy." (Emphasis added.) Moreover, "stimulation of United States exports is vital to the national interests of the United States," according to the second finding (new). This stress on the importance of exports, and the status of exporting as a right, are the focus of the new Findings.

The fourth finding tracks the old fourth finding, that uncertainty of export policy may impede United States business' efforts to export, and adds the finding that uncertainty in policy and delay in application processing raise "absolute barriers to exports by small businesses unable to absorb the risks and costs."

Still another new finding points out that economic injury in particular states through lost jobs or lost opportunities may result from unnecessary and costly export restrictions.

Old finding (3) has been strengthened in answer to a common complaint of exporters, that sales lost to U.S. exporters due to export restrictions often go to exporters in other Western nations. "The restriction of certain exports from the United States may hinder American businesses without significantly furthering national interests when such exports are available in other countries."

Finally, old finding (1) dealing with short supply has been deleted.

2. *Policy.* Section 3, Declaration of Policy, has also been substantially revised to buttress the importance of exports and to indicate that the burden of persuasion has

[1] Numbers refer to the sections of the present Export Administration Act of 1969, as amended.

shifted from the exporter to the agency that seeks to curtail exports. The first statement of policy (new) is: "It is the policy of the United States that all persons shall have the right to engage in domestic and international commerce." The second policy statement (new) reverses the emphasis in old (4) so that export expansion is seen as and end in itself, and not just a means of furthering national security, foreign policy, and economic well-being in times of short supply. "It is the policy of the United States to promote the expansion of exports to further the economic, political and social interests of the United States." The fourth policy statement (new) requires further that export controls should not be imposed "without consideration of the economic impact of such controls on particular States of the United States."

Most importantly, old policy statement (2) (new policy statement (3)) has been completely rewritten. The old policy was that export controls were to be used first, to protect the economy from short supply; second, to further United States foreign policy interests; and third, to protect the national security. New statement of policy (3) restates the issue in terms of the right to export. This right "should be restricted only when the national interests which would be served by certain exports are outweighted by the dangers which such exports would pose to military, economic or foreign policy interests and (A) the President has personally determined that trade with certain countries is against the national security of the United States, (B) it is necessary to prevent the export of goods and technology that would make a significant contribution to the military power of any other nation or nations which would prove detrimental to the national security of the United States, (C) it is necessary to fulfill declared international obligations of the United States or (D) it is necessary to protect the domestic economy from the excessive drain of scarce resources and to reduce the serious inflationary impact of foreign demand." Thus, those charged with implementing the policies of the act must balance the dangers of exporting against the benefits. Only if the dangers exceed the benefits is the right to export to be restricted, and then only when necessary to protect the economy against short supply, to fulfill international obligations, to prevent our strengthening a hostile nation's military power, or to advance national security when the President has personally decided to restrict trade with certain nations.

Finally, old declarations of policy (1), (7) and (8) have been deleted. Old declarations (3), (5) and (6) remain as they are.

3. *Structure of the Organization.* This is laid out in (new) Section 3: Authority. There are four levels to the proposed export administration structure: at the bottom, the administrative level, the Export Administration Office, which remains nominally in the Department of Commerce but which is directed by an interagency board; next, the National Export Administration Board (NEAB), composed of three voting members (one appointed by each of the Secretaries of Defense, Commerce and State; the Commerce Department member shall preside over the NEAB) and as many non-voting, advisory members from other areas of government as the President shall appoint; third, the Export Administration Review Council (EARC), composed of the Secretaries of Defense, State and Commerce (presided over by the Secretary of Commerce), and finally, the President. The NEAB and the EARC shall make decisions by majority vote; consensus is no longer required. The Secretary of Commerce is responsible for maintaining the "organizational and procedural arrangements" necessary for the functioning of the NEAB, for implementing all decisions, orders, rules and regulations, and for issuing the rules and regulations necessary for efficient export licensing procedure. The President, aside from deciding appeals from the EARC under the rule making and validated export licensing procedures, shall annually review the activities of this structure to ensure that Congressional policies are carried out, and shall coordinate the work of this structure with that of other agencies which deal with international trade. This last duty of the President dovetails with the President's new National Export Promotion Programs (NEXPO).

Further delineation of the functions of the four levels is to be found below in the context of the two primary duties of the structure: rule-making and export licensing.

4. *Rule Making Procedure.* In a totally new Section 4, Procedures for Adoption of Rules, the Rusk Center is attempting to secure greater fairness in the process of rule-making in order to strengthen United States citizens' right to export.

Proposed rules and regulations, under the proposals (with certain exceptions) must be published in both the Federal Register *and* the Export Administration Bulletin. Such notices must contain the time, place and nature of the public proceedings, the policies behind the proposed rule, the terms or substance of the rule,

and finally a statement of the probable economic, political and social effect of the proposed rule.

After notice is given, NEAB shall give interested parties, including federal agencies, States and other persons, a chance to participate orally or in writing in the proceedings. After decision on the proposed rules (by majority vote) NEAB shall publish with the rules, if adopted, "a concise statement of their basis and the policies, as enumerated in section 2 of this Act, which the rules are intended to effectuate, and the estimated economic, social and political impact of the rules." The rules must be published at least thirty (30) days before their effective date, with a few exceptions.

Any rule adopted by NEAB may be appealed to the Cabinet-level EARC by "any party substantially affected" or any interested agency, on grounds that the rule violated Congressional policy or the procedural requirements of the Act. Appeal shall be taken within thirty (30) days. The EARC may simply adopt the decision of the NEAB; otherwise, it shall include a brief statement of its reasons. Appealing parties are, upon request, entitled to all non-classified documents.

Any member of the EARC may petition the President for a review of the majority's decision. The President's decision on the proposed rule shall be final.

Rules shall be reviewed by the board after one year and at two year intervals thereafter and shall be terminated unless reenacted. Interested persons again shall have an opportunity to be heard.

5. *Procedures for Validated License Applications.* In order to shift the onus from the exporter to the agency seeking to curtail the export, a simplified license application appeals procedure with a strict time frame has been established. Each application for a validated export license, under the proposal, shall be finally approved or denied within ninety (90) calendar days of its receipt.

Any application can be approved or denied administratively within the Export Administration Office (EAO), under rules and regulations under this Act, within thirty (30) calendar days of receipt of the application. If however an application is not automatically approved it must be placed on the agenda of any meeting of the NEAB occurring on or before the 45th day from receipt. The applicant is entitled to notice and the opportunity to make submissions. He is also entitled to know of any negative considerations and of any description made of the item(s) to be exported. The NEAB shall take the exporter's submissions into account, and decide on all applications on the agenda (by majority vote).

In the event of an adverse decision, the applicant and the representatives of the Department of State, Commerce and Defense are entitled to appeal the decision to the EARC. The EARC may review the decision in any administratively convenient way, but must affirm or reverse the decision of the NEAB within seventy-five (75) days of receipt of the application. As with the rule-making procedure, the EARC may adopt the NEAB's findings; otherwise the EARC should set forth guidelines under which similar license applications can be approved administratively. The decision of the EARC is final except that the Secretaries of Defense, Commerce and State shall have the right to ask the President to reverse the EARC decision. Since the President has no authority to act under this Act after ninety (90) days from receipt of application, his decision must come by then. The President's decision is final.

Senator STEVENSON. We thank you for your helpful and constructive suggestions. I expect that within the next day or two we will have the legislation ready for introduction, which will overhaul the entire Export Administration Act and contain almost all of your recommendations.

And we will also have a report of this subcommittee which analyzes the competitiveness or lack thereof of the economy and makes a number of recommendations for improving competitiveness, including reform of the Export Administration Act. It sets out an export strategy for the United States, and as I say, they are both ready now, and we think they should be available for the public tomorrow or the day after. We will send you copies of the report and its recommendations and would invite any further thoughts or suggestions that you might have on a broader scale of export strategy than just reform of the Export Administration Act.

One of the issues that we have been considering in this long study involves the use of export controls for foreign policy reasons, as opposed to national security reasons, including for human rights, environmental protection, and other such considerations.

Would you gentlemen care to express any opinions about the wisdom of controls for such foreign policy purposes?

Governor BUSBEE. Mr. Chairman, the basic premise of our model legislation is that trade should be a matter of right. However, we also recognize that we have to protect the national security and we have to recognize restraints on foreign policy.

But I think that when you do limit that trade—that right of free trade—people and businesses in our States should be told why they are being limited, and they should be told this in an expeditious manner.

Thus, we agree that we have to have some limitations. But anytime you make this evaluation, you should be told why in terms of the costs, not only to the businesses, but to the States and the people. And the denial of this trade should be made relative to the benefit that is gained as far as foreign policy, or as far as national security is concerned.

Governor CLEMENTS. Senator Stevenson, I don't remember in 4 years of sitting on the National Security Council that there was ever a decision made with respect to either national security or foreign policy that took into account the basic issues or was an overriding factor in making a decision to either of the two aspects that you mentioned: environmental questions or human rights questions.

I know that those were given consideration, but I do not believe that the policies as eventually evolved were determined as an overriding factor of either one of those issues.

Senator STEVENSON. Thank you.

Senator Tower?

Senator TOWER. Thank you, Mr. Chairman.

Governor Busbee, has there been much coordination or consultation between the President and the Governors to date on export policy?

Governor BUSBEE. There have been two things: one is the President met with the Governors approximately 2 weeks ago. There were about 35 Governors that met with him. I might say that prior to that time I came to Washington and met not only with the administration as far as the various Cabinet members involved in exporting are concerned, but I also met on the Hill with Senator Stevenson and others that are very much involved as far as the Congress is concerned.

We have met with the administration. We have reviewed the export policy that was proposed by the President on September 26th of last year, and we have talked with some of the agencies involved regarding our concerns and proposed policy additions. That is about the extent of it.

Senator TOWER. Has the President himself reflected some concern over this bureaucratic process? I am sure he is concerned about our unfavorable balance of payments situation.

Has he expressed any sympathy to you for this program?

Governor BUSBEE. Yes, sir, I think he expressed it to all of the Governors.

I will be quite candid with you. I think that we are going to have to have an extensive overhaul of the Export Administration Act of 1969, as amended, if we are going to make any progress in this matter.

And I am just absolutely delighted that you are going to have legislation introduced that will revamp the law, rather than just patch it up.

I think we have a lot of things involved. In addition to licensing for exports, we have antitrust laws, and other matters that need to be looked at. For example, I met with Mr. Shenefield of the Justice Department who heads the Antitrust Division, and he contends that a lot of things businesses are saying about restraints—like in antitrust—are really myths.

Well, it does not matter whether it is a myth or not. If businesses believe that it is an impediment, and thus do not engage in exporting, then it is in fact an impediment.

But in any event, we have also come up with one thing further that I think will help, and the timing should be right. The Governors are going to have three regional meetings on foreign trade and exports in the East, Midwest and the West in May, and June. We are calling in the businesses, and all of the agencies of Government that are involved in exporting.

Now this will be at a time when your proposed legislation will have surfaced. We are going to have an opportunity to interface with the business communities involved, and I think it is going to be very beneficial to look at the legislation, and also look at the present administration of the existing legislation.

Senator TOWER. Governor Clements, there is a great deal of debate over the question of whether or not the United States should engage in high-technology exports from the standpoint of national defense, enhancing the ability of nations that we might regard as potential adversaries to improve their defense capability against us, or military capability that might be postured against us, as well as concerns that, in exporting technology, we are improving the productive capacity of competitor nations in the international marketplace.

Do you have some ideas about what our overall policy guidance should be on such questions?

Governor CLEMENTS. Well, Senator Tower, as you well know this has been a continuing question for the past many years. And during the 4 years that I was in Washington when I appeared many times before your Senate Armed Services Committee, as well as with private discussions with you and Senator Stennis and others, this has been a continuing problem and obviously it is going to continue to be a problem.

And while the framework of a system that we have suggested here is more workable perhaps than what has been true in the past, it will certainly not answer all of the questions. Because you finally come to a judgmental point when a judgment has to be assessed as to where is that razor edge of too high a technology that should not be licensed, and the technology that is slightly on the other side, and in balance should be licensed and sent abroad?

So you cannot legislate that kind of a decision, and I think that you understand that. But with the framework that we have suggested here, it can properly evolve through the system and, where necessary, it will eventually rise to the level of the President's office itself.

Now you will have to assist me at this point, because as I understand it the Jackson amendment still prevails, that reflects on this process where the same players are involved but where eventually there is a veto short of the Presidential level, and it then reverts back to the Senate under the Jackson amendment.

So there would have to be a legislative change to go through this kind of a system. I assume that that is correct.

Senator TOWER. There are some observers who believe that the American business community is not pursuing export markets as aggressively as it should.

Do either of you gentlemen attribute that in large measure to current export policy?

Governor BUSBEE. I would say, in answer to that question, Senator Tower, yes. However, I don't think that is the only cause. I think we do need to streamline the process. We need to shorten the time restraints and delays.

We have some other things, too, that really are cutting down business participation in exporting, such as lack of research and development and existing tax policies. I think research and development is one of the most crying needs we have in this country if we are going to be able in the future to have a favorable balance of trade.

At the present time, we have the agricultural community with about a $12 billion favorable balance. And without that, we would be in worse shape than we are today. But if you go out to Texas and look at Texas Instruments, they do not really care to export a lot of their technology by way of the licensing agreement, but they do have products that you can purchase in this country which you are not able to export abroad because they might discover something in Russia that they could not discover in Heathkit Co. in Texas.

Also, I think you have computer people here today that will testify. You have heard a lot about the short turnaround that we have on licensing procedures by some people in the administration. And I am sure a lot of that is true; that they have a great percentage of things where they have a short turnaround time. I think that indicates that we have things on the commodity control list which should be removed.

At some point in time, the technology of other countries seems to catch up with us. You could look at the research in Germany and Japan today and you see them coming up with products that are superior to ours in technology. And when their technology is superior to ours, they are going to capture the market if they are able to export it to the United States, which they can.

And if we get to the point where we do not have adequate research and development to make better products, and we continue to deny licenses on existing products because somebody might learn how to make this product, then you certainly should look at the effect that our export policy is having on our economy

We also have, I think, some tax concessions that should be looked at in research and development. It just makes you want to cry when you go to Wilmington today, and you look at what looks like a college campus up there for research at duPont, and you see the cutback in research that has occurred there. Then if you go over to Germany and look at their chemical companies, and see their technology, you begin to see the reason for our market being captured and taken away from American businesses.

We have to get back into the business of being able to export superior products which we can get from research and development if we are allowed to do it.

Now another thing you will hear from the people who are scheduled to follow is this: As was stated by Governor Clements a moment ago, 32 percent of our products that we export are high technology.

I think that you will find from these people that they don't even bother to check with the Export Administration for about 180 days after they file an application to see even where it is located at the time.

So I don't think you can just look at the figures and statistics and come to a conclusion that everything is going well and that there are no restraints on American businesses that try to get licenses.

Governor CLEMENTS. Senator Tower, I would like to make several quick points, without going into a lot of detail about them.

Most of this has, as you well know, been stated before. I want to be in the posture of preaching to the choir, so to speak. But I have discussed these many times with Ambassador Strauss, our fellow Texan, and of course these matters generally fall under his administrative jurisdiction insofar as the present administration is concerned.

I think that he is doing an outstanding job, and making a strenuous effort to work in the directions that we are talking about. I do not think there is any question about this.

He might well be termed American's No. 1 salesman at this point. And he is a good one.

But having said that, I think there are some built-in constraints that I certainly recognize as a businessman whose business is international in scope.

We are, as you well know, working pretty well around the free world, all over the world. Within the agency, as Governor Busbee has said, there is a great delay that takes place in the process of moving these permits forward. It is like a marshmallow. It is hard to put your finger on just what is happening there.

And some of that is built in, in the sense that they need more personnel. They need more personnel with a broader view. And when I had my experience for 4 years in the Defense Department, this particular group of people were short, insofar as numbers of people, and experience, and ability were concerned.

The whole system just could not process those permits properly with due diligence and in a timely fashion.

There also was built in a strong sense of procrastination, and that was by intent, and that can be cured with a proper discipline within the agency.

I want to echo what Governor Busbee said about agriculture. We in Texas, and generally in the country, are greatly disturbed about the lack of marketplace for our farmers' produce. They have been here in Washington, and demonstrating, and causing some disturbances as I read in the papers several hundred miles away, but they are properly claiming that the marketplaces around the world, in the free marketplace of the Western World, that those marketplaces are not available to them.

And our American farmers are the most efficient producers of foodstuffs in the world. And we are doing them a great disservice when we have a system, whether it is within the Congress or within the administration and the executive branch, or in our bilateral trade agreements, that does not properly recognize the productivity of our American farmer.

And this is versus the lack of productivity in our industrial base that is declining and going down. Our farmer, strangely, is becoming more efficient all the time, and is in a high sense of productivity; whereas, our industrial base, because of various tax factors and lack of capital, is becoming less productive, and therefore less competitive around the world.

So I want to stress the agricultural side of this. This may be our highest potential dollar earned in our trade in balance in the years to come.

Energy is another factor—and I won't dwell on that—but it is the worst offender that we have right now, insofar as that trade balance is concerned. If we can do something about this—and we should do something about it—we should produce more energy in this country, and not have the adverse effect of the more than 50 percent imports that we presently have.

Technology—I have already said it: It is a judgmental decision at that very high level—but we must have, as Governor Busbee said, and I am echoing him here, a stimulation of our great research and development base. That base is here. But right now, it is fettered, and right now it is not producing the research that it is capable of doing. And that is the starting point for our exports in that R. & D.

And right now it is stagnating, believe me.

Now I want to talk about the personnel. You here in the Congress have been guilty of putting a damper on our overseas trade, our export, our development of relationships overseas, by the restrictions that you have put on our people that go overseas. And I cannot emphasize how important this is.

You have made it undesirable for American technicians to go overseas through your restrictions on the tax incentives that they get by serving overseas.

And I implore you not to do this. That the greatest ambassadors that we in America have in our foreign trade endeavors are our people that we send overseas. They are literally ambassadors for our system, and they are salesmen for our products.

So please, free them up and let them move around the world, and put our best foot forward, as they can; and they can do it like no one else can.

Senator TOWER. I certainly appreciate what you have said, and I intend to associate myself with your remarks.

I think perhaps in addition to testifying before us, you gentlemen ought to have a few words with the Finance Committee and the Ways and Means Committee. I think they might be helpful in this instance.

I think the bottom line, as I understand it, is: Even if we are able to negotiate away the tariff and nontariff barriers that are raised against American goods and services in certain marketplaces, and get a more favorable climate for American participation in those markets, there is a great deal we have to do here at home to take advantage of that improved climate in terms of overhauling the administration of our export restraints, in terms of tax incentives to stimulate developing technology to improve our productivity—and so I think we have a number of matters to address ourselves to.

Unfortunately, this committee has jurisdiction over only one aspect of the problem, but I think that you have done a very splendid job of illuminating some of the problems that we face, and some of the inhibitions that are imposed upon our businesses that do business abroad.

I note that only recently has the balance changed, and we have become a net importer rather than a net exporter of manufactured goods. This disturbs me a great deal.

Thank heavens for the American farmer, or we would really be in trouble.

Thank you, Mr. Chairman.

Senator STEVENSON. Gentlemen, all of the subjects that you have mentioned bear directly on our competitiveness and our ability to export, and this is the committee with general jurisdiction over exports.

I think every subject will be mentioned in this report. Senator Tower said that action on some of the subjects, including taxes, will have to come out of other committees.

Industrial innovation and maintenance of the superior capacity of the United States with which to innovate and support basic science, as well as development, that is in the Commerce Committee. And there is an effort underway there to recommit the United States to that superior capacity of technological and industrial innovation.

On all of these subjects, we look forward to continued cooperation. And I would certainly share your hope, Governor Busbee, that we can develop policies that complement the efforts of the States, and in no instance conflict.

If there are no further questions, thank you.

We have a statement from Congressman McKinney which, without objection, I'll insert in the record at this point.

[The statement follows as though read:]

STATEMENT OF STEWART B. McKINNEY, REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

Congressman McKINNEY. Mr. Chairman, committee members: Quite properly, considerable attention has been focused of late on the oversight function of Congress. I believe this committee is fulfilling that responsibility today and in an area of vital interest to the people of the United States. In my view, the ultimate desti-

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nation of Alaskan oil is a multi-faceted issue which touches on our national security, the strength of our economy and the commitment we have to energy independence.

As you know, Mr. Chairman, I offered an amendment to the Export Administration Act Amendments of 1977 because in my judgment, there had been an insufficient effort on the part of both the producers and the Federal Government to fulfill the intent of the Trans-Alaskan Pipeline Act. That amendment, restricting the export of Alaskan oil, was passed by a voice vote in the House and a subsequent motion to instruct the conferees was approved by 240 Members. When offering this measure, I agreed to limit the export restriction to a period of 2 years because, despite a history of non-cooperation by the North Slope producers and despite my intuitive mistrust of further promises, opponents of my amendment assured me that a domestic distribution system for Alaskan oil would be well on the way to completion at the end of that period.

That has not happened. In fact, I would venture to say that the American consumer—the party that has the most at stake in this issue—is no closer to enjoying the supply security that Alaskan oil was intended to provide than he was in 1973. The truth is, Mr. Chairman, the Alaskan North Slope producers have not acted in good faith and for the sake of those people who are most adversely affected by such negligence, we must see to it that compliance is enforced.

The issue of Alaskan oil exportation is not often referred to as a consumer issue, but clearly the destination of North Slope crude is of growing importance to oil-hungry Americans. Each development in recent months, in the world oil market, has presented us with compelling evidence that Alaskan crude is of growing importance to the U.S. consumer. The importation of high-priced oil, some costing $20 per barrel, rose 9.7 percent from January 1978 to January 1979 and U.S. oil consumption rose 5.1 percent in that same period. Iran recently closed the tap on one half million barrels of oil that this country imported every day. As a result, the administration is proposing weekend gas station closings and hinting at $1 per gallon gasoline. The consumer has only begun to feel the effects of OPEC's latest price increase and shortages of No. 2 and No. 4 heating fuels are beginning to appear. At last count, the North Slope producers were among a group of 26 domestic suppliers implementing allocation plans for domestic petroleum. Why then, the consumer might ask, should we export oil at a time of growing shortage? The answer: To save producers a few pennies per barrel in transportation costs and to assure them of sufficient production incentives. At which point the consumer might ask further, are these not the same producers who just recorded record breaking earnings in the fourth quarter of 1978? The answer is "yes." They are Sohio, which as a result of a tripling of production on the North Slope reported an incredible 134 percent increase in earnings during that last quarter and Phillips Petroleum, which reported a 103-percent increase in earnings; and ARCO, a 30-percent increase; and Exxon, a 49-percent increase. In fact, Mr. Chairman, these are the same producers who plan to expand production on the North Slope by 200,000 barrels a day by the end of this year. And perhaps most important, these are the companies which are

guilty of a breach of the promise to develop a domestic distribution system for Alaskan oil.

Consider, that since the passage of the Export Administration Act, when further assurances that a domestic distribution system would be established were made, Standard Oil of Ohio has made virtually no progress in developing a pipeline route between Long Beach, Calif. and Midland, Tex. Sohio now plans to appeal to the California State Legislature to help get its project off the ground. The Northern Tier Pipeline project has been hamstrung in the State of Minnesota and is years away from initial work. Further, the Department of Energy has just released yet another study on pipeline alternatives to deliver Alaskan oil to the Lower 48.

But, as this committee is surely aware, the problem of Alaskan oil distribution is not restricted to foot dragging on pipeline proposals. Since the discovery of oil on Prudhoe Bay, the North Slope producers have known that refining capacity on the west coast was not properly equipped to handle high sulfur Alaskan crude. Yet, since that time little or no progress has been made to rectify the problem. In fact, one of the North Slope's major producers, Exxon Corp., has recently cancelled its plans to enable its Benica, Calif. refinery to handle 40 percent more Alaskan crude. A company official was quoted as saying that the plans were nullified because Exxon was concerned over getting permits. I would not hesitate to add that the financial attraction of, and the increasing possibility for, the export of Alaskan oil figured prominently in that decision. Actions such as these make it increasingly difficult for me to believe that either the Federal Government or the North Slope producers plan to make good on the promise of delivering Alaskan oil to the Lower 48. Furthermore, a short review of the history of North Slope development leads me to believe that neither party ever intended to fulfill those commitments. I won't ask the committee to accept my word on that, Mr. Chairman; the evidence is best presented by the participants, the Government and industry officials involved.

In August 1969, Rollin Eckins, vice chairman of Atlantic Richfield, in a presentation to the Alaskan science conference said Japan would be willing to pay a premium for a secure supply of Alaskan oil. Phillips Petroleum president, John M. Houchin, submitted a proposal to the House Interior Committee in the spring of 1970, in which Alaskan oil would be exported to Japan in exchange for that country's share of Persian Gulf oil. The idea, I should add, was to save the producers some transportation costs. And, in 1970, Edward L. Patton, president of Alyeska Pipeline Service Co. submitted confidential estimates to the U.S. Department of the Interior which targeted 25 percent of the North Slope crude for sale beyond the west coast of the United States, including direct sale to Japan by 1980.

Clearly, the proposed sale, export or swap of Alaskan oil to Japan is not, as we are asked to believe a result of unforeseen changes in the world petroleum markets. The plans to export Alaskan oil to Japan were formulated long before the OPEC embargo, the subsequent price increases and the development of the Outer Continental Shelf. These plans were made with the full knowledge that the west coast could never absorb the flow of oil from Prudhoe

Bay. In February 1970, President Nixon's Cabinet Task Force on Oil Import Control reported that "every projection of North Slope production indicates that it will far exceed the petroleum demands of the west coast." The report estimated that even if the west coast gave up all its non-Canadian imports, the North Slope would produce 600,000 barrels a day more than the west coast could absorb. In December 1970, the Alaskan State Legislature was told much the same thing and in July 1970, the National Petroleum Council informed the Department of the Interior of similar findings.

The arguments for exportation that we hear today, Mr. Chairman, are as fallacious as the assertions made by producers about west coast demand. I have been repeatedly told that exportation of Alaskan oil is necessary in order to provide sufficient production incentive for the North Slope producers. These claims are made despite the fact that Arco vice chairman, Bill Keischnick, told The Oil Daily this month, that plans to expand ANS production by 300,000 barrels per day "look encouraging." And, as I mentioned, Sohio attributed its record earnings in the last quarter to a tripling of production on the North Slope. We hear further arguments that to export Alaskan oil would help reduce our balance of trade deficit. However, selling ANS production to Japan at Prudhoe Bay for $13 per barrel in exchange for $14 or $15 per barrel OPEC or Mexican oil leaves a lot to be desired as a means of shrinking the trade deficit. It has been further estimated that the quality differential between high sulfur Alaskan oil and lower sulfur OPEC Indonesian or Mexican oil would result in the U.S. paying out $250 million more, for the foreign petroleum, than it would receive for North Slope crude.

The argument for transportation savings is one of the most enduring ploys used in the effort to export Alaskan oil but that argument falls short for several reasons. First, the entitlements program which spreads the cost of all crude evenly throughout this Nation's refinery network, excludes any possibility of passing those savings on to the consumer. Any savings in transportation costs will be captured by the North Slope producers and added to their record-breaking earnings totals. Furthermore, the $2 per barrel cost differential between the delivery of Alaskan oil on the west coast and on the gulf coast, via the canal, could be substantially reduced if the North Slope producers would engage in long-term shipping contracts rather than the spot contracts they now select. Unfortunately, as long as the possibility of Alaskan oil exports exists, producers will have as little incentive to engage in long-term contracts as they will to expand refining capacity or construct pipelines.

Finally, Mr. Chairman, we all should be extremely concerned with the implications an Alaskan oil export or swap would have for petroleum supply security for the United States. The original proposed "oil swap," whereby Alaskan oil would go to Japan in exchange for OPEC supplies was termed by The New York Times in 1978 to be "the most dangerous solution of them all." I certainly agree. Had the controversy surrounding export of Alaskan oil not developed, there is every possiblity that this country would have engaged in a swap involving the Shah of Iran. Of what value would our transportation costs savings have been in that instance? With

other members of the OPEC organization issuing warnings to the west that the future of oil supplies will depend on the resolution of the Palestinian question, the advisability of any swap with OPEC becomes all the more frightening. Perhaps the least publicized of the Alaskan oil export options is the delivery of that crude to Israel. This proposal, presently under study by the administration, was suggested as a means of fulfilling a 1975 threaty obligation in which the United States guaranteed Israel a secure supply of oil in the event that her supply was shut off—as it has been by Iran. It is ironic that if Israel decides to invoke the treaty, they have assured the United States that they have both the tanker capacity and appropriate refining capacity to utilize Alaskan oil.

And what of the potential strain on our relations with those countries engaged in a swap arrangement should the cancellation of the agreement be necessary? In the conference committee compromise on my amendment of 2 years ago, a provision was included allowing this country to terminate the swap if the U.S. supply of the trade was jeopardized or shut off. Again, Mr. Chairman, if this country had presently been engaged in a trilateral agreement with Iran, we would not be in a position of stopping delivery of Alaskan oil to Japan. Such a scenario does not bode well for the success of delicate trade and monetary agreements presently being worked out between Japan and the United States.

As you know, the latest, most vigorously promoted export option, now being pursued, involves the sale of Alaskan oil to Japan in exchange for that country's share of Mexican petroleum. I like to characterize this latest proposal as the methodone approach since it does nothing to relieve our addiction to foreign oil; it just replaces our current pusher. We cannot afford to allow ourselves to be lulled into a false sense of security by merely replacing OPEC supplies with Mexican oil. Despite the obvious marketing potential, Mexico does not represent the salvation of this country's petroleum problems. The recent rejection of the natural gas proposal between Mexico and the United States should provide us with sufficient warnings that Mexico, like Canada (which in the next 2 years, will phase out all exports to our northern tier refineries), does not find the happenstance of common boundaries to be a compelling enough reason to assure this country's energy security. The only way this Nation can look toward a more secure energy future is through the expansion of refining capacity; the utilization of domestic production in available domestic markets (we presently import 3 million barrels a day of sour oil into PAD's I, II, III and we import 600,000 barrels of high sulfur crude to fill our strategic petroleum reserve); and through the establishment of a transportation system to deliver Alaskan North Slope crude to the mideast and east coasts.

I realize, Mr. Chairman, that the purpose of this committee meeting is not for the consideration of new legislation. However, the amendment that I offered to the Export Administration Act (sec. 110) is due to expire in a few short months. On Thursday, February 22, I introduced H.R. 2344, a bill to delete any time reference to the restriction of the export of Alaskan oil, as contained in the Export Administration Act. That bill is presently before your committee and I would urge my colleagues, as a means of coming to a final resolution of the matter before us today, to

consider H.R. 2344 and prepare it for full House consideration in the very near future.

Thank you.

Senator STEVENSON. Our next witness is Mr. Rudy Oswald, the Director of the Department of Research of the AFL-CIO.

I will ask Mr. Oswald and all of our witnesses today to summarize, if they can. In which case, I will enter the full statements in the record.

I think it is the longest list of witnesses I have ever seen in a hearing, and if we don't summarize we are not going to get through it.

Thank you for joining us, Mr. Oswald. Please proceed.

STATEMENT OF RUDY OSWALD, DIRECTOR, DEPARTMENT OF RESEARCH, AFL-CIO, ACCOMPANIED BY RAY DENISON, ASSISTANT FOR LEGISLATION

Mr. OSWALD. Thank you, Mr. Chairman.

Accompanying me this morning is Ray Denison, the assistant legislative director of the AFL-CIO.

The AFL-CIO is concerned with the extension of the Export Administration Act as it affects American jobs, inflation, and national defense and the well-being of the industrial economy. We are concerned with the problems that deal with the export of U.S. technology and raw materials and the potential export of Alaska North Slope oil.

It is our belief that the export administration law could be a major tool in selectively curbing those exports that cause harm and injury to the United States, particularly at this time of double-digit inflation. The law's specific declaration is that export controls should be used to protect the domestic economy from the excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand.

The experience of recent years has proven that indiscriminate export of raw materials causes domestic shortages to develop. When combined with increasing demand, these shortages force up the price of the raw material. In turn, rising raw material costs force up the price of finished goods, and higher prices often render the U.S.-made item more expensive and hence noncompetitive with foreign-made or imported goods.

When domestically produced goods cannot compete with imports, U.S. factories must close, and U.S. workers lose their jobs. The imports that displace U.S. goods result in an outflow of dollars and a balance-of-payments deficit with continuing shortages of raw materials keeping the price high and causing inflation at each step of production.

Let me just give a couple of examples of where this happened in recent years: For example, lumber prices between 1971 and 1973 jumped by 52 percent while the United States had big exports, and that is continuing. Within the past year the export of logs and lumber rose by 19 percent, while the domestic price of those goods went up 16.6 percent.

Similarly, the export of hides has resulted in price increases in the past year of 37.5 percent, leather going up 39.5 percent and footwear going up 13.6 percent in price.

Similarly, scrap steel became a problem in the early 1970's, with shortages being a factor in the shutdown of a number of U.S. factories that require scrap steel. In the past year the price of scrap has risen by 40 percent, while exports of scrap steel have gone up 46 percent.

While the beleaguered steel industry has asked the Department of Commerce to reject and curb these imports, the Department of Commerce has rejected that request.

Similarly, let me give the example in agriculture, where U.S. export grains in 1973 and 1974 became a major factor in the rapid increase in U.S. food prices. And again part of that problem continues to exist. In the last year wheat exports rose by 25 percent, while grain prices rose more than 10 percent.

Mr. Chairman, in view of these items, the AFL-CIO calls on Congress to reaffirm the policy declaration of existing U.S. law that the export of goods which are in short supply should be more stringently controlled to protect our economy and lessen inflation.

Similarly, we would like to address the question of Alaska oil which is related to both job loss, domestic shortages, and inflation. At the present time domestic oil production satisfies only one-half of U.S. petroleum demand. The deficit is made up with imported oil, and much of those imports come from the very countries which cut off our supply 5 years ago.

If we relinquish control over all or part of Alaska oil, we further increase our dependence on imports. Ever-increasing reliance on imports can only hurt our economy and jeopardize our national security.

There are indications that the administration is now rethinking its concern. Last week, in a meeting with Energy Secretary Schlesinger, we were specifically authorized to state in our testimony today that in light of changed conditions this agency is reconsidering the entire question of exporting Alaska oil.

Specifically, Secretary Schlesinger told us—and I quote: "We are reconsidering the export proposal and sending it back for review, in light of changed conditions of international oil supply."

We welcome this change, but we also believe that export restraints on Alaska oil should be continued and strengthened in the Export Administration Act. Specifically, we believe that it can be strengthened by extending the provisions of the Export Administration Act and requiring that, instead of just congressional veto in 60 days, that it be changed to require a specific congressional approval before any proposed export of Alaska oil is allowed. Without congressional approval, the proposal then could not take effect.

Alaska North Slope oil production should be increased for American, not foreign, markets. There is no glut of Alaska oil. All of the 1.2 million barrels per day throughout the system is being used within the United States. There has been a surplus of Alaska oil on the west coast only in the sense that the oil companies have failed to expand refinery capacity. What has been termed a "glut" by the multinational oil company owners of this oil is, in reality, an economic boon for the American consumer.

In mid-1978, for example, Alaska oil sent through the Panama Canal to the U.S. gulf and east coasts helped hold down the price of oil to refiners in the South, Midwest, and East. The presence of

Alaska oil created a downward competitive pressure on the price of OPEC oil, with refiners and consumers realizing discounts of up to 75 cents per barrel.

Exporting Alaska oil will aggravate our balance-of-payments deficit. The 1978 GAO report stated that Alaska oil production is displacing foreign oil imports and resulting in improvement of approximately $1.3 billion in our balance-of-payments position in 1977.

The disruption of Iranian oil production has raised the possibility of rationing in the United States. The prospects of an export or an exchange of Alaska crude at a time of rising OPEC prices and rationing plans would seriously undermine the Government's credibility with the consumer. It would be difficult to explain to the American public how energy independence is being achieved and how conservation measures must be taken while American oil is being exported.

The multinational oil companies have set the energy policy of this country for too long. Increasing profits for the oil companies is no justification for jeopardizing the national security by exporting Alaska oil.

We urge Congress to take the lead in putting America back on the road toward energy independence by extending and strengthening the Export Administration Act Amendments of 1977 to prohibit the export or exchange of Alaska oil.

Another item that I would like to comment about, Mr. Chairman, is the transfer of U.S. technologies, which must be carefully scrutinized in the context of America's present and future well-being.

The AFL–CIO does not have blanket opposition to the export of U.S. technology. However, we strongly object to those exports of U.S. technology which jeopardize American jobs, the U.S. economy, or national security.

At this moment, for example, the Romanians are building computers, Mexicans are making aircraft parts, Venezuelans are producing steel, and South Korea is building ships—all with U.S. technology in competition with U.S. products. None of these economies is an open-market economy for U.S. exports.

Attached to this testimony are just a few specific examples of technology transfers that have resulted in further erosion of U.S. standards. U.S. exports need additional licensing.

Mr. Chairman, in addition to the comments on technology transfer that we have in our testimony, I would like to comment briefly on the question of productivity, which you raised with earlier witnesses.

In the past year U.S. manufacturing productivity increased at a rate of 3.7 percent, and manufacturing productivity in the United States as a whole has increased at a rate of 2.4 percent in the decade of the 1970's. That average is the same rate as occurred in the 1950's, and the rate of manufacturing productivity growth in the 1970's would have been as great as it was in the 1960's except for the two severe recessions.

Studies made by the U.S. Labor Department and by the Dresdner Bank of Germany indicate that costs in other developed countries have increased much faster than they have in the United States;

and the U.S. competitive position, in terms of manufacturing as it relates to other developed countries, has actually increased.

In conclusion, Mr. Chairman, the AFL–CIO calls on Congress to reaffirm the long-standing legislative policy of the act, to take into account inflationary impacts and shortages involving exports and to insist on vigorous enforcement of these safeguards.

We strongly favor more intensive oversight of the export of U.S. technology to prevent further losses of the know-how necessary for our industrial strength.

And finally, we oppose the export or exchange of Alaska North Slope oil unless Congress affirmatively determines that such action would be in the national interest. The very purpose of the Export Administration Act is to safeguard our National well-being. With minor revisions and vigorous administration, we believe it can help our Nation to retain its strength and reduce inflation.

Thank you, Mr. Chairman.

[Complete statement of Mr. Oswald follows:]

STATEMENT OF DR. RUDOLPH OSWALD, DIRECTOR, RESEARCH DEPARTMENT, AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS

The AFL–CIO appreciates this opportunity to appear before this subcommittee to express our views on U.S. export policy.

The AFL–CIO has always been deeply concerned about U.S. export policy as it affects American jobs, inflation, national defense, and the well-being of our industrial economy. Today, however, the problems are more serious than in the past due to exports of U.S. technology and raw materials, and the potential export of Alaska North Slope oil.

The AFL–CIO supports vigorous international trade that benefits American industry, American labor, and the American economy. We maintain, however, that it is incorrect to assume that all exports benefit the U.S. economy. Some exports cost U.S. jobs. Some exports cause inflation. Some exports weaken the U.S. industrial base.

It is our belief that the Export Administration law could be a major tool in selectively curbing those exports that cause harm and injury to the United States, particularly at this time of double digit inflation. The law's specific declaration is that export controls should be used to protect the domestic economy from the excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand.

The experience of recent years has proven that indiscriminate export of raw materials causes domestic shortages to develop. When combined with increasing demand, these shortages force up the price of the raw material. In turn, rising raw material costs force up the price of finished goods. And higher prices often render the U.S.-made item more expensive and hence, non-competitive with foreing-made or imported goods. When domestically produced goods cannot compete with imports, U.S. factories must close. United States workers lose their jobs.

The imports that displace U.S.-made goods result in an outflow of dollars and a balance of payments deficit. Continuing shortages of raw materials keep the price high, causing inflation at each step of production. This inflationary ripple eventually spreads throughout the economy. Combined with increasing imports, it weakens the dollar.

There are numerous examples of such occurrences. In 1971, a shortage of lumber forced prices to soar. Lumber prices jumped 52 percent between 1971 and 1973, pushing up the price of houses, furniture, wood products, and rental units. The uncontrolled export of logs during a period of rising demand accounted for the shortages and the price rises. United States export and tax policy favors export in spite of the domestic repercussions. The export of timber continues to create domestic shortages and inflation. These prices have not abated fully. Last year export of logs and lumber rose 19 percent, and the price of lumber rose 16.6 percent.

The export of hides has resulted in similar, ongoing problems. Hide export has been creating domestic shortages. With domestic demand remaining high, export forces U.S. hide users to pay higher prices. This renders U.S. footwear, handbag and other leather good manufacturers non-competitive with foreign producers. The U.S. footwear industry has suffered heavily from inports. Many factories have closed; job

loss has been severe. Hide export policy compounds the U.S. footware industry's problems at a time when government trade adjustment assistance programs are attempting to revitalize the industry. The sequence of this problem is clear from last year's price rises in these areas. Export of hides and skins continue to rise. Last year hides and skins rose 37.5 percent; leather rose 39.5 percent and footwear rose 13.6 percnet—all with serious impact on our economy.

Scrap steel is also exported, creating shortages and price pressure at home. Since the early 1970's the shortages have been a factor in shutdowns of some U.S. factories that require scrap steel. American workers have been laid off, and some companies have shifted to imported steel. The continuing scrap steel shortage contributes to the problems of our already beleagured steel industry, yet the Department of Commerce recently rejected a request to curb scrap exports. The inflated prices (last year the price of scrap rose 40 percent while exports rose by 46 percent) that result from the scrap shortage will militate against the U.S. steel industry becoming competitive with foreign producers. It will force up the price of all products that contain steel.

A final example of unregulated exports causing inflation is the sale of U.S. grain to the sovient Union. The sales caused domestic shortages that inflated the price of feed, livestock, and every commodity that contains wheat. The problem persists. Last year wheat exports rose over 25 percent and grain prices rose by more than 10 percent.

In view of these events the AFL-CIO calls on Congress to reaffirm the policy declaration of existing U.S. law that the export of goods which are in short supply should be more stringently controlled to protect our economy and lessen inflation.

Mr. Chairman, unregulated exports can result in job loss, domestic shortages, and inflation. The export of Alaska oil would result in all three of these negative factors.

At the present time, domestic oil production satisfies only one-half of U.S. petroleum demand. The deficit must be made up with imported oil, and much of those imports come from the very countries which cut off our supply 5 years ago. If we relinquish control over all or any part of Alaska oil, we further increase our dependence on imports. Ever-increasing reliance on imports can only hurt our economy and jeopardize our national security.

Mr. Chairman, there is now an indication in the Administration of a sharing of these fears about exporting Alaska oil. Last week, in a meeting with Energy Secretary James Schlesinger, we were specifically authorized to state in our testimony today that, in light of changed conditions, his agency is reconsidering the entire question of exporting Alaska oil. Secretary Schlesinger told AFL-CIO representatives that "we are reconsidering the export proposal and sending it back for review in light of changed conditions of international oil supply." We welcome this change, but we also believe that export restraints on Alaska oil should be continued and strengthened in the Export Administration Act.

When Alaska North Slope oil was discovered 10 years ago, it was correctly seen as a major step toward American energy independence. In the wake of the Arab oil embargo of 1973-74, Congress enacted legislation which set the stage for construction of the $10 billion Trans-Alaska Pipeline so that Alaska oil could be transported to domestic markets.

The oil on Alaska's North Slope does not belong to the oil companies. It is an invaluable national resource which belongs to the American people. When the pipeline was built, it was the American people who were promised exclusive use of the oil which it carried. That belief was reiterated by Congress when it passed the Export Administration Act amendments of 1977. Included in these amendments was a provision designed to prevent the export or swap of Alaska North Slope oil unless it served the national interest.

Ever since the Trans-Alaska Pipeline was a gleam in the eye of the multinational oil companies, they have been pushing to find a way to export North Slope oil. The sole basis for the companies efforts has been profit maximization. If Alaska North Slope oil is exported, it is the oil companies which stand to gain and the American people, our economy, and our national security which stand to suffer.

The AFL-CIO believes that it is essential to the national interest that Congress retain control over the disposition of Alaska oil and other domestic energy resources. We urge Congress to extent the Export Administration Act Amendments of 1977 and to strengthen it provisions. For example, we would urge that Congress be given 60 days to approve (instead of veto) any proposed export of Alaska oil. Without Congressional approval, the proposal could not take effect.

Alaska North Slope oil production should be increased for American not foreign markets. There is no glut of Alaska oil. All of the 1.2 million barrels per day throughout the system is being used within the United States. There has been a

surplus of Alaska oil on the West Coast only in the sense that the oil companies have failed to expand refinery capacity.

What has been termed a "glut" by the multinational oil company owners of this oil is in reality an economic boon for the American consumer. In mid-1978, for example, Alaska oil sent through the Panama Canal to the U.S. Gulf and East Coasts helped hold down the price of oil to refiners in the South, Midwest, and East. The presence of Alaska oil created a downward competitive pressure on the price of OPEC oil with refiners and consumers realizing discounts of up to 75 cents per barrel.

Exporting or swapping North Slope oil will take money away from the American consumer and put it in the pockets of the multinational oil companies. Tanker transportation costs to the United States are really immaterial. In no way will any of the transportation savings from exporting Alaska oil—however realized—get passed on to the American consumer. The price of Alaska North Slope crude oil is pegged to the landed price of imported crude. The owners of the oil are paid the landed price regardless of the transportation costs they incur. In other words, regardless of the vessel used or its destination, the oil companies receive the same landed price. Cost savings translate into profits, not consumer savings.

Exporting Alaska oil will aggravate our balance of payments deficit. A 1978 General Accounting Office report has stated that Alaska oil production is displacing foreign oil imports and resulted in an improvement of approximately $1.3 billion in our balance of payments deficit in 1977. In addition, foreign oil purchased by the United States would be transported to the United States on foreign vessels, representing an additional outflow of dollars for the purchase of the foreign shipping service.

Attempts to establish a national energy transportation system will suffer a serious setback if Alaska oil is exported or exchanged. Our national energy policy requires that we have an effective energy distribution network, including pipelines, railroads and tankers. If North Slope oil is exported, a major segment of that network will be seriously damaged. In addition, the export of Alaska oil will remove the incentive to construct one or more west-to-east pipelines to serve the petroleum needs of American consumers. Also destroyed would be incentives to build much needed domestic refinery capacity.

Failure to build new tankers, pipelines and refineries will not only leave the United States without a national energy distribution network, it will also result in the loss of thousands of American jobs. Employment in shipyards and the construction industry will be exported along with Alaska oil. The United States will increase its reliance on foreign refineries and tankers as well as on foreign oil.

The disruption of Iranian oil production had raised the possibility of rationing in the United States. The prospect of an export or an exchange of Alaska crude at a time of rising OPEC prices and rationing plans would seriously undermine the government's credibility with the consumer. It would be difficult to explain to the American public how energy independence is being achieved and how conservation measures must be taken while American oil is being exported.

The multinational oil companies have set the energy policy of this country for too long. Increasing profits for the oil companies is no justification for jeopardizing the national security by exporting Alaska oil. We urge Congress to take the lead in putting America back on the road toward energy independence by extending and strengthening the Export Administration Act Amendments of 1977 to prohibit the export or exchange of Alaska oil.

Transfer of United States technology is another issue which must be carefully scrutinized in the context of America's present and future well-being. The AFL-CIO does not have blanket opposition to the export of U.S. technology; however, we strongly object to those exports of U.S. technology which jeopardize American jobs, the U.S. economy or national security. At this moment, for example, the Romanians are building computers, Mexicans are making aircraft parts, Venezuelans are producing steel and South Korea is building ships, all with U.S. technology in competition with U.S. products. None of these economies is an open market economy for U.S. exports.

Attached to this testimony are some specific examples of technology transfers that have resulted in further erosion of U.S. standards—and in no way can be called the product of free or fair trade in the classical sense.

America's technological lead has long been its greatest asset in international trade. In recent years, this lead has been eroded by the advancement of other industrialized nations. When we export our technology, we further compromise our advantage over other nations.

Furthermore, the U.S. exports much of its technology to closed economies: nations which do not allow the U.S. equal access to their own markets. These nations do not want to buy U.S.-made products. They want to manufacture the goods themselves and export them. They do not provide a lucrative long-term market for the United States.

By exporting our technology to such countries, we gain nothing except small short-term profits. In the long-term, we lose. We lose our technological advantage; we lose an ability to export the product that the technology produces; we lose jobs; and we loss entire industries.

When the country to which we have exported our technology achieves full production capacity, it exports its goods to the United States, providing low-wage, low-price competition for U.S. manufacturers. United States multinational corporations have been responsible for the transfer of much U.S. technology. Taking advantage of the low-wages and tax and tariff benefits available to industries located in developing nations, multinationals export to the United States and undersell domestic U.S. manufacturers.

This type of import competition weakens U.S. industry. It undermines the ability of U.S. industry to recapitalize, build new plants, and develop new equipment, thereby destroying the future generation of U.S. technology in each industry so affected. American jobs lost through export of U.S. industries are never recovered.

In conclusion, Mr. Chairman, the AFL-CIO calls upon Congress to reaffirm the long-standing legislative policy of the Act to take into account inflationary impacts and shortages involving exports and to insist on vigorous enforcement of these safeguards.

We strongly favor more intensive oversight of the export of U.S. technology to prevent further losses of the know-how and engines of our industrial strength. And, finally, we oppose the export or exchange of Alaska North Slope oil unless Congress affirmatively determines that such action would be in the national interest.

The very purpose of the Export Administration Act is to safeguard our national well-being. With minor revisions and vigorous administration we believe it can help our nation to retain its strength and reduce the fires of inflation.

ATTACHMENT

Technology is "know-how"—the ability to apply new inventions, produce products and sell them in an economic system. Thus technology involves labor—including both skilled and unskilled labor, as well as professionals and scientists. In business and legal discussions technology is often referred to as the final process—the new invention—but it involves much more than that.

Sycor, Inc., computer firm of Ann Arbor, Michigan, found it couldn't fight Digi-Bras, Brazil's state computer manufacturing coordinating body, which refused authorization for Sycor's new computer line in order to hold out for a Brazil-based operation. Sycor joined DigiBras as minority partner last year and it is now producing the technology for design and manufacture of the equipment, according to the Washington Post, July 23, 1978.

This is viewed as "hard headed adjustment to market reality," by a consultant. But the market is controlled by the decision of another government that it will have the newest technology in a closed market economy.

Piper Aircraft was invited by the Brazilian Government to set up shop in Brazil. In 1974 Piper Aviacao de Brazil was created to manufacture light airplanes for the Brazilian market as a joint venture with Empresa Brazlier a de Aeronautica. The requirements to produce within Brazil to sell there and the high trade barriers of Brazil to foreign exports encouraged the technology transfer. By 1976 Piper Aviacao de Brazil supplied about 75 percent of the domestic Brazilian market. A 50 percent tax on imports and other trade barriers helped cause a U.S. market share to fall from almost 100 percent in 1970 to less than 1 percent in 1976. In 1976, the Brazilian Piper subsidiary began exporting aircraft to Latin America and Africa—former markets for U.S. exports. In 1976 the Brazilian government embargoed the importation of light aircraft into Brazil by refusing to issue any new import permits.

Dresser Industries tried to sell rock drill bit technology to the Soviet Union. This technology was developed and is concentrated in the United States. The technology will make a significant contribution to deep-well capability, which will be important to the recovery of energy resources in the 1980's. Some observations found that the strategic problems were not only the Soviet energy-related problems, but also the fact that the purchase of this technology would allow the Soviet to enter major oil and gas fields throughout the world with advanced drilling technical competence.

The debate about the propriety of the technology transfer continues, but the issue of the uncertainty of the decisionmaking process is also serious. The sale was temporarily blocked after the company had a decision for the sale. Then the company was allowed to make the transfer. This on-again-off-again decisionmaking is a problem for industry and a better system should be devised.

In 1973 and 1975 the AFL-CIO protested the export of U.S. satellite technology to Japan in a discussion of the Thor-Delta transfer. In only a few years the "competition" from abroad has become a serious problem. In 1977, the U.S. manufacturers of satellite systems were complaining about "competition" from the transferral of the latest aerospace technology.

The Thor-Delta rocket and launching system, considered by space experts to be America's most effective and reliable launching unit, was developed at taxpayer expense and cost millions of dollars in research and development funds before it became operational. It was used to launch satellites for Canada, France and a multination weather watcher for seven North European nations. Such launching work provided the United States with millions of dollars in funds, helping to offset the U.S. balance of payments deficit.

The Thor-Delta system had military technology, capable of carrying several hundred pound objects into space orbit, or with little modification, could carry a nuclear warhead in the 1,500-to-5,000 mile range, clearly a potentially offensive weapon.

Workers involved at the Vandenberg Base were understandably upset over the transfer because of its many implications for U.S. defense and aeroapace capability. They feared that the system was being sold for the exclusive profit of McDonnell Douglas while the nation lost a basic resource. They pointed out that the education of highly trained Americans, millions of dollars in U.S. funds and expensive trial and error testing brought about a basic technological system which was being sold out at a fraction of its worth.

In addition, they feared that putting another nation into direct competition in the satellite launching business would mean an end to further U.S. technology.

Last week we heard that many of the workers at the Vandenberg Base have been laid off. The worker's jobs have been lost and U.S. taxpayer technology is now in Japanese hands.

We described how the deal was reportedly developed by U.S. cabinet officers and their Japanese counterparts at a 1971 meeting in Tokyo. Estimates at that time were that the bilateral understanding could mean up to $100 million in profits to U.S. concerns over four or five years. Of added incentive to the U.S. companies was the agreement by Japan at that time to move ahead on permitting foreign investment by U.S. multinational firms in its automotive industries. Both moves would profit stockholders of the corporations involved at the expense of U.S. aerospace and autombile workers.

Senator STEVENSON. Thank you, sir.

We have received a number of estimates which suggest that about 40,000 additional jobs are created in the United States for every $1 billion in additional exports. As you know, we are running a trade deficit at an annual rate of about $30 billion. If that trade deficit didn't exist, or that estimate was accurate, that could buy another 1,200,000 jobs.

Does the AFL-CIO have any recommendations to offer us for increasing exports? As I look through this—I am trying to read the whole statement—most, if not all, of the suggestions are for controlling exports. How about increasing exports?

Mr. OSWALD. Mr. Chairman, we believe that one of the important ways of increasing exports is to require that other countries practice fair trade, which, in essence, they do not do. Many developing countries—and I can give examples here—do not allow U.S. goods to be imported. They require what are called "co-production agreements," and it is the failure of many countries to practice fair trade that I think prohibits the sort of ability of U.S. goods to compete.

You have heard many examples of the Japanese with their limitations on the importation of American goods, and, as you know,

we have currently approximately a $12 billion deficit with Japan, accounting for, in that sense, nearly 40 percent of our total deficit.

The problems are clearly not, I don't think, those that were alleged by the question of the length of time that it takes to grant export licenses.

I was very impressed with some data that was submitted by Governor Clements, where he indicates that only $220 million of exports were held up more than 90 days by the licensing arrangement. That is less than two-tenths of 1 percent of all of our exports.

And I think that the problem of exports needs to be looked at both in terms of exports as well as imports in terms of our balance-of-payments deficit.

Senator STEVENSON. But, of course, it is not the denied applications that are of concern; it is the applications that never get presented because of the delays and the risks of denial.

Mr. OSWALD. Those were the delays, Senator.

Senator STEVENSON. But that's not it. It is the applications that never get presented because of the delays.

We will try to get more estimates in this area.

But I certainly agree with everything you said about bringing down the trade barriers, and fair trade. And, of course, there are efforts under way now through the multilateral trade negotiations to do that.

But I think we have to remind ourselves, also, that other countries are going into Japan; they are establishing much larger market shares than we are, and they are competing. They seem to be able to do it. The Germans, for example, run full-employment economies, and we can't. If they can do it in spite of the barriers, there is something wrong. We could be doing better, apparently.

Even in those countries like West Germany, where labor costs, I think, have pretty much evened out——

Mr. OSWALD. Actually, they are supposedly substantially higher in Germany than the United States, both according to the Dresden Bank study and the U.S. Labor Department estimates.

Senator STEVENSON. Well, I think we have got to look at both sides. They have trading companies, the Japanese, for example, do. We are prevented by our antitrust laws from going out and marketing effectively.

Mr. OSWALD. Mr. Chairman, we have urged for a long time that particularly in items such as grain and other agricultural products, that it may well be that the United States should set up a central governmental export operation such as the Canadians have, the Canadian Wheat Board; and this would allow, I think, an enhancement of the ability of the United States to use that particular type of commodity in terms of world trade in an enhanced manner.

Senator STEVENSON. And not just the economic opportunity that would come from the increased leverage. We sell food like we buy oil: for the benefit of everybody except ourselves.

Think of the authority that could be associated with the sale of food if we sold it like the Canadians. It is an infinitely renewable resource, and it is as basic in the world as oil is. And I think we turn the exporting over to a handful of multinational corporations, some of which are under foreign control.

Mr. OSWALD. And many of which have become private corporations and no longer even report publicly in terms of their accounting and profits and other actions.

Senator STEVENSON. While we are on that subject, let me raise with you another possibility and urge for your consideration: Governor Clements, I believe, he and Senator Tower and perhaps Governor Busbee also, stressed exports of agricultural exports. The price of food is also a cause of inflation. The U.S. Government spends about $6 billion a year on price supports, supporting food at artificial levels, and about $600 million of that is for paying farmers not to produce food while we preach human rights in a world in which some 800 million people still go to bed hungry every night.

The population of the world is increasing, maybe 50 percent by the end of this century, and food production is not going to keep up. Our land is eroding; it is washing into the streams and polluting the streams and blowing into the air. We do not conserve land.

We could support the farmers with cash payments, just to be sure the family farmer is protected against prices that would put him out of business. We could help him without punishing him, and people the world over, including American consumers, with a farm policy that prices food at market levels and does not pay farmers to not produce it.

There are alternative deflationary ways of helping the farmers that would also help bring down inflation and open up new markets. It would help the livestock producers, the dairy producers, poultry producers. We don't export meat anymore; we might even be able to export meat, which is a whole lot more efficient way of exporting food than grain. We sell soybeans to the Poles and then buy back the hogs. We might be able to sell the hogs.

Has the AFL-CIO thought about this in their policy?

Mr. OSWALD. Yes, Senator, we addressed that in our executive council statement and supported strongly the notion of supporting family farmers and expanding production, rather than just plain price support for products.

I would be happy to make that statement a part of the record, because we believe that the inflationary pressures are coming, as I indicate, heavily from the food sector where prices in the past year—again, in the last 2 years—have gone up over 20 percent and are the things that are pushing it ahead. And we do need to expand production without at the same time causing problems for family farmers in terms of making them bear the full brunt of it.

We think the distinction needs to be made between family farmers and large corporate operations which are able to exist without government support.

[The following statement was received for the record:]

STATEMENT BY THE AFL-CIO EXECUTIVE COUNCIL ON FAMILY FARMERS

The issues being raised by America's family farmers, through the American Agricultural Movement and other traditional family farm organizations, go to the heart of America's economic problems and deserve more serious consideration and action by the Government than is evident thus far.

The growth of corporate farming, which is driving many farm families from agriculture, raises questions about food monopolies and concentrations of corporate power dominating the Nation's vital food supply.

The role of commodity speculators, who add to inflation in food prices through paper profits, must be regulated to increase the farmer's share of the food dollar without driving up consumer prices.

United States farmland is being purchased at alarming rates by foreign corporations and individuals, especially from the OPEC states. Control of productive farmland in the hands of foreign interests could seriously injure the Nation's economic health.

Family farmers also face serious international trade problems. Other nations subsidize their agricultural exports heavily. Since they do not require the health and safety standards the United States imposes on domestic agriculture, we believe the same standards should be applied to imports, and agricultural imports labeled as to country of origin.

Exports of agricultural commodities are presently conducted by corporations who act in their own self interest and usually to the detriment of family farmers. We believe a mechanism, similar to the Canadian Wheat Board, should be established to promote and handle foreign sales of U.S. grain.

High interest rate policies adversely affect family farmers, who must borrow money each year for planting and other expenses. Since credit is not allocated to such vital needs as agriculture, farmers are forced to compete for loans against speculators and corporations. This further drives up the farmer's interest payments, increasing the cost of food.

We believe that agricultural policy should be based on the principle of a fair return to family farmers for their labor. Price supports and other programs should be strictly limited to family farmers and denied to corporate farms and other absentee owners.

If policies to help the family farmer are not quickly adopted, consumers could be left at the mercy of corporate monopolies, and the Nation could lose the rich heritage family farmers have provided.

Senator STEVENSON. Well, I would be happy to have your statement, and I hope you would be happy to have my statement on the same subject. I could call your attention to one particular aspect of it. I suspect it is different from yours.

The eligibility, under what I am suggesting, for these deficiency payments would be conditioned on sound soil conservation practices so that this program doesn't take any productive land out of production.

This program would require the farmers to preserve good land. It would mean wind breaks. We could beautify America and save the land and cut back on production, and while it would mean taking a little land out of production for the short term, over the long term, when we're going to need it, it will increase production from the land by saving. And it is going now, and when it's gone, we have lost one of our most precious resources.

So, I will send that to you and take a look at your statement. And we would welcome any help the AFL-CIO could provide.

Mr. DENISON. Senator, I think what we are saying today is that while we share your views on the family farm, we feel pretty much the same way about our industrial base, that unless some of the programs are adopted to save this industrial base, we will see the same withering away and the same winding away of our industries.

So, the problem is common, and that is why we are here today.

Senator STEVENSON. Now you're in trouble. I am going to send you some more statements, including one on the industrial innovation.

Thank you very much, gentlemen.

Our next witnesses will comprise a panel. They are: Mr. George Bardos, vice president of Control Data Corp. and chairman of the Export Administration Act Subcommittee of the Computer and Business Equipment Manufacturers Association; Mr. Thomas

Christiansen, manager for international trade relations of Hewlett-Packard Co., who also appears here on behalf of the American Electronics Association; Gerald Gleason, senior vice president of international operations for Foxboro Corp. and a member of the Scientific Apparatus Makers Association; and Peter McCloskey, president of the Electronics Industries Association.

And I will enter in the record the statement of Boris Block, the general secretary-treasurer of the United Electrical, Radio & Machine Workers of America.

[The complete statement of Mr. Block follows:]

STATEMENT OF BORIS H. BLOCK, GENERAL SECRETARY-TREASURER, UNITED ELECTICAL, RADIO & MACHINE WORKERS OF AMERICA (UE), ACCOMPANIED BY LANCE COMPA, UE LEGISLATIVE REPRESENTATIVE

I am here representing the United Electrical, Radio & Machine Workers of America (UE), which represents 165,000 workers in the electrical manufacturing and metal working machinery industries. UE members work for such companies as General Electric, Westinghouse, GTE-Sylvania, Litton, TRW, Bendix, American Standard, Allen-Bradley, Ex-Cell-O (Bryant Grinder), Cone-Blanchard, and Textron (Jones & Lamson).

Our union welcomes the opportunity to present its views at the Banking Committee's hearing on U.S. export control policy. Thousands of our members are engaged in manufacturing products for the export market. The nearly 10,000 members of UE local 506 at the General Electric plant in Erie, and the 5,000 members of UE local 610 at the WABCO (American Standard) plant outside Pittsburgh, for example, export one-third to one-half of their output. We are certainly interested in protecting the jobs of our members who produce for export.

We are equally concerned about the thousands of jobs that are lost, not only to potential members of our union but to other workers and unions as well, because of restrictions on export trade. Loss of export markets is not the only cause of unemployment, of course, but it contributes substantially to it, in our view—especially in the manufacturing sector of the economy. Since 1973 the number of hourly employees in manufacturing has declined by a quarter of a million workers. Unemployment has "stabilized," we are told, at the 6 percent level—which means millions of workers are out of a job.

In the early 1970's a microcosm of the current situation existed in the Vermont machine tool industry—most of whose workers we represent—the industrial backbone of that State's economy. Unemployment among the skilled workers in this industry reached 50 percent in some areas. Orders were not picking up. The long-term prospect was grim.

It was a period of relaxation in tensions with the Soviet Union, and the industry reported that the Soviets were interested in large purchases of U.S. machines and machine tools. An earlier generation of U.S.-made machinery obtained in the 1930's was wearing out, and Soviet manufacturers had been pleased with the capability workmanship and durability of the equipment. Among the orders sought was one for precision grinding machines made by UE local 218 members at the Bryant Grinder division of Ex-Cell-O Corp. in Springfield, Vermont.

Restrictions on trade with the Soviet Union jeopardized the sale of this new machinery. UE representatives met with officials from the State, Commerce and Defense departments seeking approval of the contracts. Then-Senator George Aiken of Vermont was also instrumental in this effort to secure contracts for Vermont workers.

After several months the contracts were approved. Thousands of workers in the industry returned to their jobs and new workers were hired. Work on the Soviet orders sustained the industry for 1 to 2 years, long enough for the overall business to pick up and soften the impact of later layoffs. That period of expanded trade with the Soviet Union also brought work to hundreds of Allen-Bradley UE members building controls for the new equipment, as well as to many UE members in textile machinery manufacturing and other export fields. Of course, UE members were only a small portion of the thousands of American workers who benefited from this business.

We hoped that this trend would continue. The Soviet Union is the world's second-biggest economy, so it only made sense that it provides a huge potential for U.S. exports of industrial products. Instead, there has been a re-imposition of export

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restrictions since that time. There is the continued denial of "MFN" status to the Soviet Union under the Jackson-Vanik amendment. There is an inconsistent application of "security" criteria based on domestic political considerations. There is delay and uncertainty throughout the process. Meanwhile, European and Japanese producers aggressively pursue orders from the Soviet Union and other socialist countries, with their government's support. As a result of all this, the U.S. share of exports to the Soviet Union is less than 10 percent while the West German and Japanese shares are well over 20 percent each, and even France and Italy each have a greater share than ours.

In 1977 UE accepted an invitation from the Soviet electrical workers union to send a delegation of workers from our country to the Soviet Union. In a meeting with management and union officials at the Zil carburetor plant outside Moscow, the UE delegation expressed interest in sending our products to the Soviet Union. This is what V. V. Polyakov, plant manager, told our delegation: "The bulk of our production is closer to U.S. technology than European. When I was asked where to buy, I recommended the U.S. But your trade policies compel us to deal with Japan and Europe. What we can't buy, our designers and manufacturers provide for us." Likewise, when UE members raised the question of machine tools and related equipment with officials of the Stanko-Import agency, spokesman G. C. Lebiazhiev responded: "If we buy U.S. machine tools we certainly want U.S. controls and cutting tools—taps, dies, grinding wheels and so on. But if we buy the bulk of the machine tools from Europe, we buy the controls and cutting tools there, too. Last year we bought $48 million worth of U.S. machine tools. From West Germany we bought $332½ million worth."

The case of machine tools is one that bears further examination. In the late 1950's and early 1960's, U.S. machine tool production was running a 5-to-1 trade surplus in metal cutting and a 7-to-1 surplus in metal forming. In 1978 we ran a deficit in both areas totaling over $151 million.

In the mid-1960's, the United States alone accounted for one-third of the world's machine tool output, and more than one-fifth of the world's machine tool exports. Today, the U.S. share of total output is about 15 percent—cut more than half—and the share of exports is 7 percent—a loss of two-thirds of the market. During this period of our decline in the share of machine tool markets, the Soviet Union became the world's largest consumer of machine tools, and both the Soviet Union and West Germany have moved ahead of the U.S. in machine tool production.

The Soviet Union, China and the Eastern European socialist countries are the world's fastest-growing market for machine tool exports. Yet, out of $1.3 billion worth of machine tools imported by these countries in 1977, U.S. manufacturers supplied only 3½ percent. The bulk of the orders went to West German, Swiss, French and Italian producers.

Let us raise one more example of U.S. trade policy that is of particular concern to our union. A couple of years ago the Soviet Union offered a contract worth $875 million for a gas turbine pump system to move natural gas west from Siberia to Europe. They wanted to buy the equipment from General Electric, which would have meant thousands of jobs saved or created for GE workers. Because of our policy of export restriction, these orders were lost to West German and Italian firms. However, the story does not end there. The German and Italian companies are producing the equipment, employing thousands of workers, under license from General Electric! GE is getting its cut of the profits, but GE workers here are left holding the bag.

I would like to conclude with a couple of general observations on this question of exports. First of all, we do not claim that expanding trade with the Soviet Union is going to cure all the problems of export trade and the balance of payments deficit. It can be of substantial value only in an overall program to push for more U.S. exports, which must also include removing trade barriers set up by other trading partners and clamping down on U.S. multinational corporations exporting from foreign locations rather than U.S. plants. I am leaving aside the whole question of imports since that is not a subject for this hearing. Suffice to say that a vigorous export program is an absolute necessity for a successful trade policy, and the fullest possible trade with the world's second-biggest economy should be part and parcel of such a program. It is ironic that while U.S. trade policymakers lament bitterly the restrictions other countries place on admitting our exports, our own policies are as restrictive of U.S. exports.

Second, I think that to address this matter of trading with the Soviet Union we have to overcome illusions about U.S. technological superiority, what you might call "high technology chauvinsim." this attitude, that only we hold the secrets of high technology manufacturing methods and therefore we are "selling the rope to hang

ourselves" if we trade with the Soviets, is an outmoded obstacle to trade relations. There may have been a time after World War II when we did hold all or most of the cards, but that period, if it existed, is over. We have heard a lot of wailing and gnashing of teeth about the Bryant precision grinders, the Dresser equipment, the Control Data computer and so on and whether they should have been sold to the Soviet Union. From what we can see, all this equipment or its equivalent is readily available from manufacturers in other countries. They have no compunctions about making deals for such sales. Our ineffective posturing about technological superiority only costs U.S. workers more jobs.

I cannot end without a word about the relationship between military spending and export trade. There is a regrettable lack of discussion about this matter, just as there is an almost total absence of discussion about the relationship between military spending and inflation.

The trade situation is directly related to military spending, especially research and development policy and the orientation of our technical cadre. Military projects constitute fully half of all government-sponsored R & D in the United States. The bulk of our engineers and technicians are at work on these projects. The sophisticated weaponry that results is sold around the world, often to dictators like the Shah of Iran. On paper this should help the balance of trade, but we are falling so far behind in civilian-oriented goods that the overall balance is unfavorable.

R & D money that goes to develop new missiles could help design new breakthroughs in machine tools, consumer electronics, transit equipment, pollution controls, power generation, energy conservation, steel production and other fields where we have fallen behind. The Japanese and Germans have been able to do this, thanks to their relatively small military budgets—only 3 percent and 15 percent, respectively, of those countries' R & D expenditures goes to military projects, compared to our half. They are developing better machines, better cars, better TV's, better locomotives, better steel, etc. There is no good reason why U.S. companies cannot do likewise with an appropriate transfer of resources from military to civilian use, and thereby recapture shares of both domestic and foreign markets.

To summarize briefly our recommendations on export policy:

(1) *Full trade.*—There should be no unilaternal restrictions on trade for political purposes. Any restrictions should only be made as part of an international consensus, as in the case of UN sanctions against Rhodesia and the ban on arms sales to South Africa. Absent this, we should trade with all countries on an equal basis. As part of this effort, we should face up to the new realities about the availability of high technology from other industrial countries.

With respect to this point I would like to introduce into the record as an appendix to my testimony a resolution unanimously adopted by the 400 delegates to the UE National Convention in September 1978.

(2) *Transfer from military to civilian-oriented production.*—A cut in the military budget and a transfer of research and development efforts to the civilian sector will lead to breakthroughs in product areas where the United States has fallen behind Japanese and European manufacturers. This will allow us to regain shares of both the domestic market now served by imports, and the export markets in these product areas. It will also lead us away from supplying foreign dictators with weapons to appress their populations.

(3) *Remove tax incentives for runaways.*—United States tax policies that encourage multinationals to run away from U.S. plants must be reversed. These include the following:

Repeal TSUS 806.30 and 807 which give American companies special exemptions on import duties on goods they produce abroad;

End the deferral of taxes on foreign profits;

Make foreign taxes a deduction, not a credit; and

Abolish OPIC.

(4) *Control U.S. companies exports and sales from abroad.*—In 1976 U.S. multinational corporations exported $37.7 billion to foreign countries from foreign locations. If these products had been exported from U.S. locations, the balance of trade deficit would be overcome and many thousands of American workers would be on the job. In addition, $161 billion worth of goods were sold by U.S. multinationals in the countries in which their plants were located. If only a small portion of this were exported from U.S. plants, this too would go a long way toward solving the trade deficit without running afoul of foreign governments investment requirements for market entry. (Source: Survey of Current Business, March 1978)

To this end, legislation should be developed that forces the multinationals to live up to their claim that foreign investment creates jobs in the United States.[1] For all jobs they create by foreign investment, they should be required to demonstrate where in the United States they will establish at least an equal number of new jobs. Where they shift operations from a U.S. plant to a foreign location, they should be required by law to provide substitute employment for their U.S. workers at the same U.S. location, undertaking whatever retooling and retraining that is necessary to manufacture the more sophisticated, higher-skill-required products that they contend American workers are better able to produce.

APPENDIX

Resolution Adopted by the 43rd International Convention, United Electrical, Radio & Machine Workers of America (UE) September, 1978.

Remove barriers on trade with socialist countries

Whereas, during recent months the Carter Administration has tightened the already severe restrictions on trade with the Soviet Union and other Socialist countries, and

Whereas, the shutting of this trade contributes to the rekindling of the cold war which did so much harm to our country during the 1950's and 1960's and

Whereas, this expanding embargo that deprives our country of billons of dollars of available manufacturing orders hurts the balance of trade, a major factor in inflation, and shuts off an important source of jobs for American workers including, as we have found in the past, many for UE members, and

Whereas, foreign manufacturers and American manufacturers with overseas plants are always ready to provide the equipment that the Soviet Union is not permitted to buy here, and

Whereas, U.S. companies reap the profits from Soviet orders while U.S. workers are denied the jobs, therefore be it

Resolved, That this 43rd UE International Convention urge the Congress and the Carter Administration to end these trade restrictions in the interest of peace so urgently desired by the American people, and jobs so urgently needed.

Resolved, That the right of the Soviet Union and other Socialist countries to buy and sell here should be placed on the same basis regarding credit, and duties as granted other countries and granted by our allies for such trade.

Senator STEVENSON. Gentlemen, we're grateful to all of you for appearing. I invite you, as I have everybody today, to summarize your statements, and they will be placed in the record.

Mr. Bardos, do you want to go first?

STATEMENT OF PETER McCLOSKEY, PRESIDENT, ELECTRONICS INDUSTRIES ASSOCIATION

Mr. McCLOSKEY. Mr. Chairman, this panel of witnesses had a meeting this morning. With your permission we have agreed on the order of testimony. I am Peter McCloskey, president of Electronic Industries Association. Accompanying me today are John Copeland of Motorola, vice chairman of EIA's international business council and a member of the president's export council's subcommittee on export administration, together with Wallace Davis of ITT Corp., chairman of our export administration committee.

Electronic manufacturing directly employs more than 1.3 million Americans. Of these jobs, well over a quarter of a million are directly dependent on exports. In 1978 the sales of this Nation's electronic manufacturing plants exceeded $55 billion. Of those sales, $13.3 billion were made in the world market; 25 percent of the electronic industry's business is export.

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[1] General Electric alone claims that its foreign operations have brought a net gain of 30,000 U.S. jobs—13,000 in G.E. and the rest in G.E. suppliers and subcontractors. This is small consolation when you consider that in 10 years, G.E.'s employment has dropped by 34,000 workers in the U.S. (23,000 in the last 5 years alone).

The United States imported about $10.7 billion last year, yielding an overall $2.6 billion trade surplus in electronics. In 1978 the United States suffered a record $34.2 billion deficit on a balance of payments basis. The administration states that the Government is counting on increase in the export of manufactured goods for much if not most of the any improvement in 1979.

This cannot be achieved unless there's a clear change in government policy and attitude. If changes are not forthcoming, we predict this year will produce another record deficit, as will succeeding years.

A thorough revision of the Export Administration Act will help to create an improved environment for U.S. industry as it seeks to compete in overseas markets.

First and foremost the new law must state in clear terms the sense of the Congress that exports are a high national priority. This is basic if we are to regain economic, political, and military strength. Yet this declaration of policy has been been made neither by the Congress nor by the President in his export policy statement.

We agree with Governor Busbee: The law should state that exporting is a right, not a privilege, subject only to considerations of military security, short supply, or extreme foreign policy considerations. A defined right to export and a long-term assurance that this right will not be abrogated for less than truly significant reasons will create the conditions necessary for long-term stability. The U.S. supplier can once more be a reliable supplier.

Because of the increased technological capabilities of other countries friendly to the United States, U.S. export controls can no longer significantly retard the military capabilities of countries which threaten the national security of the United States unless such export controls are imposed in cooperation with such friendly countries. This relates to three specific issues.

First, CoCom, the coordinating committee, must become a treaty organization with published rules rather than the current gentlemen's agreement with rules subject to individual interpretation. Only thus can we assure the national security of the United States and give U.S. suppliers equal opportunity.

Second, is the question of foreign availability of technologies, keystone equipments and products. The United States must have such information centralized in the Department of Commerce with appropriate inputs from the various Government agencies as well as the private sector. In this connection, we urge that the State Department train their commercial attachés to evaluate more thoroughly the host country's industrial capabilities. Demonstrated availability from any foreign source should constitute a presumption in favor of license application approval.

Thus, in order to protect the military security of the country, we must maintain our lead in technologies which are critical to our military posture. The technological lead that the United States once enjoyed has narrowed to a razor's edge. We feel that the Defense Science Board in its report of February 4, 1976, made basic sense when it recommended that products be released but that design and manufacturing technology and keystone equipments be controlled to the extent necessary.

We urge that the Department of Defense promptly complete its analysis of these items and render its recommendations to the Department of Commerce. Thus, U.S. industry can compete freely in world markets but the protection which the Department of Defense requires can be retained.

The administration's policy of discontinuing exports for foreign policy reasons is not only detrimental to U.S. industry but, more important, is demonstrably not effective. We feel that the use of export controls to change the internal policies of another government can only create animosity and hardship for the citizens of both countries and make the controlled country more resistive to any influence we may have had in the past.

This policy creates an unpredictable atmosphere for U.S. industry and fosters the belief that U.S. suppliers are unreliable. Controls in this area should not exceed those sanctioned by any international organization of which the United States is a member. President Carter said in his recent Georgia Tech speech: "We cannot control events outside the United States." We agree wholeheartedly with that statement.

The Commerce Department must act more aggressively to carry out its charter to make a final decision on a case within the allotted 90 days. They must realize that they are dealing with a perishable commodity and time is of the essence.

The process must be streamlined. At the present time, applications are running over 70,000 a year, a record for recent times, and yet the bureaucracy has not taken steps to reduce this load through modern administrative methods, new licensing procedures, or streamlined operations which could be done under the existing act.

The key to a successful operation is not necessarily more people, but a carefully conceived, cooperatively planned system with up to date administrative tools, including data processing equipment. The existing act gives the executive departments involved a great deal of latitude in their operations.

However, instituting new procedures, concepts and changes in regulations to improve the operation and hence improve our export posture have not occurred to any large degree. Even today an exporter asking for the status of an application must wait several days for his answer.

This process should be made more transparent to the applicant who must have opportunity to communicate with appropriate authorities and help speed the case. Denial of an appication should be in writing with an explicit reason for the denial.

It is important that the departments involved in export administration not have a veto power over each other, but should operate on a majority rule basis, with the minority having right of appeal to the next highest level until a decision is made, if necessary by the President. Time constraints should be placed on this process.

If the United States is ever to achieve a balanced trade position again, U.S. industry must be able to know where it stands and be free to move forward on an aggressive basis. With a clear and coordinated U.S. policy, the military security and national interests of the United States will be adequately protected, and U.S. industry can do its job.

I will gladly answer any questions you may have.

I look forward to seeing the specific legislation you intend to introduce.

[Complete statement of Mr. McCloskey follows:]

STATEMENT ON EXTENDING AND AMENDING THE EXPORT ADMINISTRATION ACT GIVEN IN ORAL TESTIMONY ON MARCH 12, 1979, BY THE ELECTRONIC INDUSTRIES ASSOCIATION "EIA"

The Electronic Industries Association (EIA) is pleased to have this opportunity of expressing its views, and of doing so as a part of a panel representing high-technology industries.

I am Peter F. McCloskey, EIA's President, and accompanying me today are John Copeland of Motorola, Inc., Vice Chairman of EIA's International Business Council (IBC) and a member of the President's Export Council's Subcommittee on Export Administration, together with Wallace Davis of the ITT Corp., Chairman of our IBC's Export Administration Committee.

Our Association's 285 member companies design, engineer, and manufacture in the U.S. electronic systems, equipment, and components for consumer, industrial, and government use which are marketed throughout the world. Electronic manufacturing directly employs more than 1.3 million Americans. Of those jobs, well over a quarter of a million are directly dependent on exports.

In 1978, the sales of this nation's electronics manufacturing plants exceeded $55 billion. Of those sales, $13.3 billion were made in the world market; 25 percent of the electronic industries' business is export. The U.S. imported $10.7 billion, yielding a $2.6 billion trade surplus.

In 1978 the United States suffered a record $34.2 billion deficit on a balance of payments basis. The administration states that the Government is counting on an increase in the export of manufactured goods for much, if not most, of any improvement in 1979. This cannot be achieved unless there is a clear change in Government policy and attitude. If changes are not forth coming, we predict that this year will produce another record deficit, as will succeeding years.

A thorough revision of the Export Administration Act will help to create an improved environment for U.S. industry as it seeks to compete in overseas markets.

First and foremost the new law must state in clear terms the sense of the Congress that exports are a high national priority. This is basic if we are to regain economic, politicial, and military strength. Yet this declaration of policy has never been made by the Congress nor by the President in his Export Policy Statement.

Further, the law should state that exporting is a right, not a privilege, subject only to considerations of military security, short supply, or extreme foreign policy considerations. A defined right to export and a long term assurance that this right will not be abrogated for less than truly significant reasons will create the conditions necessary for long term stability. The U.S. supplier can once more be a reliable supplier.

Because of the increased technological capabilities of other countries friendly to the United States, U.S. export controls can no longer significantly retard the military capabilities of countries which threaten the national security of the United States unless such export controls are imposed in cooperations with such friendly countries. This related to three specific issues.

First, CoCom (Coordinating Committee) is an excellent concept for the control of products that should not be shipped to certain destinations. However, it should be a treaty organization with published rules rather than the current "Gentlemen's Agreement" with rules subject to individual interpretation. Only thus can we assure the national security of the United States and give U.S. suppliers an equal opportunity.

Second is the question of foreign availability of technologies, keystone equipments and products. The United States must have such information centralized in the Department of Commerce with appropriate inputs from the various government agencies as well as the private sector. In this connection, we urge that the State Department train their Commercial Attaches to evalute more thoroughly the host country's industrial capabilities. Demonstrated availability from any foreign source should constitute a presumption in favor of license application approval.

Third, in order to protect the military security of the country, we must maintain our lead in technologies which are critical to our military posture. The technological lead that the United States once enjoyed has narrowed to a razor's edge. We feel that the Defense Science Board, in its Report of February 4, 1976, made basic sense when it recommended that products be released but that design and manufacturing technol-

ogy and keystone equipments be controlled to the extent necessary. We urge that the Department of Defense promptly complete its analysis of these items and render its recommendations to the Department of Commerce. Thus, U.S. industry can compete freely in world markets but the protection which the Department of Defense requires can be retained.

The Administration's policy of discontinuing exports for foreign policy reasons is not only detrimental to U.S. industry but, more important, is demonstrably not effective. We feel that the use of export controls to change the internal policies of another government can only create animosity and hardship for the citizens of both countries, and make the controlled country more resistive to any influence we may have had in the past.

This policy creates an unpredictable atmosphere for the U.S. industry and fosters the belief that U.S. suppliers are unreliable. Controls in this area should not exceed those sanctioned by any international organization of which the United States is member. President Carter said in his recent Georgia Tech speech, "We cannot control events outside the United States." We agree wholeheartedly with that statement.

Apart from these policy issues, there are certain administrative matters which we feel the Congress must address.

The Commerce Department must act more aggressively to carry out its charter to make a final decision on a case within the allotted 90 days. They must realize that they are dealing with a perishable commodity and time is of the essence.

The process must be streamlined. At the present time, applications are running over 70,000 a year, a record for recent times and yet the bureaucracy has not taken steps to reduce this load through modern administrative methods, new licensing procedures or streamlined operations, which could be done under the existing act. The key to a successful operation is not necessarily more people, but a carefully conceived, cooperatively planned, flexible program that is staffed with competent personnel to operate a system with up to date administrative tools including data processing equipment. The existing Act gives the executive departments involved a great deal of latitude in their operations. However, instituting new procedures, concepts and changes in regulations to improve the operation and hence improve our export posture have not occurred to any large degree. Even today, an exporter asking for the status of an application must wait several days for his answer.

This process should be made more transparent to the applicant who must have an opportunity to communicate with appropriate authorities and help speed the case. Denial of an application should be in writing with an explicit reason for the denial.

It is important that the Departments involved in export administration not have a veto power over each other, but should operate on a majority rule basis, with the minority having right of appeal to the next highest level until a decision is made, if necessary by the President. Time constraints should be place on this process.

If the United States is ever to achieve a balanced trade position, U.S. industry must be able to know where it stands and be free to move forward on an aggressive basis. With a clear and coordinated U.S. policy, the military security and national interests of the United States will be adequately protected and U.S. industry can do its job.

I will gladly answer any questions you may have.

STATEMENT OF GEORGE BARDOS, ON BEHALF OF THE COMPUTER AND BUSINESS EQUIPMENT MANUFACTURERS ASSOCIATION

Mr. BARDOS. Mr. Chairman and members of the subcommittee, I am George Bardos, vice president for the Control Data Corp. and chairman of the export administration act subcommittee of the Computer and Business Equipment Manufacturers Association.

Over the past decade, U.S. exports of manufactured goods have declined by nearly one-third. This decline has contributed to a decrease in the rate of our economic growth; it has deepened the imbalance of trade, and added to inflation while reducing the number of skilled jobs open to American workers.

President Carter, on September 26, 1978, noted the importance of placing a higher priority on exports as one means of restoring the Nation's economic vitality. He said that large trade deficits in recent years have weakened the value of the dollar, intensified

inflationary pressures in our own economy, and heightened instability in the world economy. He went on to say that both business and Government have accorded exports a relatively low priority, and that these priorities must be changed.

In recognizing the restrictive role that Federal regulations have played in worsening the export posture of the United States, the President directed the heads of all executive departments and agencies to take into account what possible adverse effects their actions might have on the Nation's ability to export manufactured products.

Beyond doubt, restrictive Federal regulations have impeded the exports of our country, particularly in that segment of the export market where the United States holds a competitive but disappearing edge—the export of high technology products.

Today, I want to emphasize the importance placed by members of CBEMA in revising our export control laws to make them more workable by removing unwarranted regulations that restrict the export of commercial products. Too, I will point out the contribution that an improved export posture can make to the economic well-being of the United States.

The Computer and Business Equipment Manufacturers Association (CBEMA) represents the leading manufacturers of computer and business equipment.[1] Last year the combined revenues of CBEMA member companies increased to more than $45 billion, of which $18 billion were derived from international sales. CBEMA members contributed more than $2.8 billion to the U.S. balance of trade with exports of $5 billion. Our member companies employ over 750,000 people in the United States. Typically, our members receive from 30 percent to over 50 percent of their revenues from overseas operations.[2]

CBEMA and its member companies participated actively in the review and revision of the Export Control Act of 1949 which led to the passage of the Export Administration Act of 1969. We participated also in the 1972, 1974 and 1977 Extensions and Amendments of that act. We are pleased to appear before the Subcommittee on International Finance to relate our concerns about the current law and to suggest areas of change and revision for the subcommittee's consideration.

Secretary of Commerce Juanita Kreps, in testimony before this committee on March 5, said that export license applications for this year are being filed at an annual rate of 77,000 cases. Of these, she pointed out, 96.7 percent of all applications were processed in 90 days or less—leaving only 3.3 percent that took more than 90 days.

This 3.3 percent looks rather insignificant when compared with the total—until you realize that this 3.3 percent represents 100 percent of the export license applications of an industry that exports over $5 billion a year.

This 3.3 percent represents the area in which our country has the greatest technological lead, and therefore, the greatest potential for a positive balance of trade. A significant number of applications filed by the computer and business equipment industry—nearly 50 percent—are for equipment of such low performance that

[1] See attached list.
[2] 1978 figures are estimated.

they should not need licenses at all. Yet, as a matter of fact, we can expect delays in processing of at least 6 months for the simple cases that fit within the U.S. guidelines and for significant cases, an entire year may go by before we receive a decision.

We wish to make specific recommendations which we believe will significantly improve the export licensing aspects of the Export Administration Act.

Currently, under U.S. law, all commodities require an export authorization. The recommendations and revisions we propose will improve the predictability of this process without diminution of national security perview.

There are two categories of export licenses, general and validated.

General licenses are for exports—where a company does not need to apply in advance for Government preapproval—are representative of the first category of licenses.

Validated export licenses—where a company must make an application to the Government for each individual case prior to approval—are representative of the second category of licensing.

Under the validated category of export licenses, private industry and individuals submit export license applications to the Government describing each transaction. The Government approves or disapproves the proposed transaction. This latter form of licensing requires a significant amount of Government resources, and places a much heavier paperwork burden on both Government and industry. Additionally, it results in uncertainty as to what will be approved or disapproved, along with protracted lead times between the application for approval of a proposed transaction and the actual completion of the licensing review.

The United States also participates in CoCom [1] which has its own list of commodities requiring CoCom approval. Only a small portion of the U.S. list, namely the higher performance levels, do in fact require CoCom approval. The majority of items, and therefore the majority of the current caseload, can and are being approved at U.S. discretion without submission to CoCom. To demonstrate that fact, of the approximately 70,000 export license applications received by the Office of Export Administration during 1978 only 1,174 required CoCom approval.

It is desirable to minimize the number of cases that will require validated licenses without endangering national security. This could be done by issuing a general distribution license which will result in reduced paperwork and minimize delays and uncertainties. Thus, predictability, which is so vital for the U.S. exporter, will be achieved.

Our recommendations for simplifying the export process have three key features:

First, we recommend the validated license procedure—that is, the case-by-case prior approval—be limited only to those cases that require CoCom approval, plus special cases.

The effect of this would be that all other cases that can now be approved at U.S. discretion without CoCom approval would fall

[1] CoCom—The coordinating committee created in 1949 consists of all NATO members minus Iceland plus Japan. It is an informal multilateral export control committee.

under the general distribution license procedure, and not require the time consuming case-by-case prior approval.

Thus, attention would be focused on the significant cases, with a greater emphasis toward reducing less sensitive products to a qualified general distribution license, with only proper end-user verification and reporting as a requirement.

Based upon the experience of our industry, we estimate that this procedure would reduce the caseload and attendant paperwork up to 80 percent without jeopardizing national security and would permit the United States to concentrate only on cases that require CoCom approval. Significant savings in cost and manpower to both industry and Government would result. In addition, the advantages of greater speed and predictability would have positive effects upon U.S. employment and the balance of trade.

Second, we recommend retention of a provision that requires cases submitted for validated license approval be determined in 90 days, but addition of automatic escalation to an approval level committee if a decision has not been reached at that time. Further, we recommend that the higher level decision must be completed with prescribed time limitations. Any application for a validated license that has not been approved or disapproved within 180 days from the date of receipt would then be presumed conclusively to be approved.

This process will eliminate these protracted delays we have continually experienced and which have added to the uncertainty and unpredictability of exporting, costing the U.S. economy lost business and jobs. At the same time it provides for review at the right levels for sensitive cases.

Additional recommendations include the better use of the industry advisory committees (the TAC's) to consult with the Government on foreign availability of products, the updating and indexing CoCom control levels, and as an advisory forum for discussing problems and difficulties of the export process.

Many of the proposals that I have just described to you are incorporated in a new bill, H.R. 2593, that has been recently submitted to the House of Representatives.

But even if our recommendations are adopted, the best bill in the world cannot be made to work unless the people responsible for its implementation want it to work. It must be made clear at all levels of the Government that exports make a vital contribution to the well-being of this country—that a properly administered program can contribute to reducing the growing imbalance of trade: That such a program will add thousands of skilled jobs and reduce the inflationary pressure on the dollar from abroad.

America's high technology products, as represented by the member companies of CBEMA, can find ready acceptance in the world markets if we remove the unwarranted restrictions that hamper the growth of this vital segment of American industry.

[A list of companies follow:]

CBEMA Member Companies

3M Company
AB Dick Company
AMP Incorporated
Acme Visible Records, Inc.
Addmaster Corporation
Addressograph Multigraph Corp.
Burroughs Corporation
Control Data Corporation

Dennison Manufacturing Company
Dictaphone Corporation
Eastman Kodak Company
Exxon Enterprises, Inc.
General Binding Corporation
Harris Corporation
Hewlett-Packard Company
Honeywell Information Systems, Inc.
IBM Corporation
K/Tronic, Incorporated
Lanier Business Products, Inc.
Liquid Paper Corporation
Micro Switch, Division of Honeywell, Inc.
NCR Corporation
North American Philips Corporation
Olivetti Corporation of America
Pitney Bowes
Royal Business Machines, Inc.
Sanders Associates, Inc.
Sony Corporation of America
Sperry Univac
Sweda International
TRW Communications Systems & Services
TAB Products Company
Tektronix, Inc.
The Standard Register Company
Uarco Incorporated
Xerox Corporation

Senator STEVENSON. Thank you, sir.

STATEMENT OF GERALD H. GLEASON ON BEHALF OF THE SCIENTIFIC APPARATUS MAKERS ASSOCIATION

Mr. GLEASON. Thank you, Mr. Chairman. My name is Gerald Gleason. I am vice president of the Foxboro Co. of Foxboro, Mass., and I'm speaking this morning in my capacity as chairman of the international affairs committee of the Scientific Apparatus Makers Association. With me is Mr. St. Clair J. Tweedie, SAMA's director of government affairs.

We appreciate this opportunity to testify in front of the committee this morning.

SAMA's membership consists primarily of small to medium sized companies. In 1978 this industry produced and shipped products valued at nearly $8 billion. Exports accounted for about one-third of the total sales. Last year exports exceeded $3 billion, while imports amounted to less than $1 billion, a very favorable balance of trade. In our own company we deposit about 50 percent of our output overseas each year.

Therefore, in our industry, since many are like us, it must be said that loss of an export right on a given order at any time is not just incidental to our business, but it means direct reduction of employment.

SAMA has been encouraged by the sentiments expressed by the Congress and by the administration concerning the development of U.S. policies to expand and promote exports. We believe that a comprehensive and coordinated national policy in this area is to be necessary and that one of the best places to begin is in restoring the thrust of the Export Administration Act whose original intent, modifying provisions, which in practice have become impediments to exports.

Many of our U.S. products with significant export appeal are high technology products; high technology in our industry often leads to the misimpression that we all work at the frontier of science. Drawing from my own experience in my own company, nothing could be further from the truth. We provide the instrumentation that keeps the oil refineries and powerplants, pulp mills, blast furnaces, and the like, running 24 hours a day, 365 days a year.

The technology we use must be proven reliable in the long term, which tends to militate against being in the frontier of science. But as a result of this confusion, SAMA company products have become subjected to greater and greater constraints upon their export. What is needed is a fresh new look, not only at the provisions of the existing laws, but at the underlying philosophy and logic upon which they are constituted and the resulting mass of implementing regulations saying that increase in U.S. exports and employment and reducing our balance-of-payments deficit—we have reached certain conclusions.

U.S. export licensing uncertainties when added to the many other government initiated impediments inhibit U.S. businessmen, especially the smaller ones, from staging meaningful marketing efforts abroad.

These uncertainties will have to be reduced if the U.S. Government is serious about increasing exports. Failure to do so can only result in greater concentration on domestic business at the expense of exports. Unfortunately, the use of export controls for foreign policy purposes will probably continue.

So to reduce export inhibiting uncertainties clearly written guidelines should be issued as to when and how such controls might be employed. Multiple administration of export restrictions, as mentioned by many of my colleagues this morning, of any kind, must be eliminated. A very good example is the inconsistencies between Commerce and the Treasury Department's antiboycott provisions.

The product performance thresholds of the CoCom and unilateral U.S. controls should be raised significantly. This would reduce the number of commodities which are overcontrolled in terms of strategic significance and foreign availability and permit the export licensing community, government and industry, to concentrate on more important transactions.

Some commodity classifications are obsolete due to technological progress. Provisions should be made for review on a continuing basis to remove controls which have become counterproductive. A good example of this is found in the area of instruments containing microprocessors. A single agency within the administration should be funded and made responsible for determining the availability abroad of non-U.S. products comparable in terms of quality and quantity.

The conclusions of this agency should be used to speed U.S. licensing decisions and to affect appropriate reductions in the unilateral U.S. and CoCom controls. U.S. export licensing practices and procedures should be modified to eliminate individually validated export licensing for products which previously have been approved a number of times for all destinations in a particular country group or to any group to which export controls are less restrictive.

Reduce the amount of documentation, particularly that required to support computer transactions. Reduce reliance on and user statements. Substitute instead the capability of the product in question. Permit more expeditious, less complicated ways of licensing parts and components, including a significant increase in gen-

eral license validation limits and reduce unilateral U.S. re-export controls over commodities supplied to our CoCom partners.

United States licensing practices should be streamlined to eliminate or reduce features which place U.S. businessmen at a disadvantage vis-a-vis their foreign competitors, particularly those in other CoCom countries which interpret the CoCom restrictions more liberally to not impose unilateral controls and are able to reach licensing decisions quickly.

On this latter point, the excessive time required to reach licensing decisions, not the quality of the decision, is objectionable. In our industry, we seldom if ever have a license rejected. It's simply the serious inconvenience in cost and time delays involved in the transaction that we object to. The processing of export licensing applications should be made more transparent.

We note that the General Accounting Office has been looking into the workings of the U.S. export controls program. Two reports have been issued. They recommend in the first report that the administration of the export licensing process be made more responsive to the needs of exporters, and obviously, we could not agree more. Many of the routine and repetitive aspects of the present program can be stripped away without compromising the basic objective of export controls, which SAMA understands to be to protect the military security of this Nation. We believe in this goal and we support it.

SAMA is convinced that the vast majority of instruments and systems currently requring validated licenses have no business on the commodity control list at all.

I would like to make the point that many SAMA members have found that products not incorporating microprocessors have required no license. The simple addition of a microprocessor has required that all of these instruments go through a very complex licensing procedure. It's very interesting. I've been told by our engineers that the microprocessor added to one of our products in this category can be purchased in the Radio Shack stores found in every neighborhood by anyone who wanders in.

So Friday afternoon on the way home from work, just to make sure I wasn't going to tell an untruth here this morning, I did stop in and buy an Intel 8080 from Radio Shack. That is exactly the microprocessor that is incorporated in one of our products that now requires a license, while it did not require the license prior to the incorporation of this particular chip.

Senator STEVENSON. Is that the same quality? They argue that you have to take a pretty hard look at whatever it is to determine whether it is comparable. Can you tell? Is that the same for which the license is required?

Mr. GLEASON. Well, Senator, in our case it is. There are instruments of course that we use for the control of missiles or other things that would require a far better quality, perhaps, than what you might buy in a Radio Shack. But ours is not a critical component. It is purely a data acquisition device, and I'm told that it is approximately the same quality.

Senator STEVENSON. How much did that cost, might I ask?

Mr. GLEASON. It was $12.95.

Senator STEVENSON. And the whole sale involves how much for the product you can't sell that because of a license requirement for that part?

Mr. GLEASON. That's right.

Senator STEVENSON. What would a typical sale amount to?

Mr. GLEASON. The sale of the device incorporating this in our company is in the range of $8,000.

Senator STEVENSON. Thank you.

Mr. GLEASON. I think that summarizes my statement. I would like to say that we have surveyed all of our members within the last several months. We have received detailed comments from them which are included in the written testimony. We find that licensing delays are important. It is hard to understand how we continue to countenance the laws of the export business that result from the complex licensing procedures.

Unless we change, we are going to see continued loss and a greater inhibition on companies such as our own.

And the SAMA group thanks you.

[Complete statement of Mr. Gleason follows:]

TESTIMONY BY SCIENTIFIC APPARATUS MAKERS ASSOCIATION

Good morning. My name is Gerald H. Gleason. I am Vice President of the The Foxboro Company, and am speaking in my capacity as Chairman of the International Affairs Committee of the Scientific Apparatus Makers Association. With me is St. Clair J. Tweedie, SAMA's Director of Government Affairs. It is on behalf of SAMA's member firms that I am appearing here today to discuss the importance which we attach to the renewal of the Export Administration Act and the need for redirection of policy in this nation as it concerns export expansion. By this I mean a demonstrated national commitment to export expansion.

The Scientific Apparatus Makers Association is a national trade association representing this country's manufacturers and distributors of a wide range of scientific, industrial and medical instruments and equipment. The 200 member companies of SAMA constitute the bulk of the American industry producing laboratory analytical, electronic measurement and test, process measurement and control instruments and systems, clinical laboratory instruments and patient monitoring systems, as well as a wide range of laboratory apparatus and equipment, including optical and microscope products. SAMA's membership consists primarily of small to medium size companies. Of the largest corporate members, only a single division or two are involved. In 1978, this industry produced and shipped products valued at nearly $8 billion. Exports account for about one-third of total sales. Last year, exports exceeded $3 billion, while imports amounted to less than $1 billion, a very favorable balance of trade. Most of the sales of this industry are made by small and moderate sized firms located throughout the country, with major concentrations in the Northeast, Western, and Southern regions of the nation. The companies comprising this industry employ somewhat in excess of a quarter of a million people, in some 2000 manufacturing establishments.

SAMA has been encouraged by the sentiments expressed by the Congress and by the Administration concerning the development of U.S. policies to expand and promote exports. We believe that a comprehensive and coordinated national policy in this area is indeed necessary and that one of the best places to begin is in restoring the thrust of the Export Administration Act to its original intent, modifying provisions which in practice have become impediments to exports. Many of the U.S. products with significant export appeal are high-technology products * * * high technology in our industry often leads to the misimpression that we all work at the frontier of science. Drawing from my experience in my own company, nothing could be further from the truth. We provide the instrumentation that keeps the oil refineries, power plants, pulp mills, blast furnaces and the like running 24 hours a day, 365 days a year. The technology we use must be proven reliable in the long term. We are not looking for the super-performance for 10 seconds required of a rocket on take off, but stable performance over a period of years. For example, we may use a microprocessor in an instrument, but it should not be confused with the microprocessor used to control the missile. Herein lies the

problem. As a result of this confusion, SAMA company products have become subjected to greater and greater constraints upon their export. What is needed is a fresh new look at not only the provisions of the existing law, but at the underlying philosophy and logic upon which it is constituted and the resultant mass of implementing regulations, aimed at increasing U.S. exports and employment and reducing our balance of payments' deficit.

As a result of our experience with the implementation practices of the present export control law, we can offer the following observations and conclusions.

(1) United States export licensing uncertainties, when added to the many other government initiated export impediments, inhibit U.S. businessmen, expecially the smaller ones, from staging meaningful marketing efforts abroad. These uncertainties will have to be reduced if the U.S. Government is serious about increasing exports. Failure to do so can only result in greater concentration on domestic business at the expense of exports.

(2) Unfortunately, the use of export controls for foreign policy purposes will probably continue. So, to reduce export inhibiting uncertainties, clear written guidelines should be issued as to when and how such controls might be employed. The administration of human rights provisions has been notably capricious.

(3) Multiple administration of export restrictions of any kind must be eliminated. A very good example are the inconsistencies between Commerce and the Treasury Department's anti-boycott provisions.

(4) The product performance thresholds of the CoCom and unilateral U.S. controls should be raised significantly. This would reduce the number of commodities which are over-controlled in terms of strategic significance and foreign availability and permit the export licensing community, government and industry, to concentrate on more important transactions.

(5) Some commodity classifications are obsolete due to technological progress. Provisions should be made for review on a continuing basis to remove controls which have beome counter productive. A good example of this is found in the area of instruments containing microprocessors.

(6) A single agency within the Administration should be funded and made responsible for determining the availability abroad of non-U.S. products, comparable in terms of quality and quantity. The conclusions of this agency should be used to speed U.S. licensing decisions and to effect appropriate reductions in the unilateral United States and the CoCom controls.

United States export licensing practices and procedures should be modified to:

(a) Eliminate individually validated export licensing for products which previously have been approved a number of times for all destinations in a particular country group, or to any group to which export controls are less restrictive,

(b) Reduce the amount of documentation, particularly that required to support computer transactions,

(c) Reduce reliance on end use/end user statements, substituting instead the capability of the product in question,

(d) Permit more expeditious, less complicated ways of licensing parts and components, including a significant increase in GLV limits, and

(e) Reduce unilateral U.S. reexport controls over commodities supplied to our CoCom partners.

(8) United States export licensing practices should be streamlined to eliminate or reduce features which place U.S. businessmen at a disadvantage vis-a-vis their foreign competitors, particularly those in other CoCom countries which: (1) interpret the CoCom restrictions more liberally, (2) do not impose unilateral controls, and (3) are able to reach licensing decisions quickly. On this latter point, the excessive time required to reach licensing decisions, not the quality of the decision, is objectionable. In our industry, we seldom if ever have a license rejected, it's simply the serious inconvenience, cost and time delays involved. This latter point applies to government as well as business. United States licensing practices and procedures are so involved, time consuming and diffuse that the Congressional intent in the "90 day clause" in the present law is lost. So far as businessmen are concerned, licensing delays inhibit normal customer relations, tie up extensive inventories, and ultimately, permanently divert business to foreign competitors.

(9) The processing of export licensing applications should be made more transparent. United States exporters should be able, without a great deal of effort or reliance on personal contacts, to determine the status of their export license applications—where they are in the licensing process and who or what is delaying decisions. United States exporters should also be able to resolve difficulties by working directly with the objecting agency(ies).

The General Accounting Office has been looking into the workings of the U.S. export controls program. Two reports have been issued. They recommended, in the first report, that the administration of the export licensing process be made more responsive to the needs of exporters. We could not agree more.

SAMA members cooperated with the GAO in its investigation. We discussed our experiences with the licensing program and provided examples of the problems encountered in the conduct of our normal business activities. The endeavors of the GAO represent a major step toward enhancing in the Congress an understanding of the problems and impediments faced by the U.S. exporters who are subject to licensing provisions of the Export Administration Act.

The GAO recommended a largely administrative path to achieving the goal stated in the title. After a thorough examination of the recommendations, we have arrived at the conclusion that the recommendations are not wholly adequate and in some instances may even be counterproductive. Let me briefly comment on these in order to clarify our observations.

Recognizing that multiple administration is not desirable, we agree with the GAO that the responsibility for the licensing program should be centered with the Commerce Department. There are, however, some very real and practical problems in having technical determinations scattered around the government while policy responsibility is centered in the Department of Commerce.

The Department of Commerce could speed up the licensing process now if it used the authority it already has under the Export Administration Act. Commerce is presently able to make licensing decisions, even if the consulting agencies are unable to make up their minds or in fact, disagree. From our vantage point, Commerce seems unwilling to take any such action without a unanimous decision of the various departments and agencies.

Another recommendation is to establish a multiagency "Export Policy Advisory Committee * * * at an appropriate administrative level." This is a good recommendation, but I should like to go even further. Many people are already engaged in processing large quantities of routine applications. This serves no useful purpose and should be eliminated. This would leave an even faster track for the justified applications.

Another recommendation would abolish Exporter Services and transfer the areas functions into the OEA licensing divisions. I believe several functions should be retained under Exporter Services—general advice to exporters, which form or procedures to use, etc. However, I think that portion of Exporter Services which presently responds to status queries should be transferred to the various licensing divisions.

A final recommendation would establish a "pre-licensing decision, License Application Appeals Committee in the OEA." This is a good idea, in fact, Commerce is already doing something like this informally by telling exporters when their applications may be headed for denial and giving them an opportunity to supply additional information. I think establishing this on a more formal basis is desirable.

The need for major administrative and management improvements in the export control program has been demonstrated quite dramatically by the GAO. The general approach, aside from some of the problem areas I mentioned, is a very necessary component of the changes we are recommending but it will not be sufficient in and of itself.

SAMA understands that the basic purpose of export controls should be to protect the military security of this nation. We believe in this goal; we support this goal.

Many of the routine and repetitive aspects of the present program can be stripped away without compromising this objective. SAMA is convinced that the vast majority of instruments and systems currently requiring validated licenses have no business on the Commodity Control List at all. Virtually every addition to the CCL from our standpoint, is a unilateral U.S. addition and not subject to CoCom review or multilateral controls. Some of these additions seem to be the end result of a continuing effort to extend the mantle of the export controls over an ever widening array of products to provide the government with a club, albeit an ineffective one to date, to fortify and enforce foreign policy considerations which are often unclear.

Simply stated, our industry has very few questions or complaints regarding the quality of the ultimate licensing decisions rendered. Rarely, if ever, do any of us have license applications denied for other than administrative reasons. Only a minority of our applications are submitted to CoCom for review. What gives a problem is the process * * * the time and paperwork; the doubts of our foreign customers as to our reliability as suppliers and the competitive edge it gives to non-U.S. suppliers.

My comments illustrate the fact that our concerns with export controls are not complex. SAMA members are required to obtain export licenses for a growing

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proportion of product sales abroad. While licenses are required for shipment of many of these products to Western as well as Communist nations, the great bulk of license applications are for shipments to non-Communist countries. These restrictions apply to technical data as well as to products.

Larger companies have been compelled to employ executives whose primary responsibility is overseeing the preparation of license applications and the shepherding of these through the export licensing process. To the extent that larger firms employ such persons, their experience, while time consuming, is rather smooth. A small firm has several options. It can sell through a distributor, shifting the time and expense burden of document preparation or it can sell direct. If the latter is chosen, the firm generally will submit individual validated license applications each time it wishes to export a covered product—whether to a Western or a Communist nation.

With respect to larger firms exporting covered goods to non-Communist countries, a distribution license authorizing shipment to "approved consignees" can be obtained. Such licenses are good for one year. But the small exporter is rarely able to avail himself of this approach. There are also substantial limitations in this approach for all involved and it by no means offers the solution to our growing problems.

We surveyed our members during the last two months to determine, first-hand, their experiences in routinely complying with the export licensing regulations. The responses were quite informative and came both from manufacturers and from distributors. The latter export products provided by many of the smaller firms which do not export directly. The information yielded by our survey appears to be quite representative of the experiences of our industry in general. As such, the following comments are offered to emphasize the need for the changes we are recommending.

The first series of questions concerned experiences with the classification of commodities. We asked "Do you have trouble with existing classifications as they pertain to your products?—73 percent responded that they did. Many said that the regulations simply are not clear enough to indicate whether or not they apply to a given firm's product.

An example of the confusion, and the sometimes disastrous results of companies attempting in good faith to comply with the classification guidelines can be seen in the recent experience of one of our members. That company reported that it had determined that its product did not require a validated export license. U.S. Customs officials thought differently and seized the shipment. The company was threatened with a heavy fine and other sanctions for failure to classify the equipment as a computer and obtain appropriate licensing. The equipment was in fact not a computer, but it took nearly a year for the Department of Commerce to resolve the problems.

The instruments and systems produced by SAMA members which require validated licenses for export include analytical instruments such as spectrophotometers, gas and liquid chromatographs, automated diagnostic medical equipment, and various process measurement and control equipment. Validated license requirements, however, are not restricted solely to expensive and high-technology instrumentation. We are finding today that a large number of heretofore uncovered instruments, relatively low in dollar value, now require validated export licenses. A very good example of this type of product is the new generation of electronic laboratory balances. The reason for licensing common to all of these products is that they have incorporated microprocessors.

Most instruments sold by SAMA members were not subject to export licenses before incorporation of microprocessor based data handling systems, or operating systems. It is difficult to determine in this light, why sewing machines and some consumer and industrial products are not subject to validated licensing procedures while SAMA members' products are.

A typical example of the type of microprocessor or micro-computer incorporated into the various instruments was concisely described by one member as follows: "* * * The majority of the computerized hardware and software contained within the systems resides in a single 6.75 inch by 12.0 inch printed circuit board. This board is purchased from Intel Corp.—SCB 80/10. This board contains the control processor, five thousand words of program memory, input/output lines, and a serial communications interface. This product is currently available from two manufacturers and modifications of this board are presently available from more than seven manufacturers * * * the cost of the board is less than $300 and is available through a world-wide network of distributors."

The heart of the board is a single central control processor integrated circuit (8080A microprocessor) which is manufactured by several companies and sells for $12.95 retail at any local Radio Shack store.

Others pointed to ambiguities in justifying the use of a given classification on technical merits. For instance, the Office of Export Administration has directed firms to use a particular CCL (Commodity Control List) number which in no way identifies the real nature of the product. A good example can be seen in the treatment of a number of instruments using the Intel 4004 microprocessor. Commerce has directed that the instrument be classified according to CCL 25.4529B "Other Instruments, n.e.s. for measuring, indicating, recording, testing, or controlling electronic, electric, or non-electric quantities that incorporate digital computers defined in entry No. 1565 sub items (d) and (e): and parts and accessories, n.e.s." The fact of the matter is that the capacity of the Intel microprocessor is so small that it simply should not be considered a digital computer.

What makes the classification unclear is the incorporation of a microprocessor. If this component were not used, no license would be required for the product itself. I might also note that our export market for these products would be significantly reduced absent this element.

In virtually every instance, the microprocessor is not the principal element in the end product. It only facilitates data acquisition. The instrument will likely cost many thousands of dollars while the microprocessor costs only a few dollars. From the standpoint of the logic of requiring a license, it is hard to see why someone would purchase an expensive item simply to remove an inexpensive microprocessor.

Of those responding, 93 percent indicated that they had asked the Department of Commerce for clarification. However, only 67 percent received responses in writing. To obtain any response takes time—an average of about 40 days. The range is also interesting—up to 180 days to get a response—and sometimes it never arrives.

The second issue which we raised concerned foreign availability. We asked for examples of products which are subject to U.S. validated licensing requirements while similar foreign products are freely available.

We have found that analytical instruments are especially visible because of the existence of a well developed European industry as well as the emerging Japanese industry. Some specific examples are:

U.S. manufactured products	*European manufactured products*
Ainsworth Electronic Balances Models M-3000, M300DR, M-1000	Sartorius Electronic Balances, W. Germany
DuPont Model R-90 Thermal Analyzers	Mettler Thermal Analysis System, Switzerland
Varian FT-80 Spectrometer	WP-80 Brucker, E. Germany
Varian XL-100 Spectrometer	FX100 Joel, Japan
Varian LC 5000 Spectrometer	LC Mashpriborintorg, U.S.S.R.

It is difficult to understand the logic for requiring validated licenses time and again for such products in light of the foreign availability of comparable units.

The third issue we inquired about concerns U.S. Licensing Practices. We asked for examples of controlled products repeatedly licensed with and without delay. Delays in granting licenses appear most pronounced for shipment to Communist countries; however, certain shipments to Western Europe exhibited delays as well.

There seems to be a sense of hesitation when it comes to issuing a license to export an instrument to a Communist country—regardless of the number of times an identical product has been licensed for export to the same country group. What is surprising is that there is also an element of delay in approval of licenses to export products to non-Communist countries as well.

Another aspect of the licensing process is the amount of paperwork required to obtain a license. For a small company, this becomes an almost insurmountable hurdle. Transaction statements signed by purchasers and end users, international import certifications, descriptive literature and reference lists of purchased components all add up to substantial paperwork—and that means executive time, elapsed time and often lost sales. Larger firms go to greater expense to assure that they will minimize lost business.

Finally, licensing delays, for our industry and for the U.S. economy have a serious and unnecessary adverse impact. Of those responding to our survey, 36 percent reported that they know that they have lost business as a result of U.S. export licensing delays. It is hard to understand how we can continue to countenance this loss of export business in light of our serious trade imbalance and the domestic recession we appear to be heading into.

What kind of delays are we talking about? A matter of a few months. Not great when viewed from the perspective of the bureaucratic process. Immense from the standpoint of the company on a twelve week delivery cycle engaged in intense international competition for markets.

Our survey shows the following pattern for time required to process and issue export licenses:

	Percent
More than 90 days	1
60 to 90 days	11
30 to 60 days	70
Less than 30 days	18

We have, through our own experience and that of many other members of SAMA, come to the conclusion that the basic framework underlying our export licensing programs must be extensively modified. This nation's trade imbalance will not improve if exporters of goods which have an excellent readily available worldwide market potential are inhibited and impeded every step of the way. The Export Administration Act is a perfect example of a government activity, instituted for sound purposes, which has evolved into a serious impediment to the conduct of trade with the real potential for major U.S. export expansion.

SAMA does not question the need for the imposition of export controls on technologies and products which will adversely affect the military position of this nation. Our members fully recognize the need to maintain controls over the export of certain high-technology products and the exchange of technology which would make a significant contribution to the military capability of any nation which threatens the security of the United States.

The application of export controls, has unfortunately gone far beyond such a reasonable and rational set of considerations. The United States is currently controlling the export of a vast range of instruments with commercial, medical and educational capacities and like uses. The noncritical nature of these products, from a military standpoint, is brought home quite dramatically by the fact that rarely are export license applications denied for any of these products. Quite the contrary, these are processed, with variation in the amount of delay involved quite routinely. The point is that these products simply should not be subject to export controls at all!

The problems and inconsistencies associated with the application of the present volume of export controls to "high-technology" instruments and other equipment cannot be corrected through piecemeal and minor changes in the law from time to time. We need to change attitude and policy direction. We must insure that deviations in implementation of export administration policy do not again work against the economic interests of the United States in world markets.

Senator STEVENSON. Thank you. And now, Mr. Christiansen?

STATEMENT OF THOMAS A. CHRISTIANSEN ON BEHALF OF THE AMERICAN ELECTRONICS ASSOCIATION

Mr. CHRISTIANSEN. Mr. Chairman, I am Thomas A. Christiansen, manager of international trade relations for the Hewlett-Packard Co., and I'm appearing today on behalf of the American Electronics Association.

We have a very lengthy prepared statement. So in the interests of time I'll merely emphasize certain portions. I would like, however, to direct the committee's attention to some of the suggestions in our statement. We have tried very hard to focus on specific portions of the act and make concrete suggestions.

The first area is one of creating a more positive export environment. AEA believes that the competitiveness of U.S. high technology companies abroad would be greatly enhanced by the creation of a positive U.S. export policy and a determination at all levels of Government to carry it out. Only a positive policy will convince U.S. businessmen that it is in their best interest to invest their time and energy and resources into developing meaningful marketing activities abroad. We think the Congress can contribute greatly

to a positive policy by amending the act and our prepared statement contains a number of specific suggestions to this effect.

Another area we are concerned about is the increasing use of export controls for foreign policy purposes. Over the years the major focus of executive, legislative, and business efforts has been to define, elaborate, and improve the national security provisions of the Export Administration Act. The Carter administration, however, has made wide use of the foreign policy aspects of the act, particularly in the area of human rights.

Business has frequently seen this use of controls as highly subjective, erratic, and sometimes even capricious. Moreover, this use of foreign policy controls has discouraged U.S. businessmen from entering into or expanding their export efforts and has lost business for the United States as U.S. suppliers have been perceived to be unreliable. Again, we have a series of concrete suggestions in our formal statement, which we would like to see the committee examine and include in legislation.

The third area of concern is one of export licensing delays. Businessmen find that long licensing delays inhibit normal customer relations, tie up expensive inventories, and ultimately divert business permanently to our foreign competitors who are not so encumbered.

In previous congressional oversight hearings, AEA has testified that lengthy U.S. licensing delays put American high technology exporters at a considerable competitive disadvantage. The Congress has been sympathetic and included provisions in the act in 1974, later strengthened in 1977, requiring the processing of applications relating to national security within 90 days of submission.

Unfortunately, at this time, licensing delays are just as bad as ever. On pages 10 and 11 of our prepared statement, I have included two charts analyzing the time required over the past 7½ years to reach licensing decisions on some 1,900 Hewlett-Packard applications for CoCom controlled goods to be exported to East European and Soviet destinations. The chart on page 11 shows that despite an improvement in 1977—1977 was our best year, I would say—the amount of time required to reach licensing decisions in 1978 was almost identical to the period 1971-76.

If this isn't bad enough, a glance at the chart on page 10 shows that licensing delays increased steadily, quarter by quarter, throughout 1978. The situation would be substantially worse if the 1978 curve was redrawn to show just the last quarter or two of the year. Licensing delays in 1978 discouraged our sales force, caused customer unhappiness, subjected us to late delivery penalties, and even resulted in some cancellations.

Now, the startling congruence of the 1971-76 and 1978 curves suggest to us that despite a brief improvement in 1977—our "Prague spring"—the present U.S. licensing system is what we would call system limited. That is, it is so bogged down in bureaucratic details—requirements for licensing actions on both technical and policy levels, involved paperwork procedures, and so forth—that, barring drastic action, little improvement is possible.

In AEA's view there are three ways that the licensing situation could be improved and delays reduced. The first is to adopt a strong affirmative export licensing policy at the highest levels of

the Government. The second is to effectively implement such a policy. The recent GAO report contains some very interesting suggestions along this line. And the third way is to discontinue obsolete and obsolescent controls.

Reducing controls, and thus the number of required applications, would speed the licensing process by enabling U.S. licensing officials to spend more of their time on important cases. It would also relieve exporters from the time and expense of preparing applications for their more routine products.

In the long run, however, it is likely that licensing delays can be substantially and permanently reduced only through the adoption and implementation of a strong affirmative export licensing policy. AEA believes a major provision of any such policy must be to escalate for decision at higher levels those cases which seem to continually circulate at lower levels or which become stuck in the licensing process.

A number of proposals have been suggested to provide automatic escalation at various points within the 90-day licensing period. Unfortunately, those proposals that AEA has reviewed provide very little incentive to escalate and little penalty, if any, if escalation does not occur. In addition, they contain no provisions for strong and specific congressional oversight.

It is difficult to see how meaningful incentives or penalties can be imposed, but one idea that should be explored is to place the initiative for action in the hands of the exporter/applicant. After all, the exporter/applicant, not the licensing officer or his superior, is the party most interested in receiving speedy licensing decisions.

One way to do this and also provide meaningful congressional oversight would be to amend the present 90-day subsection of the act to permit a four-step procedure. Under the first step any export license application which after 90 days has not been approved or disapproved or sent to CoCom for a decision shall be deemed to be denied without prejudice because of unresolved issues and the applicant so informed.

The second step: The applicant shall have the right to appeal the denial in 45 days to the Assistant Secretary of Commerce for Industry and Trade.

The third step: Not later than 30 days after receipt of any appeal, the Secretary of Commerce shall transmit a written decision to the applicant, overturning or confirming denial.

And the fourth step: The Secretary shall include in each semiannual report to the Congress an accounting of the denials issued, the subsequent appeals received, and their disposition.

Now, at first glance it might seem that these provisions would produce a sharp increase in the number of denials. This is a risk, of course. But in actual practice I believe the number of denials would likely be quite low. People in the licensing chain would be quite careful not to raise the ire of their superiors by letting cases slide. Moreover, a public accounting in the semiannual report to Congress would serve as a strong incentive to licensing personnel and management alike.

In short, I believe it is quite likely that adoption of the 90-day deemed denial/appeal provisions would yield a significant reduction in licensing times with only a small increase in denials. In any

event, I believe that most experienced exporters are painfully aware that the 90-day provisions haven't worked and many are willing to try something else to speed the processing of license applications, even if it means a limited increase in denials and extra work involved in using the appeal process.

We have some suggestions in our prepared statement about increased transparency—making it possible for the applicant to contact the people in the various agencies who are handling his cases.

We suggest specifically assigning responsibility for determining foreign availability to the Secretary of Commerce and having the Secretary utilize not only the in-house governmental agencies for these determinations, but also the technical advisory committees.

We also suggest that changes are overdue in the way in which we apply unilateral reexport controls to our CoCom partners. At present, the United States requires reexport licensing, while our partners do not. Our suggestion is to permit the discontinuance of some of these reexport controls to those countries cooperating with us in a significant program of export control.

In conclusion, Mr. Chairman, I should like to spend 2 or 3 minutes on the implementation of controls over critical technologies and keystone equipment.

Three years ago last month, the Defense Science Board Task Force on the Export of U.S. technology published its report. This report, the so-called Busey report, pointed out that the leading edge of much U.S. technology is presently vested in the civil sector and stressed the need for control of design and manufacturing know-how as absolutely vital to the maintenance of U.S. technological superiority.

Three years ago, AEA testified in general support of these conclusions and since early last year has been working very closely with the Department of Defense and several other high-technology trade associations to chair voluntary groups of industry experts to assist in the identification of civil technologies and civil equipment considered to be critical and noncritical.

AEA chairs the critical technology expert group on semiconductor production technology. This group has met a number of times—all at private, not Government, expense, and its report is now in its final stages.

While the Department of Defense has been spending considerable time defining critical technologies and keystone equipment—a very difficult task—some Members of the Congress have become impatient. These Congressmen, apparently not fully aware of the scope of existing controls over commercial exports, have wished to rush into a considerably more extensive system of controls.

Such an effort surfaced late last year in the House with H.R. 14081, the Technology Transfer Act of 1978. This bill, which had all the earmarks of a hastily drafted piece of legislation, would have substantially broadened the Export Administration Act, and this would have had a disastrous effect on U.S. exports and U.S. exporters.

The already cumbersome and slow U.S. export licensing process would have been virtually paralyzed, U.S. customers abroad would have been permanently diverted into the eager hands of foreign

competitors, deeply discouraged U.S. exporters would have reduced their efforts abroad, and U.S. employment would have suffered.

Although this bill did not pass, AEA understands it is being redrafted and will be introduced in the Senate as well as the House.

Although we are not privy to the revisions that are being made, we have received a summary of the broad outlines of this bill, which presumably would be called the Export Administration Reform Act of 1979.

Very briefly, the bill would, first, make the Secretary of Defense responsible for identifying the types of critical technologies and goods to be controlled for national security purposes. Presumably he would also have the authority and ability to designate the types of controls necessary.

Second, the bill would prohibit exports of critical technologies and goods to controlled—presumably Communist—destinations. Such exports would also require validated licensing to friendly countries, likely to be denied if these countries were unable to adequately assure the Secretary of Defense of their ability to prohibit reexports.

Third, the bill would also subject to case-to-case individual licensing treatment exports to controlled countries of commercial technologies and goods considered to be significant.

Fourth and finally, the bill would give the Congress the authority to veto, within 30 days, any decision of the President to overrule or modify any classification made by the Secretary of Defense.

We believe these measures are not needed and, if adopted, would immensely complicate our relations with friendly countries, They would also increase the reputation of U.S. firms as being unreliable suppliers and discourage U.S. firms from expanding their marketing efforts abroad.

First, no one has demonstrated that the present system of controls is inadequate. In fact, I believe a case can be made that we have too many controls.

Second, the Defense Department already plays a key role with all kinds of veto powers and even the ability to appeal to the Congress if the President does not sustain its requests.

Third, prohibiting the export of critical technologies and keystone equipment to friendly countries would cause all kinds of havoc, diplomatic furor, political repercussions and so on. AEA shares some concern about the adequacy of the export controls of some friendly countries, but our relationship is not so much with the country as with the individual or the firm to whom we are transmitting the goods and technologies, and these are reliable.

Fourth, we feel that giving the Congress authority to veto the President's decisions would work mischief. Moreover, we don't think the Congress has the resources or the technical ability to judge some of these cases.

Fifth and last, the imposition of more stringent U.S. licensing controls would discourage U.S. firms and put further uncertainties in the process. It would provide additional evidence, as if any more were needed, of U.S. firms being unreliable suppliers. Suspicion and resentment would build in friendly countries to which U.S. exports were denied or threatened to be denied. The United States

is not a unique source of supply these days, and these people would go elsewhere and we would lose the market permanently.

Mr. Chairman, this concludes my verbal presentation on behalf of the American Electronics Association. I thank you and the members of the subcommittee for your attention. I would be pleased to respond to any questions you might have.

[Complete statement of Mr. Christiansen follows:]

STATEMENT OF THOMAS A. CHRISTIANSEN ON BEHALF OF THE AMERICAN ELECTRONICS ASSOCIATION

Mr. Chairman and members of the subcommittee, I am Thomas A. Christiansen, Manager of International Trade Relations of the Hewlett-Packard Company, Palo Alto, California. My company is a major designer and manufacturer of instrumentation used in the fields of electronics, medicine and chemistry for scientific research, engineering, production and maintenance. The company also designs and manufactures sophisticated calculators, computers and selected peripheral equipment.

Hewlett-Packard is a founding member of the American Electronics Association (AEA). It is on behalf of AEA's member firms that I appear today to discuss changes to the Export Administration Act we believe are needed to increase U.S. exports and improve our ability to compete against West European and Japanese firms in the expanding markets of the Soviet Union, the Socialist countries of Eastern Europe, and the People's Republic of China.

The American Electronics Association, formerly WEMA, is a trade association representing over 1,000 high-technology electronics companies in 39 states. While some of our member firms rank among the largest companies in the United States, the large majority are small businesses employing fewer than 200 employees. Most of our member firms design and manufacture sophisticated components and equipment for a number of end markets. Some of these products are: Semiconductor devices, such as transistors, diodes, and integrated circuits; test equipment such as oscilloscopes, signal generators, counters and voltmeters; computers and computer peripheral equipment; calculators, telecommunications equipment such as radio transmitters and receivers; and finally, components such as tubes, resistors, capacitors and similar items.

The sale abroad of high-technology electronics products has become increasingly important to AEA member companies and to the U.S. economy as a whole. A high level of exports provides increased and more stable employment, allows a wider distribution of R & D expenses and permits the adoption of economies of scale in manufacturing and distribution. This, in turn, reduces prices at home and abroad. A high level of exports also supports the balances of trade and payments and reduces the inflationary impact of higher priced imports.

United States Department of Commerce figures indicate that in 1977 U.S. exports of nonconsumer, high-technology electronics-oriented products made a net positive contribution of over $4.3 billion to the balance of trade. AEA's 1977 survey of its member companies showed that $26.4 billion, or more than a third, of the overall revenue of the 325 responding companies came from exports and foreign operations.

The ability of U.S. high-technology electronics companies to compete abroad is essential to the continued economic health of the United States. Yet AEA member firms face increasingly tougher competition from other industrialized countries in Western as well as expanding Communist country markets. Foreign firms, aided to a great extent by their governments, have concentrated on technological developments and now compete directly in many of our product areas.

The competitiveness of U.S. high-technology companies abroad would be greatly enhanced by creation of a positive U.S. export policy and a determination at all levels of the Government to carry it out. Only a positive U.S. export policy will convince U.S. businessmen that it is in their best interest to invest their time, energy and resources into developing meaningful marketing activities abroad.

Last September President Carter announced his Administration's 10-point policy to increase U.S. exports. AEA supports the President's policy as an essential first step, but urges that more is needed. We believe the Congress can contribute greatly to a positive export policy by amending the Export Administration Act to reduce uncertainties and speed the licensing process. In fact, AEA believes the active participation of the Congress is essential if any such effort is to succeed. The General Accounting Office in its March 1, 1979 report, the most recent of its two admirable and thought-provoking reports on the Administration of Export Controls, states this well:

"The major assumption underlying several recommendations in our October 1978 report and many recommendations in this report is that Congress must involve itself more in defining the kind of administrative or decision-making structure it believes will make the policy ends of export control possible. Legislative exhortations to reach licensing decisions in a specified period of time, for example, are not enough if Congress does not state how it expects the executive branch to realize that or any other export control goal. In our previous report, we said that the attainment of policy goals is constrained and can be frustrated by a particular decision-making system. Policy goals and administrative systems are thus bound together, and attention must be paid to both when either one is considered."

It is in this context that AEA wishes to make recommendations in the following areas:

Creating a positive export environment;

Defining the use of export controls for foreign policy purposes;

Reducing export licensing delays;

Speeding up the interagency review process and providing increased transparency;

Assigning responsibility for determining foreign availability;

Reducing the impact of U.S. reexport controls on our CoCom partners; and

Critical technologies and keystone equipment.

CREATING A POSITIVE EXPORT ENVIRONMENT

A major portion of the Export Administration Act was written and subsequently revised when U.S. military, technological and economic power was overwhelming. As a result little emphasis was placed on the importance of exports to the economic health of the United States. In fact, it almost seems that those who drafted the Act felt, perhaps unconsciously, that the U.S. need to participate in world affairs was so great and our strength so overwhelming that the export business of the United States could easily withstand, or even be sacrificed, in the pursuit of any number of national security and foreign policy goals.

Today the situation has changed drastically: U.S. prestige and military supremacy have declined, our economy is relatively weaker, many countries have become our technological equals or nearly so and can produce highly sophisticated products in large quantities. Finally, it has become painfully evident that curtailing U.S. exports has an immediate and wide-ranging adverse effect on U.S. employment.

Clearly certain portions of the Export Administration Act need to be refocused to stress the importance of exports to the economic well-being of our nation. We need to insure the continuing health and viability of our export business by making certain that controls are applied to the minimum extent and for only the most important reasons.

AEA believes this refocusing can be accomplished by adding and emphasizing the following elements in Section 2, the "Findings" portion of the Act:

(1) The stimulation of U.S. exports is vital to the national interest of the United States.

(2) A stronger export performance is necessary to reduce the U.S. trade deficit, strengthen the U.S. dollar, reduce domestic inflationary pressures, increase domestic employment, finance increased research and development, provide improved more efficient production capabilities, and in general to further the continued economic well-being of this country.

(3) The way in which U.S. exports have been regulated, uncertain policies and delays in reaching export licensing decisions seriously hinder present and future U.S. export performance and competitiveness.

(4) Certain exports, if not restricted, could be detrimental to the military security or foreign policy of the United States, but unwarranted restrictions of exports, particularly if similar products are available from non-U.S. sources, adversely affect the domestic economy.

And by amending and adding the following elements to Section 3, the "Declaration of Policy" portion of the Act:

(1) It is the policy of the United States that all persons have a right to engage in domestic and international commerce.

(2) It is U.S. policy to expand exports and to enhance the competitiveness of U.S. exporters.

(3) It is U.S. policy to minimize uncertainties in export policy and use export controls only to the extent necessary to:

(a) Protect the domestic economy from the excessive drain of scarce materials and to reduce the inflationary impact of foreign demand;

(b) Further significantly, consistent with the availability of similar commodities from non-U.S. sources and with full consideration of the potential impact on the U.S. economy, the major foreign policy objectives of the United States and to fulfill its international responsibilities; and

(c) Prevent the export of goods and technology that would make a significant contribution to the military power of any other nation or nations which would prove detrimental to the national security of the United States.

(4) It is U.S. policy to impose controls on the export of goods and technology only after consultation with and review by appropriate government agencies and by qualified experts from the private sector.

DEFINING THE USE OF EXPORT CONTROLS FOR FOREIGN POLICY PURPOSES

Over the years the major focus of executive, legislative and business efforts has been to define, elaborate and improve the national security provisions of the Export Administration Act. The Carter Administration, however, has made wide use of the Foreign Policy aspects of the Act, particularly in the area of human rights. Business has frequently seen this use of controls as highly subjective, erratic and even carpricious. Moreover, this use of foreign policy controls has discouraged U.S. businessmen from entering into or expanding their export efforts and has lost business for the United States as U.S. suppliers have been perceived to be unreliable. And all this at a time when our country vitally needs increased exports to provide U.S. jobs and to correct an ever-worsening balance of trade!

AEA believes the foreign policy aspects of the Act should be better defined and to this purpose suggests including a new subsection in Section 4, the "Authority" portion of the Act, containing the following elements:

(1) The President shall impose export controls for foreign policy purposes only in cases where he determines that such action would be in the national interest and where such action would clearly and importantly advance U.S. foreign policy. To determine whether to apply such controls, the President shall take fully into account the likely effectiveness of the proposed controls in achieving their objective, and their potential impact on the U.S. economy and on domestic employment.

(2) Before using such controls the President shall attempt to achieve the objectives through diplomatic means and, if possible, to do so in concert with other nations.

(3) The President shall not impose such controls if goods or technology are available without restriction from non-U.S. sources in significant quantities and comparable in quality to those produced in the United States unless he determines the presence of such controls would prove beneficial to the foreign policy of the United States.

(4) Whenever the President decides to employ unilaterally export controls for foreign policy purposes, he shall, at the same time, submit a report to Congress indicating:

(a) The foreign policy objective sought and how the controls would achieve the objective;

(b) The potential impact of such controls on the U.S. economy and on U.S. employment; and

(c) An explanation of measures undertaken to obtain the cooperation of other countries in imposing similar controls.

(5) Such foreign policy controls may continue in effect beyond an initial 60-day period only if a majority of both Houses of the Congress do not object within the 60-day period.

(6) The President shall clearly notify the public of what goods and technology are restricted for foreign policy purposes and to which countries.

(7) The President shall periodically review the unilateral use by the United States of foreign policy controls towards individual countries with the objective of discounting such controls whenever changing conditions permit.

REDUCING EXPORT LICENSING DELAYS

Businessmen find that long licensing delays inhibit normal customer relations, tie up expensive inventories, and, ultimately, divert business permanently to foreign competitors who are not so encumbered.

In the 1972, 1974, and 1976 Congressional oversight hearings on the Export Administration Act of 1969, AEA witnesses testified that lengthy U.S. licensing delays put American high-technology exporters at a considerable competitive disadvantage in the Communist markets. AEA witnesses and others pointed out that their Japanese and West European competitors were consistently able to obtain much quicker licensing decisions.

These witnesses claimed that time delays, serious in any transaction, were especially serious in dealing in the U.S.S.R. and the East European markets where U.S. suppliers already faced several built-in disadvantages. Some of the disadvantages are: lack of familiarity with the market; the relative lack of hard currency; remoteness, and thus, the fact that long shipping intervals are required; and the unwillingness or inability of U.S. firms to accept merchandise from the Communist countries in payment for U.S. goods.

Testimony attributed the U.S. licensing delays to a number of factors, singly and in combination. Some of these were and still are:

(1) Lack of affirmative policy direction at the highest Government levels to coordinate the disparate views and opinions held by the various agencies participating in the export control process.

(2) Inadequate reductions in the scope of controls despite the fact that Western availability of similar products and, for that matter, availability within the Communist countries themselves has changed substantially in recent years.

(3) Laborious case-by-case licensing procedures applied to repetitive transactions and the lack of significant additional licensing delegations from other agencies to permit the Department of Commerce to process license applications more rapidly.

(4) Constant increase in the number and difficulty of new applications as U.S. business volume with the Communist countries expands and as various products, especially computer systems, increase in complexity.

(5) Inability of the licensing agencies, particularly the Department of Commerce, to obtain adequate funding to add qualified licensing personnel required to reduce delays.

(6) Personnel cuts in the licensing agencies, especially the Department of Commerce, along with increased workloads such as those occasioned by the administration of the anti-boycott provisions of the Export Administration Act.

(7) Archaic paperwork procedures and slow, manual data retrieval processes which waste the time of skilled licensing officers who would be better employed analyzing applications and speeding them through the licensing process.

The Congress was sympathetic to these pleas and, to stimulate speedier licensing action, included provisions in the Export Administration Amendments of 1974, later strengthened in 1977, requiring the processing of export license applications relating to the national security of the United States within 90 days of submission. section 4(g) of the Export Administration Act stresses the intent of the Congress that licensing decisions be reached in 90 days, but adds that if more than 90 days is needed, the applicant is to be informed of the specific circumstances requiring additional time, given an estimate of when a licensing decision will be reached, and permitted to respond to any negative factors under consideration.

Unfortunately, at this licensing delays are just as bad as ever and the two-fold purpose of the 90 day rule—to stimulate the licensing authorities to meet the 90-day committment or, in lieu of this, to convey meaningful information to the exporter—has not been met. The Commerce Department has been very regular in cranking out "90-day notices." But the information they contain has not been very helpful and many of the estimated dates have been quite inaccurate, in both directions. It should be perfectly clear that none of ARA's member companies want improved 90-day notices. What we really want is more rapid licensing and the total absence of such notices!

An example: Hewlett-Packard Company's Experience

I would like to turn to my company's experience to document the failure to achieve shortened licensing cycles, that would greatly benefit U.S. exporters in their competitive struggle with West European and Japanese firms.

Over the past seven and one-half years, from July 1, 1971 to December 31, 1978, the Hewlett-Packard Company submitted 2,228 U.S. export/reexport license applications for commodities destined to the USSR or the Socialist Countries of Eastern Europe. The aggregate value of these applications represents approximately 35 percent of our total business in these markets.

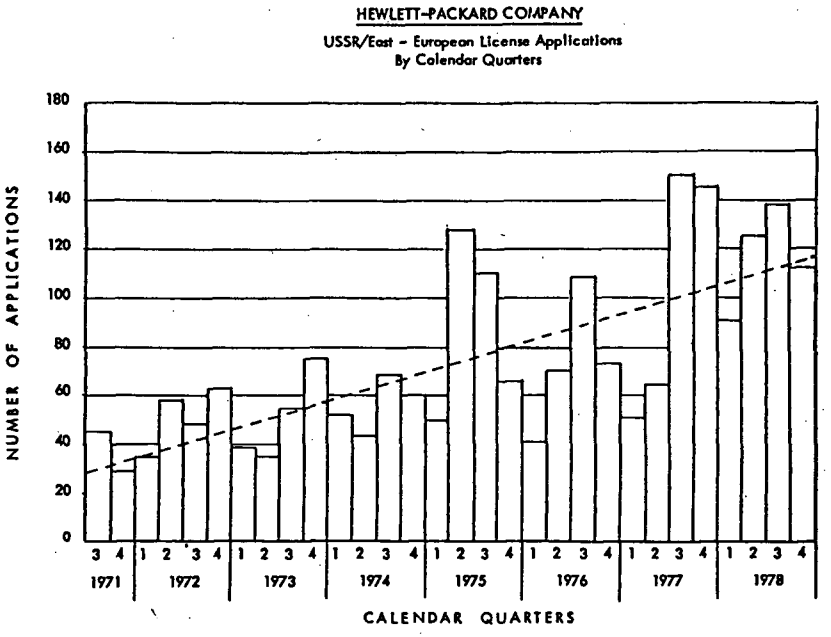

Exhibit 1

Exhibit 1 shows these applications by the calendar quarters in which submitted. The dashed trend line, fitted by the linear regression method, indicates that we are currently submitting an average of 117 USSR/East European license applications each quarter. This licensing load has risen six-fold in the past seven and one-half years and, barring any radical reduction in validated licensing requirements, can be expected to continue to increase as our trade with U.S.S.R. and the countries of Eastern Europe grows and as we sell more of our products to the People's Republic of China.

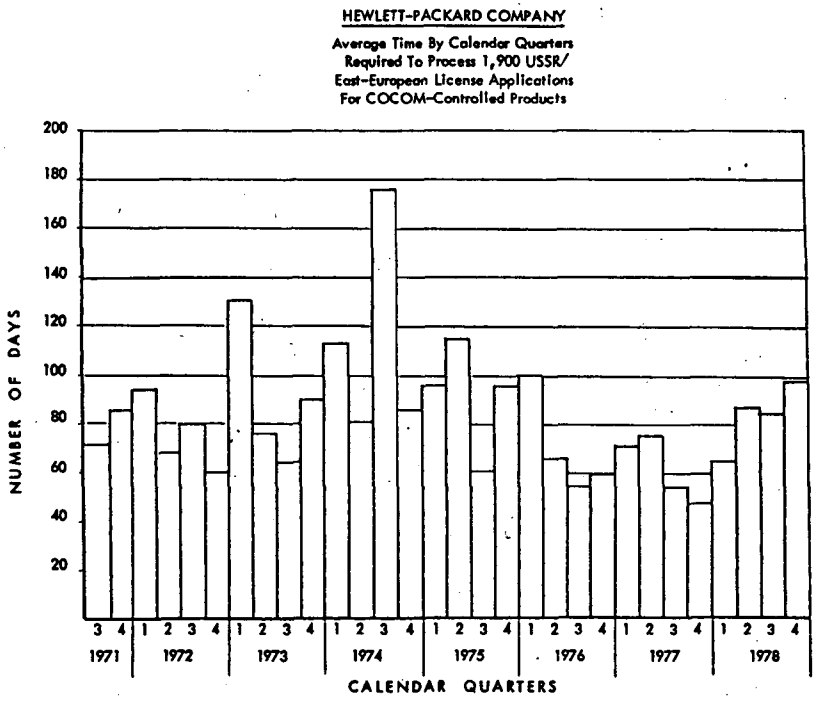

Exhibit 2

The vast bulk of these 2,228 USSR/East European license applications were for CoCom controlled commodities. During the seven and one-half year period some 1,900 licensing decisions were received for these CoCom products. Exhibit 2 groups these 1,900 cases into the various calendar quarters in which licensing decisions were reached. The time interval for each application was measured from the date it was airmailed to Washington, D. C. to the date the Commerce Department issued approval or denial. On those occasions when a license application was returned for additional information, the amount of time it remained in Hewlett-Packard's hands pending receipt of the information and resubmittal was deducted.

It is interesting to note that 154 of our USSR/East European applications were still pending at the beginning of 1979. Some had been submitted in the latter part of 1978, and thus it was too early to expect a licensing decision. The majority, however, had been pending for longer periods of time, the longest 25 months and the next three 22, 22, and 19 months.

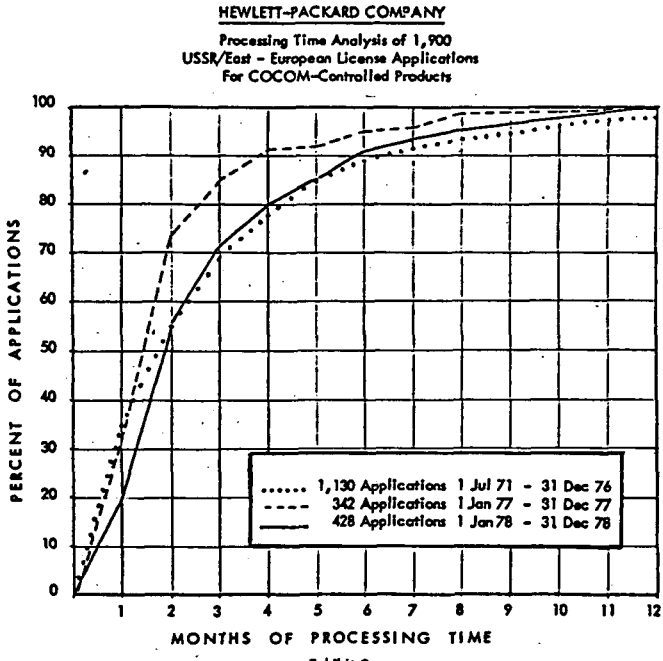

Exhibit 3

Exhibit 3 shows the amount of time, cumulatively on a percentage basis, required to reach the 1,900 licensing decisions portrayed in Exhibit 2. The dotted curve pertains to 1,130 licensing decisions received over the five and one-half year period from July 1, 1971 to December 31, 1976. This curve shows approximately two-thirds of the cases were decided within a period of three months.

The dashed curve refers to 342 licensing decisions received during 1977. The sharp reduction in licensing delays supported the validity of the 90-day concept, encouraged our sales force, and created much customer goodwill.

The third curve, the solid line, pertains to 428 licensing decisions reached during 1978. It is disappointing to note that licensing delays increased drastically and, despite continued exporter unhappiness and Congressional strengthening of the 90-day clause ini 1977, they were almost identical to those or the period 1971-1976. If this isn't bad enough, an examination of Exhibit 2 shows licensing delays increased steadily quarter by quarter throughout 1978 so the situation would be substantially worse if the last curve were redrawn to represent the last quarter or two of the year. Licensing delays during 1978 discouraged our sales force, caused customer unhappiness, subjected us to late delivery penalities, and even resulted in some cancellations.

The startling congruence of the 1971-1976 and the 1978 curves suggest that despite a brief improvement in 1977 the present U.S. licensing system is "system limited," that is, so bogged down in bureaucratic details—requirements for licensing actions on both technical and policy levels, involved paperwork procedures, the rule of unanimity, etc. etc.—that, barring drastic action, little real improvement is possible. This is despite repeated Congressional efforts in recent years to speed up the licensing process and make it more responsive to the competitive needs of U.S. exporters.

To reduce licensing delays

In AEA's view the most effective way to reduce all licensing delays would be to:

(1) Adopt a strong affirmative export licensing policy at the highest levels in the Administration,

(2) Effectively implement such a policy centralizing appropriate responsibility and authority—the recent GAO reports on the administration of export controls contain suggestions well worth considering, and

(3) Discontinue obsolete and obsolescent controls.

Reducing controls, and thus the number of required applications, would speed the licensing process by enabling U.S. licensing officials to spend more of their time on more important cases. It would also relieve exporters from the time and expense of preparing applications for their more routine and prosaic products. On the other hand, we must be realistic. Past experience and the problems related by the GAO in its March 1, 1979 report "Export Controls: Need To Clarify Policy And Simplify Administration" show it's often more difficult to remove controls than add them!

In the long run, however, it is likely that licensing delays can be substantially and permanently reduced only through the adoption and implementation of a strong affirmative export licensing policy. AEA believes a major provision of any such policy must be to escalate for decision at higher levels those cases which seem to continually circulate at lower levels or which become stuck in the licensing process. A number of proposals have been advanced to provide automatic escalation at various points within the 90-day licensing period. Unfortunately, those AEA has reviewed provide little incentive to escalate and little penalty if escalation does not occur. In addition, these proposals contain no provisions for strong and specific congressional oversight.

It is difficult to see how meaningful incentives or penalties could be imposed, but one idea that should be explored would be to place the initiative for action in the hands of the exporter/applicant. After all, the exporter/applicant, not the licensing officer or his superior, is the party most interested in receiving a speedy licensing decision. A way to do this and also provide meaningful Congressional oversight would be to amend the present "90-day" provisions of Subsection (g) (1) and (2) of Section 4, the "Authority" portion of the Act to provide a "90-day deemed-denied-without-prejudice-because-of-unresolved-issues appeal" procedure as follows:

(g)(1) It is the intent of Congress that any export license application required under this Act shall be approved or disapproved within 90 days of its receipt. Upon the expiration of the 90 day period beginning on the day of its receipt, any export license application required under this Act which has not been approved or disapproved or which has not been sent to CoCom for a decision shall be deemed to be denied without prejudice because of unresolved issues and the applicant so informed in writing.

(2) With respect to any export license application denied for cause or deemed denied without prejudice because of unresolved issues, the applicant shall have the right to appeal the denial within 45 days to the Assistant Secretary of Commerce for Industry and Trade in such form and with such information as may be required to support the appeal as the Secretary of Commerce shall prescribe. Appeals for applications which have been deemed denied without prejudice because of unresolved issues as provided in paragraph (1) of this subsection shall be supported by the notice of denial or, if none has been received within 15 days after the initial 90 days has elapsed, the applicant's certification to this effect. Not later than 30 days after the receipt of any appeal the Secretary of Commerce shall transmit a written decision to the applicant overturning or confirming the denial. Such decisions shall contain a statement setting forth the Secretary's basis for reversal or confirmation. The Secretary shall include in each semiannual report required by Section 10 of this Act an accounting of denials issued (differentiating between those issued for cause and those without prejudice because of unresolved issues) and subsequent appeals received and their disposition summarizing, as appropriate within the confidential aspects of the Act, the reasons for denial and for subsequent reversal or confirmation.

At first glance it might seem that these provisions would produce a sharp increase in the number of denials. This is a risk of course, but in actual practice the number of deemed denials would likely be quite low. People in the licensing chain would be quite careful not to raise the ire of their superiors by letting cases slide. Moreover, a public accounting in the semiannual report to Congress would serve as a strong incentive to licensing personnel and management alike. In short, it's quite likely that adoption of the "90-day deemed denied appeal" provisions would yield a significant decrease in licensing times with only a small increase in denials. In any event, I believe most experienced exporters are painfully aware that the current 90-day provisions haven't worked and many are willing to try something else to speed the processing of license applications, even if it means a limited increase in denials and extra work in using the appeal process.

SPEEDING UP THE INTERAGENCY REVIEW PROCESS AND PROVIDING INCREASED TRANSPARENCY

At present, license applications which require interagency review appear to be firmly identified as such only after spending considerable time at lower levels in the

Commerce Department. Once identified, a Commerce Department licensing officer digests, abstracts and rewrites the material submitted by the exporter and only then is this summary plus any additional comments of the officer sent to the other agency(s) for their review.

This occurs quite late in the licensing process, and often when the other agency(s) begin to analyze the digested summary they may find the summary lacks important information. To obtain this or any additional information from the applicant the agency(s) must contact the Commerce Department licensing officers. Unlike their counterparts in the Defense Department handling munitions cases, licensing officers outside the Department of Commerce handling commercial export cases are discouraged from contacting the applicants. All in all, this series of steps is laborious and time consuming.

With these bureaucratic limitations in mind, the processing of export license applications requiring interagency review could be speeded if the Commerce Department would:

(1) Define more clearly the type and extent of supporting information applicants must supply with their export license applications,

(2) Reduce to an absolute minimum the number of applications requiring interagency review,

(3) Identify early in the licensing process those cases which require review by other agencies,

(4) Immediately send each agency a complete copy of the export application with a request to begin their review, and

(5) Permit the licensing officers from the other agencies to contact the applicants and vice versa in order to secure additional information and resolve any obscure points.

This last point, direct contact with the applicants, would broaden the viewpoint of the licensing officers, as well as speed cases through the licensing process. It would also increase industry's awareness of those problems licensing officers feel most keenly. These changes could be accomplished by modifying subsection (g)(2)(B) of Section 4, the "Authority" portion of the Act, and adding new subsection (g)(2)(C) as follows:

"(B) It is the intent of Congress that the Secretary screen all export license applications on receipt to identify those he deems necessary to refer to any interagency process for approval and, in the interest of speeding the licensing process, immediately send a complete copy of the export application to the appropriate agency(s) along with a request to begin consideration.

(C) Whenever the Secretary determines that it is necessary to refer an export license application to any interagency review process for approval, he shall, on request of the applicant, identify the agency(s) and the contact person(s) within the agency(s) to permit the applicant to provide additional information directly, in order to resolve any misunderstandings, etc. If at any stage in the review process the Secretary finds it necessary to provide additional or supplemental information to the agency(s) for the purpose of clarifying the export in question he shall, if the applicant so requests, concurrently and within the confidential aspects of the Act, provide the applicant with an opportunity to review such documentation in order to determine whether it accurately describes the proposed export."

ASSIGNING RESPONSIBILITY FOR DETERMINING FOREIGN AVAILABILITY

Imposing export controls on commodities which foreign purchasers can readily obtain without restriction from non-U.S. sources is pointless and merely serves to deny business to U.S. exporters. The second sentence of subsection (b)(2)(B) of Section 4, the "Authority" portion of the Act recognizes this:

"The President shall not impose export controls for national security purposes on the export from the United States of articles, materials, or supplies, including technical data or other information, which he determines are available without restriction from sources outside the United States in significant quantities and comparable in quality to those produced in the United States unless the President determines that adequate evidence has been presented to him demonstrating that the absence of such controls would prove detrimental to the national security of the United States."

Unfortunately no agency within the Government is charged with the responsibility or funded to determine the availability abroad of non-U.S. products comparable in terms of quantity and quality.

This situation could be corrected if this portion of the subsection was reworded: "The Secretary of Commerce shall determine which articles, materials or supplies including technical data or other information are available without restriction from

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sources outside the United States in significant quantities and comparable in quality to those produced in the United States and the President shall not impose export controls for national security purposes on the export of these commodities unless he determines that adequate evidence has been presented to him demonstrating that the presence of such controls would prove beneficial to the security of the United States. In determining foreign availability the Secretary of Commerce shall seek information and advice from the several executive departments and independent agencies concerned with aspects of United States and foreign trade policy and operations, from the private sector directly, and from the technical advisory committees established under Section 5(c) of this Act.

REDUCING THE IMPACT OF U.S. REEXPORT CONTROLS ON OUR COCOM PARTNERS

U.S. export regulations state that under most circumstances commercial commodities exported under validated license from the United States to a foreign destination cannot be reexported to another country without prior specific written authorization from the U.S. Office of Export Administration. Our CoCom partners do not exercise similar restraints in regard to reexports of their products from the United States or from other CoCom countries. For these reasons they find these extraterritorial, unilateral U.S. reexport controls offensive, and say they tend to undermine CoCom's viability by offering proof that the United States mistrusts its fellow members. Moreover, AEA believes that these U.S. reexport controls reduce the market abroad for U.S. products since some purchasers in CoCom countries prefer to buy non-U.S. products, and avoid dual licensing—that of their own country and that of the United States.

In addition, the unilateral U.S. reexport regulations are relatively ineffective in other CoCom countries. Many purchasers in these countries pay little if any attention to them on the basis that: (1) They are foreign nationals and not subject to U.S. Law, (2) they are very careful to file export applications with their governments who scrupulously observe all CoCom restrictions, and (3) the United States, in the person of the U.S. delegate in Paris, can readily veto any transaction their country submits for CoCom approval.

The extraterritorial impact of unilateral U.S. reexport controls on CoCom member countries and its impact on U.S. exports could be reduced if a new subsection (3)(C) was added to Section 3, the "Declaration of Policy" portion of the Act as follows:

(C) To control reexports of commodities exported from the United States to the extent necessary to carry out the objectives of this Section 3, reducing such controls to other nations in direct relation to their cooperation in a unified trade control policy.

CRITICAL TECHNOLOGIES AND KEYSTONE EQUIPMENT

Three years ago last month the Defense Science Board Task Force on the export of U.S. technology published its report. This report—the so-called Bucy Report—pointed out that the leading edge of much U.S. technology was presently vested in the civil sector and stressed the need for control of design and manufacturing know-how as "absolutely vital to the maintenance of U.S. technological superiority." In the words of its Chairman, J. Fred Bucy, the Task Force called for: "* * * a new approach * * * to focus wholly on (controlling technology exports) and not end products of technology—excepting for those critical items of direct military significance."

On March 23, 1976 AEA testified before this Subcommittee in support of the major recommendations of the Task Force. AEA stated that: "* * * active transfers of design and/manufacturing know-how, especially those of a 'revolutionary' nature, are most critical be * * * (AEA) member firms welcome the suggestion of the Task Force to reduce dependence on difficult to obtain and frequently questionable end use information * * * (and favor) * * * a streamlining and simplification of the license process, a sharper review and elimination of obsolete CoCom controls, and a reduced concern about products containing non-extractable embodied technology * * *."

On August 26, 1977 Secretary Brown issued the Defense Department's Interim Policy Statement on the Export Control of U.S. Technology. Secretary Brown's statement was based largely on the recommendations of the Defense Science Board Task Force to control transfers of strategic technologies more rigorously and deemphasize controls over products considered neither "keystone" nor susceptible to significant extraction of technology (reverse engineering).

Early in 1978 the Department of Defense asked AEA and several other high technology trade associations to chair voluntary groups of industry experts who

would assist in the identification of civil technologies and equipment considered to be critical and non-critical. AEA accepted DOD's invitation and currently chairs the Critical Technology Expert Group (CTEG) on semiconductor production technology. This CTEG has held a number of meetings (all at private, not government expense) and its report is now in its final draft stages.

While the Department of Defense has been spending considerable time defining critical technologies and keystone equipment—admittedly a difficult task—some members of Congress have become impatient. These congressmen, apparently unaware of the scope of existing constraints over commercial exports, have wished to rush into a considerably more extensive system of controls.

Such an effort surfaced late in the last session when H.R. 14081, the Technology Transfer Ban Act of 1978, was introduced in the House. H.R. 14081, which had all the earmarks of a hastily drafted piece of legislation, would have substantially broadened the Export Administration Act (an effective piece of control legislation) to prevent the transfer "to any Communist country or to any country to which exports are restricted for national security purposes" of any goods or technology which "could make any contribution to the military or economic potential" of such a country including applications for "law enforcement or intelligence gathering purposes." If passed into law, H.R. 14081 would have had a disastrous effect on U.S. exports. The already cumbersome and slow U.S. export licensing process would have been virtually paralyzed, deeply discouraged U.S. exporters would have curtailed their efforts abroad, U.S. customers abroad would have been permanently diverted into the all too eager hands of foreign competitors, and U.S. employment would have suffered.

H.R. 14081 was introduced late in the session and did not pass. However H.R. 14081 did attract seventy-seven co-sponsors, many of whom I believe would have declined co-sponsorship if they had been aware of the effective controls already in force under the Export Administration Act.

Although H.R. 14081 did not pass, AEA understands the measure is being redrafted and will be reintroduced this session, in the Senate as well as in the House. Although AEA is not privy to the revisions that are being made, we have received a summary of the broad outlines of a bill that presumably will be called "the Export Administration Reform Act of 1979". Briefly the bill would:

(1) Make the Secretary of Defense responsible for identifying the types of commercial technologies and goods to be controlled for national security purposes. Presumably the Secretary of Defense would also have the ability to designate the types of controls necessary.

(2) Prohibit exports to controlled (presumably Communist) countries of commercial technologies and goods, apparently regardless of foreign availability, which the Secretary of Defense considers "indispensable to a current or projected U.S. military system, and (providing) * * * a present or probable military advantage significantly superior to that of any controlled nation". Such exports would require validated licenses to friendly countries and presumably would be prohibited to those countries unable to adequately assure the Secretary of Defense of their ability to prohibit reexports to controlled destinations.

(3) Subject to case-by-case individual license control exports to controlled countries of commercial technologies and goods which, although obsolete in the United States, are considered by the Secretary of Defense to be "superior to that of a controlled nation, and which * * * would make a significant contribution to its military potential."

(4) Give the Congress the authority to veto, within 30 days, any decision by the President to over-rule or modify any classification made by the Secretary of Defense.

AEA believes that these measures are not needed and if adopted would immensely complicate our relations with friendly countries, further reduce the reputation of U.S. firms as "reliable suppliers", and discourage U.S. firms from expanding their marketing efforts abroad. Specifically:

(1) No one has yet demonstrated that the present system of export controls mandated by the Export Administration Act and applied by the Department of Commerce over technologies and goods are ineffective. In fact, I believe a case can be made that we have too many controls.

(2) The Defense Department under Section 4(h)(1) of the current Act already plays a key role, some would say a disproportionate role, in establishing control classifications and in determining whether or not an export license is granted. I know of no case where the Secretary of Commerce has overturned a recommendation for denial by the Defense Department. Moreover, if this ever occurred the Export Administration Act permits the Secretary of Defense to appeal directly to the President for

reversal and even to the Congress if the President does not sustain his appeal. These measures seem to be more than adequate.

(3) Prohibiting the export of critical technologies and keystone equipment to friendly countries unable to adequately assure the Secretary of Defense of their ability to prohibit reexports would cause many problems. I suspect that a number of friendly countries would not be able to satisfy the Defense Department and as a result U.S. exports of advanced technology would be curtailed. Also, to subject transfers to validated license review procedures, especially those to U.S. subsidiaries, would damage the flexibility and competitiveness of U.S. companies. Moreover, U.S. firms would find themselves unable to support licensing or manufacturing activities in many areas abroad. In addition to these economic dislocations, the ensuing diplomatic furor and resulting political repercussions would be intense.

AEA does share some of the concern that has apparently prompted such a measure—that the reexport regulations of most non-CoCom Western countries are either nonexistent or so limited that an unscrupulous and determined person or organization could freely reexport important U.S. technology. AEA believes, however, that nearly all of transfers are to responsible firms and individuals who use the technology in their own countries and have not the slightest intention or inclination of diversion. These firms and individuals sign end-use statements agreeing to prevent diversion, and almost all make strong positive efforts to guard against such possibilities. AEA believes that the U.S. is justified in continuing to trust these individuals and firms and that technology transfers should continue with, perhaps, increased U.S. scrutiny abroad. In any event, AEA believes the United States should avoid an extreme measure such as prohibiting exports to friendly countries solely on the basis of their reexport controls or requiring validated licenses for transfers to friendly western countries.

Finally, giving the Congress authority to veto the President's decision to overrule or modify any classification made by the Secretary of Defense would make the role of the President extremely difficult if ever he decided that the interests of the United States would be best served by such a modification or, presumably, by supplying critical technologies or keystone equipment to a friendly country unable to satisfy the Secretary of Defense of its ability to prohibit reexports. We also do not believe that Congress has the resources or technical ability to deal with such matters in a useful way.

(4) The unilateral imposition by the United States of more stringent licensing controls would provide additional evidence, as if any more were needed, of U.S. firms being "unreliable suppliers." Suspicion and resentment would build in friendly countries to which U.S. exports were denied, or threatened to be denied. The United States is a unique source of supply in very few commodities these days, so I'm certain these countries would take steps to obtain comparable products and services elsewhere to the everlasting delight of our foreign competitors. Such a situation could easily develop into a major detriment to U.S. exports and, of course, U.S. employment.

(5) The unilateral imposition of more stringent U.S. licensing controls would, I believe, also discourage U.S. firms which, seeing further uncertainties, would decline to invest additional time, money and effort into marketing abroad. And this at a time when the United States vitally needs increased exports to provide U.S. jobs and to correct an ever-worsening balance of trade!

(6) Finally, other Government departments and agencies, as well as private industry experts should be a part of any review of export controls over these commercial goods and technology.

Mr. Chairman, this concludes my formal presentation. On behalf of the American Electronics Association, I thank you and the members of the Subcommittee for your attention. I'll be pleased to respond to any questions you might have.

Senator STEVENSON. Thank you, sir.

You suggest that after a fixed period of time, 90 days, without action, that the application should be deemed denied. Others have suggested that after the expiration of the period of time, the application should be deemed approved. What is the difference?

Mr. CHRISTIANSEN. I feel that the Defense Establishment has a very legitimate concern in not wishing to see applications automatically approved simply when time runs out. I think the suggestion I have made is kind of a fail-safe. They certainly can't object to something being deemed to be denied at the end of 90 days.

But I think, more importantly, it puts the initiative in the exporter's hands. As you well know, Senator, over the past 10 years various measures have been suggested to speed up the export licensing process. The Congress has been very good about writing some of these measures into legislation.

But frankly, all the effort hasn't resulted in very much; in fact, in nothing, so far as I can see. So the time is here, I think, to do something more drastic, and this is the genesis of my suggestion.

Senator STEVENSON. But under the other approval, the appeal can go to the President. If one of the Secretaries rescinds, he can appeal to the President. Are you suggesting that the exporter with a license application denied, his appeal to the Secretaries——

Mr. CHRISTIANSEN. To the Secretary of Commerce.

Senator STEVENSON. That it be rejected and go beyond that point?

Mr. CHRISTIANSEN. The hope would be, frankly, that if the Secretary or the Assistant Secretary were aware of the number of applications that were taking more than 90 days, and if this were made public and available to you and to the other Members of the Congress, this would provide a powerful additional incentive that doesn't exist at this time. That is the hope.

Senator STEVENSON. But at that point, his remedies are exhausted if the Secretary of Commerce sustains.

Mr. CHRISTIANSEN. Yes.

Senator STEVENSON. The Commerce Department and witnesses point to the small percentage of applications which are delayed or denied. Can you suggest how much business is actually lost because of the uncertainties and the unreliability and the transactions that never materialize or even reach an application stage because of those uncertainties?

Mr. CHRISTIANSEN. I think that's the important point, the transactions that never materialize. Now, I must emphasize that the charts that we have included in our prepared statement are only Soviet and East European cases. They are not free world cases.

My feeling is that once most of the purchasers in these countries decide they really need a U.S. product, they are willing to wait, most of them, for what might be a fairly long time. If, however, they decide the product is available from non-U.S. sources in equal quality and so forth, they will place their orders there. And so, the business we lose is really the business we don't get, rather than that which is subject to loss because of licensing delays.

Senator STEVENSON. Is there any way of estimating how much we lose because we don't get it?

Mr. CHRISTIANSEN. I don't know. One way that has been tried is to compare the relative volume of trade that other countries are doing with the Soviets and the East Europeans with that done by the United States, which, of course, is substantially less, and then attribute some portion of that loss to licensing delays.

I do not know how one could make a more definitive estimate.

Senator STEVENSON. Are those the only countries in which it is lost, just the so-called nonmarket countries?

When we last reviewed the Export Administration Act, I got a provision in that said that that was, in effect, an artificial distinction, that all countries ought to be reviewed periodically in order to

determine, regardless of whether they are Communist or non-Communist, whether there are strategic and military implications.

So the suggestion, at least until then, perhaps is still, that Yugoslavia was more of a threat than Iraq or Libya. What about the other countries? Are we losing business there, too?

Mr. CHRISTIANSEN. I think that the emphasis on foreign policy controls in the last couple of years has certainly raised that question to a much greater extent than we had before. I think most large U.S. exporters avail themselves of project distribution, and service supply license coverage which generally frees their hands to market in most free world countries.

Now, a small exporter, one who is unaware or does not understand these procedures or who does not qualify, has got problems, real problems. I sometimes think that some of the associations here, including AEA, should focus more sharply on the problems of small exporters.,

Senator STEVENSON. I meant to address these questions to all of you, too, if you have any additional comments to make.

Mr. BARDOS. I would like to make one on that point of 90 days. It has been said—and I think there is some truth—that what we are attacking here is a symptom. If we did not have these long delays, if we were getting quick turnaround, we wouldn't be insisting and demanding 90-day denials or 90-day approvals, escalation and all of that sort of thing.

We are attacking the symptom, and what we really have to attack is the cause. Why are all of these taking so long? What is the problem? Is it the bureaucracy? Is it the papering over of the interagency process and the fear of national security concern as a legitimate interest? What is taking so long?

And this is what we are trying to alleviate by these arbitrary, adamant, final kinds of cutoffs. Whichever version you want is, I think, again, the best way of getting at the cause, not just the alleviation of the symptom.

I do want to point out—I may have said it earlier—that of the 70,000 they do, 95 percent do not require CoCom approval, do not have national security overtones, and have no reason that we can see for the interminable delay for any reason at all to go beyond the 90 days, and to a great extent, no reason at all even to have to go through the licensing process, because of the low-performance characteristic of the products.

And this is what we are after, how to free that up and make the system more efficient and effective, to suit all of our needs.

Mr. MCCLOSKEY. Perhaps the only reason for having the vast number that require licenses is to have the overall statistic make sense. But when 100 percent of the delayed 3 percent represent the high-technology industries, then we have a real problem, and we don't want to be confused by the fact that 95 percent of them get handled in a more expeditious manner or finally get approved. That does confuse the situation.

Mr. BARDOS. In other words, what difference does it make if nuts and bolts, 70,000 nuts and bolts, get done in 90 days, when every single computer and every single electronic system takes between 6 and 12 months?

Senator STEVENSON. When was the last major revision of the control specifications for computers issued?

Mr. BARDOS. 1974.

Senator STEVENSON. That is a technology that is evolving very rapidly. They are coming on with the fourth generation of computer technology this year. How would you suggest we assure that those lists are updated regularly or often enough to assess not only the military implications, but also the foreign availability questions, too, which are changing very rapidly, especially in this field? Could there be some way of requiring that they update periodically?

Mr. BARDOS. Well, we did participate, our industry and other industries participate, with the Commerce-sponsored technical advisory committee. We submitted our industry recommendations as to what the new CoCom level should be. We recommended a great deal of equipment be taken off of those lists. We recommended an annual indexing of those levels, so that every year they increased by 25 to 50 percent, depending upon the product, so that by the time the next CoCom negotiation comes along, which would be in another 4 years, we will continually index the levels to reflect the changes in technology.

We also have insisted upon a foreign availability focal point, and currently there is no place in the Government responsible for foreign availability. We have recommended that, too.

I think we have been continually trying to show what is going around the world with the Japanese and the western countries and their technology, what is currently available in the East. We feel that the views and understandings of the people within the export process are way behind or antiquated. They are looking at things 10 years ago. Their level of understanding in technology is far, far behind. They have not adopted any of the TAC recommendations that we've made.

Senator STEVENSON. We were told the other day that the Department of Defense relies at least in part on the CIA to determine foreign availability. Are your members ever consulted by the CIA?

Mr. BARDOS. Well, I will say this: We frequently consult with the CIA. Every trip, every time we find additional information overseas, we come back and we set up a meeting with the CIA, and we keep them informed.

Our feeling is that, although the CIA probably does an excellent job in military technology, they are really very far behind in commercial technology, and they must get that, and the only place they can get that is from industry. So we probably, collectively, these organizations represented here, know far more about what is going on in commercial technology than the CIA or any other defense establishment.

Senator STEVENSON. Could you relate that kind of information about commercial technologies to the CIA?

Mr. BARDOS. Yes, sir, we did that at the Department of Defense just 2 weeks ago, and we took it over and gave the whole story to the CIA that very same day. But this is our initiative.

Senator STEVENSON. But what happens? Don't they understand it?

Mr. BARDOS. We never get feedback from them.

Mr. McCloskey. The point, I think, Senator, is that in 1974 that microprocessor that was shown you here today probably cost somewhere in the range of $300 to $400. Today it is costing $10 or $12. It is being incorporated in products that are strictly commercial. But, because it is in there, it is being tarred with that brush of advanced technology.

The fact is that the advanced technology is in the commercial sector today and is readily available. The Department of Defense is recognizing that and is planning on instituting a program this year to pump development dollars into military integrated circuit development, to bring it back to a significant advantage over what the Russians are known to have. The CIA has made evaluations of what their technology was, and it was generally poo-pooed that it was available in Russia. There have been recent cases in point that have demonstrated to them that they really should not have poo-pooed it, that that technology has gone a lot further, and they are making efforts now to pump dollars into R. & D. for military integrated circuits.

Mr. Christiansen. Senator, my impression is that the CIA's interest is almost totally devoted to military activities, not civil. We occasionally get visits from CIA people, but they are generalists. They don't understand the technical aspects and aren't too interested, either.

Mr. McCloskey. I guess the point is that the commercial market is really driving that. Less than 10 percent of the total level in the United States today goes to anything in the military area. It is all commercial.

Senator Stevenson. Mr. Bardos, do you have any recommendations about the control of software and its inclusion as technical data?

Mr. Bardos. To a great extent, we have tried to get the export process to understand what software is and whether it can or cannot be controlled. And we have participated on several committees.

To a great extent, software cannot be controlled. There are specific programs relating to nuclear products, relating to military analyses. These particular pieces of software can be prohibited. But as far as what you are putting on the computer and how you are processing data and communicating it throughout your plants and throughout your subsidiaries and affiliated companies, there is really no effective way of controlling it.

And our recommendation is that we look at the whole telecommunications software transmission system as a whole process and look at the controls of that entire process, rather than trying to take something like software and try to control it as if it was a piece of hardware, which is really what we're trying to do.

So, to try to be more specific to your answer, software as such can't be controlled. It is part of a much broader, bigger telecommunications system, and that ought to be looked at.

It is a much broader picture, including satellite transmission and all of the other factors relating to it.

Senator Stevenson. Your testimony has been helpful. We will try again. Thank you.

The committee is recessed until 2 p.m.

[Whereupon, at 12:30 p.m., the hearing was recessed, to reconvene at 2 p.m. the same day.]

AFTERNOON SESSION

Senator STEVENSON. The subcommittee will come to order.

We continue this afternoon our hearings on export policy and on the Export Administration Act in particular.

Our first set of witnesses will comprise a panel. They are: Mr. W. Robert McLellan, vice president of FMC, Inc., Chicago, Ill., and chairman of the international trade subcommittee of the National Association of Manufacturers; Mr. James A. Gray, president of National Machine Tool Builders Association; Mr. H. K. Baboyian, vice president of Fruin-Colnon Corp., on behalf of the National Constructors Association; and Mr. Robert L. McNeill, executive vice chairman of the emergency committee on American trade.

Can we begin with you, Mr. McLellan?

I invite all of the other witnesses to follow you and go through with all the testimony and we will go back to all of you for further impressions.

I understand you may have to leave before we complete the panel.

STATEMENTS OF W. ROBERT McLELLAN, VICE PRESIDENT, FMC, INC., CHICAGO ILL., AND CHAIRMAN OF THE INTERNATIONAL TRADE SUBCOMMITTEE, NATIONAL ASSOCIATION OF MANUFACTURERS; JAMES A. GRAY, PRESIDENT, NATIONAL MACHINE TOOL BUILDERS ASSOCIATION; H. K. BABOYIAN ON BEHALF OF JAMES B. McGRATH, VICE PRESIDENT, FRUIN-COLNON CORP., ST. LOUIS, MO., AND CHAIRMAN, NATIONAL CONSTRUCTORS ASSOCIATION; AND ROBERT L. McNEILL, EXECUTIVE VICE CHAIRMAN, EMERGENCY COMMITTEE ON AMERICAN TRADE

Mr. McLELLAN. It is good to be with you here today.

I have filed a complete copy of the text, and what I would like to do in my oral testimony is highlight that statement, if I could.

Senator STEVENSON. Thank you for reminding me. I will invite all of the witnesses this afternoon to summarize their statements, in which case we will put the full statements in the record.

We have many witnesses.

Mr. McLELLAN. Thank you again, Mr. Chairman.

As you know, I am Robert McLellan, vice president of FMC Corp., a diversified producer of machinery and chemicals with 1978 sales of over $2.9 billion, including exports of more than a half billion dollars.

Our company, as you also know, is in Chicago, Ill. It is a company that moved from California to Chicago to counter the direction of setting up of headquarters outside Chicago 7 years ago.

We employ 46,000 people in 33 States and 14 foreign countries.

On the personal side, I have been privileged to view the country's international involvement both as an international business man-

ager since 1950, and then as assistant secretary of commerce for domestic and international business for 1969–71.

The National Association of Manufacturers is concerned that a proper balance be struck to maintain adequate export control authority to meet our national security and other essential public policy needs, while assuring American industry predictable and equitable conditions in competing for sales in world markets.

We support extension of the Export Administration Act, but suggest a number of possible improvements. Principally, we urge that the act clearly set forth export expansion as a priority national goal, and restructure export administration procedures so they do not excessively or unnecessarily restrict U.S. opportunities.

It is essential to recognize the context within which this discussion is occurring. We must make an effort to drop the feelings of superiority and security regarding this country's preeminent role in the world economy. In reality, the United States has serious problems in competing in world markets, and we can no longer afford to treat our international trade interests as a poor stepchild to nearly every other foreign policy consideration.

Last year the United States sustained another record trade deficit of over $28 billion. It is often overlooked that the decline in our manufactured goods trade balance was more significant last year than oil in accounting for the larger trade deficit.

In just 3 years, from 1975 to 1978, the U.S. trade account in manufactured goods dropped from roughly a $20 billion surplus to a deficit of over $5.8 billion.

The U.S. total share of world exports dropped from 18 percent in 1970, to 13.7 in 1977; and bear in mind that every one-tenth of 1 percentage point represents over $1 billion in trade, or 40,000 jobs, $2 billion in U.S. gross national product, and $400 million in Federal tax revenue.

These figures set forth the challenge facing this country which must be met by two export expansion programs: One for today; and one addressed to fundamental, longer range problems.

In the long term, the country must reassess its present high orientation toward consumption, because the flipside of this coin means holding a negative orientation with respect to promoting new productive investment.

Incentive policies must be formulated to create a climate in the United States which makes American industry investment oriented in relation to new plants and equipment, as well as to research and development.

More immediately, we must begin to dismantle barriers to U.S. exports both in the United States and abroad. The United States must press hard in final negotiating sessions for the elimination or reduction of tariff and nontariff barriers in the multilateral trade negotiation agreements expected soon from Geneva.

U.S. Government reorganization should also be considered. Currently scattered international trade functions and unfocused policymaking and execution is inadequate for the international economic needs of our Nation.

The best solution is consolidation of functions into a Cabinet-level department along the lines of the S. 377 bill sponsored by Senators William Roth and Abraham Ribicoff.

The proposal is also appropriate to this discussion today because there is considerable evidence that a top policy spokesman with full departmental resources is needed to represent the country's export interests in debates over export control policy.

Let me share with you a recent personal experience. In a discussion with a successful Venezuelan businessman who has interests in several joint ventures with overseas firms, he said to me, "We have decided we want to avoid joint ventures with U.S. firms, and instead to join with European firms. If we go into business with U.S. firms, your government, through its IRS, human rights policies, et cetera, attempts to control our business. If we join the European firms, they leave us alone, concerning themselves with their own country, not trying to impose their laws on us."

The point is, the long and growing list of self-imposed restraints on exports has given U.S. business the reputation of being an unreliable supplier, and most of them should be dismantled or greatly modified.

This brings us to the Export Administration Act. The act's early history unfortunately has focused attention on only the control aspects. Secure in the belief of a continuing American dominance of world markets, exports were viewed as a privilege for U.S. companies and as a benefit to be granted to foreign buyers, or to be withheld from them.

This perception distorts the act's application and leads to an overuse of export controls as a lever to seek foreign policy and other objectives.

Since this presumed leverage is clearly out of line with current economic realities, its application has little positive impact, while often creating a number of negative or even counterproductive side effects.

An appropriate place to begin improving the act is in sections 2 and 3, the findings and policy statement. These sections should be revised to establish the priority importance of export expansion to U.S. national interests.

The burden of proof should fall on those who urge limitation on exports for other policy reasons, rather than on those seeking export expansion.

In the area of national security controls, we support the necessity of controls based on national security determinations. However, we believe that improvements in implementing procedures can help correct the competitive disadvantage placed on U.S. companies due to different standards and excessive processing delays.

A number of industry representatives have suggested changes which appear to streamline procedures while maintaining the national security interests. Validated licenses, requiring case by case prior approval could be limited to CoCom controlled categories.

Current language concerning action on export license applications within 90 days of receipt should be more strictly enforced.

Major departments engaged in the licensing reviews could adopt majority vote with the possibility of appeal, rather than a concensus approach, giving one agency veto power, as a basic decision rule.

If the 90-day deadline is not being met, the exporter should be notified of the exact nature and technical circumstances for the delay.

Finally, industry-government consultation can be improved in setting technical specifications and standards, ascertaining foreign availability, and discussing other relevant issues.

Export control authority for foreign policy reasons is amorphous and troublesome. Even more than in the national security area, this export control rests on the presumption that U.S. exports are a benefit granted to other nations.

The realities are different. With very few exceptions, world commerce is not a seller's market, and U.S. products are seldom of such fundamental importance that a nation will alter its basic policies—especially internal ones—in order to buy American exports.

My company, FMC Corp., recently experienced a situation which illustrates the problem which can arise with the controls in this area.

We had an order for fire trucks from South Africa. Since these were being ordered by the South African military, we could not accept the order under U.S. law. The only difference between these units and some we are currently supplying to municipalities in South Africa is the color of the paint.

I am sure that under a state of emergency, municipal units could be preempted by the South African military. Thus, our own Government's regulations have, in effect, excluded us from a significant volume of export business, with doubtful policy results.

The real result was that the South African Government ordered these units—$7 million worth of U.S. jobs and profits—from a European firm that gladly executed the order.

NAM urges the Congress to set guidelines for the use of foreign policy export controls.

We urge that such actions be authorized only when undertaken: (1) in support of clearly defined, major U.S. policy objective; (2) when such U.S. action will cause the desired change; (3) when other noneconomic measures have been tried; (4) only if similar or substitute products are not available from other countries; and (5) only after full consideration of the direct and indirect impact on U.S. economic interests.

Export controls for commodities in domestic short supply have not been as controversial recently as the other kinds of controls. We would urge the Government to continue to be cautious and circumspect in using this trade restraint.

Mr. Chairman, the United States is no longer—if it ever was—a unique source of supply. Therefore, it is a matter of serious concern that U.S. firms increasingly are being tagged with a reputation as "unreliable suppliers" because of the excessive use of Government export controls as leverage for other policy purposes.

The recommendations we have made for changes in the Export Administration Act would put more reliability into the system. It would establish export expansion as a national priority objective, while providing the authority to control exports for important national policy reasons without unnecessarily harming U.S. export interests.

We believe these changes are more consistent with prevailing world realities and will better meet the national interest than the current export administration procedures.

NAM urges the subcommittee to consider and adopt these changes in the extension of the Export Administration Act.

Thank you very much.

[Complete statement of Mr. McLellan follows:]

EXECUTIVE SUMMARY NATIONAL ASSOCIATION OF MANUFACTURERS

NAM supports extension of the Export Administration Act, but urges changes to clearly set forth export expansion as a priority national goal and structure export administration procedures to eliminate excessive or unnecessary restrictions on U.S. export opportunities.

International economic realities—including record U.S. trade deficits and the deterioration of the manufactured trade goods account—dictate a change in U.S. policy perceptions. Export expansion must be viewed as a beneficial and necessary national objective, not a privilege to be granted or withheld for some presumed leverage it may have on other policy objectives.

The Export Administration Act should contain policy statements placing the clear burden of proof on those who would urge a limitation on exports rather than those seeking export expansion.

National security export controls, while necessary, can be streamlined by (a) decreasing the number of items requiring case-by-case validated license approval, (b) harmonizing U.S. regulations and CoCom standards, (c) replacing one-agency veto procedures with majority voting in license reviews, (d) enforcing stricter adherence to the 90 day deadline for final licensing decisions, and (e) improving government/industry consultation mechanisms to help determine foreign availability, set technical specifications and otherwise aid appropriate control implementation.

Foreign policy export controls generally should not be used to express displeasure with other government's policies where treaties or other agreements have not been violated. Guidelines should be established for foreign policy export control use, including: (a) to support clear major U.S. policy objectives (b) when desired results can be effectively achieved (c) after non-economic measures have failed (d) if controlled items are unavailable elsewhere (e) after full consideration of negative economic impacts on the U.S.

Short supply export control authority, while probably necessary, should be used cautiously and only after due consideration to the needs of dependent foreign customers.

Unpredictability has become a major problem for U.S. exporters who increasingly are viewed as "unreliable suppliers" due to U.S. government export controls actions. An extension of the Export Administration Act should address this difficulty by increasing the priority given to export expansion while constraining unpredictable and often unnecessary export control actions.

STATEMENT OF ROBERT MCLELLAN FOR THE NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. Chairman and members of the Subcommittee, I am Robert McLellan, Vice President of FMC Corporation, a diversified producer of machinery and chemicals with 1978 sales of over $2.9 billion including exports of more than a half billion dollars. FMC's manufacturing operations employ 46,000 people in 33 U.S. states and 14 foreign countries. I am testifying today on behalf of the National Association of Manufacturers as Chairman of NAM's International Trade Subcommittee.

The National Association of Manufacturers is a voluntary, non-profit organization of nearly 13,000 companies, large and small, located in every state of the Union. As the representative of firms which account for about 85 percent of American manufactured goods and approximately the same percentage of the nation's industrial jobs, the NAM is concerned that a proper balance be struck which maintains adequate export control authority to meet national security and other emergency public policy needs, while assuring American industry predictable and equitable conditions in competing for sales in the world market. Accordingly, we support the extension of the Export Administration Act, which will expire in September of this year, to continue current export control authority, but we have a number of suggestions to make regarding possible improvements in the Act. Principally, we urge that the Act clearly set forth export expansion as a priority national goal and structure

export administration procedures in a manner that meets other national interest objectives without excessively or unnecessarily restricting U.S. export opportunities.

THE EXPORT EXPANSION CHALLENGE

Before considering specific aspects of the Export Administration Act, we believe it is essential to set out the context within which this discussion is occurring. In particular, it is important that we all make an effort to drop our long-held national feeling of superiority and security regarding this country's preeminent role in the international economy. The stark reality of the current situation is that the United States has increasingly serious problems competing in world markets and we can no longer afford the luxury of treating our international trade interests as the poor step-child to nearly every other foreign policy or domestic political consideration.

Only recently has national attention begun to focus on our international economic policies with "export expansion" becoming a widely accepted, if often amorphous, call for action. Therefore I hope it will be useful to take a moment to examine the altered world environment and discuss the challenge facing this country in the international marketplace.

Last year the United States sustained another record trade deficit of over $28 billion—a figure that would have been unimaginable just a few years ago. This deficit has serious implications for the nation's economy in terms of higher unemployment, dollar weakness abroad and growing inflation at home. While most press accounts usually stress the admittedly large role of increasingly costly oil imports in this deficit, it is often overlooked that the decline in our manufactured goods trade balance was more significant last year than oil in accounting for the larger trade deficit. Indeed, our trade position in manufactured goods, which represent two-thirds of the dollar value of U.S. exports, generally has been declining since 1965. In just the three years, from 1975 to 1978, the U.S. trade account in manufactured goods dropped from roughly a $20 billion surplus to a deficit of over $5.8 billion.

The United States has lost its once unchallenged position in world commerce. In 1970 Germany moved ahead of the United States as the world's leading exporter of manufactured goods and has widened its lead since that time. The U.S. share of total world exports has continued to drop from an 18 percent share in 1970 to 13.7 percent in 1977—and bear in mind that every one-tenth of 1 percentage point represents over $1 billion in trade, or 40,000 jobs, $2 billion in U.S. GNP and $400 million in Federal tax revenue.

TWO EXPORT EXPANSION PROGRAMS NEEDED

These figures set forth the broad context of the export expansion challange facing this country. The problem has been developing for a decade or more and probably will take at least that long to resolve. NAM urges a realistic approach based on two export expansion programs: one for today and one addressed to fundamental, longer-range problems aimed at improving America's industrial base.

In terms of the longer-range picture, the country must begin to reassess its present high orientation toward consumption, because the flip side of this coin means we hold a negative orientation with respect to promoting new productive investment. Incentive policies must be formulated to create a climate in the U.S. which makes American industry investment-oriented in relation to new plants and equipment as well as to research and development (R & D). Serious study should be given to longer-range tax and other issues which will stimulate new investment in the industrial sector. American industry cannot be competitive abroad in export markets unless it is strong at home.

More immediately, we must begin to dismantle barriers to U.S. exports at home and abroad. The United States must press hard in final negotiating sessions for the elimination or reduction of tariff and non-tariff barriers in the Multilateral Trade Negotiation (MTN) agreements expected soon from Geneva. Of particular importance in these negotiations is the objective of achieving meaningful constraints on government intervention in the marketplace, especially in the key areas of subsidies, government procurement, standards, customs valuation and an international safeguard mechanism.

U.S. Government reorganization is also an appropriate issue for mentioning here. The current system of scattered international trade functions and generally unrelated international economic policy-making and execution is inadequate to meet the international economic needs of our nation. Implementation of a successful national export expansion program, particularly following upon the expected conclusion of new multilateral trade agreements, will require a governmental mechanism able: (1) to assist U.S. exporters in realizing the potential for increased sales abroad promised by a lowering of foreign trade barriers; and (2) to vigorously and effectively

enforce the agreed international trade standards to assure that U.S. industry is not harmed or disadvantaged by unfair foreign competition. We believe that the best solution to this challenge lies in the consolidation of governmental trade functions into a Cabinet-level Department along the lines of the bill (S. 377) sponsored by Senators William Roth and Abraham Ribicoff.

We expect to testify more specifically on this bill in the near future. However, we believe it is also appropriate to this discussion today because a top policy spokesman with full departmental resources is needed to represent the country's export policy interestes in the debates between competing policy objections.

Thus far the long and growing list of self-imposed restraints on export speaks loudly for the need for a stronger advocate of U.S. international economic interests. Many of these self-imposed restraints must be early candidates for removal or modification if the export expansion challenge is to be met. The recent history of encumbering Eximbank with various non-economic restrictions must be reversed. The Bank should be given adequate financial resources and encouraged in its recent moves to more aggressively meet foreign government-backed export credit competition. Calls for elimination of the DISC should be opposed, along with short-sighted proposals to cut back trade assistance programs such as the trade center in the fast-developing Mexican market. The export consequences of a number of U.S. laws such as environmental standards, foreign corrupt practices, and antitrust statutes should be examined and ways found to reduce unfavorable effects on U.S. export trade.

I would like to share wih you a recent personal experience in a discussion with a successful Venezuelan businessman who has interests in several joint ventures with overseas firms. He told me "We have decided we want to avoid joint ventures with U.S. firms and instead to join with European firms. If we go into business with U.S. firms, your government, through the IRS, human rights policies, etc., attempts to control our business. If we join with European firms they leave us alone, concerning themselves only with their own country, not trying to impose their laws on us."

There is another, perhaps more central place to begin this task of removing self-imposed restraints on U.S. international business expansion which brings us directly to the Export Administration Act. The EAA is the basic U.S. statute governing this country's international export policy. Originally enacted as the Export Control Act in 1949 and expanded in 1962 to limit exports to communist countries, the Act started with a decidedly dominant national security objective. In 1969, the Congress set forth a broader export policy statement encouraging trade, but concentrated on authorizing a number of areas for export control actions. The Act's early history and subsequent changes thus unfortunately have focused attention on the "control" aspects of administration, leaving the export objective as a platitudinous and easily subjugated goal. Secure in a belief of continuing American dominance of world markets, exports were viewed as a privilege for U.S. companies desiring to sell abroad and as a benefit to be granted to foreign buyers—or withheld from them.

These perceptions have distorted application of Act's stated objectives and led to the overuse of export controls as a lever to seek foreign policy and other objectives. Since this perception is clearly out of line with current world economic realities, the application of such presumed leverage has had little direct positive impact, while creating a number of negative or even counterproductive side effects. The time has come to alter this situation and bring U.S. export policies into line with the nation's basic interests and the world's economic realities.

RECOMMENDED CHANGES TO THE EXPORT ADMINISTRATION ACT

While occasionally referring to the need for export expansion, the EAA concentrates through numerous ways on the government's ability to restrict exports for the following three purposes: (1) to safeguard national security (2) to protect the domestic economy from an excessive drain of materials in short supply, and (3) to foster U.S. foreign policy.

An appropriate place to begin improving the Act is in Sections 2 and 3, the Findings and Policy statement. These sections should be revised to establish the priority importance of export expansion to U.S. national interests. This recommendation does not deny the necessity for appropriate statements on national security and other policy objectives. However, the sections should clearly establish that the burden of proof will fall on those who urge a limitation on exports for such other policy reasons rather than on those seeking to expand U.S. exports. A restatement of these two sections thus should set the framework for granting procedural authority to determine whether export limitations are required on the basis of a careful weighing of national interest objectives.

NATIONAL SECURITY EXPORT CONTROLS

First, in the area of national security controls, NAM fully recognizes and supports the necessity for government export controls based on clear national security determinations. It is our belief, however, that improvements can be made in the implementing procedures relevant to this policy while still safeguarding this essential national interest. In particular, steps should be taken to correct the competitive disadvantage placed on U.S. companies due to different international control standards and excessive processing delays.

The Administration has tried to minimize the overall impact of delays in current licensing procedures, citing statistics that some 97 percent of all licenses for controlled items other than military equipment are approved in less than 90 days. Nevertheless, the impact can be very serious in certain important sectors of U.S. industry. As pointed out in testimony last year before the House International Relations Committee, the vast majority of machine tool as well as computer license requests consistently exceed the 90 day limit, which is the intended deadline set by the Congress. In an increasingly competitive world marketplace, these delays can and very often do mean the loss of sales to foreign customers. The impact of such losses not only registers immediately, but can rebound again and again in the form of future orders not placed with American companies and foreign business not sought by U.S. firms.

We would like to direct the Committee's attention to a number of suggestions which were made in House hearings last year by representatives of these industries which especially suffer from protracted license determinations.[1] Their recommendations appear to us to have much merit in seeking a streamlined procedure which still maintains essential national security interests. First, validated licenses which need case-by-case prior approval could be limited to only those categories requiring CoCom approval. This change would help remove some of the current discrepancies which place U.S. companies at a disadvantage compared to suppliers in other allied countries. Additionally, it has been estimated that up to 80 percent of the current caseload and paperwork of the export control procedures could be eliminated, saving time, money and allowing greater concentration on the most sensitive cases. National security interests would not be jeopardized since CoCom standards are maintained and general rules governing licensing procedures, including the presubmission of certain end-use and end-user information for exports to controlled countries, could still be required.

Another useful change would be better adherence to the intent of the current EAA language concerning action on export license applications within 90 days of receipt. First, there could be a majority vote, with the possibility of appeal, rather than consensus (meaning one-agency veto power) as the basic decision rule among the major departments engaged in export license reviews to help speed the process within the 90 day period. Additionally, if the deadline is not met, the exporter should be notified of the exact nature and technical circumstances for the delay, rather than the simple fact that a further extension of time is required. We believe these two changes would help meet the stated intent of Congress already contained in the Act which, unfortunately, has been circumvented in the Act's administration. Finally, an improved system of industry/government consultation should be explored to help needed interaction in setting technical specifications and standards, ascertaining foreign availability and discussing other issues which may arise under the Act's implementation.

FOREIGN POLICY EXPORT CONTROLS

Export control authority for foreign policy reasons is a more amorphous and recently more troublesome issue than national security controls. The Export Administration Act covers a number of areas where export controls can be used for their imagined leverage in achieving foreign policy goals, such as combating terrorism, countering foreign boycotts, promoting human rights, etc. Even more than in the national security area (and with even less justification), this export control application rests on the presumption that U.S. exports are a benefit granted to other nations. The realities are different. With very few exceptions, world commerce does not exist as a seller's market and U.S. products are seldom so unique and of such fundamental importance that a nation will alter its basic policies, especially if they are internal ones, in order to buy American products. Furthermore, U.S. actions in this area are applied inconsistently, so that "successes" usually occur only with the small and weak countries that are strategically unimportant to us. The export

[1] See hearing record of the House International Economic Policy and Trade Subcommittee, Oct. 4, 1978, on the Export Administration Act: testimony and question/answer by representatives of CBEMA and NMTBA.

expansion goal apparently is held in such low esteem that export transactions with a country can be prevented for foreign policy reasons while other normal relations continue, including commerical imports from that country. Surely if a situation has deteriorated to such an extent that the United States must resort to economic leverage to express its foreign policy displeasure, U.S. purchasing power, exercised through the world's largest market, would provide more leverage and less self-inflicted injury than export control actions. In principle, however, we recommend that neither export nor import controls be used as a foreign policy tool to express American government displeasure regarding other governments' policies which do not violate treaties or other agreements with the United States.

The President recognized the need to alter national priorities and elevate export expansion goals last year in his September 1978 statement on a national export expansion program. We support his directive that Executive agencies "take export consequences fully into account when considering the use of export controls for foreign policy purposes" and also consider "whether the goods in question are also available from countries other than the United States."

My company—FMC Corporation—recently experienced a situation which illustrates the problems which can arise in applying export controls in this area. We had an order for fire trucks from South Africa. But since these were being ordered by the South African military, we could not accept the order under U.S. law. The only difference between these units and some we are currently supplying to municipalities in South Africa is the color of the paint. I am sure that under a state of emergency the municipal units could be preempted by the South African military. Thus, our own government's regulations have, in effect, excluded us from a significant volume of export business, with doubtful policy results. The real result was that the South African government ordered these units—$7 million worth of U.S. jobs and profits—from a European firm who gladly executed the order.

NAM urges that the Congress respond to this issue by setting guidelines for the use of export controls for foreign policy purposes. Among possible guidelines which have been suggested, we would urge serious consideration be given to authorizing foreign policy control actions only when undertaken: (1) in support of a clearly defined, major U.S. foreign policy objective, (2) when such U.S. action will cause the desired change in a foreign nation's policy, (3) when other noneconomic measures have been tried, (4) only if similar or substitute products are not available from other countries, and (5) only after full consideration of the potential direct and indirect impact on U.S. economic interests (domestic employment and inflation, trade and payments balance, overseas business, long-term U.S. competitiveness, etc.).

SHORT SUPPLY EXPORT CONTROLS

Export controls for commodities in domestic short supply have not involved the level of recent controversies occurring in the other two areas. We would urge the government to continue to be cautious and circumspect in instituting such trade restraints. The maintenance of some authority in this area is proper to allow an effective response to unusual supply shortages which could seriously disrupt the national economy. However, international cooperation must play an important role, and in general the needs of foreign customers dependent on the U.S. for suppliers should be given appropriate weight in any short supply actions the United States might consider.

THE PROBLEM OF UNRELIABILITY

Consideration of the needs of established or new overseas buyers of U.S. products is a legitimate and necessary element in decisions to apply export controls for any reason—national security, foreign policy or domestic short supply. As pointed out earlier, the United States is no longer, if it ever was, a unique source of supply. Therefore, it is a matter of serious concern that U.S. firms increasingly are being tagged with a reputation as "unreliable suppliers" because of the excessive use of government export controls as leverage for other policy purposes.

United States business cannot grow and prosper in this type of environment. Foreign buyers cannot be blamed for looking elsewhere rather than depending on uncertain access to U.S. products, especially if access is often denied as a way to twist a nation's arm to bring about changes in its internal policies. U.S. businessmen cannot be blamed for a reluctance to commit time, money and effort into expanding exports abroad when the rules, regulations and administrative practices which govern such transactions are unpredictable. Indeed, the lack of predictability is the major problem in the current export control system. Companies cannot cost out marketing efforts, set production plans, guarantee delivery schedules or otherwise

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carry on business in a manner that allows an effective response to the vigorous export expansion efforts of our foreign competitors.

CONCLUSION

The recommendations we have made for changes in the Export Administration Act would help introduce more predictability into the system. They would clearly establish export expansion as a national priority objective while providing the necessary authority to exercise export controls in a manner which meets other important national goals without unnecessarily harming U.S. export interests. We believe that these changes are more consistent with prevailing world realities and will better meet the national interest than the current export administration procedures. NAM urges the Subcommittee to consider and adopt these changes in its extension of the Export Administration Act.

APPENDIX

The following is a brief summary of key selected provisions of the Export Administration Act which are relevant to the changes recommended in this testmony:

Section 2: Congressional Findings: Although unrestricted exports may have certain adverse domestic and foreign policy ramifications, an uncertain export policy and unreasonable access to world supplies can be detrimental to this country's balance of trade as well as worldwide trade.

Section 3: Policy Declarations: It is the policy of the United States to promote trade with friendly countries, to stimulate economic growth and stability, but only if such trade is in the national interest and not detrimental to national security. Export controls should be used to protect this country from diminishing commodities and supplies, to reduce domestic inflation and to encourage other countries to condemn international terrorism. Restrictive trade practices and boycotts should be condemned. Government inter-agency review committees and private industry groups should be established to examine export licenses.

Section 4: Authority: The Secretary of Commerce is required to institute organizational changes to carry out the export controls cited in the Act, reflecting a view toward trying to promote trade. The President is authorized to prohibit or curtail exports or technical data to carry out the purposes of Section 3, above. Controls toward industrial countries on national security grounds are not to be determined by the President solely on the basis of their being Communist or non-Communist, but rather on other factors such as the foreign country's relationship with the United States. The President may not impose exports controls on goods which are available without restrictions from sources outside the U.S. in comparable quantities and quality unless the lack of such control would be demonstrably contrary to the national interest.

All export licenses must be approved or disapproved within 90 days of receipt. If the time period is not met, the license must be issued unless the Secretary of Commerce finds that additional time is required and the applicant is notified in writing of the specific circumstances why more time is needed and an approximate date when a decision will be reached. Notification by the government official to the applicant must be specific and provide in writing questions and negative considerations that were made with respect to consideration of the license. The applicant must be given an opportunity to respond to the government's questions or recommendations and such response must be considered in the Department's final determination. If Commerce decides to submit the export license application to an interagency review process, the Secretary must first, if requested by the applicant, provide him an opportunity to review the documentation to be assured the export is properly described. Denial of a license must be provided the applicant in writing with a specific statutory basis for such denial.

Section 4 further requires an assessment of the impact of exports of goods and technology to determine whether such exports will significantly contribute to the military potential of a country and prove detrimental to U.S. national security. In consultation with the Department of Commerce export control office, the Secretary of Defense must approve the above assessment.

Section 5: Consultations and Standards: To determine what should be controlled or monitored, the agency making the decision must consult with other relevant government bodies with regard to the domestic and foreign policy results that might flow from the controls. In carrying out consultation, the President is required to seek "from time to time" whatever advice or information private industry may have.

Before export license fees or any other export restriction due to a short supply situation may be imposed, the Department of Commerce must seek the views of

interested persons to receive information on the impact of the export restrictions and the methods for licensing.

The Department of Commerce must appoint an advisory committee consisting of representatives from industry and various governmental bodies where an industry subject to export controls specifically requests such committee or when national security reasons require such committee.

Section 6: Violations: This section sets forth various sanctions—both civil and criminal—for willful and knowing violations of the Act.

Section 9: Information to Exporters: To enable U.S. exporters to coordinate their business activities with the Act's multiple export control policies, the relevant government agencies must, if requested by U.S. exporters, inform them of (1) considerations leading to a demand for an export license, (2) reasons for delays in processing of export license applications, and (3) the reasons for denial of an export license request. The relevant administering agencies must also provide each exporter an opportunity to present evidence and information relevant to the request for a license.

Section 10: Reports: Semiannual reports must be submitted to the President by each governmental entity exercising any functions under the Act. The reports must contain information on: (1) the impact on the U.S. and foreign economies of shortages or increased prices for goods subject to monitoring under the Act, (2) the worldwide supply of such goods, and (3) actions taken by other countries in response to such shortages or increased prices.

Senator STEVENSON. Thank you, sir.

We will have a bill available for introduction soon that would overhaul the Export Administration Act. I think it would reflect most of the suggestions you have made.

You have to leave now?

Mr. MCLELLAN. No, I will stay for the rest of the testimony, and then join in the discussion, if I may.

Senator STEVENSON. Who is next?

Mr. BABOYIAN. I am H. K. Baboyian, vice chairman of UOP, Inc., here speaking on behalf of the National Constructors Association. I am accompanied by Robert Gants, who is a vice president of the association.

The National Constructors Association is composed of 50 of the largest American firms engaged in international engineering and construction activities.

Our overseas products amounted to at least $11 billion last year, including some $4.5 billion sales of U.S. construction equipment and services.

This activity accounts for one-half million U.S. jobs. However, the U.S. export industry is in trouble. Our own industry, we slipped from first to fourth place in world construction in the last 3 years alone. As a result of losses to American business, revenues that should be flowing into our domestic economy are flowing instead into the economies of Japan, Germany, Italy, and the rest of the industrialized nations.

Given a cumulative U.S. trade deficit of $70 billion, the declining strength of the U.S. export industry could not come at a worse time. There is a direct and meaningful link between what happens in the export market and our ability to pay for oil, lessen our trade deficit, and create new jobs at home. It is a link which is rapidly becoming recognized in Washington, and our industry is anxious to do all it can to support some positive action.

Although the U.S. engineering and construction engineering can no longer come to have the preeminence in advanced technologies that it once had, we still have, by some estimates, about 40 percent of the world's engineering and construction capacity.

We should be in an excellent position to compete successfully in world markets. We are not. In fact, our competitive position continues to slip. And the reasons for it come down, in large part, to the policies and regulations imposed on us by our own Government.

U.S. exporters face more Federal controls, conditions, and restrictions than do companies of any other industrialized country in the world. At a time when other nations are encouraging their export industries through their financing, tax, and promotion policies, the United States is subjecting its exports to tighter regulation, scrutiny, and control.

It should come as no surprise that nations such as Germany and Japan, with a much greater reliance on foreign energy imports than the United States, are experiencing far less problems with trade and payment balances than we are. The relative strengths of their currencies can be considered in the comparison as well.

The United States is a nation with a unique history and a unique sense of social responsibility. As Americans, we all share this heritage and are proud of it. The practices of oppressive governments and the treatment of their people are of concern to us, and rightly so. Where we can have an impact on these activities, we should continue to do so.

In the same light, national security is of the highest priority, and steps to insure it should be subject only to standards of international law and the determination that actions taken are indeed effective.

These have been the underlying philosophies behind the use of export controls for foreign policy and national security purposes. We as an industry recognize the U.S. interest in these actions and share the universal goals implicit in them.

At the same time, we point out that in most cases they have not worked. This is particularly true with regard to our foreign-policy goals of attempting to influence human rights policies of our trading partners. Countries we have attempted to influence have not altered those policies we consider oppressive. Nor have they done without the technologies, goods, or services we have denied them. The only direct result has been the loss of American exports and jobs.

Export controls are imposed by our Government in a variety of ways ranging from restrictions on export financing to denial of export licenses. These controls are aimed in most cases at Communist nations, the Soviet Union in particular, in an attempt to prevent the development of capabilities that could pose a military threat to the United States.

They are also directed as a form of leverage intended to bring about a change in both internal and international activities of countries which do not adhere to our concept of human rights and violate our standards of international behavior.

Restrictions on trade with Communist nations are a major concern of the engineering-construction industry, and are cited repeatedly as an example of expanding markets which are lost to U.S. business.

It is difficult, if not impossible, to quantify the extent of that loss to American firms, with the subsequent loss to the domestic economy in terms of revenues, taxes, foreign exchange, and jobs.

What can be shown, however, is that our international competitors are in a position to provide much of the high technology that we are being prohibited from supplying. What can be shown is that American business—and not the nations we are seeking to control—are suffering as a result of our export restrictions.

The United Nations provides data on the export trade of 15 industrialized Western nations with Eastern European Communist states. These data show that since 1976 the U.S. share of that export trade has declined, often significantly, to every Communist nation in Eastern Europe but Hungary, where it remained unchanged.

Nowhere is this more true than with regard to the Soviet Union, and nowhere are the implications for American business more pronounced. This is so because of the size of the Soviet market, which amounted to almost $11½ billion in imports from the West in 1977, and the fact that more U.S. export controls are directed at the Soviet Union than at any other country.

Trade data show that the U.S. share of manufactured goods exports to the Soviet Union since 1976 has dropped dramatically from almost $800 billion in 1976 to only $229 million in the first 6 months of last year. In 1977 the United States ranked well behind West Germany, Japan, France, Italy, and the United Kingdom in this regard.

And the importance of the United States as a supplier of manufactured goods to the Soviet Union continues to decline. In 1977 only 5.7 percent of total manufactured goods exports from the industrialized West to the Soviet Union were American in origin. An analysis of the U.S.-U.S.S.R. trade trends by the Industry and Trade Administration of the Department of Commerce indicates that this low U.S. share may be at least partly attributable to Soviet policy decisions resulting from restrictions in the U.S. Trade Act of 1974. The Soviets have been going elsewhere for their needed goods and services, and other nations have been able to supply them.

The implications of the declining Soviet reliance on American exports can be seen more clearly with regard to high technology products. Most American export controls impact on this area. The definition of high technology items is, of course, somewhat arbitrary, but for purposes of analyzing the effect of American export controls, we have relied on a refined list of 25 products derived by the Office of East-West Policy and Planning of the Bureau of East-West Trade in consultation with commodity specialists in the Office of Export Administration.

An analysis of trade data over a 5-year period from 1972 to 1977 shows that Soviet imports of high technology items from the industrialized West increased dramatically, from $582 million in 1972 to over $2 billion in 1977. However, by 1977 the United States ranked fifth in supplier countries, falling well behind West Germany, Japan, France, and Italy.

The total U.S. share of those imports in 1977 was 9.1 percent, as compared to a German share of 34.1 percent and Japanese share of 16.9 percent.

A similar situation exists with regard to the People's Republic of China. Of a total of almost $250 million in Western imports of high

technology items to the PRC in 1977, only 6.1 percent, or slightly over $15 million, came from U.S. suppliers. The United States fell far behind Japan, West Germany, France, Norway, the United Kingdom, and Switzerland.

The implications are clear. The areas in which the United States is able to deny high technology products to the Soviet Union and other nations are declining. There are simply too many other suppliers, too many other trading partners who are willing and able to step in where American firms are restricted.

Nor do American export restrictions reduce the overall proportion of high technology items in aggregate exports to the Soviet Union. U.N. trade figures released by the Department of Commerce show that the percentage of such items to the Soviet Union from the industrialized West was roughly the same as to Yugoslavia, a noncontrolled country. The 9.1-percent U.S. share of high technology exports to the Soviet Union is contrasted with a 27.2-percent U.S. share of western high technology product exports to the world as a whole. Our competitors are having no problems making up the difference.

The Soviet Union and other Communist nations are not dependent on the United States for their high technology imports. The use of export controls by our Government as a foreign policy tool must take this into consideration. That this is so should come as no surprise. It would be difficult to show that the oppressive policies of these nations have been altered in any significant way by U.S. actions. Soviet treatment of its dissenters and minorities, as well as recent roles in Africa, Iran, and Afghanistan, remain as serious an American concern as ever. Chinese military operations in Southeast Asia show little regard for world opinion at all.

This is also the case where export controls have been invoked against non-Communist countries. We see no evidence that the denial of export licenses to certain Latin American countries has improved the cause of human rights there, or that export restrictions to South Africa have lessened the impact of apartheid.

The National Constructors Association recognizes that there are areas where export restrictions are warranted for reasons of national security and specific policy objectives. We feel, however, that the following criteria should be established to insure the realization of these objectives:

U.S. foreign-policy objectives must be established;

The compatibility and consistency of export controls with those controls must be shown;

Export controls for foreign-policy purposes must be enforceable through our ability to prevent our allies and other nations from supplying the controlled goods or technology;

The likely effectiveness of the controls must be established. This would include a determination that the embargoed products were essential to the development of a critical technology;

And the economic impact on U.S. exports and jobs must be assessed.

Industry concerns about the U.S. export market abroad, however, are not limited to examples of outright export restriction and prohibition. Our lesser share of international trade can also be traced to the declining competitiveness of our goods and services interna-

tionally resulting from the uncertainties and delays of our Government's regulatory process.

A major aspect of this problem is the export licensing process. It has been an experience of our members that an allowance of 5 to 9 months must be made for receipt of a license to export. These are licenses which have no political problems connected with them, in most cases. This is often the case even when the technology involved is identical to that which has been exported to the same country, for the same reasons, in the recent past.

Prompt processing of license applications is not a matter of convenience for our companies—it is a matter of economic survival in an intensely competitive international market.

There are undoubtedly many reasons why the current licensing process can take so long. Our members report bureaucratic delays resulting from insufficient staff within the Commerce Department. One official within the Office of Export Administration reported to us that he had 60 license applications on his desk at that time, but that he was only able to process three a week.

Other reasons include unnecessarily complex procedures, archaic definitions regarding the level of technology involved, and perhaps most important of all, a general lack of awareness of the potential damage which can be done to our marketing efforts in foreign countries during the approval process.

Many examples can be shown of this problem.

One of our member companies, a major corporation engaged in petroleum and petrochemical licensing, reported the following experience:

The company applied for an export license last year to transmit technical data for five process units in the PRC for production of paraxylene, a petrochemical used for feedstock in the production of polyster fibers, products of no direct military or national security significance.

The license application sat at the Commerce Department for almost 2 months before being referred to the Department of Defense, despite numerous phone calls from the company.

By the end of the third month, there had still been no completed action.

During this period the company requested assistance from the Commerce Department in expediting action from Defense. Commerce replied that it hadn't had much success in similar attempts in the past, and that the company should approach DOD itself.

The license was finally released by the Department of Defense with its approval approximately 30 days later, following discussion between the company and DOD officials— very speedy action on their part, by the way.

Commerce then took another 30 days to assign a number and issue the license, which had already been cleared by DOD, and an additional 2 weeks beyond that to forward the license to the company.

The entire process took approximately 6 months. During that 6 months they were in China talking about the replacement.

This example is by no means unusual or unique. Another member company reports a delay of 5½ months in receiving government permission to export technical data relating to pharma-

ceutical production, despite the fact that it merely involved improvements in a process that had already been granted an export license recently. The only reason the supplemental license was required was for commercial invoicing.

We can cite other examples as well. The impact of this process upon the ability of U.S. businesses to compete abroad is substantial. In many cases, firms must receive permission to export hardware or technologies before they are able to participate in a bidding process. In others, they are unable to complete agreements for projects until a license has been issued.

Delays of months and uncertainty in receiving export licenses give our competitors that much more time to convince our potential customers of the merits of their products as opposed to ours.

Our companies' perception that they simply cannot compete with the Germans, Japanese, Koreans, and French in this regard is becoming a substantial disincentive to export.

We suggest improvement of the process through the following:

One, institution of a mechanism for the export of technology previously exported. We see no reason for technology that has already been licensed to be subject to the same review procedure.

Two, extension of the term of a license. Why shouldn't a license apply as well to additional exports of the same technology for the life of the project?

Three, increase in the staff and technical expertise within the Department of Commerce handling license applications.

Four, introduction of a system to address unusual or emergency situations, where business would likely be lost.

Five, guideline limits on the length of time that a license application may remain at any given stage of review.

Six, introduction of a mechanism to provide notice of an application's status throughout the process.

These are by no means the only issues of concern to our industry with regard to our export position. The Congress and the administration are being asked to examine additional proposals which we feel impact directly on our ability to compete openly and fairly on the international market. These include:

Extension and clarification of the Webb-Pomerene Act, as well as its amendment to include services. A mechanism allowing U.S. engineers and contractors to combine in international ventures without threat of domestic criminal antitrust action is necessary if we are to be able to develop our full export potential;

Relaxation of restrictions on export financing to Communist nations;

Government support of grant funding for feasibility studies, possibly in the form of cost insurance through OPIC;

A reduction in the extraterritorial application of U.S. laws and regulations, including environmental reviews which may limit exports;

Declaration of a new mandate to protect and promote international trade interests of the United States.

We as an industry are not suggesting government action that would give us an obvious or unfair advantage over our competitors. We are simply asking that we be allowed to compete in the world marketplace without undue government restrictions.

The fact is that our system of export controls is not functioning as it was intended. International economic realities are such that the United States has lost its monopoly in technology and large project management. Attempts to control access to both merely deny us the real benefits of that trade.

Our companies cannot survive in the international marketplace under what former Treasury Secretary George Schultz refers to as "lightswitch diplomacy," the apparent perception that individual trades can be turned on and off at will to induce changes in the domestic and foreign policies of a host country without adversely affecting the domestic economy.

The result is that the United States is coming to be viewed as an unreliable supplier and that we are losing our ability to compete abroad. It is a problem that has implications far beyond economic losses to our individual firms, and one on which we hope the Congress and administration will take action soon.

Thank you very much, sir.

[Complete statement of Mr. Baboyian follows:]

H.K. BABOYIAN
VICE-PRESIDENT
UOP, INCORPORATED

&

MEMBER
NATIONAL CONSTRUCTORS ASSOCIATION

SUBMISSION FOR THE RECORD
SUBCOMMITTEE ON INTERNATIONAL FINANCE
COMMITTEE ON BANKING, HOUSING & URBAN AFFAIRS
UNITED STATES SENATE

MARCH 12, 1979

ADMINISTRATION ON EXPORT CONTROLS

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I am H.K. Baboyian, Vice-President of UOP, Inc., a member of the National Constructors Association. I am submitting this statement on behalf of the nation's engineering and construction industry involved in overseas work.

The National Constructors Association is composed of fifty of the largest American firms engaged in international engineering and construction activities. Many of our members are involved in the export of technology and technical data in the form of engineering designs and construction plans for large scale industrial facilities in such fields as power generation, oil refining, chemical processes, and steel production. Part of our work includes the specification and often the purchasing of machinery, apparatus, and equipment required for those facilities.

In many ways, we are the pathfinders for follow-on U.S. markets in developing countries, where we are often the first in those nations to develop an industrial infrastructure.

The subject we are addressing impacts on very individual in this room because we as a nation are affected by world trade more today than ever before in our history.

The strength of the United States as an exporter of American goods and services affects our standard of living in direct and visible ways. Consider the fact that:

- the U.S. trades approximately 1/6 of everything it grows or makes;
- one out of every three acres of farmland produces for the export market;
- exports and imports are the equivalent of approximately 1/5 of our GNP, which is double what they represented ten years ago;
- overseas markets account for 1/5 of our nation's manufacturing employment.

In our testimony to the Congress on the taxation of overseas earned income last year, we stated that engineering and construction firms handled $18.6 billion worth of projects overseas annually. Engineering-News Record magazine estimates that that volume is now around $11 billion, reflecting a significant drop in overseas activity.

Nevertheless, engineering and construction projects overseas make up a significant proportion of total U.S. exports. These operations include the sale of U.S. construction equipment and services amounting to at least $4.5 billion, making them second only to the export of defense equipment in contributing to the U.S. trade balance.

This activity probably accounts for at least 1/2 million U.S. jobs.

However, the U.S. export industry is in trouble. The National Constructors Association estimates that between 1976 and 1978, the U.S. slipped from first to fourth place in world construction. Of $86 billion in Middle East construction awards between 1975 and 1978, only 10% went to U.S. contractors. That is compared to 51% awarded to Western European firms and 27% to Far Eastern firms. These figures do not represent an isolated trend. They represent our experience in all major foreign markets.

The losses to American business run into the billions of dollars. More than half of those dollars would normally flow directly into our domestic economy. Instead, they are flowing into the economies of the other industrial nations. They are generating new jobs in Japan, Germany, Italy and the rest of the industrial nations.

The declining strength of the U.S. export industry could not come at a worse time. In 1971, the U.S. experienced its first trade deficit in more than 50 years, a relatively minor $2.2 billion.

By 1978 the deficit for the month of February alone was $4.5 billion. The deficit for 1978 as a whole was $28.5 billion. At the end of 1978 we had experienced thirty straight months of deficits.

Early indications for 1979 are that the problem is continuing to grow worse. U.S. Commerce Department figures show that the trade deficit for January of this year was $3.1 billion, an increase of $1.7 billion over the previous month. This increase was not merely a reflection of rising international oil prices - total U.S. exports fell a sizable 1.1%,or $150 million, in that one month alone. Our cumulative trade deficit now exceeds an unprecedented $70 billion.

This imbalance, due partly to the open-ended U.S. reliance on foreign energy, cannot continue. The effects of this disequilibrium on the domestic rate of inflation and declining strength of the dollar are well-known.

The effect on our unemployment rate, which is the highest of any industrialized nation in the world, is clear. We have more than 6 million Americans on welfare rolls rather than payrolls. And the hard fact is that the construction industry has one of the highest rates of unemployment in the nation.

There is a direct and meaningful link between what happens to our firms in the export market and our ability to pay for oil, lessen our trade deficit, and create new jobs at home. It is a link which is rapidly coming to be recognized in Washington. The President's announced export policy and introduction of legislation within the Congress such as the renewal and expansion of the Export

Administration Act are welcomed signs of this new awareness. The lead taken by Senator Stevenson in supporting export incentives and reducing government interference is acknowledged as well in this regard. Our industry is anxious to do all it can to encourage this type of positive action in support of U.S. exports.

Although the U.S. engineering-construction industry can no longer claim to have the monopoly in advanced technologies that we once had, we still have, by some estimates, about 40% of the world's engineering and construction capacity. We should be in an excellent position to compete successfully in world markets. Our capabilities are as diversified and advanced as exist anywhere in the world. In short, on our own merits, we should be claiming a much larger share of world markets than we are. The markets are there. The interest is there.

Yet our competitive position continues to slip. And the reasons for it come down in large part to policies and regulations imposed on us by the U.S. government.

U.S. exporters face more federal controls, conditions, and restrictions than do companies of any other industrialized country in the world. At a time when other nations are encouraging their export industries through their financing, tax, and promotion policies, the United States is subjecting its exports to tighter regulation, scrutiny, and control. It should come as no surprise that nations such as Germany and Japan, with a much greater reliance on foreign energy imports than the U.S., are experiencing far less problems with trade and payment balances than we are. The relative strengths of their currencies can be considered in the comparison as well.

The United States is a nation with a unique history and a unique sense of social responsibility. As Americans, we all share this heritage and are proud of it. The practices of oppressive governments and the treatment of their people are of concern to us, and rightly so. Where we can have an impact on these activities, we should continue to do so.

In the same light, national security is of the highest priority, and steps to ensure it should be subject only to standards of international law and the determination that actions taken are indeed effective.

These have been the underlying philosophies behind the use of export controls for foreign policy and national security purposes. We as an industry recognize the U.S. interest in these actions and share the universal goals implicit in them.

At the same time, we point out that in most cases they have not worked. This is particularly true with regard to our foreign policy goals of attempting to influence human rights policies of our trading partners. Countries we have attempted to influence have not altered those policies we consider oppressive. Nor have they done without the technologies, goods, or services we have denied them. The only direct result has been the loss of American exports and jobs.

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They are also directed as a form of leverage intended to bring about a change in both internal and international activities of countries which do not adhere to our concept of human rights and violate our standards of international behavior.

Restrictions on trade with Communist nations are a major concern of the engineering-construction industry, and are cited repeatedly as an example of expanding markets which are lost to U.S. business.

It is difficult, if not impossible, to quantify the extent of that loss to American firms, with the subsequent loss to the domestic economy in terms of revenues, taxes, foreign exchange, and jobs.

What can be shown, however, is that our international competitors are in a position to provide much of the high technology that we are being prohibited from supplying.

What can be shown is that American businesses and not the nations we are seeking to control are suffering as a result of our export restrictions.

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Nowhere is this more true than with regard to the Soviet Union, and nowhere are the implications for American business more pronounced. This is so because of the size of the Soviet market, which amounted to almost $11½ billion in imports from the West in 1977, and the fact that more U.S. export controls are directed at the Soviet Union than at any other country.

Trade date ahow that the U.S. share of manufactured goods exports to the Soviet Union since 1976 has dropped dramatically from almost $800 million in 1976 to only $229 million in the first six months of last year. In 1977 the United States ranked well behind West Germany, Japan, France, Italy, and the United Kingdom in this regard.

And the importance of the U.S. as a supplier of manufactured goods to the Soviet Union continues to decline. In 1977, only 5.7% of total manufactured goods exports from the industrialized West to the Soviet Union were American in origin. An analysis of the U.S.-U.S.S.R. trade trends by the Industry and Trade Administration of the Department of Commerce indicates that this low U.S. share may be at least partly attributable to Soviet policy decisions resulting from restrictions in the U.S. Trade Act of 1974. The Soviets have been going elsewhere for their needed goods and services, and other nations have been able to supply them.

The implications of the declining Soviet reliance on American exports can be seen more clearly with regard to high technology products. Most American export controls impact on this area.

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The definition of high technology items is of course somewhat arbitrary, but for purposes of analyzing the effect of American export controls, we have relied on a refined list of 25 products derived by the Office of East-West Policy and Planning of the Bureau of East-West Trade in consultation with commodity specialists in the Office of Export Administration.

An analysis of trade data over a five-year period from 1972-1977 shows that Soviet imports of high technology items from the industrialized West increased dramatically, from $582 million in 1972 to over $2 billion in 1977. However, by 1977, the United States ranked fifth in supplier countries, falling well behind West Germany, Japan, France, and Italy.

The total U.S. share of those imports in 1977 was 9.1%, as compared to a German share of $34.1% and Japanese share of 16.9%.

A similar situation exists with regard to the Peoples Republic of China. Of a total of almost $250 million in Western imports of high technology items to the PRC in 1977, only 6.1%, or slightly over $15 million, came from U.S. suppliers. The U.S. fell far behind Japan, West Germany, France, Norway, the United Kingdom, and Switzerland.

The implications are clear. The areas in which the United States is able to deny high technology products to the Soviet Union and other nations are declining. There are simply too many other suppliers, too many other trading partners who are willing and able to step in where American firms are restricted.

Nor do American export restrictions reduce the overall proportion of high technology items in aggregate exports to the Soviet Union. U.N. trade figures released by the Department of Commerce show that the percentage of such items to the Soviet Union from the industrialized West was roughly the same as to Yugoslavia, a non-controlled country. The 9.1% U.S. share of high technology exports to the Soviet Union is contrasted with a 27.2% U.S. share of western high technology product exports to the world as a whole. Our competitors are having no problems making up the difference.

The Soviet Union and other Communist nations are not dependent on the United States for their high technology imports. The use of export controls by our government as a foreign policy tool must take this into consideration.

That this is so should come as no surprise. It would be difficult to show that the oppressive policies of these nations have been altered in any significant way by U.S. actions. Soviet treatment of its dissidents and minorities, as well as recent roles in Africa, Iran, and Afghanistan, remain as serious an American concern as ever. Chinese military operations in Southeast Asia show little regard for world opinion as well.

This is also the case where export controls have been invoked against non-Communist countries. We see no evidence that the denial of export licenses to certain Latin American countries has improved the cause of human rights there, or that export restrictions to South Africa have lessened the impact of apartheid.

The National Constructors Association recognizes that there are areas where export restrictions are warranted for reasons of national security and specific policy objectives. We feel, however, that the following criteria should be established to ensure the realization of these objectives:

- U.S. foreign policy objectives must be established;
- The compatibility and consistency of export controls with those controls must be shown;
- Export controls for foreign policy purposes must be enforceable through our ability to prevent our allies and other nations from supplying the controlled good or technology;
- The likely effectiveness of the controls must be established. This would include a determination that the embargoed products were essential to the development of a critical technology, and
- The economic impact on U.S. exports and jobs must be assessed.

Industry concerns about the U.S. export market abroad, however, are not limited to examples of outright export restriction and prohibition. Our lesser share of international trade can also be traced to the declining competitiveness of our goods and services internationally resulting from the uncertainties and delays of our government's regulatory process.

Government procedures which impede our flexibility, slow down our reaction time to potential markets, and handicap our ability to make commitments, give a decided and often overwhelming advantage to our competitors. In a world of heightened competition such as we see today, it doesn't take much to convey advantage.

An aspect of this problem which is of direct and immediate concern to the engineering-construction industry involves the export license process.

The system as it operates today poses a serious problem for our firms engaged in operations overseas. It has been the experience of many of our members that an allowance of 5-9 months must be made for receipt of a license to export. This is often the case even when the technology involved is identical to that which has been exported to the same country, for the same reasons, in the recent past.

Prompt processing of license applications is not a matter of convenience for our companies - it is a matter of economic survival in an intensely competitive international market.

There are undoubtedly many reasons why the current licensing process can take so long. Our members report bureaucratic delays resulting from insufficient staff within the Commerce Department. One official within the Office of Export Administration reported to us that he had 60 license applications on his desk at that time, but that he was only able to process three a week.

Other reasons include unnecessarily complex procedures, archaic definitions regarding the level of technology involved, and perhaps most important of all, a general lack of awareness of the potential damage which can be done to our marketing efforts in foreign countries during the approval process.

Many examples can be shown of this problem.

One of our member companies, a major corporation engaged in petroleum and petrochemical licensing, reported the following experience:

> The company applied for an export license last year to transmit technical data for five process units in the PRC for production of paraxylene, a petrochemical used for feedstock in the production of polyester fibers, products of no direct military or national security significance.
>
> The license application sat at the Commerce Department for almost 2 months before being referred to the Department of Defense, despite numerous phone calls from the company.
>
> By the end of the third month, there had still been no completed action.
>
> During this period, the company requested assistance from the Commerce Department in expediting action from Defense. Commerce replied that it hadn't had much success in similar attempts in the past, and that the company should approach DOD itself.
>
> The license was finally released by the Department of Defense with its approval approximately 30 days later, following discussion between the company and DOD officials.
>
> Commerce then took another 30 days to assign a number and issue the license, which had already been cleared by DOD, and an additional two weeks beyond that to forward the license to the company.
>
> The entire process took approximately six months.

This example is by no means unusual or unique. Another member company reports a delay of 5½ months in receiving government permission to export technical data relating to pharmaceutical production, despite the fact that it merely involved improvements in a process that had already been granted an export

license recently. The only reason the supplemental license was required was for commercial invoicing.

We can cite other examples as well. The impact of this process upon the ability of U.S. businesses to compete abroad is substantial. In many cases, firms must receive permission to export hardware or technologies before they are able to participate in a bidding process. In others, they are unable to complete agreements for projects until a license has been issued.

Delays of months and uncertainty in receiving export licenses give our competitors that much more time to convince our potential customers of the merits of their products as opposed to ours.

It can also give foreign countries the impression that we are not very interested in the project in the first place.

Once again it is not possible to cite specific figures on the amount of business lost to American companies. Data previously cited do indicate, however, the growing share of trade with restricted countries that is going to our industrialized competitors, suggesting once again that our competitive position is slipping.

This is reflected in the attitudes of our members, many of whom express an outright reluctance to engage in international activities because of controls such as the export licensing procedure. One company stated specifically that fewer inquiries from restricted nations were being pursued and fewer new markets explored because of the knowledge that six months must be allowed before any commitments could be made.

Our companies' perception that they simply cannot compete with the Germans, Japanese, Koreans, and French in this regard is becoming a substantial disincentive to export.

We suggest improvement of the process through the following:

- Institution of a mechanism for the export of technology previously exported. We see no reason for technology that has already been licensed to be subject to the same review procedure;
- Extension of the term of a license. Why shouldn't a license apply as well to additional exports of the same technology for the life of the project?;
- Increase in the staff and technical expertise within the Department of Commerce handling license applications;
- Introduction of a system to address unusual or emergency situations. There exists no mechanism for expediting license reviews when extenuating circumstances make it vital for a particular project;
- Guideline limits on the length of time that a license application may remain at any given stage of review;
- Introduction of a mechanism to provide notice of an application's status throughout the process.

These are by no means the only issues of concern to our industry with regard to our export position. The Congress and administration are being asked to examine additional proposals which we feel impact directly on our ability to compete openly and fairly on the international market.

These include:

- Extension and clarification of the Webb-Pomerene Act, as well as its amendment to include services. A mechanism allowing U.S. engineers and contractors to combine in international ventures without threat of domestic criminal antitrust action is necessary if we are able to develop our full export potential;
- Relaxation of restrictions on export financing to Communist nations;
- Government support of grant funding for feasibility studies, possibly in the form of cost insurance through OPIC;
- A reduction in the extraterritorial application of U.S. laws and regulations, including environmental reviews which may limit exports;
- Declaration of a new mandate to protect and promote international trade interests of the United States.

We as an industry are not suggesting government action that would give us an obvious or unfair advantage over our competitors. We are simply asking that we be allowed to compete in the world marketplace without undue government restrictions.

The fact is that our system of export controls is not functioning as it was intended. International economic realities are such that the U.S. has lost its monopoly in technology and large project management. Attempts to control access to both merely deny us the real benefits of that trade.

Our companies cannot survive in the international marketplace under what former Treasury Secretary George Shultz refers to as "lightswitch diplomacy," the apparent perception that individual trades can be turned on and off at will to induce changes in the domestic and foreign policies of a host country without adversely affecting the domestic economy.

The result is that the United States is coming to be viewed as an unreliable supplier and that we are losing our ability to compete abroad. It is a problem that has implications far beyond economic losses to our individual firms, and one on which we hope the Congress and administraiton will take action soon.

Senator STEVENSON. Who is next?

Mr. GRAY. My name is James Gray, president of the National Machine Tool Builders Association. I am accompanied today by James Mack, public affairs director.

You have heard testimony from ourselves and others to the effect that CoCom and other export control mechanisms have failed to affect technology transfers to potential military adversaries. U.S. companies and U.S. workers are adversely affected.

But, you might ask, don't stringent export control regulations prevent the Socialists from obtaining the technology that they desire? No, in the first place, they can buy most of the technology elsewhere. In the second place, if they cannot buy what they want from the West, they are quite capable of developing the technology themselves. And when they do develop the technology, it makes them independent. They no longer have to look to the United States for spare parts to keep the machinery running. They no longer have to look to America for service. They no longer have to look to the United States for replacement machinery. And, in addition, we lose the knowledge of where our Socialist adversaries are using the more technologically advanced machines.

Yet, last week, the Commerce Department testified that the number of requests for validated export licenses filed with the Commerce Department had increased from some 54,000 in 1977 to approximately 65,000 in 1978, an increase of over 20 percent. Moreover, during the first 6 weeks of this year, export license applications are apparently being filed at an annual rate of 77,000, up more than 13 percent over last year.

This annual increase of over 22,000 filings occurred during a period of time after which the Congress had supposedly enacted redtape cutting reforms and expressed its desire that the number of cases should be reduced.

Mr. Chairman, these facts surely force us all to ask why such a harmful trend is continuing. We suggest that there are two possible contributing factors to this development.

First, the administration has recently added foreign policy controls to free world trading partners, thus exacerbating the already delay-plagued situation existing with Socialist customers. If authority to impose new foreign policy controls is to be expanded beyond the authority already contained in the Export Administration Act, that authority should be very strictly limited to cover only those situations in which a foreign country either: (a) is likely to use the export subject to control in a manner likely to violate the internationally recognized rights of its own citizens; (b) it is likely to use the export subject to control in a manner significantly contributing to its capability to engage in military actions against another country friendly to the United States; or (c) is the subject of a full or partial trade embargo of an international organization, of which the United States is a member by treaty.

Second, the validated license controls catch increasingly sophisticated technologies and products, as the level of technology improves. In other words, what was the cutting edge of technology yesterday is "old hat" today. But yesterday's technology is being caught by the controls, which are not systematically updated to account for obsolescence and foreign availability.

However, according to the Commerce Department, the extreme delays of over 90 days occur in only 3.3 percent of the cases, with as many as 73 percent processed in 10 days or less.

At first blush, this may sound encouraging, but, Mr. Chairman, if you stop and think about it, you wonder how many of this 96.7 percent should have been filed in the first place. Do we really have to shuffle 77,000 pieces of paper per year from one desk to another in order to maintain military security?

Mr. Marcuss and his staff are to be commended for their dutiful and efficient handling of the 73 percent of requests processed within 10 days or less. However, might not our export control be streamlined such that the vast majority of that 73 percent need not require their scrutiny at all, thus freeing countless man-hours to be used in a more rapid analysis of the tough cases?

What we have here, Mr. Chairman, is bureaucratic overkill, similar to what we experienced with the initial promulgation of OSHA regulations. In the case of OSHA, after repeated complaints from Congress, many of the unnecessary regulations were removed voluntarily by the administrative agencies involved.

Unfortunately, Mr. Chairman, with the notable exception of the Commerce Department, it is clear that the mind-set of most agencies militates against such reform in the foreign trade area.

The result is a bureaucratic system run amuck, to the clear disadvantage of the national security it was originally established to protect.

Mr. Chairman, there must be a way to prevent advanced technology from going to our potential military adversaries without this excess of bureaucratic waste and delay.

We are hopeful that your committee will address this problem forcefully in the Export Administration Act amendments of 1979. The alternative is a further reduction in American competitiveness in world markets at a time when our trade deficit is the worst in history and promises not to get better.

Last year, NMTBA faced its first machine tool trade deficit in history, and projections indicate that this year will be even worse. Twenty-two cents of every dollar expended on machine tools by American industry in 1978 were spent for foreign machines, approximately one-third from Japan.

The export picture for the American machine tool industry is indeed alarming. Our share of the world export market has declined nearly two-thirds in just 14 years. Machine tools consumed by the Socialist countries in 1978 accounted for 50 percent of all machine tools consumed outside the United States. But our industry supplied only 1 percent of this vast market. This simply cannot be allowed to continue.

Our written testimony makes specific suggestions as to how you might improve our balance of trade while retaining the ability to prevent potential adversaries from securing militarily useful technologies from the United States which they cannot secure elsewhere in the world or produce themselves. Our suggestions are as follows:

Foreign availability requirements should be applicable to both military security and foreign policy controls;

Controls should be administered by the Department of Commerce in consultation with other agencies;

U.S. companies should be indemnified for revoked foreign policy control licenses;

A precedent mechanism is necessary in licensing process;

Annual upgrading of the commodity control list;

Definition of technology not to include product itself;

Military security license decisions should be the responsibility of Commerce without the need for unanimous interagency consent;

CoCom signatories must act speedily, or license should be issued without their approval;

A judicially enforceable right to license approval after showing of foreign availability;

CoCom should be elevated to treaty status or abolished;

Immiment rather than present foreign availability should be the test;

The scope of evidence regarding foreign availability should be broadened and the TAC's role strengthened.

In conclusion, Mr. Chairman, the American machine tool industry, as represented through NMTBA, in making these comments before your subcommittee is not asking for special treatment; we are only asking for the chance to compete fairly in the entire world machine tool market.

Thank you for the opportunity of appearing before the subcommittee again. We will be glad to answer any questions.

[The complete statement of Mr. Gray follows:]

STATEMENT OF JAMES A. GRAY FOR THE NATIONAL MACHINE TOOL BUILDERS ASSOCIATION

Good afternoon, my name is James A. Gray, I am President of the National Machine Tool Builders Association (NMTBA). With me is James H. Mack, NMTBA Public Affairs Director.

We would like to thank you for again giving us the opportunity to testify before this subcommittee on the subject of export legislation—a subject which is of major importance to our industry.

As mentioned in earlier testimony, NMTBA is a national trade association comprised of about 370 companies accounting for some 90 percent of the United States machine tool production. Over 70 percent of these companies have less than 250 employees, while the entire industry has approximately 95,000 employees.

In previous testimony we dwelt on the difficulties our members have had in obtaining export licenses for the shipment of machine tools to controlled countries. We attempted to show why the CoCom controls are working only to the disadvantage of American industry. Furthermore, we tried to show that the Export Administration Act is not being followed by the various U.S. Government departments and agencies as was clearly mandated in the amendments to the Act made in 1977. The fact that the intent of the amendments has been circumvented has been brought sharply into focus by a review of Congressional committee reports, discussions with committee staff members, and additional discussions with Congressmen and Senators who were involved in writing the amendments.

We have also had the opportunity to observe, the first hand, the licensing difficulties when we have been involved on behalf of some of our member companies in their attempts to obtain export licenses.

As was true of our earlier testimony, the conclusions we have dawn, and the suggestions we will make, are not primarily the thoughts of the NMTBA staff, but have come from discussions with the member companies of our industry.

Last year, NMTBA faced its first machine tool trade deficit in history, and projections indiate that this year will be even worse. Twenty-two cents of every dollar expended on machine tools by American industry in 1978 were spent for foreign machines—approximately one-third from Japan.

The export picture for the American machine tool industry is indeed alarming. Our share of the world export market has declined nearly two-thirds in just fourteen years. Machine tools consumed by the socialist countries in 1978 accounted for 50 percent of all machine tools consumed outside the United States, but our industry supplied only 1 percent of this vast market.

NMTBA, on behalf of the American machine tool industry, is devoting its own resources to the development and maintenance of international markets everywhere in the world. We have three people who spend virtually their full time overseas promoting United States machine tool exports with considerable assistance from the Department of Commerce. And we bring large groups of foreign visitors to the International Machine Tool Show in Chicago every two years. The Commerce Department has worked closely with us in the development and implementation of this and other programs.

In now proceeding with our recommendations, we wish to re-emphasize the necessity for economic and political pragmatism in the formulation of future U.S. foreign trade policy. Any legislation reported out of this committee must be based upon a recognition of the economic and political realities of the current global situation.

Moreover, any legislation should set forth in unmistakable terms the fundamental right of every American person to market its products overseas and should clearly establish that the encumbrance of that right through the export licensing process is to be the exception and not the rule.

It is well known that the administration has been exercising control over U.S. exports for reasons of foreign policy. While there may be times when sanctions may be justified in pursuit of foreign policy goals, we do not believe that export controls are an efficient manner in which to apply those sanctions. In industries such as the machine tool industry, where long lead times prevail, these sanctions may be particularly inefficient because the foreign policy may shift before the equipment is finally manufactured. Other forms of sanctions, or "leverage", may be much more effective than a restriction on some exports. In addition, some sanctions often prove to be counter-productive in that the country against which the sanctions are applied reacts in a manner not foreseen, and the exportation of other commodities to that country is adversely affected.

We therefore continue to recommend that the same foreign availability restrictions be imposed on administrative authority for licensing controls based upon foreign policy considerations as are imposed upon national security controls.

Policymakers—both within the Administration and within the Congress—must resist the temptation to use the export licensing process as a vehicle for attempting to change other countries human right and other policies of which they do not approve.

However, if authority to impose so-called foreign policy controls is to be expanded beyond the authority already contained in the Export Administration Act, that authority should be very strictly limited to cover only those situations in which a foreign country either—

(1) Is likely to use the export subject to control in a manner likely to violate the internationally recognized rights of its own citizens;

(2) Is likely to use the export subject to control in a manner significantly contributing to its capability to engage in military actions against another country friendly to the United States; or

(3) Is the subject of a full or partial trade embargo of an international organization, of which the United States is a member by treaty.

If the President decides to exercise his authority to impose new foreign policy exports controls, he should submit his decision to Congress for its approval—together with (1) a finding that the controls are likely to achieve the desired changes in the offensive behavior of the target country; (2) a determination, based upon consultation with the approved U.S. industries, that the controls will not cause undue hardship on U.S. employment and the U.S. economy; and (3) a showing that he has initiated and is likely to conclude successful negotiations with appropriate foreign governments to cut off foreign availability of the controlled exports to the target country.

Subsequently, such foreign policy controls should be administered by the Commerce Department in consultation with the State Department and such other government agencies as are appropriate.

Consideration should also be given to providing some form of indemnification for a U.S. company, whose export license is revoked due to imposition of new foreign policy controls prior to shipment.

Above all, policymakers must be careful that they do not broadly impose new and wider export controls, making U.S. exports less competitive, at a time when we have the worst trade deficit in our Nation's history.

As one manner of achieving such an export policy reform, some form of precedent should be provided for, so that, once a particular form of technology or product is licensed, all future proposed exports of the same kind will be licensed without delay, subject to appropriate end use controls. Moreover, regulations should be established providing for the annual upgrading of the Commodity Control List (CCL) and the annual removal from the list of militarily useful technologies and products in which the United States and its CoCom allies no longer hold superiority or which are in fact available to potentially hostile nations without restriction from other countries. These types of questions are currently decided by the interagency review process on an ad hoc basis; and this current procedure leads to seemingly endless delays, as a unanimous "consensus" is sought among the various government agencies.

Additionally, technology should be defined as "the knowledge required to design and manufacture products and services including technical data and any other information, but does not include the product itself."

Although we are pleased with the progress made by the Commerce Department, under the able leadership of Stan Marcuss, in ending the scandalously long delays in making export licensing decisions, it is clear that the mind-set of some other agencies militates against true reform of the system, unless further congressional guidance is given. Therefore, Commerce must be given the clear legislative authority to make military security export licensing decisions, in consultation with other appropriate agencies, but without going through and interminable "unanimous consent" interagency review process; for providing clearly drawn deadlines for the decision making process; and for opening up the process so that the exporter is kept fully informed of the technical objections standing in the way of his obtaining a license. Many times he can, through appropriate negotiations with his customer, modify his license application in order to meet these objections; and it is entirely within the realm of possibility that the objections themselves may be based upon a lack of technical understanding or skill by the licensing authorities.

Your bill should establish an appropriate appeal procedure, so that, at every stage of the decision making process, neither the rights of potential exporters nor the military security of the United States are in any way compromised. In this regard, we would suggest that, until the Director of the National Security Council is made subject to Senate confirmation, he or she should not have a role in the licensing process in individual cases, unless an appeal is submitted directly to the President by the Defense Department or another agency.

The Commerce department must also be given the legislative authority for establishing, in consultation with the Defense Department, the Commodity Control List of those technologies and end products which are critical to maintaining military superiority over potentially hostile nations. Disputes between the Commerce and Defense Departments over the contents of this list should be resolved by the President. He—and not some faceless bureaucrat in the Pentagon should have the ultimate decision over what is or is not exportable.

Only those technologies and related end products which are embargoed by the CoCom agreement should be embargoed by our own government for military security reasons. And because of the disparity of interpretation of the CoCom list among the various CoCom signatories, Commerce should be charged in the legislation with determining the question of actual foreign availability in cooperation with the Technical Advisory Committees. If another agency (such as DOD) should object to Commerce's decisions, the dispute should be escalated to the President for resolution.

Finally, the State Department must be forced to stop their practice of permitting our foreign competitors to set U.S. trade policy. That is exactly what happens everytime decisions drag out interminably at the CoCom level. Congressional intent should be made clear that, if exception request decisions are not made by the CoCom signatories within a reasonable period of time—or if our western trading partners choose to hold U.S. exception requests hostage for favorable U.S. action on their own exception requests—Commerce has the authority to issue a license. By the same token, strict time limits should be established within which U.S. action on foreign exception requests must be taken.

The bill should direct the President to both initiate and conclude negotiations with the governments of appropriate foreign countries for the purpose of eliminating availability.

The elevation of CoCom to a treaty status or its abolition should be seriously considered. The record before this subcommittee shows clearly that CoCom has not

met its intended goals. CoCom has most decidedly not been an effective means of denying the availability of high technology equipment to controlled countries.

The Secretary of Commerce should be mandatorily required to approve any application for a validated license when a determination of foreign availability in sufficient quality and quantity is made. Such approval should be enforcable in the courts, with actual foreign availability a question to be determined by the trier of fact.

The Secretary of Commerce should be able to remove a technology or porduct from those requiring a validated export license upon a showing of sufficient present foreign availability. Moreover, the Secretary of Commerce should not require a validated license for export of such technology or product, even though it may not have present foreign availability, if it in fact appears that such technology or product will imminently become available from foreign sources.

As to the kind of evidence which could be produced to show such foreign availability, our members have, in the past, submitted large quantities of catalogs of foreign manufacturers, as well as articles and pictures from trade journals, with their license applications. This material has been considered inadequate by the U.S. Government for proving foreign availability. Numerous executives from our member companies, upon returning from visits to factories in the controlled countries, have offered to submit sworn affidavits attesting to the equipment they have seen installed in these countries. The U.S. agencies involved with processing the licenses have never seriously considered that such affidavits might serve to prove foreign availability and have never asked for them. It has been suggested by government officials that copies of sales proposals, purchase orders, or shipping documents might be of interest to them; this is obviously impractical as neither the buyer nor the seller of the equipment would seriously entertain a request for submission of such information. It is our hope that under this new legislation such evidence would be acceptable in making the factual determination of foreign availability.

But, you might ask, don't stringent export control regulations prevent the Socialists from obtaining the technology that they desire? No! In the first place they can buy most of the technology elsewhere. In the second place, if they cannot buy what they want from the West they are quite capable of developing the technology themselves. And when they do develop the technology it makes them independent. They no longer have to look to the United States for spare parts to keep the machinery running. They no longer have to look to America for service. They no longer have to look to the United States for replacement machinery. And, in addition, we lose the knowledge of where our Socialist adversaries are using the more technologically advanced machines.

The Administration, the national security apparatus, and some members of Congress must stop trying to use international trade as a tool to achieve political ends.

In conclusion, Mr. Chairman, the American machine tool industry, as represented through NMTBA, in making these comments before your subcommittee is not asking for special treatment. We are only asking for the chance to compete fairly in the entire world machine tool market.

Thank you for the opportunity of appearing before the subcommittee again. We will be glad to answer any questions you may propose.

Senator STEVENSON. And now Mr. McNeill.

Mr. MCNEILL. Thank you, Mr. Chairman.

ECAT is an organization of 64 leaders of American industry and banking working for governmental policies to expand U.S. international trade and investment. The need for such policies has never been greater.

American trade deficits, the erosion of the value of the dollar, and the apparent shifts in U.S. competitiveness require measures to expand our country's exports. Legislation to renew the Export Administration Act can and should deal creatively with this imperative in order for the act to be a more effective instrument of U.S. policy.

Mr. Chairman, we understand that you will soon introduce a bill to amend the act. We look forward to evaluating it and giving this committee detailed comments on its provisions. In the meantime,

we offer the following general suggestions for consideration in completing action on that bill.

ECAT members believe that the Export Administration Act should be brought up to date. It needs to be rewritten to reflect the importance that the United States now attaches to exports.

It needs to be reworked to require controls only when they are absolutely necessary to protect our national interests. And it needs to be revised in a fashion that will assure our exporters prompt and consistent export licensing decisions.

A NEW EMPHASIS ON EXPORTS

We recommend that both the statement of findings and the declaration of policy in the Export Administration Act be reworded to stress the greater emphasis that our Government now places on export expansion.

As presently written, these provisions reflect a time when other U.S. policy goals could be safely given higher priority—a bygone luxury.

Today, exports should be restricted only in exceptional circumstances and only after full consideration of the economic impact of the restrictions themselves.

REDUCING THE SCOPE OF CONTROLS

We recommend that the act require a full scale review of all items on the commodity control list. We believe such a review would produce a significant reduction in the number of items that warrant individual export licensing controls. We further emphasize that three major types of action be taken:

First, additional weight should be given to the availability of the item from foreign sources. The act should explicitly provide that export licenses shall be granted whenever an item of comparable quality and quantity is available from abroad, unless the President determines that overriding national interests dictate that a license be denied. In such cases, the reasons for the denial should be reported to the licensing applicant and to the Congress in the semiannual report required under the act. The act should make the Department of Commerce responsible for assessing foreign availability in consultation with representatives of other designated U.S. Government agencies and experts from private industry.

Second, the act should impose limitations on the use of export controls for those foreign policy purposes not directly linked to national security. As you know, Mr. Chairman, last October ECAT issued a petition to the Government of the United States in which we deplored the increasing trend of denying U.S. exports as a means of pursuing such U.S. foreign policy objectives. We called for full recognition of the damaging impact of these export restraints on the American economy and recommended specific government actions when U.S. exports are denied for reasons of public policy other than national security.

In that petition, which we have appended to this statement, we recommended in part that:

* * * When the U.S. government proposes to take action to deny U.S. exports for reasons of public policy other than national security, it issue a public statement

detailing the economic consequences in as complete detail as possible * * * The export denial statement should specify the specific reason for the denial and an analysis of how the U.S. action will bring about the desired change in the country concerned.

As an initial requirement we recommend that denial of export licenses for foreign policy reasons should be made only by the President and only after he formally determines that such action would be in the national interest.

As you recall, Mr. Chairman, the Congress amended the Export-Import Bank Act last October, requiring that such a determination be made before export financing could be denied for foreign policy purposes. Enacting a similar provision for export licenses would assure a consistent U.S. policy for both export financing and licensing restraint decisions.

Before making such determinations, we recommend that the President be required to consult with industry, assess the foreign availability of the item proposed for control, and seek assurances that foreign competitors will impose comparable controls.

Third, all items subject to individual export licensing controls should be reviewed at least annually to determine whether controls are still called for in light of changed circumstances such as technological obsolesence or changes in policies of foreign governments.

For example, an immediate review of the specific controls that have been imposed on the export of oil exploration and production equipment and technology to the Soviet Union seems warranted.

These controls were imposed last summer at a time of serious strains in United States-Soviet relations arising in part from objectionable Soviet domestic policies.

Since then, all license applications under these controls have been approved. Continuing the controls needs to be questioned. Ending them could certainly help eliminate concerns about the reliability of U.S. suppliers.

Taken together, the three types of action we have recommended could significantly reduce the number of items subject to individual licensing controls. This could free up resources to better evaluate the really critical questions of control and to speed licensing decisions.

Aside from complaints that far too many items are subject to individual export licensing control, exporters are frustrated by the complexity of the licensing system, by the delays in decisionmaking, and by the lack of responsiveness of government officials to requests for information on the status of individual licensing cases.

Improvements in these areas are essentially questions of management and organization, but a clear statement of congressional intent in the new legislation that export expansion is high on the list of national priorities would help.

By working closely with officials in the agencies concerned, this committee can determine whether remedies require additional legislation, more effective direction, greater resources, or any combination of these.

I will be pleased to respond to questions.

[Complete statement of Mr. McNeill follows:]

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STATEMENT BY ROBERT L. MCNEILL ON BEHALF OF THE EMERGENCY COMMITTEE FOR AMERICAN TRADE

Mr. Chairman, and members of the subcommittee, I appreciate this opportunity to present the views of the Emergency Committee for American Trade on renewal of the Export Administration Act.

ECAT is an organization of 64 leaders of American industry and banking working for governmental policies to expand U.S. international trade and investment. The need for such policies has never been greater. American trade deficits, the erosion of the value of the dollar, and the apparent shifts in U.S. competitiveness require measures to expand our country's exports. Legislation to renew the Export Administration Act can and should deal creatively with this imperative in order for the Act to be a more effective instrument of U.S. policy.

Mr. Chairman, we understand that you will soon introduce a bill to amend the Act. We look forward to evaluating it and giving this committee detailed comments on its provisions. In the meantime, we offer the following general suggestions for consideration in completing action on that bill.

ECAT members believe that the Export Administration Act should be brought up to date. It needs to be re-written to reflect the importance that the United States now attaches to exports. It needs to be reworked to require controls only when they are absolutely necesssary to protect our national interests. And it needs to be revised in a fashion that will assure our exporters prompt and consistent export licensing decisions.

A NEW EMPHASIS ON EXPORTS

We recommend that both the statement of findings and the declaration of policy in the Export Administration Act be reworded to stress the greater emphasis that our government now places on export expansion. As presently written, these provisions reflect a time when other U.S. policy goals could be safely given higher priority—a bygone luxury. Today, exports should be restricted only in exceptional circumstances and only after full consideration of the economic impact of the restrictions.

REDUCING THE SCOPE OF CONTROLS

We recommend that the Act require a full scale review of all items on the commodity control list. We believe such a review would produce a significant reduction in the number of items that warrant individual export licensing controls. We further emphasize that three major types of action be taken:

First, Additional weight should be given to the availability of the item from foreign sources. The Act should explicitly provide that export licenses shall be granted whenever an item of comparable quality and quantity is available from abroad, unless the President determines that overriding national interests dictate that a license be denied. In such cases the reasons for the denial should be reported to the licensing applicant and to the Congress in the semiannual report required under the Act. The Act should make the Department of Commerce responsible for assessing foreign availability in consultation with representatives of other designated U.S. government agencies and experts from private industry.

Second, The Act should impose limitations on the use of export controls for those foreign policy purposes not directly linked to national security. As you know, Mr. Chairman, last October ECAT issued a petition to the Government of the United States in which we deplored the increasing trend of denying U.S. exports as a means of pursuing such U.S. foreign policy objectives. We called for full recognition of the damaging impact of these export restraints on the American economy and recommended specific government actions when U.S. exports are denied for reasons of public policy other than national security. In that petition, which we have appended to this statement, we recommended in part that " * * * when the U.S. government proposes to take action to deny U.S. exports for reasons of public policy other than national security, it issues a public statement detailing the economic consequences in as complete detail as possible * * * The export denial statement should specify the specific reason for the denial and an analysis of how the U.S. action will bring about the desired change in the country concerned."

As an initial requirement we recommend that denial of export licenses for foreign policy reasons should be made only by the President and only after he formally determines that such action would be in the national interest. As you recall, Mr. Chairman, the Congress amended the Export-Import Bank Act last October, with a provision in Section 2(b)(1)(B), requiring that such a determination be made before export financing could be denied for foreign policy reasons. Enacting a similar

provision for export licenses would assure a consistent U.S. policy for both export financing and licensing restraint decisions.

Before making such determinations, we recommend that the President be required to consult with industry, assess the foreign availability of the item proposed for control, and seek assurances that foreign competitors will impose comparable controls.

Third, all items subject to individual export licensing controls should be reviewed at least annually to determine whether controls are still called for in light of changed circumstances such as technological obsolescence or changes in policies of foreign governments. For example, an immediate review of the special controls that have been imposed on the export of oil exploration and production equipment and technology to the Soviet Union seems warranted. These controls were imposed last summer at a time of serious strains in U.S.-Soviet relations, arising in part from objectionable Soviet domestic policies. Since then, all license applications under these controls have been approved. Continuing the controls needs to be questioned. Ending them could certainly help eliminate concerns about the reliability of U.S. suppliers.

Taken together, the three types of action we have recommended could significantly reduce the number of items subject to individual licensing controls. This could free up resources to better evaluate the really critical questions of control and to speed licensing decisions.

ASSURING PROMPT AND CONSISTENT LICENSING DECISIONS

Aside from complaints that far too many items are subject to individual export licensing control, exporters are frustrated by the complexity of the licensing system, by the delays in decisionmaking and by the lack of responsiveness of government officials to requests for information on the status of individual licensing cases. Improvements in these areas are essentially questions of management and organization, but a clear statement of congressional intent in the new legislation that export expansion is high on the list of national priorities would help. By working closely with officials in the agencies concerned, this Committee can determine whether remedies require additional legislation, more effective direction, greater resources, or any combination of these.

I would be pleased to respond to any questions.

PETITION BY THE MEMBERS OF THE EMERGENCY COMMITTEE FOR AMERICAN TRADE TO THE GOVERNMENT OF THE UNITED STATES FOR FULL RECOGNITION OF THE DAMAGING IMPACT OF EXPORT RESTRAINTS ON THE AMERICAN ECONOMY

The United States adverse balance of trade is of near crisis proportions at a time when our nation's dependence on both exports and imports has never been greater. The continuation of this dependence is inescapable. In the case of oil, even under the most ideal circumstances of conservation, exploration, and the development of alternative energy sources, we cannot avoid massive dependence on imports. A long list of other raw materials not produced in sufficient quantities must be imported to sustain our economy. Moreover, imports of other products are important to American consumers.

Exports are the principal means of paying for our imports and are vital to the well-being of much of America's agriculture and its manufacturing and service industries. But competition for world markets has become fierce. Our share in world trade has been declining and our competitiveness in some areas is being eroded by changes in the world economy. Our export growth simply has not kept pace with the steady growth of our imports. In these circumstances, export expansion deserves highest priority by our national leaders in order to narrow the trade gap in a constructive fashion.

Yet, at a time when the need for export expansion has never been greater, our government is taking actions that increasingly inhibit U.S. sales abroad. In some cases, export incentives common to our foreign competitors are denied to Americans. In other cases—and these are becoming increasingly burdensome—American exporters are denied markets for reasons of public policy other than national security. Similarly, efforts have been made to impose on U.S. financial institutions disclosure and lending requirements with respect to their international operations that are unrelated to such taditional banking concerns as credit worthiness, and that are designed to achieve public policy goals.

Americans who depend on the export sector are as concerned as any of our citizens about human rights in other nations, about discrimination against other Americans, about protection of the environment, about consumer safety, about curbing terrorism and about other such worthwhile goals of American policy. The

export sector, however, is becoming more and more the instrument for the pursuit of these goals, thus bearing the burden of adverse domestic economic consequences—which are not being adequately taken into account.

The Emergency Committee for American Trade deplores this trend. We are concerned about the impact export denial has on the domestic economy and on the competitive position of U.S. firms. In nearly all instances our foreign competitors will step in to pick up the business opportunities afforded them through U.S. export restraints.

For example

The Department of State—presumably for reasons of foreign policy—is holding back the sale to Libya of two Boeing 727's powered by Pratt & Whitney engines. The Libyan airline already operates a number of the same aircraft. The Libyan airline's chairman, while stating a preference for the Boeing aircraft, warns that unless an export license is soon granted, he is prepared to turn to the French-German Airbus to meet his airline's needs. He has also said that, if necessary, consideration will be given to Soviet-made equipment.

Allis-Chalmers Corporation had learned that the Department of State was preventing the export of $268 million of U.S. turbines to Argentina by invoking a provision of the Export-Import Bank Act concerning human rights. John L. Moore, Jr., President of the Bank, wrote Allis-Chalmers' Chairman, David C. Scott, that the project "clearly would qualify on economic or financial grounds for Eximbank financial support." Allis-Chalmers reports that 18 million man-hours of work for Americans are at stake since without U.S. financing, the order would be filled from abroad.

After two years of negotiating an order and an export license to sell a $6.8 million computer system for the Soviet news agency TASS, Sperry Rand Corporation found that its license was being refused because the sale was "inconsistent with the foreign policy of the United States at this time." The negotiations had been conducted under provisions of the Export Administration Act, and Sperry Rand's Chairman, J. Paul Lyet, said that the system "was carefully designed to provide adequate but not excessive capacity" for the 1980 Olympics.

Manufacturers of oil production equipment are threatened with substantial losses of exports to the Soviet Union for foreign policy reasons through a new Presidential directive.

Foreign boycott legislation has prevented Deere & Company from bidding to supply a substantial number of tractors to Iraq from its Dubuque, Iowa factory. The company had developed the Iraq market for many years. A successful bid could have resulted in U.S. business worth $18 million and 20,000 man-days of work for John Deere's U.S. employees.

These examples taken from ECAT members are only illustrative. Most lost sales are not as dramatic as some just mentioned, and have not come to light. Meanwhile, the reputation of American companies as reliable suppliers is being eroded. The arbitrary and unpredictable nature of recent U.S. government actions can only have a chilling effect on the relations between U.S. exporters and their foreign customers and on future as well as on current exports. This is particularly true when the products affected are readily available from competitors abroad.

The Emergency Committee for American Trade recognizes and supports the need for export controls to protect U.S. national security. American business is willing to forego market opportunities where it is determined that the sale of products or of technology would clearly be detrimental to our national security. We recognize this legitimate national interest, but question the use and effectiveness of export restraints as a means of achieving desired political changes in the internal policies of other nations.

The congruence of public policy restrictions on exports is a phenomenon that was in all likelihood unanticipated by the architects of the various laws and regulations containing authorities to control exports. Yet the result is real. The export sector of our nation has been conscripted into a service from which others are largely exempt—and the casualty list is growing.

Again, probably by coincidence, this casualty list is hidden from public view and even from the view of legislators and Administration leaders. When laws and regulations are enacted that restrict exports, there has been up to now no requirement for analyses of their effects. And even when the adverse consequences were certain, there has been no consideration given to the help needed by the worker who would be unemployed or the farmer without a market or the entrepreneur facing bankruptcy or the shareholder watching equity shrink and dividends dwindle. Large companies may be able to weather the consequences, but small companies may not. While many small to medium-size companies are not direct exporters, they

are suppliers to major exporters and thus share the economic loss when their customers' exports are curtailed by the government. One of our best hopes for increasing U.S. exports lies with encouraging smaller companies to export. Instead, they may concluded that it is hazardous to base much of their business on exports.

We, therefore, recommend that when the U.S. government proposes to take action to deny U.S. exports for reasons of public policy other than national security, it issue a public statement detailing the economic consequences in as complete detail as possible. Included, for example, should be identification of the target country and the product involved, the dollar amount of the shipment being curtailed, the supplier or suppliers concerned, and, to the extent available, the number and location of man-hours of work being lost as well as the names of other major countries from whom the product could be purchased. The export-denial statement should specify the specific reason for the denial and an analysis of how the U.S. action will bring about the desired change in the country concerned.

We believe a better appreciation of such adverse consequences should give pause to placing the burden of public policy on the export sector. Therefore, every action bearing on export restriction, whether the denial or delay of credits or of export licenses, or of penalties resulting from the failure to fulfill a contract, should be subject to open study of the potential damage to the export sector and then to periodic review.

We believe that greater awareness of the burdens borne by American workers, farmers, companies, and shareholders would contribute substantially to restraint in the use of trade for public policy purposes.

The members of the Emergency Committee for American Trade stand ready to cooperate with business, worker and farmer groups and with the Congress and the Administration in seeking feasible measures to sustain and to increase U.S. exports, which we believe to be a national necessity.

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Senator STEVENSON. Thank you, sir.

As I mentioned this morning, we will have a bill introduced very soon to overhaul the Export Administration Act similar to some of the provisions that you have recommended.

We welcome your comments on that bill when it is available. Also, tomorrow I expect to release the report of this subcommittee at the conclusion of its study of U.S. competitiveness in the world.

That will contain recommendations for U.S. export strategy, including overhauling of the Export Administration Act. I think it will be the first comprehensive export policy to be suggested by anybody or any agency of this Government—at least it goes a lot further than the administration's export policy.

So that will be available for your comment, too. I am sorry that we couldn't get it finished and available at the beginning of this latest series of hearings, but it does reflect the prior hearings and will become the basis, or could become the basis for legislation in this Congress.

So we welcome your comments, needless to say, on that study, including its recommendations for the U.S. export policy. We ought soon to be hearing from the administration with its recommendations for changes in the Export Administration Act. It is taking a long time, but when those recommendations are available, your comments to them will also be welcomed.

Let me address this question to all of you: Could the technical advisory committees perform a useful role in helping to assess foreign availability?

Does anybody want to take that one on?

Mr. McLellan. Any particular technical advisory committee?

Senator Stevenson. I was thinking of it generally, using technical assistance advisory committees. Some might be more appropriate than others.

Mr. McLellan. As a general proposition, I would endorse that. Very often, these considerations within the interagency group may be made without specific knowledge of what the competitive situation is.

The group may presume to know the competitive position, but it may not always be as current or as sharp on it as they might be.

I would think that an advisory service of some sort could be constructive in the deliberations.

Mr. Gray. I don't think there is any question about it. We have supplied catalogs and technical information on machine tool availability around the world. Some of our people have even offered to give affidavits after having been in foreign plants where they have seen equipment installed that was delivered from other CoCom countries.

To my knowledge the Government has never accepted an offer for an affidavit. We are Americans, and we know what is going on in the factories overseas. We know that they are getting the equipment in spite of the CoCom regulations.

So the TAC committees could be helpful with that information.

Senator Stevenson. The administration—I think the Department of Commerce—excuse me. Some of the administration witnesses maintain that industry, in advising of foreign availability, doesn't take into account the differences in quality, and that is where the breakdown comes.

Do you want to respond to that?

Mr. Baboyian. I would respond to that. My particular company is the world's largest exporter of petroleum, petrochemical processes, and we meet competition from the French, Japanese, and even some of the CoCom countries themselves.

There is a question of American quality. We would be less than truthful if we said that we didn't have good quality products, but it is not quality that ought to determine whether or not a particular export ought to be allowed, or disallowed, if it means that they have to spend 5 or 10 percent more or get less yield from a particular plant as a result of not getting the product from the United States when it involves petrochemical fibers or fuel oils, that seems like an immaterial point.

We have had experience regarding this question of having a technical advisory committee, where the Department of Defense has totally misconstrued the technology. Once they held up a li-

cense for over a year because they believed that the technology we were exporting could produce jet fuel of high quality, when in fact it was designed to produce heavy-fuel oil and we would have had to have made major alterations in catalysts and other techniques that would have had to come from our own technological base to change it to jet fuel.

You know, you can find a thousand different reasons not to export when you are dealing with these countries. We feel too much is being controlled, and we are losing sight of those things we really should control as a result of it.

Mr. GRAY. Senator, a couple of things.

One of the things that the Commerce Department frequently asks us to provide is a copy of the order, or information of that type. But neither buyer nor the seller, if he has violated the CoCom regulations, is going to make that available. In any case, we are not talking about the cutting edge of technology. What we are talking about is the kind of technology that others, including the socialist countries, have available.

Let me give you an example. We had an International Machine Tool Show in Chicago last September. The Hungarians demonstrated a three-axes computer numerically controlled machine tool that is so competitive that they are being sued by an American company for patent infringement.

Now the reason the Hungarians developed the machine is because they couldn't buy it here in the United States, and they so told a representative of our Department of Commerce.

Senator STEVENSON. I went to that show. I think I saw that machine. I have mentioned it to certain representatives of the administration, without a very satisfactory response.

This is a slight digression, but perhaps witnesses from the administration recently who in substance repeated the administration's earlier assertions that the depreciated dollar and higher growth rates in foreign countries would rectify our trade balance, some of you have addressed yourself to the basic problem.

Would you like to respond to their basic response?

Mr. BABOYIAN. If I might address it from the construction industry's standpoint, what is happening internationally is that, for example when a construction firm from the United States bids on a project in Saudi Arabia or elsewhere, we may be bidding against four or five other U.S. companies, as well as our foreign competitors. We have very little, if any, financing to offer from our own shores. We certainly haven't had our Government give massive extensions of credit as have the Japanese and others.

We don't have the luxury of having our own diplomatic personnel tie our deal in with arms deals, as the French have done in many places. And we find that the competition is subsidized by their governments, which more than makes up for the difference in the dollar value.

One example with my particular company. We have major competition from an organization in France which is a sponsored government-owned petroleum petrochemical research organization. And every gallon of gasoline that is sold in France has a small fraction of it, the price of that gasoline, go into underwriting the research and development done by that particular organization.

They now compete with us in virtually every part of the world. And in doing so, they can offer in many cases some competitive advantages. But we have seen them take the French Ambassador in and offer Mirage fighters in order to get a contract against our own firm. And the U.S. dollar does not mean a whole lot when you are talking in those terms.

Often U.S. bank financing does not exist for our firm in any way, either.

Mr. GRAY. Senator, the only growing market for machine tools is the world market. The machine tool demand in every country in the world is a highly cyclical demand. The only way to maintain a viable machine tool industry is to become so closely tied to the world market that we gain by its steady upward growth.

In the last few years the Socialist market has grown to the point where it is today, as I indicated in my testimony, 50 percent of the entire machine tool consumption outside the United States. We are getting only 1 percent of that business. We cannot maintain a viable machine tool industry here in the United States with that small percentage of the Socialist countries' business.

The German industry has grown. The Japanese tool industry has grown. The Italian and the French have grown. And it isn't going to be very long, with the applied research experience that they get and the research that they are able to carry on as a result of the profits generated from that business, that the technological lead we now have will be further narrowed. And pretty soon, they are going to overtake us. Then we are going to be No. 2, 3, or 4 in machine tool technology.

It is very important that it be made possible for us to compete in the world market.

Senator STEVENSON. Have you any way of estimating how much business is lost not as a result of applications denied, but as a result of the uncertainty, the risk, the delays, the expense, which prevents the transactions from materializing?

Mr. GRAY. I don't know that anyone has come up with the figures. We know that we can compete with Germany, Japan, in other markets. We know that up until the Jackson amendment came into effect, even though we got into the Socialist market much later than the other countries, we were on a climbing rate.

Our order boards for the Soviet Union are virtually blank. There are very few machine tool orders for the Soviet Union today. I don't know that we can give that kind of an estimate. The figure has got to be tremendous.

[The following letter was ordered inserted in the record:]

NATIONAL MACHINE TOOL BUILDERS ASSOCIATION,
McLean Va., March 27, 1979.

Mr. BOB RUSSELL,
Counsel, Subcommittee on International Finance, Dirksen Senate Office Building, Washington, D.C.

DEAR MR. RUSSELL: In February of 1978, NMTBA conducted a survey of its members on the question of export licensing difficulties. Of the 90 respondents to the questionnaire, 30 export licensable machine tools to the Socialist countries, and another 9 companies have ceased attempts to do so because of past or anticipated difficulties in obtaining a license. Only 12 of these 39 companies indicated that they have never experienced licensing problems. The balance have experienced denials and/or delays. The estimated additional annual volume these companies claim they would receive, if it were not for unreasonable delays and/or license denials, exceeds

by $10 million our industry's total shipments to the Socialist countries ($45 million) in 1977.

Sincerely yours,

JAMES A. GRAY, *President.*

Mr. MCLELLAN. It isn't true, either, that the Soviets have terminated imports of machine tools; they are getting them from Western Europe. We can get some numbers that will indicate the Soviet imports, that they are continuing, but imports from the United States are dropping off. So you will see that the companies from Western Europe are taking advantage of that opportunity.

Senator STEVENSON. Don't these controls, the uncertainties, also have the effect of encouraging U.S. manufacturers to locate production offshore? There are other reasons for that, product liability laws, for example.

Mr. MCLELLAN. I would like to respond to that. I can honestly say that when we locate production facilities offshore, it is to get to a market or stay in a market that we can't get to by exporting. We export two-thirds of our business, so we are, by any definition, a good multinational, because we don't go offshore and produce and then bring it back to the United States. We put in a facility to get to a market that we couldn't get to otherwise.

I think it is accurate to say, along with that, that we are getting today benefits from governments where we have subsidiaries located, in Europe and Japan, that we have difficulty competing with from the United States. All of our exports to France have both a magnificent credit arrangement and, secondly, an insurance guarantee, so that we—if we have bad receivables from Iran, we are covered on the receivables. And thirdly, we get inflation insurance so that if the cost of production increases against the bid cost structure, the Government reimburses us. That is the extreme. But they really go to the hilt to see that they get that export business.

Now, back to the original question ——

Senator STEVENSON. It may be a good thing that they got the Iranian business.

Mr. MCLELLAN. At least they got the jobs and the original business on that. So it is a question of how much value you assign to that.

I use that as an example to demonstrate the importance that the French government attaches to its export business. Eventually, exports will be important enough to the United States that this Nation will respond to that need. The question is when.

I submit the time is here now, given the deficits we face and the weakness of the U.S. dollar. I think the time is now to take action. But certainly the governments in Europe recognized this long before we did.

Senator STEVENSON. It takes some people a long time to learn that this isn't the 18th century. Devaluing the dollar causes inflation, which offsets the advantage of lower prices abroad. The events in Iran probably affect growth rates in other major oil-consuming countries more severely than the United States, which means that all of their assumptions about the effect of the higher growth rates are no longer operative.

Mr. BABOYIAN. That is a philosophy that Blumenthal brought in early on in the administration. And just looking at our industry,

we dropped from No. 1 to No. 4 in the last 3 or 4 years. We haven't done that because we've gotten dumber.

Incidentally, we are the only country I can think of, which uses exports as a stick and not as a carrot. Most of our competitors find it a diplomatic advantage to flaunt their technology and what they have got to sell. We go the other way.

Mr. GRAY. Senator, on your question about the amount of business actually lost. We did make a study last year of the amount of business lost as a result of export controls. I would be glad to supply that to you. But it does not indicate the amount of business that we lost because we were not even asked to bid on it.

Senator STEVENSON. That's what I'm getting at.

Mr. GRAY. That is difficult. Let me quote Something from the Foreign Trade Minister Barzcan from Czechoslovakia: "The CSSR is interested in importing U.S. capital goods and equipment and other products. Western European competitors are getting the business because of U.S. export controls."

That was in the "Journal of Commerce" of February 16, 1979.

Senator STEVENSON. Thank you, gentlemen.

We will have to recess now for as long as it takes me to vote. We are in recess.

[Recess.]

Senator STEVENSON. The committee will come to order.

Our next witness is Jan Dlouhy, vice president of the Mideast/Europe/African Division of American Cyanamid.

We will enter your full statement in the record.

STATEMENT OF JAN DLOUHY, VICE PRESIDENT, MEDICAL, EUROPE/MIDEAST/AFRICA DIVISION, AMERICAN CYANAMID

Mr. DLOUHY. Cyanamid is a major multinational American enterprise that manufactures and markets consumer products in more than 120 countries—1978 worldwide sales were $2.7 billion. Net earnings were $156 million.

In recent years, approximately 40 percent of our operating earnings have been generated by overseas sales derived from exports, joint ventures and other arrangements.

We appreciate this opportunity to appear before the subcommittee to comment briefly on U.S. Government policies with respect to the export of beneficial or benign technology—that is, the new medicines, fertilizers, synthetic fibers, agricultural chemicals and other products that we at Cyanamid develop, largely in this country, to meet worldwide human needs for food, health, clothing, shelter, a clean environment and a better way of life.

Specifically, we wish to invite your attention to two major concerns of ours which we believe are shared by many U.S. multinational corporations:

The first is the cumulative effect of the many constraints placed on us by the U.S. Government, which is working to make us less competitive with the multinational companies of Japan and Western Europe.

The second is the sometimes forced export of new technology, and the plants and jobs that accompany it, to our overseas subsidiaries because of the delay in obtaining product approvals in this country.

Both are relevant in the context of this committee's expressed interest in the control which should be placed on the export of U.S.-originated technology in the national interest.

The committee has asked whether technology transfer should be limited when it appears likely to increase imports to the United States or to enhance the competitive position of foreign producers relative to American producers in world markets? Our comment is limited to this question.

Technology and open competition.

We strongly believe that the open, dynamic and energetic flow of benign technology across national borders offers mankind its best hope for both economic and social progress. Such a flow should always be encouraged by the U.S. Government so long as it works to improve the human condition. Technology transfer should not become a tool of foreign policy nor a weapon of ideology except in the most extreme cases. We should recognize that government cannot compel the generation and transfer of beneficial technology in free societies. It is a voluntary process which continues so long as the sender and receiver both benefit.

However, this also implies open and equal competition in world markets, which is hardly ever the reality since virtually all industrialized states construct their trade, investment, and tax policies to favor their own multinationals.

The United States must realize that it needs American multinational business abroad. It cannot be apathetic or neutral to U.S. commercial success overseas. Or, even worse, the U.S. Government should not unilaterally inhibit our trade and investment abroad by penalizing the international operations of U.S. companies through arbitrary impediments to investment or technology transfer overseas. For our part, we welcome foreign investment and foreign technology into the U.S. market where we are more than willing to compete on an equal basis.

This committee is surely aware of the many U.S. laws and regulations, such as the antitrust laws, which are extended to the operations of our foreign subsidiaries. Such policies, combined with the arm's length attitude of the U.S. foreign affairs establishment, restrain the competitive ability of American multinationals abroad.

This situation is compounded by the competitive advantage that foreign multinationals enjoy as a result of the attitudes and policies of their governments, who construct their trade, investment, and tax policies to favor their own multinationals.

Permit me now to cite an example from our own experience at Cyanamid to demonstrate how existing U.S. export policy works against this open flow of new science.

The Food, Drug, and Cosmetic Act regulates distribution of pharmaceutical products and requires that such products first be approved in the United States by the Food and Drug Administration before export will be permitted. This prohibition holds for almost all drugs, even for such things as tropical medicines and special vaccine for which there may be no need in the United States

As you may know, for the American pharmaceutical industry as a whole, it now takes an average of 8 years and $57 million in development expense to bring a new pharmaceutical chemical

entity to the point of FDA approval. Therefore, we, like many others in the industry, have responded to these circumstances:

First, by not seeking FDA approvals for new drug products which may be needed in other parts of the world, but not here;

And second, by placing the production of new products which may be approved overseas before approval in the United States in our overseas facilities.

Incidentally, the United States is the only country which has the requirement of domestic approval prior to allowing exports.

Cyanamid prefers, other things being equal, to do our basic synthesis and manufacturing in the United States, and to do the final stages of formulation and packaging overseas. This preference is based on economic reasons. Many countries, and their number is growing, insist on some basic manufacture in their country. This is based largely on political reasons.

It is ironic that U.S. export policies are forcing us in the direction of exporting our production facilities rather than our products.

As an example, in 1975 we undertook an $11 million expansion of our pharmaceutical plant at Gosport, England, to manufacture four new drug products for export to world markets.

When the facility was planned, we were concerned about the delays we expected, based on past experience, in obtaining new drug approvals in the United States.

In practice, the Gosport plant is now in operation and is producing two of the four new drugs. These two are now approved in many major foreign countries, but not in the United States. The third product is approved here, and we terminated the fourth in the research stage. We expect FDA approval for one of the products now made at Gosport this year.

Because we now have the U.K. plant in production, and because the additional new products coming from research are still 1 to 2 years away, for economic reasons we will use the Gosport plant to supply the U.S. market.

The Gosport plant as it is now operating produces products valued at $15 million annually for export from the United Kingdom. This plant could have, and should have, been built in the United States. The plant, and its annual output, is lost to this country.

We have other, similar examples.

A few years ago, we introduced Dexon synthetic absorbable sutures. We wanted to manufacture the suture braid in Danbury, Conn., and export it to England for finishing and packaging to serve the continent. However, because of delays in FDA approval of the particular braid formulation, we were forced to put a large part of the manufacturing operation in England. Now that we finally have FDA approval, we may or may not bring the basic manufacture back here. This will depend on the economics involved.

I want to emphasize that once a facility is built overseas, it is unlikely that it will be shut down simply to move production back to the United States. Once the capacity exists, it will be used unless economics dictates otherwise.

But the future is always more important than the past. Cyanamid now has several new drug products in research, which, if successful, will be major therapeutic breakthroughs. These include

an important new heart drug, cetaben sodium, designed to treat atherosclerosis; two new anticancer agents, and an analgesic and several others.

Under our existing law, all of these will first have to be approved by the FDA before they can be exported from this country, regardless of the need overseas or the willingness of foreign health authorities to approve the drugs for their countries.

Thus, the FDA becomes a world standard in disregard of the opinion of medical authorities in other nations.

This attitude may have been justified in the past when we sought to be the world's policeman. However, today medical authorities in most major nations are as sophisticated—in some cases more sophisticated—than in this country. The provision is out of date. But it does exist.

Therefore, it is clear to us that these major new drugs may well receive registration and medical acceptance in several major countries abroad before the FDA will approve them here. We will have to plan for overseas manufacture to service these foreign markets, solely because of U.S. export policy.

So the story of Gosport will be repeated, perhaps indefinitely.

Mr. Chairman, I realize that these proceedings are in reference to extension of the Export Administration Act and the emphasis is on matters of national security and defense. This act, to my knowledge, never has been used specifically to regulate exports of medical or pharmaceutical products.

However, in the broader context of U.S. export policy and the competitive effects of these policies on American business and employment, I submit that these comments are relevant. I invite you and your colleagues in the Senate to consider our views when specific legislation on exports of pharmaceuticals comes before you later in this session.

Thank you.

[Complete statement of Mr. Dlouhy follows:]

STATEMENT OF JAN DLOUHY, VICE PRESIDENT, EUROPE/MIDEAST/AFRICA DIVISION, AMERICAN CYANAMID CO.

I am Jan Dlouhy, vice president, medical of the Europe/Mideast/Africa Division of American Cyanamid Company which has its world headquarters at Wayne, New Jersey.

Immediately preceding my present assignment, I was president of Cyanamid's domestic medical products subsidiary, Lederle Laboratories. I was born in Czechoslovakia, am a citizen of Canada, and hold a doctorate in chemical engineering from McGill University, Montreal.

Cyanamid is a major American multinational enterprise that manufacturers and markets agricultural, medical, specialty chemical, consumer and Formica brand products in more than 120 countries. Our 1978 worldwide sales were $2.7 billion and net earnings were $156 million. In recent years approximately 40 percent of our operating earnings have been generated by overseas sales derived from exports, joint ventures and other arrangements, and from wholly owned foreing subsidiaries.

We appreciate this opportunity to appear before the subcommittee to comment briefly on U.S. Government policies with respect to the export of beneficial or benign technology—that is, the new medicines, fertilizers, synthetic fibers, agricultural chemicals and other products we at Cyanamid develop largely in this country to meet worldwide human needs for food, health, clothing, shelter, a clean environment and a better way of life. Our defense-related work has always been limited to wartime emergencies and never has been exported by us.

Specifically, we wish to invite your attention to two major concerns of ours which we believe are shared by many U.S. multinational corporations:

The first is the cumulative effect of the many constraints placed on us by the U.S. Government which is working to make usl ess competitive with the multinational companies of Japan and Western Europe.

The second is the sometimes forced export of new technology, and the plants and jobs that accompany it, to our overseas subsidiaries because of the delay in obtaining product approvals in this country.

Both are relevant in the context of this committee's expressed interest in the control which should be placed on the export of U.S.-originated technology in the national interest. The committee has asked whether technology transfer should be limited "when it appears likely to increase imports to the United States or to enhance the competitive position of foreign producers relative to American producers in world markets?" Our comment is limited to this question.

TECHNOLOGY AND OPEN COMPETITION

We strongly believe that the open, dynamic and energetic flow of benign technology across national borders offers mankind its best hope for both economic and social progress. Such a flow should always be encouraged by the United States Government so long as it works to improve the human condition. Technology transfer should not become a tool of foreign policy nor a weapon of ideology except in the most extreme cases. We should recognize that government cannot compel the generation and transfer of beneficial technology in free societies. It is a voluntary process which continues so long as the sender and receiver both benefit.

However, this also implies open and equal competition in world markets, which is hardly ever the reality since virtually all industrialized states construct their trade, investment and tax policies to favor their own multinationals.

The United States must realize that it needs American multinational business abroad. It cannot be apathetic or neutral to U.S. commercial success overseas. Or, even worse, the U.S. Government should not unilaterally inhibit our trade and investment abroad by penalizing the international operations of U.S. companies through arbitrary impediments to investment or technology transfer overseas. For our part, we welcome foreign investment and foreign technology into the U.S. market where we are more than willing to compete on an equal basis.

"Equal basis" is the key phrase. This committee is surely aware of the many U.S. laws and regulations, such as the antitrust laws, which are extended to the operations of our foreign subsidiaries. Such policies, combined with the arm's length attitude of the U.S. foreign affairs establishment, restrain the competitive ability of American multinationals abroad.

This situation is compounded by the competitive advantage that foreign multinationals enjoy as a result of the attitudes and policies of their governments, who construct their trade, investment and tax policies to favor their own multinationals. Such incentives include, for example, tax benefits for private research.

The combined effect of these factors has led to the critical situation we find ourselves in today. The situation is that the total sales by overseas affiliates of foreign multinationals have surpassed those of U.S. subsidiaries abroad. In addition, direct investment abroad by foreign multinationals has reached, and may be exceeding, the U.S. level.

It is essential for our future as a nation that the United States continue to be the world leader in research and technology, and that such benign technology be made available to the people of all nations without regard to our judgments on their ideology, their form of government, or their policies on human rights.

We at Cyanamid are convinced that the great burden of social progress in the coming decades will be carried by private industry, whose role is the satisfaction of the material needs and aspirations of the peoples of the world. As these needs are met, evolutionary and peaceful social advances become possible. And to meet these needs in the future, science and technology must be applied in increasing amounts to problems which are becoming more complex everywhere in the world.

However, our role as a generator of technology does not mean we should either impose it on others or withhold it from them. The marketplace provides a mechanism for the innovators to sell technology and those in need to purchase it, whether we in the U.S. are buyers or sellers.

CYANAMID'S EXPERIENCE

Permit me now to cite an example from our own experience at Cyanamid to demonstrate how existing U.S. export policy works against this open flow of new science.

The Food, Drug and Cosmetic Act regulates distribution of pharmaceutical products and requires that such products first be approved in the United States by the

Food and Drug Administration before export will be permitted. This prohibition holds for almost all drugs, even for such things as tropical medicines and special vaccines for which there may be no need in the U.S.

As you may know, for the American pharmaceutical industry as a whole, it now takes an average of eight years and $57 million in development expense to bring a new pharmaceutical chemical entity to the point of FDA approval.

Therefore, we, like many others in the pharmaceutical industry, have responded to these circumstances:

First, by not seeking FDA approvals for new drug products which may be needed in other parts of the world, but not here, and

Second, by placing the production of new products which may be approved overseas before approval in the U.S. in our overseas facilities. I remind you that the United States is the only country which has the requirement of domestic approval prior to allowing exports.

Cyanamid prefers, other things being equal, to do our basic synthesis and manufacturing in the United States, and to do the final stages of formulation and packaging abroad. This preference is based on economic reasons. Many countries, and their number is growing, require us to do some or all of basic manufacture in their country. This is based largely on political reasons.

It is ironic that U.S. export policies are forcing us in the direction of exporting our production facilities rather than our products.

In 1975, we undertook an $11 million expansion of our pharmaceutical plant at Gosport, England, to manufacture four new drug products for export to world markets.

When the facility was planned, we were concerned about the delays we expected, based on past experience, in obtaining New Drug Approvals in the United States. The idea was to manufacture these products overseas and, when U.S. approvals were obtained, to move the manufacture back here and to replace them at Gosport with further new and as yet unidentified products to come out of research.

In practice, the Gosport plant is now in operation and is producing two of the four new drugs. These two are now approved in many major foreign countries, but not in the United States. The third product is approved here, and we terminated the fourth in the research stage. We expect FDA approval for one of the products now made at Gosport this year.

Because we now have the United Kingdom plant in production, and because the additional new products coming from research are still one to two years away, for economic reasons we will use the Gosport plant to supply the U.S. market.

The Gosport plant as it is designed will produce products valued at $15 million annually for export from the United Kingdom. This plant could have, and should have, been built in the United States. The plant, and its annual output, is lost to this country.

We have other, similar, examples.

A few years ago, we introduced Dexon synthetic absorbable sutures. We wanted to manufacture the suture braid in Danbury, Connecticut, and export it to England for finishing and packaging to serve the continent. However, because of delays in FDA approval of the particular braid formulation, we were forced to put a large part of the manufacturing operation in England. Now that we finally have FDA approval, we may or may not bring the basic manufacture back to the United States, depending on the economics involved.

I want to emphasize that once a facility is built overseas, it is unlikely that it will be shut down simply to move production back to the United States. Once the capacity, and the sourcing and distribution networks, exist, they will be used.

But the future is always more important than the past. Cyanamid now has several new drug products in research, which, if successful, will be major therapeutic breakthroughs. These include an important new heart drug, cetaben sodium, designed to treat arteriosclerosis; two new anti-cancer agents, and an analgesic we believe to be as effective as codeine but without its addictive characteristics.

Under our existing law, all of these will first have to be approved by the FDA before they can be exported from this country, regardless of the need overseas, or the willingness of foreign health authorities to approve the drugs for their countries.

Thus, the FDA sets its own criteria as a world standard in disregard of the opinion of medical authorities in other nations.

This attitude may have been justified in the past when we sought to be the world's policeman. However, today medical authorities around the world are as sophisticated—in some cases more sophisticated—than in this country. The provision is out of date. But it does exist.

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Thank you.

Senator STEVENSON. Thank you, sir.

Do the counterparts of FDA in other industrialized countries approve pharmaceuticals for export, or is it just for domestic sales?

Dr. DLOUHY. Just for domestic sales. They can manufacture in England, for example, drugs and export them to other countries of the world.

Senator STEVENSON. That is true ——

Dr. DLOUHY. To the best of my knowledge of all Western countries, industrialized countries.

Senator STEVENSON. And can the importing countries protect themselves against dangerous drugs by simply excluding from their markets drugs which have not received the approval of some accepted agency such as the FDA?

Dr. DLOUHY. Yes. Specifically, Western Europe, Japan, have procedures equivalent to the FDA; in some cases more stringent; in some cases less.

The less developed nations, Africa, Latin America, usually have one provision that the drug be approved in the country of origin or that it must be approved in the country where it is manufactured.

Senator STEVENSON. So, the public health is protected not by export controls, as in the United States, but by import controls of the countries within which the people are located, by their governments.

Dr. DLOUHY. That's true.

Senator STEVENSON. What is a suture braid?

Dr. DLOUHY. Synthetic suture. It is superior to gut. It substitutes for gut, and by FDA law it is a drug, since it is absorbable and implanted in the human body.

Senator STEVENSON. As you acknowledge toward the end, we have the responsibility for the Export Administration Act, and as far as I know the Export Administration Act does not cover the export of drugs. That is the FDA law. This is a new one to me. Offhand I am not sure what I can do about it. It is certainly a good example of how the United States under the best intentions deprives itself of economic opportunity in the world without achieving any of its objectives.

At least it seems in this case that if drugs can't be obtained here, they are either obtained elsewhere or, as you pointed out, the facilities for manufacture are located abroad, and subsequently can be obtained.

Dr. DLOUHY. It is the same story we heard awhile ago, that the ultimate sources for these products are not limited to the U.S.

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sources, and all we are doing is depriving ourselves of exports from this country by such regulations.

Senator STEVENSON. We will have followup on that. We may have some more questions. Thank you, sir.

Dr. DLOUHY. Thank you.

Senator STEVENSON. Our next witnesses are Mr. Jerry Goodman of the National Conference on Soviet Jewry and Mr. Robert Gordon, president of the Union of Councils for Soviet Jews.

STATEMENT OF JERRY GOODMAN, EXECUTIVE DIRECTOR, NATIONAL CONFERENCE ON SOVIET JEWRY, AND ROBERT GORDON, PRESIDENT, UNION OF COUNCILS FOR SOVIET JEWS

Senator STEVENSON. We would be happy to have you read your statements, but we would be happier if they were summarized and placed in the record. We still have four more witnesses to go. Who would like to go first?

Mr. GOODMAN. I am executive director of the National Council of Soviet Jewry a coalition of 39 national, membership groups and nearly 300 local committees, councils, and federations. You are familiar, Mr. Chairman, with the National Conference on Soviet Jewry, and I will not go into the details of the organization I represent. I have provided a list of our membership. I would, however, like to raise a number of concerns which have been stimulated by the hearings, and our full statement before this subcommittee will have our complete views on the matters.

At the moment, we have taken a position—and we have stated our position in the past—concerning the increased import of products in the Soviet Union and the Virgin Islands under the provisions of the tariff schedules which allow duty free entry.

We believe that legislation in this regard, in so far as the Soviet Union is concerned, is being violated. While the continuation of the abuses certainly set a precedent of concern to domestic industries, we are also concerned for reasons that go beyond the important economic considerations.

We believe that the Trade Reform Act of 1974, with the related amendments affecting immigration, was a major statement on behalf of humanitarian concerns. Our Nation should be proud of having taken a stand on the fundamental issues of human freedom, and in expecting all nations to respect the rights of citizens to emigrate. By using the Virgin Islands, however, as a port, the Soviet Union has shown disregard for the purpose of our laws and manipulated loopholes of those laws.

In allowing the Soviet Union to circumvent the Trade Reform Act this way, we allowed the gradual erosion of the principles of the act, including that of emigration. While this legislation was not meant to be a springboard for dumping cheap goods on the U. S. market, we are fearful of witnessing the undermining of the nation's commitments to the principles of human rights, as expressed in the Trade Reform Act.

We therefore support efforts to amend the current regulations in order to limit free ports to be used by most favored nations exclusively.

Second, we are very much concerned with the problem of transferring to the Soviet Union equipment for potential application as citizen control mechanisms. We may become a supplier, perhaps inadvertently, of technologies of repression. Recent sales which have received Department of Commerce licensing approval suggest that sophisticated devices which can be used for so-called criminal investigations and intelligence gathering are to be routinely expedited by our Government.

With the upcoming Moscow Olympics in view, we are particularly concerned that citizen control equipment sales to the Soviet Union be limited. Seepage in this area could contribute to the suppression of Soviet citizens pursuing their fundamental rights and seeking to participate in this major international event, notably the Jewish minority. The brutal police attack on Jews at the time of the 1973 university games still haunts us.

I would expect that all Americans share an interest in the welfare of people who live in lands without freedom. It is therefore appropriate that we develop an export policy consistent with this interest, and that we try to insure at least the following: one, adequate assessment and capability and analyzing potential enemies of Soviet technology acquisition in the United States.

Two, adequate control capability to restrict sales of equipment to the Soviet Union where citizen security conditions are threatened.

Three, adequate coordination capabilities between government agencies to inhibit the possibility for conflicting assessments on licensing questions. If these stations of measurement and control can be reached, we can end the hemorrhaging of freedom jeopardizing technology from this country to other countries; in this case, the Soviet Union—and begin to build a sound policy in this area.

Mr. Chairman, I think it would also be most helpful to have a means of simplifying the process for considering possibly conflicting human rights considerations or strictures in international economic policies and applicable legislation. This is not to suggest an abandonment of such limitations, but to help avoid any inconsistency and subsequent confusion in implementing export control policies.

There exists, for example, machinery which could provide such an approach to considering export controls, at least in regard to the nations in CoCom. As we pointed out before this committee last October, there was established within the executive branch of the Government the East-West Foreign Trade Board. That Board, established by Executive order in March 1975, has not functioned as a proper review agency. As a refresher to those who are not familiar with the Board, it consists of a special representative for trade negotiations, six cabinet level members, as well as additional members the President may designate. Perhaps the Board should be strengthened by adding the Secretary of Energy and by developing a regular agenda and adequate budget.

The Board was intended to have responsibility for prior approval of contracts involving technology transfer, among other things, and would provide an orderly process for managing this aspect of export policy. I might suggest that the Board does permit a public role, inasmuch as the two Houses of Congress could disapprove any

determination of a proposed provisions of credits, investment guarantees, or export of technology.

There are also so-called prior consent provisions for the monitoring system which permits interested parties to be heard, allowing for a role of the interested public and for the Congress. This would provide opponents of the transaction the opportunity to react, and it might help eliminate the confusion which resulted, for example, in the wake of the Dresser oil technology transfer of last summer. That contract, as we may recall, was linked to the suppression of the rights of a number of Soviet human rights activists such as Anatoly Shcharansky and Aleksandr Ginsberg.

There was hesitation in evaluating any linkage. This hesitation concerning the linkage could have been misread as a lack of commitment to the plight of those people. Surely, this was not intended. The revitalization of the Board, therefore, which could also evaluate the potential for leverage in the matter of human rights objectives, should be considered.

The board or any similar agency might become a key instrument in determining a rational export policy for our economy. It would help set standards, remove arbitrariness, and modify the inconsistencies which are so unsettling to nations like the Soviet Union with their need for long range planning.

In conclusion, Mr. Chairman, we have offered these brief observations which we hope will be helpful to the committee. In so doing, it is important to note that the national membership organizations in the National Conference on Soviet Jewry and the nearly 300 local Jewish councils, federations, and committees support a policy of trade and détente with the Soviet Union. But we believe that such a policy is not inconsistent with some rational control apparatus.

Indeed, we think this would be advantageous to America's interest in terms of economic policies and in terms of exports, and would be equally advantageous in our pursuit and guarantee of human rights. Thank you.

[Complete statement of the National Conference on Soviet Jewry follows:]

NATIONAL CONFERENCE ON SOVIET JEWRY TESTIMONY SUBMITTED TO THE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS

(By Jerry Goodman, Executive Director, National Conference on Soviet Jewry)

Mr. Chairman: I welcome this opportunity to appear today and present some views concerning matters pending before this Committee.

Thirty-nine national membership organizations, and nearly three hundred local affiliated councils, federations and committees comprise our constituency. Through them, and notably the National Jewish Community Relations Advisory Council and the Council of Jewish Federations, we are able to reach every corner of organized Jewish life in the United States.

The National Conference on Soviet Jewry, as the major, single-purpose agency in this country, representing the bulk of this community's work for the Jewish minority in the U.S.S.R., supports efforts to achieve a meaningful detente. The hopes of all people, including minorities like the Jews in the Soviet Union, will have a better opportunity to achieve security and self-expression in an atmosphere of diminished tensions. In our view, however, detente requires reciprocal obligations. It is not a one-way street.

In the matter of emigration practice from the Soviet Union, for example, an issue of critical concern to many peoples, especially the large Jewish minority in that

storehouse of nationalities, we are still actively pursuing the goal of a change in basic emigration policies and practices.

This committee is now considering how export controls, among other things, help achieve broad foreign policy objectives, and is also considering renewal of the Export Administration Act. A number of concerns are therefore raised at this time.

When the Congress passed Section 402, or the Jackson-Vanik Amendment, to the Trade Act of 1974, the American people made a moral commitment. Senator Bob Packwood of Oregon in a hearing on that amendment praised the idea that this country was putting moral principles above and before pecuniary interests.

At a time when this Administration advocates continued support for the advancement of human rights around the world, and has gained the support of millions of people in countries where we have friendly as well as adversary relations, this Congress should continue to support this unique statement of concern for human dignity. It is a statement which remains in principle and in practice a tenet of American foreign policy and law.

Notwithstanding that fact, for years we have continued to debate the value, indeed the efficacy, of attaching conditions to trade relations with the non-market or communist countries. Where the question was raised as to whether any conditions should be attached in the matter of human rights, especially on the right to leave, we are gratified that a positive decision was taken and that the Congress has continued to uphold that decision. We believe this position and the principles of the amendment are proving beneficial.

As Senator Henry Jackson said in proposing the original amendment, "Long before the President went to Moscow," and he was then referring to President Nixon—"I was one of the handful of Senators who sponsored the East-West Trade Relations Act to promote trade with the Soviet Union; but while we do some bargaining over dollars and rubles, let us do some bargaining on behalf of human beings. When we talk about free trade, let us talk about free people."

Mr. Chairman, we are witnessing a very welcome increase in the number of Jews and others allowed to leave the Soviet Union. We have reason to hope this represents a trend, rather than a spark of hope for would-be applicants as has often been the case in the past. If it continues to increase over a respectable length of time, I'm certain we will all want to evaluate how this impacts on the important issue of U.S.-Soviet trade relations.

The increased number of Jews permitted to leave has certainly raised a series of questions in regard to U.S. policy, especially on trade. We believe the new level proves the value of the Jackson-Vanik amendment to the 1974 Trade Act, after years of waiting and resisting pressures. Should the United States now be forthcoming in matters of trade? If the idea of explicit or implicit linkage to a wide range of bilateral issues is being made, will a lengthy, tough debate on SALT II prevent a serious discussion on emigration from taking place in Washington?

While the perception of real change exists, the Jewish community in this country and its supporters in this effort ask themselves whether the refuseniks, the spearhead of the emigration movement, are to be ignored in exchange for the larger numbers of jews allowed to emigrate?

Dare we forget or ignore the Jewish Prisoners of Conscience who are emigration-related victims? We have insisted that their only "real crime" was their prominence in the struggle to emigrate, a factor used by the KGB and other security forces.

If the harassment of new applicants does not mount again, however, and if the 1979 level continues to remain relatively high compared to previous years, the Congress will surely be asked to be flexible on the linkage of trade to emigration. When the time is appropriate we will also be "flexible" in the matter of trade relations.

We have never opposed trade between the United States and the U.S.S.R. We are for detente and, of course, peace, but a detente that requires reciprocal obligations, not One-way street. Those who would drive us into the "cold war" camp do us a great disservice, as much as those who would counsel us to compromise and retreat.

For years we insisted that the next significant move is up to Moscow, since it rejected the Trade Act. Are they now prepared to return to the understanding that resulted in the passage of the Trade Act linking trade to human rights—to emigration? Perhaps the increased emigration is the beginning of a trend, but we must know that they are what they are supposed to be.

Referring to the increased emigration, Marshall Shulman special advisor to the Secretary of State reportedly said that he had "the impression this is the result of a signal to the Soviet Union" made by Congressmen to Soviet trade officials when they visited the United States towards the end of 1977. Shulman believes that Congressmen suggested that the Jackson-Vanik Amendment would not be modified

until the Soviet Union lifted restrictions on Soviet Jews and others who wished to emigrate. In regard to a flexible application of the law, we concur with that view.

Our position on trade matters does not support the diminution of our resolve to fight increased Soviet oppression when and where it's manifested. The Soviet Union has not undergone a transformation, notwithstanding the increase in emigration, nor has it suddenly become cooperative in efforts to maintain the peace or in matters respecting human dignity. In light of the trials within the last year of Anatoly Scharansky, Ida Nudel, Vladimir Slepak, Alexander Ginzburg and others, and a stepped up campaign of anti-semitism, no one should be deceived as to the nature of the present regime.

We will, therefore, continue to move to achieve our essential goals of wanting Jews to be able to leave in accordance with international law and standards, and of securing for those who have not decided upon their future, or choose to remain, the right to live as Jews within Soviet society with the full rights of every other Soviet nationality—the right to their cultural, historical and religious heritage; the right to have Hebrew books and newspapers printed; synagogues open and functioning; trained rabbis and teachers and others trained and available and as end to all forms of anti-semitism. Simply put, we want the Jews who remain to survive as a people, and to have the means to do so as part of their daily lives.

We have maintained that the security of Jews in the Soviet Union and our campaign are based on an effort to seek the fundamental rights of a religious and cultural/ethnic minority. The Right to leave is an extension of the deprivation of other rights and, for Soviet Jews, the only alternative to the failure of the Soviet Union to alter or modify the existing set of conditions.

Is there then a contradiction in current Soviet policies? We know that the USSR often arranges seemingly contradictory policies, such as meddling in Africa and the Middle East, while SALT talks continue and the number of permits granted for Jews to exit to Israel increases. The Soviets are practitioners of a convenient hard line soft line approach used to their own advantage. We must, therefore, be as resourceful with our own multiple responses.

Indeed, the Congress on other occasions may even wish to express its concern over other continuing acts of the Soviet Union. To be sure, it would be easier if all policies could be simple. Unhappily, the nature of our world precludes that possibility.

Mr. Chairman, we have observed and considered the increasing import of watch movements manufactured in the U.S.S.R. and assembled in the Virgin Islands, under the provisions of General Headnote 3(a) of the U.S. Tariff Schedules, which allow duty-free entry.

The nature of the assembly process of these watch movements, while seemingly complying with Headnote 3(a), actually reveals a gross abuse of the license in the law. The purpose of encouraging the Virgin Island labor market is undermined rather than augmented by the miniscule labor cost add-on. The assembled watches are sold in the United States without proper identification of origin.

In addition to the possible violations of the law in the import of these watches, the process by which they enter duty-free represents a circumvention of the intentions of the law itself.

The watches, for example, are artifically priced below competitive market value, one of the reasons labor cost is so low. This low pricing has already had a negative effect on the American watch industry, the intention of Headnote 3(a) centered about concern for the insular possessions. This has been exploited by the Soviets in exporting a vastly unforeseen volume of watches.

While the continuation of this abuse sets a precedent of concern to domestic industries, we are deeply concerned for reasons that go beyond important economic concerns. We believe that the Trade Reform Act of 1974 was, with the related amendments, a major statement on behalf of humanitarian concerns. Our nation can be proud of taking a stand on issues of human freedom in expecting all nations, including the U.S.S.R., to respect the rights of its citizens to emigrate. By using the Virgin Islands as a port, the U.S.S.R. has shown disregard for the purposes of our laws, in manipulating loopholes of those laws. In allowing the Soviet Union to circumvent the Trade Reform Act we allow the gradual erosion of the principles of the Act, including the concern for emigration.

Believing that Headnote 3(a) was not meant to be a springboard for dumping cheaply goods on the U.S. market, and fearful of witnessing the undermining of our nation's commitment to the principles of human rights expressed in the Trade Reform Act, we support efforts to amend current regulations in order to restrict insular duty-free ports to use by Most Favored Nations exclusively.

The problem of transfer to the U.S.S.R. of equipment with potential application as citizen control mechanisms, is another matter of concern, for we may become the supplier of the technology of repression. Recent sales which received Department of Commerce licensing approval suggest that sophisticated devices which can be used for "criminal" investigations and intelligence-gathering activities are to be routinely expedited by our government.

It seems that we are unable to assess the impact and implications of the aggregate accumulation by the Soviet Union of this technology. We fear that this is contributing to a vacuum in which thousands of decisions on sales, licensing, and equipment transfers must be made.

We submit that items such as registration equipment, searching devices, and certain photocinematographic equipment such as sonographs, psychological stress evaluators, with use potential as a lie detector, or telephone analyzers, with "bugging" potential should not be permitted to be sold to the U.S.S.R. without a proper review. We would also like to see procedures established which would effectively screen out these items from automatic approval lists.

With the upcoming Moscow Olympics in view we are particularly concerned that citizen control equipment sales to the U.S.S.R. be limited. Seepage in this area could contribute to the suppression of Soviet citizens pursuing their fundamental rights and seeking to participate in this major international event, notably, the Jewish minority. The brutal police attack on Jews at the time of the 1973 University Games still haunts us.

All Americans share an interest in the welfare of people who live in or dream of freedom. It is, therefore, appropriate that we develop an export policy consistent with this interest and that we try to ensure:

(1) Adequate assessment capability aimed at analyzing potential end-uses of Soviet technology acquisition in the United States;

(2) Adequate control capability to restrict sales of equipment to the Soviets where citizen security conditions are threatened; and

(3) Adequate coordination capabilities between government agencies to inhibit the possibility for conflicting assessments on licensing questions.

If these stages of measurement and control can be reached, we can end the hemorrhaging of freedom-jeopardizing technology from the United States to the U.S.S.R.—and begin to build a sound policy in this area.

Mr. Chairman, it would be most helpful to have a means to simplify the process for considering possibly conflicting human rights considerations or strictures in international economic policies and applicable legislation.

This is not to suggest any abandonment of such limitations, but to help avoid inconsistencies and the subsequent confusion in implementing export control policies.

There does exist for example, machinery which theoretically could provide such an approach to the consideration of export controls, at least in regard to the nations in CoCom.

As we pointed out last October, there was established within the executive branch of the Government the East-West Foreign Trade Board. That Board, established by Executive Order on March 27, 1975, however, has not functioned as a proper review agency. The Board consists of the Special Representative for Trade Negotiations, Six Cabinet level Members (State, Defense, Treasury, Commerce, Agriculture, Interior) as well as additional members the President may designate. Perhaps it should be strengthened by adding the Secretary of Energy and by developing a regular agenda, with adequate budget.

The Board was intended to have responsibility for prior approval of contracts involving technology transfer, among other things, and would provide an orderly process in managing this aspect of export policy. To the best of my knowledge, however, the Board last met in July 1976, and has fallen into disuse.

It has been suggested that when the Dresser drill-bit contract was being evaluated last summer the President was not aware of opposition within his own administration on this very delicate energy matter. While I do not take a position on whether the arrangement should have gone ahead, it was patently clear that there did not exist any efficient evaluation mechanism. The net result was a series of signals confusing to the American people as well as to Soviet authorities. In light of the then discussed connection between the transfer of that technology and Soviet violations of human rights notably in the instances of Anatoly Shcharansky, Aleksandr Ginsburg and Yurii Orlov, the hestitation could have been misread as a lack of commitment to the plight of these persons.

I do not wish to add undue emphasis to the Board in the consideration of a coherent export control policy, but it seems to me that this Committee should

consider the value of strengthening a body already endorsed by the Congress and institutionally in place.

The process which the Board employs would also permit a public role inasmuch as the two Houses of Congress could disapprove any determination of the proposed provision of credits, investment guarantees, or export of technology. There are also "prior consent" provisions of the monitoring system which permit "interested parties" to be heard, allowing for a role for the interested public and for the Congress. This would provide opponents of a transaction the opportunity to react.

The revitalization of the Board, which could also evaluate the potential for leverage in the matter of human rights objectives, should be considered. We are aware of the possibility that its machinery could become bogged down in considering minor complaints, and be disconcerting to those with whom we trade. We should, perhaps, give consideration to a consistent pattern of gross violations of human rights as articulated in those agreements or international covenants where we are members. I have in mind, for example, the provisions of the Helsinki Final Act, among others. Such documents provide a framework for limiting the "gross violations" to be considered, in determining links to our export policy.

The Board or a similar agency might then become a key instrument in the determination of a rational export policy with non-market countries. It would help set standards, remove some of the arbitrariness, and modify the inconsistencies which are so unsettling to nations like the Soviet Union with their need for long-range planning and five-year plans.

Mr. Chairman, we trust that these very brief observations have been helpful to this Committee. We wish to thank you once again for your time and for your interest.

WHAT IS THE NATIONAL CONFERENCE ON SOVIET JEWRY?

The NCSJ is today the major nationwide coordinating agency for American activity and policy on behalf of Soviet Jews. Thirtynine national member agencies (see list), and over 200 local, affiliated councils, federations and committees comprise the NCSJ constituency. The National Conference on Soviet Jewry reaches nearly every corner of organized Jewish life in the United States, and maintains international ties.

The Conference today has the same two missions it had at its founding:

(1) To help all Soviet Jews who wish to emigrate leave the Soviet Union for Israel and elsewhere.

(2) To help Jews live in the Soviet Union as Jews with all the rights and privileges and freedoms accorded all other groups in the U.S.S.R.

NCSJ CONSTITUENT AGENCIES

American Federation of Jewish Fighters, Camp Inmates and Nazi Victims, Inc.
American Israel Public Affairs Committee.
American Jewish Committee.
American Jewish Congress/AJ Congress Women's Division.
American Mizrachi Women.
American Zionist Federation.
Americans for Progressive Israel/Hashomer Hatzair.
Anti-Defamation League of B'nai B'rith.
B'nai B'rith/B'nai B'rith Women.
Bnai Zion.
Brith Sholom.
Central Conference of American Rabbis.
Conference of Presidents of Major American Jewish Organizations.
Council of Jewish Federations and Welfare Funds.
Free Sons of Israel.
Hadassah, Women's Zionist Organization of America.
Jewish Labor Committee/Workmen's Circle.
Jewish War Veterans of the U.S.A.
Labor Zionist Alliance.
National Committee for Labor Israel.
National Council of Jewish Women.
National Council of Young Israel.
National Jewish Community Relations Advisory Council.
National Jewish Welfare Board.
North American Jewish Youth Council.
Pioneer Women.
Rabbinical Assembly.

Rabbinical Council of America.
Religious Zionists of America—Mizrachi, Hapoel Hamizrachi, Women's Organization of Hapoel Hamizrachi.
Student Stuggle for Soviet Jewry.
Synagogue Council of America.
Union of American Hebrew Congregations.
Union of Orthodox Jewish Congregations of America.
United Synagogue of America.
United Zionists—Revisionists of America.
Women's American ORT.
The World Zionist Organization, American Section.
Zionist Organization of America.

Senator STEVENSON. Thank you, sir. We will go ahead with your statement.

Mr. GORDON. I will take some excerpts from the statement I have presented.

I speak here on behalf of the Union of Councils for Soviet Jews, which is a grassroots organization with affiliates in 20 States and the District of Columbia.

Our members are volunteers, dedicated to the cause of freedom and dignity for Soviet Jews.

The Union of Councils for Soviet Jews is naturally interested in good relations with the Soviet Union and the expansion of United States-Soviet trade. A return to a cold war, siege mentality in the Kremlin would not help Soviet Jews or, for that matter, anyone in the Soviet Union striving for reform.

Greater interaction between the Soviet Union and American societies, gradual removal of political barriers, and the relaxation of tension can only have a beneficial effect on our cause.

However, we do believe that trade with the U.S.S.R. cannot be hermetically insulated from other aspects of the relationship. Trade, as desirable as it may be, is not a panacea unless it is coupled with an improvement in political relations.

As former Secretary of State Henry Kissinger observed before the Senate Finance Committee, March 7, 1974, "Prior to World War I, there was essentially free trade in Europe but, nevertheless, this did not prevent the outbreak of a cataclysmic war."

The lessons of history should not be disregarded. Trade with the Soviet Union can be either beneficial or dangerous, depending upon the overall context of the relationship between Moscow and Washington.

In trade with the Soviet Union, as in all other foreign activities—and trade with a nonmarket economy is definitely a foreign activity—the United States should be true to its interests and values.

Needless to say, national security considerations place certain limits on American exports to the Soviet Union, especially in the areas of high technology and know-how. But national security constraints, as important as they are, are only part of the natural limitations on trade with Russia.

To conduct business as usual with Hitler's Germany and Stalin's Russia, even in nonmilitary items, would be hardly worthy of this great Nation. After all, the equipment for Nazi gas chambers did not have direct military application, and could be easily produced outside the United States.

Would anyone seriously argue that this is a sufficient reason for allowing American products to be used in the extermination of human beings?

In short, it is clear that in the absence of cordial political relations and trade the United States would have little opportunity to pressure the Soviets in the human rights area. But it is equally true that, without such pressure, détente would be immoral and provide tacit approval of repressive Soviet practices.

In the final analysis, this kind of détente would be unstable and shortlived, because the U.S. public would not allow a realpolitik arrangement with the U.S.S.R., free of moral and human rights considerations.

The Union of Councils for Soviet Jews is convinced that the United States has to retain export controls vis-a-vis the Soviet Union. National security considerations represent one obvious reason.

Second, there are items outside the national security area which we still may not want to sell to the Soviets on ethical grounds. For instance, do we want a repetition of the situation described by the famous Soviet dissident Vladimir Bukovsky—that is, the KGB using handcuffs labeled "made in the United States."

The United States should not supply the Kremlin with equipment which can be used for the purposes of repression and political surveillance.

Furthermore, export controls may be and should be used as leverage to incite the Soviet Government to abolish at least some of the more offensive features of their domestic controls.

The argument is often made that linkage between trade and Soviet human rights performance does not make sense, if for no other reason than that the record indicates that the Kremlin will not alter its internal policies as a result of foreign pressure. The Union of Councils for Soviet Jews is in profound disagreement with this view.

But Western pressure, chiefly the introduction of the Jackson amendment, persuaded the Soviet authorities, after several months, to drop the educational reimbursement requirement.

Second, those who argue against linkage usually focus on the instant retribution practiced on several occasions by the Carter administration to punish the Soviets for particularly dismaying repression against Jewish dissidents and activists.

I myself am a businessman and know the importance of basic predictability and stability to trade relations. If there is no confidence between partners, there is little incentive for them to make mutual concessions and goodwill gestures.

Accordingly, I can appreciate the argument that canceling or restricting previously approved business transactions may not always be effective in terms of influencing human rights performance.

However, such a quick reaction may make sense, not so much as leverage, but as a clear indication of our indignation and concern over Soviet repression. Even if it doesn't force the Soviets to yield on a particular case, it will affect the Kremlin's perceptions of the costs and benefits of brutal persecution.

More importantly, linkage means employing both a carrot and a stick. The Soviet Union is clearly interested in expanding economic cooperation with the United States. The pragmatic Soviet leadership is willing to pay a certain political price in order to gain access to American credits and technology.

Of course, "carrot" means that under certain conditions legislative barriers to trade such as the Jackson amendment, the 1974 Stevenson amendment, and naturally export controls may be removed or at least significantly reduced.

The Union of Councils for Soviet Jews believes, however, that any steps toward relaxation of trade restrictions at this point would be extremely damaging to human rights causes in the Soviet Union.

We are in principle in favor of flexibility in economic relations with the U.S.S.R. But there is a time for relaxation and a time for patient persistence.

The administration and the Congress in our view should communicate to the Soviets that current restrictions on trade are not sacred, and as is the case with all policy tools their utility is subject to review if circumstances change.

Before anything can be done to improve the condition of United States-Soviet trade, Moscow should be willing to demonstrate some improvement in its treatment of the emigration issue. As yet, there are no signs that the U.S.S.R. is attempting to correct its dismal record of persecution and harassment of Soviet Jews wishing to emigrate.

To sum up, the Union of Councils for Soviet Jews favors the expansion of trade with the Soviet Union, but such expansion should be hand in hand with the development of political relations between our two countries.

Giving the Soviets unilateral concessions can only indicate to Moscow that we are not serious in our insistence on the observance of fundamental human rights principles. We are convinced that, if anything, unilateral concessions today may preclude the possibility of mutually advantageous compromises tomorrow.

[Complete statement of Mr. Gordon follows:]

STATEMENT BY ROBERT G. GORDON, PRESIDENT, UNION OF COUNCILS FOR SOVIET JEWS

I speak here on behalf of the Union of Councils for Soviet Jews, a grassroots organization with affiliates in 20 States and the District of Columbia. Our members are volunteers, dedicated to the cause of freedom and dignity for Soviet Jews, first of all in bettering opportunities for emigration from the U.S.S.R.

The Union of Councils for Soviet Jews is naturally interested in good relations with the Soviet Union, and the expansion of U.S.-Soviet trade. A return to a Cold War, siege mentality in the Kremlin would not help Soviet Jews or, for that matter, anyone in the Soviet Union striving for reform. Greater interaction between the Soviet and American societies, gradual removal of political barriers, and the relaxation of tension can only have a beneficial effect on our cause.

However, we do believe that trade with the U.S.S.R. cannot be hermetically insulated from other aspects of the relationship. Trade, as desirable as it may be, is not a panacea, unless it is coupled with and improvement in political relations. As former Secretary of State Henry Kissinger observed before the Senate Finance Committee (March 7, 1974), "Prior to World War I, there was essentially free trade in Europe, but, nevertheless, this did not prevent the outbreak of a cataclysmic war". The lessons of history should not be disregarded. Trade with the Soviet Union can be either beneficial or dangerous, depending upon the overall context of the relationship between Moscow and Washington.

In trade with the Soviet Union, as in all other foreign activities—and trade with a nonmarket economy is definitely a foreign activity—the United States should be true to its interests and values. Needless to say, national security considerations place certain limits on American exports to the Soviet Union, especially in the areas of high technology and know-how. But national security constraints, as important as they are, are only part of the natural limitations on trade with Russia. To conduct business as usual with Hitler's Germany and Stalin's Russia, even in nonmilitary items, would be hardly worthy of this great nation. After all, the equipment for Nazi gas chambers did not have direct military application, and could be easily produced outside the United States. Would anyone seriously argue that this is a sufficient reason for allowing American products to be used in the extermination of human beings?

In short, it is clear that, in the absence of cordial political relations and trade, the United States would have little opportunity to pressure the Soviets in the human rights area. But it is equally true that, without such pressure, détente would be immoral and provide tacit approval of repressive Soviet practices. In the final analysis, this kind of détente would be unstable and shortlived, because the U.S. public would not allow a realpolitik arrangement with the U.S.S.R., free of moral and human rights considerations.

The Union of Councils for Soviet Jews is convinced that the United States has to retain export controls vis-a-vis the Soviet Union. National security considerations represent one obvious reason. Second, there are items, outside the national security area, which we still may not want to sell to the Soviets on ethical grounds. For instance, do we want a repetition of the situation described by the famous Soviet dissident Vladimir Bukovsky, i.e., the KGB using handcuffs labelled "made in the United States." The United States should not supply the Kremlin with equipment which can be used for the purposes of repression and political surveillance. Even if we can do little about the inhuman behavior of the Soviet regime, we should not allow ourselves to be perceived as contributing to the suffering of its subjects.

Furthermore, export controls may be and should be used as leverage to incite the Soviet government to abolish at least some of the more offensive features of their domestic controls. The argument is often made that linkage between trade and Soviet human rights performance does not make sense, if for no other reason than that the record indicates the Kremlin will not alter its internal policies as a result of foreign pressure. The Union of Councils for Soviet Jews is in profound disagreement with this view.

It is true that attempts to use trade as leverage on behalf of human rights causes were not universally successful. But past disappointments should not be used as an alibi by the advocates of the current indifference to Soviet human rights violations. First, there is convincing evidence that, under some circumstances, linkage does work. In 1972, soon after President Richard Nixon's visit to Moscow, the Soviets, in violation of their own constitution, which granted the right to free education, adopted a law requiring would-be emigrants to reimburse the state for their college costs. The sums involved were astronomical, far beyond the means of the vast majority of Soviet citizens. This law's implementation would have made any sizable emigration impossible. But Western pressure, chiefly the introduction of the Jackson Amendment, persuaded the Soviet authorities, after several months, to drop the educational reimbursement requirement.

Second, those who argue against linkage usually focus on the instant retribution practiced on several occasions by the Carter Administration to punish the Soviets for particularly dismaying repression against Jewish dissidents and activists. I myself am a businessman and know, from my experiences at the Harvard School of Business, the importance of basic predictability and stability to trade relations. If there is no conficence between partners, there is little incentive for them to make mutual concessions and goodwill gestures. Accordingly, I can appreciate the argument that cancelling or restricting previously approved business transactions may not always be effective in terms of influencing human rights performance.

However, such a quick reaction may make sense, not so much as leverage, but as a clear indication of our indignation and concern over Soviet repression. Even if it doesn't force the Soviets to yield on a particular case, it will affect the Kremlin's perceptions of the costs and benefits of brutal persecution. More importantly, linkage means employing both a carrot and a stick. The Soviet Union is clearly interested in expanding economic cooperation with the United States. The pragmatic Soviet leadership is willing to pay a certain political price in order to gain access to American credits and technology. Political considerations today affect our trade with a number of friendly nations. Why should trade with Russia, our principal adversary, be separated from such considerations?

Of course, "carrot" means that, under certain conditions, legislative barriers to trade, such as the Jackson Amendment, the 1974 Stevenson Amendment, and naturally, export controls, may be removed or at least significantly reduced. The union of Councils for Soviet Jews believes, however, that any steps towards relaxation of trade restrictions at this point would be extremely damaging to human rights causes in the Soviet Union.

We are, in principle, in favor of flexibility in economic relations with the U.S.S.R. But there is a time for relaxation and a time for patient persistence.

The Administration and the Congress, in our view, should communicate to the Soviets that current restrictions on trade are not sacred, and, as is the case with all policy tools, their utility is subject to review, if circumstances change. Before anything can be done to improve the condition of U.S.-Soviet trade, Moscow should be willing to demonstrate some improvement in its treatment of the emigration issue. As yet, there are no signs that the U.S.S.R. is attempting to correct its dismal record of persecution and harassment of Soviet Jews wishing to emigrate.

The increase in the number of Soviet emigrants has lasted only a few months, and the reasons for it are ambiguous at best. Apparently, the greater number of visas granted in 1978 resulted from a dramatic increase in applications. The available evidence indicates that the percentage of refusals has not declined. If more people are currently applying, it is not because the emigration process was liberalized; the opposite is true. Many Soviet Jews are frightened by the summer 1978 political trials against Jewish refusniks and dissidents in general. The qualitative increase in the anti-Semitic media campaign and the new restrictions on Jewish access to college education and professional employment are also factors motivating a growing number of Jews to apply for emigration. In fact, it can be argued that to reward the Soviets by giving them economic benefits in exchange for an increase in emigration figures would mean to reward them for an increase in anti-Semitism and repression. Clearly, this would be the wrong signal at the wrong time.

To sum up, the Union of Councils for Soviet Jews favors the expansion of trade with the Soviet Union, but such expansion should be hand in hand with the development of political relations between our two countries. Giving the Soviets unilateral concessions can only indicate to Moscow that we are not serious in our insistence on the observance of fundamental human rights principles. We are convinced that, if anything, unilateral concessions today may preclude the possibility of mutually advantageous compromises tomorrow.

Message From Moscow III

1. GENERAL CHARACTERISTICS OF THE SITUATION

During 1978 the Jewish Emigration movement assumed large proportions as the number of persons asking for invitations from Israel during the first half of the year reached one hundred thousand. In their attempts to slow down the flood of emigrants, the government, in its emigration policy, is permitting violation and abuse of authority—persons applying to emigrate are being persecuted, activists of the emigration movement are being sentenced to long years of imprisonment or exile, many applicants are arbitrarily refused permission to leave for many years, and a whole series of families of "refuseniks" is being kept back in the U.S.S.R.

In spite of the internationally recognized right of repatriation, the government will not permit this without an invitation (vyzov) from relatives (in Israel—Translator) while the majority of such invitations simply "get lost" in the post. People who are allegedly in "possession of secret information" are refused permission and included in this group are significant numbers of Soviet scientific and technical professional intelligentsia. Many such refuseniks are compelled to stay in the Soviet Union for 7 to 10 years or even more with indefinite prospects, inasmuch as the authorities refuse to indicate any period of time that such persons may be held back, and their situation is very unenviable. To prevent young people from emigrating, the Soviet authorities are widely exploiting the weapon of military conscription (draft) and are forcibly subjecting conscripts to "secrecy" so that they can then deny emigration to them, after they have completed their military service, for many years. An effective means of attacking the emigration movement has been the institution by the authorities of an artificial parental "serfdom" by insisting on an illegal demand that the would-be emigrant should produce a statement from his parents who are remaining to the effect that they have no financial claims against him. Such a statement can be, and usually is considered by officials to be an agreement to the emigration of the children on the part of the parents, and therefore, it is frequently not given because the parents fear the danger of reprisals against themselves.

In the U.S.S.R. there does not exist any defence of the right to emigrate. Complaints are referred back to the very same administrative offices which are guilty of the abuse of authority. There is no legal defence at all of the right to emigrate. This situation gives rise to a large number of personal tragedies and permits the authorities to ignore the fate of individuals and to deal with cases according to the official's personal whim. Thus during the years 1974–77, during the period of friction with the USA, the Soviet authorities considerably strengthened administrative barriers and decreasd repatriation by 2 to 3 times what it had been.

As before, the ordeals of repatriation start well before the submission of an application to OVIR. In order to be given a blank application form, one has first to present the invitation (vyzov) from relatives living in Israel. There are no international regulations or agreements which indicate the necessity for such an invitation from the country to which an applicant desires to emigrate (especially when that country is Israel, where the right of immigration of Jewish repatriates is enshrined in its constitution and where there is no necessity for this to be confirmed). In any case the demanding of such an invitation is absurd as the invitation itself remains in OVIR and is not handed back to the person leaving the USSR.

Requests for invitations to be sent are made by post, by telephone, via tourists or via emigrants. The person for whom the vyzov is intended only knows that it has been sent when it is actually in his possession. If a vyzov does not arrive for some considerable time, it is requested over and over again. This can go on for a year or two (the average time of waiting for a vyzov is 3 to 4 months). Long delays may occur as a result of: either the request does not get to Israel; or the vyzov is not sent from Israel; or once the vyzov has been sent it is held back by the Soviet authorities. The assembling of the rest of the documents demanded by OVIR is also encompassed with many difficulties. Many enterprises will not give the certificate from the applicant's place of employment, insisting instead on a "voluntary" resignation. Vladimir Shvartz of Odessa has been unable to get his documents accepted for the last 5 years because his wife's parents do not give their permission.

The form of application itself is indicative of the official attitude toward emigration. Until 1976 it was necessary to state the places where one had worked during the previous 5 years. In 1976 they began to insist on details of the whole of one's working life and at present employment details for the previous 15 years (this is probably directly associated with terms of refusal on grounds of "secrecy").

In Odessa they are periodically not accepting documents from young men under military service age, insisting that they should first of all serve in the army. In order to submit application for emigration in Moldavia, or in the Ukraine, e.g., in Odessa, in Kiev, in Benderi, it is necessary to wait several months as in the OVIR offices long queues have been formed with as many as thousands of persons in each area (at the present tempo of work in OVIR, people at the end of the line will have to wait from 18 months to 2 years before they can even hand in their applications. After his documents have been accepted by OVIR the applicant must wait a long time before he can expect an answer (in Moscow the average waiting time for an answer is 5 to 6 months). Grigory Kantarovitch of Moscow handed in his application in February 1977 but by the date this review had been completed (Dec. 3, 1978—Translator's note) he had had no answer. Refusals are often not based on any reason at all, and frequently they do not indicate which member of the family is the "reason" for the refusal. In Tbilisi, OVIR gives refusals to single persons. Gennadi Zhutovsky of Lvov was refused because of service in the army in 1968. In Moldavia, Latvia, and the Ukraine, where permission is given (and this is always given only orally) as an exit visa is given only after the applicant has redecorated and evacuated his apartment, so that for a period of one to two months the emigrant must live and store his possessions wherever he can. For re-examination of applications the authorities are demanding a re-submission of all documents every six months. This means that in the majority of cases it is necessary to change one's place of work every six months. Many professionals are closed to applicants for emigration—teaching, legal practice, any administrative work (i.e. where work demands the presence of subordinates). Even relatives who have worked in "classified" (i.e. so-called "secret") enterprises, are dismissed from work (e.g. the father of Boris Chernobilsky). However, in spite of all obstacles the number of applications for emigration has grown to such an extent that the authorities have been compelled to increase the number of exit permits which this year 1978 is expected to reach somewhere near 30,000 persons. And, of course, at the same time, the number of refusals to grant permission to leave has grown correspondingly.

2. THE PRISONERS OF CONSCIENCE (ASSIREI ZION)

1978 has been an almost record year for the number of trials (seven in all) against Jews wishing to emigrate to Israel. A greater of number of Jews were sentenced only in 1970-71 when a whole series of trials (the Leningrad Trials—Translator's note) took place.

In March 1978 Grigory Goldstein was sentenced for "parasitism" to a year in a Labor Camp (the maximum under that article of the Criminal Code). In direct violation of the Corrective Labor Code, Goldstein was sent to serve his sentence from Georgia (in the South) to the Arkhangelsk area in the Far North of the RSFSR (a different Republic—Translator's Note).

In July, in Zaporozhe a sentence of 2½ years in Labor Camp was imposed on Simon Shneerman for refusal to serve in the army. The Shneerman family first applied to emigrate to Israel in 1959 in Kerch (on the Black Sea—Translator's Note); they were refused—no reason was given for the refusal. Subsequently the whole family applied and was refused a number of times. In 1976 Simon's father applied alone, got permission and left. Simon himself applied to join his father in Israel when he had graduated from the Technical College, but was refused on the grounds that he had not worked a period of 2 years as a young specialist after graduating. He then worked this period of 2 years and on completion of it he was immediately called to the army. His refusal to serve was quickly followed by arrest, trial and sentence. His sister left but his mother stayed to wait for Simon.

At the end of June, trials were conducted against Ida Nudel and Vladimir Slepak. The Soviet authorities had long been threatening these activists of the Jewish emigration movement. The details of these trials have been given sufficient publicity elsewhere. We will only remark that the accused refused to hire advocates or to use the services of officially appointed defence counsel as they did not wish to take part in the proceedings of a "framed" show trial. There soon followed the trial of Yosef Begun. The absurdity of the accusation brought against him was obvious to all. The conditions under which this trial proceeded were exceptionally cruel, even by Soviet standards. Weakened after a long hunger strike in protest at his arrest, Begun was unable to either sit or stand on his own and from time to time he lost consciousness but in spite of the protests of his wife (Alla Drugova) supported by those of the state appointed lawyer, the court refused to postpone the sitting.

In each of these three trials the accused was sentenced to exile in Siberia (V. Slepak—3 years, I. Nudel—4 years, Y. Begun—3 years), but this should not allow anyone to think that by this the Soviet authorities were being humane. We must remember that they had sentenced innocent people. One must also not be deluded by the thought that living conditions in exile are similar to those of a normal life but in distant regions. It must be remembered that people exiled to Siberia are sent to places with the most dreadful climatic and poor economic conditions. The places allotted for living accommodation are hardly suitable even in a moderate climate (cold houses with no heating etc.). Reasonable food can be obtained only with the help of parcels sent from Moscow. Add to this the heavy physical work not related in any way to one's profession or specialty, or education, or state of health. And all this in an atmosphere of isolation and hostility surrounding them as a result of the rumors deliberately spread that they are—"dangerous enemies of the state."

Further there was the trial of Maria Slepak—who also categorically refused to participate in this frame-up of a trial. Sentence—3 years suspended.

In this way the authorities were building up the atmosphere towards the most important trial of the year, and perhaps the most important trial of all the years of Aliya from the U.S.S.R.—the case of Anatoly Shcharansky. The case of Shcharansky is widely known in all its details. We will only remark here that this trial was originally planned as a grandiose group anti-jewish process, but owing to the influence of protests throughout the world and mainly thanks to the heroic conduct of Anatoly Shcharansky himself, the authorities were compelled to present it as a case of espionage and dissidence. It was not mere coincidence that caused the trial to take place at the same time as those of the dissidents Ginsburg (in Kaluga) and Piatkus (in Vilnius), Shcharansky's sentence of 3 years in prison and 10 years in Slave Labor Camp is staggering in its cruelty. But his persecution continues even after the trial for it has become known that he is not being allowed to have letters from his family and friends. He has received only a small proportion of the letters written by his mother and only one from his wife (she has sent him 53—Translator).

So towards the close of 1978 the following are:

In Soviet prisons and labor camps:	*Due to be released in*
Mark Dymshitz	1985
Edward Kuznetsov	1985
Wulf Zalmanson	1980
Anatoly Altman	1980

	Due to be released in
In Soviet prisons and labor camps:	
Leib Khanokn	1980
Hillel Butman	1980
Isaak Skolnik	1979
Semyon Gluzman	1982
Followed by five years exile in Siberia.	
Grigory Goldstein	1979
Amner Zavurov	1980
Anatoly Shcharansky	1991
Simon Shneerman	1980
Yosef Mendelevich	1982
Yuri Fedorov	1985
Alexei Murzhenko	1984
And in exile:	
Mark Nashpits	1980
Boris Tsitlonok	1980
Vladimir Slepak	1983
Ida Nudel	1982
Yosef Begun	1981

Most of the prisoners in camps and prison were sentenced at the Leningrad airplane trial of 1970. Clearly the time has come for the question of the review of this trial to be raised, as only in 1973 was there a law passed regarding hijacking of aircraft, and in 1970 they were tried under a completely different charge not connected in any way with the actual details of the case, and they did not commit any crime at all. They only planned an action, (which they did not carry out), so as to draw the attention of the world to the situation of the Jews in the U.S.S.R. and thereby facilitate their repatriation to Israel. They succeeded in this aim, but at what a price: Since 1970 tens of thousands of Jews have emigrated and we must not forget "the first ones," we must not cease to strive for their release.

In 1977-78 on completion of their term of punishment Israil Zalmanson, Yosef Begun, Natan Malkin and Lev Roitburd were released; Sender Levinson was released before the expiration of his sentence. But of those the only one to receive an exit visa was Zalmanson. (Since this was written both Malkin and Levinson have been promised permission—Translator's Note). Within 2 months of his release Begun was again arrested and sentenced, and Roitburd was again refused permission and the authorities have shown that the completion of a term of imprisonment is no guarantee of receiving an exit visa.

Recently living conditions in imprisonment have worsened. The Prisoners are deprived of visits and parcels (one a year) for no reason whatsoever. If there is no excuse for this punishment they think one up. Semyon Gluzman was put into a punishment cell for six months on a trumped up pretext. In Vladimir Prison, Butman was deprived of visits and mail on leaving the punishment cell. Goldstein was deprived of a visit in December, 1978 with a promise that it would be restored later although only a few months remain to the end of his sentence.

Now it appears that Vladimir Prison is being transferred to the town of Chistopol in the Tatarskaya ASSR. It seems that the Soviet authorities find that with the approach of the Olympics and with the spread of foreign tourism in the U.S.S.R. the presence of a political prison in the town of Vladimir is somewhat inconvenient.

3. THE REFUSENIKS

The Soviet authorities are using more and more frequently the excuse of "considerations of state" (i.e. "secrecy") in their politics of refusal. Any healthy male aged 18 or more in the Soviet Union can be refused permission to emigrate on the grounds of "considerations of state". In the U.S.S.R. all males are liable for military service after which they can be refused for 10 years or more, no matter in what branch or unit of the army they may have served. Only those studying in institutes of higher education are exempted from such service and they undergo a short military training. Moreover, former serving soldiers are liable to be recalled from time to time for training in the reserves for a period of from one to thirteen weeks. Refusal to serve in the army or to undergo this further training is punishable by imprisonment from 6 months to 3 years and does not release one from a possible draft later. Moreover in the U.S.S.R. a very large number of industrial enterprises and scientific institutions are considered to be "secret" and anyone who works there is considered to come under the category of "consideratons of state". If in the applicant's family there are no males and there is no-one who has worked in these enterprises, OVIR still can refuse on the grounds of these "considerations," finding some near or distant relative who does come into this category. For example Yelena

Chernobilskaya and her children were refused because of the "secrecy" of her father (who was not applying to leave). Vladimir Lerner has been refused for 7 years because of the "state considerations" applying to his father. These "considerations" are limitless and OVIR can refuse a family without indicating any reason or term of refusal. The term of "considerations of state" has grown to 10 to 15 years. Evidently this has happened not because the "secrets" in the U.S.S.R. in 1978 are any more "secret" than they were before e.g. in 1970, but because the KGB is now "cultivating" refuseniks with frightful terms. The prospect of being in refusal is intimidating many Jews who would otherwise apply to emigrate. Refuseniks are not able to work in their professions and as a result find themselves in difficult financial straits. Protests against such illegal refusals to permit one to emigrate is followed by harassment, open persecution, house arrests, show trials, imprisonment and exile. The refuseniks, and especially their children feel anti-semitism much more sharply than other Soviet Jews, because the refuseniks affirm their Jewishness and try to uphold their national Jewish dignity. Today the ordinary Soviet "man-in-the-street" knows that he can with impunity insult and humiliate Jews for their desire to emigrate to Israel.

4. COMMUNICATION

Postal and telephonic communication between you and us is unsatisfactory and unreliable. Letters, parcels, telegrams and advices of incoming telephone calls—all disappear. With the exception of a few more-well-known Jewish activists, the Jews in the U.S.S.R. know of your activity only from what they hear on "The Voice of America", the BBC "Radio Liberty—Free Europe" and what little they can receive from the jammed broadcasts of Kol Israel. Moreover you are far from knowing all that happens with us and as a result the struggle for freedom of emigration is carried on, on both sides of the Iron Curtain as if it were on two different planets. Shamelessly violating international agreements on postal, telephonic and telegraphic communication, the Soviet authorities intercept your and our letters, parcels, telegrams and advices of incoming telephone calls. Incidentally many years of experience of this activity, (which is contrary to accepted legality) on the part of the Soviet authorities has convinced them that they can do it with impunity. They calmly confiscate your letters which bear the naive stick-on label "non-delivery of this letter will be considered as a violation of the Helsinki Agreement." They confiscate the contents of parcels ("Confiscated in accordance with International Conventions . . .") they block telephone conversations ("The person called did not arrive"—"A fault on the line" etc.) and in the Customs they succeed in putting such fear into the hearts of tourists that the latter come to our apartments in a state of semi-stupor.

We appreciate that it is difficult to give detailed information in advance to tourists about conditions in the U.S.S.R., (tourists who pay their own expenses and come with the best of intentions), but nevertheless we have to state with astonishment that the level of their knowledge of Jews in the U.S.S.R. and of the refuseniks is far too low, and that they know only the names and addresses of very few people and from year to year visit the same ones (basically those families where someone speaks English and which have a telephone).

International telephone conversations remain as before, the most effective means of exchange of information. The fact that this expensive means of communication is concentrated in the hands of a few activists in the U.S.S.R. and a few activists in Israel and in the West is quite natural. However, we find it strange that these few individuals in the West and in Israel are failing in passing to each other the information they receive from us.

It is a deplorable fact that the campaign against the cutting of the telephones of the Jewish activists in the U.S.S.R. has not been receiving official support and is not being kept alive. To improve communication and information flow, it is necessary to push a campaign at governmental level against the deliberate misconstruction by the Soviet authorities of international agreements in the field of postal and telephonic-telegraphic communications, and in the field of customs regulations. In order to get such a campaign under way, it is vital to bring in lawyers from Western countries and from Israel and to have available irrefutable evidence of the flouting of agreements. This latter can be achieved by the creation in Israel, in the West and in the U.S.S.R., "Postal Groups," via whom all who wish to participate in a given country or in a given major town, could pass their international correspondence. These "Postal Groups," following up the delivery or non-delivery of correspondence in both directions, would be able to gather a large body of evidence of arbitrary confiscation of letters, parcels and printed matter.

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5. INFORMATION

Radio broadcasts from the West and from Israel about the U.S.S.R. are a speedy and authoritative channel of information. However, as a result of the special character of the Western Press too little real information is given out in regard to emigration. Western correspondents in Moscow are mainly interested in sensationalism. They are concerned almost entirely only with events which have some external effect and if a similar event (for example a demonstration demanding the release of Prisoners for Zion) has already occurred in the past, the correspondents are no longer interested, in spite of its topicality. Some correspondents are afraid to call down the wrath of the Soviet authorities, and those who do fulfill their professional duty without looking over their shoulders, quickly find that they are in the authority's black book, we consider that the Jewish communities in the West and in Israel must aim at correcting this situation.

Jews in the U.S.S.R. find out about events vitally important for them, occurring even in their own town, mainly from radio broadcasts from Israel and from the West. The frenzy with which the Soviet authorities jam Kol Israel, (even educational broadcasts in simple Hebrew) clearly demonstrate the importance of direct broadcasts from Israel, which are greedily listened to both in the major towns, where the voice of the Israeli announcer can be made out through the noise of the jamming only by good fortune, and in the provinces, where the work of the Soviet jammer is not so effective. Jews in the U.S.S.R. want to hear about Jewish history and of the contribution of Jews to world culture, about the victories of Israel, so as to escape from the age old feeling of inferiority; about the realities and the real conditions of absorption in Israel; about the work of the OVIR offices; about how best to submit application for emigration, how best to fight the various abuses on the part of authority when an application is handed in.

The Russian department of Israel Broadcasting not only ignores these and similar questions, but, what is even more to the point, presents its programs on a very low professional level in a style which is very reminiscent of Soviet propaganda. The same disregard of the listener's intelligence and the same low standard rhetoric. A pleasant exception has been the broadcasts which Felix Kandell has recently been putting out. These are on a much higher intellectual and professional level.

The most popular of Western stations—Voice of America—has sharply curtailed its broadcasts about Jewish emigration, giving more attention to the luxurious living of the new arrivals in the U.S.A. from the U.S.S.R., assuming apparently that the simple lectures of the economic commentator about the material advantages of life in the U.S.A. are not sufficiently understood by the listener.

Books about Israel, books about Jewish history and books on Jewish culture filter through the Soviet customs as through a very fine net. Frequently Olim from the U.S.S.R. go in complete ignorance, not having the most elementary information about Israel in general, nor about the conditions of life for new Olim in particular. Jews want (and in our view, have the right) to know precisely and in detail, their rights and obligations, and their privileges on arrival in Israel. The young are interested in the possibilities of study, parents are concerned about kindergarten and schools. All are concerned about work. Each person wants to imagine just how things all work out in his particular case. A list of what, in principal, can be found in Moscow (if you try very hard) would show how poor the situation is in this respect: Facts and Figures about Israel 1973; Elementary and Secondary Education in Israel 1976; Information for the Oleh 1973; Information for the Student, 1976; The Repatriate wants to know, 1975; these pamphlets contain only the most general information and are hopelessly out of date. We need to have precise and fresh information published by the Department of Information for New Arrivals of the Ministry of Absorption, in large quantities and in the Russian language.

6. MEETINGS WITH STATESMEN

Direct contacts with statesmen of western countries are of great importance for the Jewish emigration movement and for its support in the west. These meetings allow us better to understand how people in the west view our situation, which questions of our movement have particular effect on world public opinion, what possibilities exist for strengthening and broadening support of the emigration movement amongst Jews and non-Jews in the West. At the same time, these meetings are important for our quests as it enables them to gain at first hand the information which interests them about the situation of emigration, the difficulties, and the desired methods of overcoming these difficulties. In recent months members of the parliaments of Sweden, Belgium and U.S.A. were in Moscow and visited several activists. These visits bore an unofficial character, and took place in family circumstances and left us with an impression of deep interest on the part of western

statesmen in removing barriers from the path of those who wish to leave the U.S.S.R. There is some basis to assume that our guests also were not disappointed with these meetings and were confirmed in their desire to support the Jewish emigration movement in the U.S.S.R. and better understood how to offer such support. In these meetings with statesmen, pride of place goes to the more important ones of which there were four recently: with Senator Kennedy; with Eugene Gold; with a group of U.S. Senators; and with Members of the Knesset. The meeting with Senator Kennedy went, we think, normally. He met a number of Jewish activists as well as Academician Sakharov and Elena Bonner. The meeting lasted three hours and we discussed means of gaining support from the U.S. Congress for the emigration and human rights movements in the U.S.S.R. Unfortunately information about the possibility of holding such a meeting came to light only on the very evening of the meeting, so that it prevented a number of useful participants from being invited.

With regard to the meeting with Eugene Gold and his colleagues, leading attorneys from the U.S.A.—we must remark upon the unsatisfactory nature of its organization. There was no previous preparation for it, the make-up of its participants bore clear signs of it being of a purely casual or chance character, and the introductory speeches about the situation and perspectives of the Jewish emigration movement were impromptu. But the worst feature of the meeting was the complete impossibility of discussing in any factual way urgent and topical problems.

We were advised about the forthcoming meeting with the US Senators well in time, and were able to organize preparations for it, as well as the participation of a representative group of activists. The meeting was conducted in an organized manner, and enabled the presentation of the opinions of activists on a series of questions of interest to the Senators.

With regard to the meeting with the delegates from the Knesset, we were informed well in advance of their arrival in Moscow, and on the appointed day and at the appointed time a large number of us gathered to meet them, amongst us practically all the leading Aliyah activists. Unfortunately, however, this meeting failed to take place as the delegates of the Knesset were not able to get away from a frivolous programmed visit which had been arranged for them (it is understood that they went to the Circus instead—Translator's Note). As a result of this only a few participants of our large and representative gathering managed to meet with the members of the Knesset at night.

With respect, yours sincerely,

Isai Goldstein (Tbilisi), Victor Yelistratov (Moscow), Alexander Lerner (Moscow), Mark Novikov (Moscow), Lev Ovsishoher (Minsk), Alexander Paritsky (Kharkov), Yakov Rakhlenko (Moscow), Lev Roitburd (Odessa), Eitan Finkelstein (Vilnius), Natasha Khassina (Moscow), Yevgheniy Tzirlin (Moscow), Boris Chernobilsky (Moscow).

Senator STEVENSON. Thank you, gentlemen.

Mr. Goodman, you referred to "Citizen Control Equipment." Is that what we generally refer to as "crime control detection equipment"?

Mr. GOODMAN. Yes, but we are using it in a different sense. My full statement includes a list of such items as sonographs, registration equipment, certain photocinematography equipment, searching devices, lie detectors, stress evaluators, telephone analyzers, bugging equipment, et cetera.

These are some of the items which are being considered or have been licensed by the Department of Commerce for sale to the Soviet Union.

Our fear is that these will be used for other than crime purposes, but actually to monitor or to control the citizenry. We are therefore urging some methodology be found, if possible, to insure that this is not how they will be applied.

If such assurances cannot be found, then perhaps these items should be reconsidered for sale.

Senator STEVENSON. I was under the impression that those items which sound like crime control and detection equipment were

under validated license controls for all countries except the NATO partners.

What more can be done in the case of the Soviet Union? And is there any basis for distinguishing between the Soviet Union and Libya, or other countries, including nonmarket?

Mr. GOODMAN. Based on past experience in the Soviet Union, we have seen this happen. That is also an area where we are most informed. Naturally we express concern about the potential use of this equipment against ordinary citizens as opposed to its use in criminal investigation.

Indeed, if the policy is clarified it would apply to all countries. But I am suggesting that some consideration be given to this matter, Mr. Chairman, although I don't have the solution. I am raising the hope that some method be found, if we can, to insure that so-called criminal investigation equipment not be used against the ordinary citizen for political objectives or political ends. Whether that is achievable or not, I don't know; but I would be happy to entertain some thought on this in the future.

Right now, such material and intelligence gathering equipment is being routinely expedited after approval by our Government, with no assurance that it is not being used to suppress and repress the domestic populations of the countries receiving them.

Senator STEVENSON. We will followup with the Commerce Department and State Department to find out what kind of equipment of this general description is being approved for and licensed to the Soviet Union.

Mr. GOODMAN. Thank you.

Senator STEVENSON. I certainly agree with what you said about a need for a rational export policy, some mechanism to not only establish it but to implement it.

You referred on page 14 to a board or similar agency for rational export policy with nonmarket countries. I have never fully understood the basis for this distinction between "market" and "nonmarket" countries.

When we last considered the Export Administration Act, I persuaded Congress to eliminate the distinction on the theory that the organization of the economy was of no significance. Can you help me out?

Mr. GOODMAN. Perhaps. The phrase "nonmarket economy" or "one-market country" is a euphemism. It really means the socialist bloc, and more appropriately those countries on their way to communism. That applies basically to East Europe. It also includes the PRC, People's Republic of China, et cetera.

The designation was meant, I suppose, to depoliticize the issue. The reason why we believe special considerations should be given, is that this country has legitimate security interests vis-a-vis those countries in particular which may not apply to other countries.

I therefore believe special consideration should be given, in certain matters that apply, to the so-called Socialist or Communist countries, especially those in Eastern Europe.

Senator STEVENSON. What is Iraq? Is that a market, or a nonmarket country?

Mr. GOODMAN. Well, we would have to get some political economists, I suppose, to isolate that.

Senator STEVENSON. Its economy is organized as the Communist industries are. It is a hostile country, but it is an Arab form of socialism, not altogether friendly. It is probably more of a threat than Yugoslavia. Is there some basis for including, or suggesting that in our law we make distinctions in that case which really aren't based on any more than a semantic use, that one is "market" and one is "nonmarket"?

Mr. GOODMAN. If we want to be more specific, we are referring here to those countries who are in the East European bloc of nations, the so-called Communist countries of Eastern Europe.

Those countries are members of CoCom vis-a-vis NATO. We do have a special consideration here which I would suggest does not apply to Iraq, Iran, or countries of Africa and South America, not that we don't have any legitimate interest there.

But from a strategic viewpoint, from a military viewpoint, in terms of relationships between the NATO countries and the rest of the world, I would suggest that there is that special distinction that is applicable, and I think it is valid.

If we prefer to call them CoCom countries, or East European rather than "nonmarket economies," so be it. That really is the point of my suggested recommendation.

Mr. Chairman, rather than create another agency or another bureaucracy, I am suggesting that the East-West Trade Review Board which was created by Executive order nearly 4 years ago, and has not been utilized since 1976, might be a proper vehicle for considering at least a part of our total export policy.

It may be that another agency is more appropriate, but since that one exists, why not utilize it, strengthen it, and maybe restructure it, as necessary, and allow that to be an instrument of export policy?

Senator STEVENSON. I guess in expressing the concern for human rights, it ought to be universal; it ought to be beyond the Soviet Union, beyond the nonmarket countries. And as I am sure you would agree, it should address the welfare of all peoples, even those who aren't Jews.

Mr. GOODMAN. There is little doubt, Mr. Chairman, about that. I think that this country has expressed its concern. I am glad that this was a principal component of the President's policy and of this administration—a concern for human rights everywhere.

I believe there is a distinction however, between the great powers and the small powers. This country has sometimes been accused of expressing real concern for human rights violations in those countries that are small, and are apparently weaker from a military viewpoint. I would suggest that, in regard to the Soviet Union, and the neighboring or cooperating countries as well, we have an equal responsibility to continue to address human rights violations in that country. Indeed, there is some hope of success in regards to the Soviet Union which might not apply even to Uganda. If Idi Amin doesn't listen to anyone, there is little possibility of modifying policy. It is because we are establishing relations with the Soviet Union that it is possible, in that instance, to affect human rights policies.

Where no one listens, where you have no one to talk to, there is very little probability of any change. And therefore, to universalize

our concern, while a noble concept, from a pragmatic viewpoint it may not always work. Perhaps the approach is to both simultaneously: Deal with it country by country, issue by issue, short term, keeping in mind the long-range commitment and policy to protect human rights of all people.

Mr. GORDON. Mr. Chairman, the basic point of my speech was that we retain the option of using export controls for foreign policy considerations. And we might not be bounded by control or uncontrol. And with that, I think this is more useful as a potential threat, and certainly not an everyday use of this device.

But I think it would be a mistake to lose the foreign policy consideration when it comes to export controls.

Senator STEVENSON. No one is suggesting that we abolish all authority for use of controls for foreign policy purposes.

There is controversy over what purposes should be pursued. In my own mind, it is very largely a question of how you pursue them. The objectives are very obvious. How you go about effectively pursuing them is not so obvious, and recent history strongly suggests to me that we have disserved all of our objectives with a policy that does not obviously promote our economic interest, it doesn't produce—it hurts our economy, it makes us a laughingstock, and deprives us of authority with which to pursue any objectives. We are weak now.

Mr. GORDON. At the same time, I think that some flexibility as to willingness to send exports would vary. I think a very repressive regime might receive less in the way of potentially harmful materials than a less dangerous regime.

Senator STEVENSON. Clearly there are some commodities such as the crime control equipment.

Mr. GORDON. We certainly agree.

Senator STEVENSON. Those are morally wrong to sell to certain countries.

Mr. GOODMAN. If I might, Mr. Chairman, add one comment.

We can disagree on whether the Jackson-Vanik amendment to the Trade Reform Act was useful or not useful. It would appear, because of the increased emigration in the last several months of 1978 which continued through the early part of 1979, that perhaps the Jackson-Vanik amendment in fact is working after 4 years of waiting. One could argue that, as well.

And while I concede that this is not an item before this table, it is something to consider, perhaps on another occasion. That there may be some validity to the position that it is now beginning to work.

Senator STEVENSON. You can make that argument. But you can go back and see the terrible dropoff in emigration, the price that people have paid in Russia, and then others who are emigrating. It has had some effect. It is incumbent on us to respond by modifying, by meeting the needs, by evolving the political economic—the economic relationship, the political relationship as it evolves. And to suggest that this is in our exclusive interest—but I have a feeling we will have another opportunity to consider that. It is not really before us right now.

We would rather have your views on that later. Not that I don't know what they are already.

Mr. GOODMAN. If I might, Mr. Chairman, in the prepared text you will see some references to that issue. I have not raised it because I didn't think it was appropriate for our discussion today, in the interest of time. There are some suggestions which might be helpful when the discussion comes before the Senate and the House, as I am sure it will.

Senator STEVENSON. We will be in touch with you before then. Thank you.

Senator Williams has asked me to express his warm welcome to the participats in this discussion and to extend his special thanks to Jerry Goodman, executive director of the National Conference on Soviet Jewry.

The National Conference on Soviet Jewry has sponsored the Congressional Wives for Soviet Jewry, which is cochaired in the Senate by Mrs. Jeanette Williams and Mrs. Helen Jackson. Senator Williams asked me to mention to you that working with your organization on Soviet immigration problems has been a very rewarding experience for Mrs. Williams and himself.

Senator STEVENSON. We now have Mr. Meinhard, manager, process quality, Teledyne Casting Service, chairman of the steering committee for the Ferrous Scrap Consumers' Coalition; Mr. William Stapleton, vice president of purchases, Inland Steel Co., member of the American Iron and Steel Institute; Mr. Noah Liff, president of the Institute of Scrap Iron and Steel, who is accompanied by Mr. Robert R. Nathan, president of Robert R. Nathan Associates, Inc.

STATEMENTS OF WILLIAM J. MEINHARD, MANAGER, PROCESS QUALITY, TELEDYNE CASTING SERVICE, CHAIRMAN, STEERING COMMITTEE, FERROUS SCRAP CONSUMERS COALITION; WILLIAM STAPLETON, VICE PRESIDENT OF PURCHASES, INLAND STEEL CO., MEMBER, AMERICAN IRON & STEEL INSTITUTE; NOAH LIFF, PRESIDENT, INSTITUTE OF SCRAP IRON AND STEEL, ACCOMPANIED BY ROBERT R. NATHAN, PRESIDENT, ROBERT R. NATHAN ASSOCIATES, INC.

Senator STEVENSON. We should start with you, Mr. Meinhard. Is that all right?

Mr. MEINHARD. It certainly is.

Senator STEVENSON. Please proceed.

Mr. MEINHARD. Mr. Chairman and members of the committee:

I am pleased to have the opportunity to testify today. I am William J. Meinhard, chairman of the Ferrous Scrap Consumers' Coalition and manager for process quality of Teledyne Casting Services.

I am accompanied by David A. Hartquist of Collier, Shannon, Rill, Edwards & Scott, counsel to the FSCC.

Teledyne is a small iron jobbing foundry located in La Porte, Ind.

The Ferrous Scrap Consumers' Coalition is comprised of small cold metal shop steel firms and iron and steel foundries as well as unions representing employees in these companies. About 900 companies throughout the United States which employ in excess of 450,000 workers are members of our association. Unlike large integrated steel producers, member companies use virtually no metallic

raw material other than ferrous scrap in their iron and steel production.

The Ferrous Scrap Consumers' Coalition and Teledyne have a keen interest in the Export Administration Act. Foundries and small steel firms have had a longstanding problem with excessive exports of ferrous scrap. In 1973 ferrous scrap consumers persuaded the Department of Commerce to impose export controls on this essential product and just last week our coalition requested that Secretary Kreps impose new export limits.

In my testimony today I will discuss two issues. First, I will describe current problems being experienced by my industry with respect to ferrous scrap exports. By explaining my industry's plight, I hope to highlight the unique problems our companies face and the importance of making meaningful relief available under the Export Administration Act. Second, I will talk about the Ferrous Scrap Consumers' Coalition's proposed amendments to the Export Administration Act. These amendments will require that the Commerce Department establish streamlined, fair procedures for the administration of this statute.

The recent rate of U.S. ferrous scrap exports has reached record levels. Current export levels parallel those experienced in the 1973 and 1974 period in which Commerce imposed export restraints. During 1978, domestic consumption of ferrous scrap approached the 100 million ton level and U.S. exports rose to more than 9 million tons, 54 percent greater than in 1977. Japan accounted for almost all of the increase in U.S. exports. Between 1977 and 1978 domestic exports of ferrous scrap to Japan increased by 208 percent to more than 3 million tons. Scrap exports to other countries—Italy, Mexico, Taiwan, South Korea, Spain, Canada—also increased. During the last 6 months of 1978, as domestic demand rose and exports skyrocketed, inventory stocks of industrial ferrous scrap purchased on the open market declined by 6 percent.

Electric furnace steel mills have been recently constructed in South Korea, Argentina, Brazil, Venezuela, the Philippines, Taiwan, and the Peoples Republic of China. Also, many foreign countries, including the United Kingdom and Indonesia, have instituted ferrous scrap export restraint programs, thus creating additional demand for exports of this product.

In addition to the exports to the countries mentioned, we have many third world countries who are going to be in the market for the steel scrap.

We are the only one that exports ferrous scrap without any restraint whatsoever.

All of this, of course, makes it more difficult for the hundreds of foundries to obtain scrap at reasonable prices as well. That is why we joined together, these 900 small companies, to form this coalition.

Members of the Ferrous Scrap Consumers' Coalition have been squeezed by increasing exports during a period of increasing demand. The result of these conditions has been drastic inflation in ferrous scrap prices.

Prices for scrap have skyrocketed. Between June and December 1978 the American Metal Market three-city composite price for No. 1 heavy melt—the composite is Philadelphia, Chicago and Pitts-

burgh—increased by 18 percent. During January 1979, the American metal market composite price for No. 1 heavy melt rose by 8.5 percent over the level of December 1978.

The annual rate of inflation for this key commodity was 102 percent. With prices of No. 1 heavy melt ferrous scrap exceeding $130 per ton in some areas, current price levels are 72 percent higher than in June of 1978.

Large increases in scrap prices place FSCC members in a particularly precarious position. While member companies wish to pledge their support for the President's voluntary wage and price guidelines, ferrous scrap has been excluded from these guidelines and is escalating in price at a triple digit annual rate. Members of our Ferrous Scrap Consumers' Coalition must compete with some of the largest integrated domestic enterprises—these have a secure source for their scrap supplies—and with foreign steel companies. Such a situation is untenable for smaller steel mills and foundries.

Scrap exports not only limit the availability of ferrous scrap to American consumers, they also frustrate U.S. energy and environmental policies. Each ton of ferrous scrap used to produce steel in place of iron ore and coal saves more than 17 million BTUs, or the equivalent of 3 barrels of crude oil. The 9 million tons of ferrous scrap exported during 1978 represent a net loss of 28 million barrels of oil, an amount sufficient to serve the per capita energy needs for 500,000 Americans for an entire year. The usage of scrap also reduces the amount of pollutants generated in steel production by approximately 70 percent.

In summary, exports of ferrous scrap from the United States have increased drastically during a period of increasing domestic demand. This has caused substantial scrap price increases in the United States and frustrated our energy conservation program. If small foundries and steel companies are to survive, export controls must be instituted immediately.

On the suggested amendments, I will cover them briefly. We propose two, one to meet our short term needs, and a second to meet longer term deficiencies.

First, we propose immediate enactment of legislation to establish a temporary limit of ferrous scrap exports in the amount of 600,000 short tons per month. Scrap export controls would continue only as long as there are either voluntary or mandatory Federal wage and price controls in effect. We recommend a limit of 600,000 tons per month because, in our judgment, that level of exports would still provide for a supply to U.S. consumers adequate to meet our needs. A copy of this proposal is attached as exhibit A.

Second, we believe the present Export Administration Act is not adequate in affording injured parties relief; also, too slow in reacting to it. In our estimation, the statute is seriously deficient in that it does not establish a formal procedure for requesting relief or a mechanism for reviewing petitions.

The Export Administration Act, like other international trade statutes, should contain rigorous procedural requirements. We favor enactment of the following amendments, as attached, which I will cover here shortly.

A formal petition procedure must be established. Any entity, including a trade association, firm, certified or recognized union or

group of workers, should be given standing to submit a request for the imposition of monitoring or export controls. The Secretary of Commerce should be directed to establish regulations governing the submission of such a petition.

The Secretary of Commerce should be given 30 days from the close of the comment period to make a determination of whether monitoring or export controls are appropriate. If the requested relief is denied, the Secretary should be required to publish a statement explaining why relief was denied. The statute should direct the Secretary of Commerce to hold a hearing during the period of deliberations and afford parties the opportunity to present their points of view if any interested party asks for such a hearing.

I might mention that we have demonstrated to the Secretary of Commerce, in the instance of our own company, an increase of 63.4 percent since October of 1978 until Monday of last week in the cost of our steel scrap. The Department of Commerce does not think that this is inflationary.

Provision should also be made for temporary relief. Authority should be vested in the Secretary of Commerce to impose temporary monitoring or export controls during the pendency of an investigation if a domestic industry is threatened with imminent harm.

Finally, the Ferrous Scrap Consumers' Coalition favors a widening of the circumstances in which the Department of Commerce may monitor exports. Under the present statute, monitoring is appropriate if exports contribute to an increase in domestic prices or a shortage which has a serious adverse impact on the economy or any sector thereof. We believe that a serious adverse impact on the economy, any sector thereof, or any industry or substantial segment thereof should be sufficient to allow the Commerce Department to institute export monitoring.

A copy of our proposed legislation, along with explanatory materials, is attached to my testimony as exhibit B.

In conclusion, I hope that our suggested amendments will be helpful to the committee in its consideration of how the Export Administration Act should be administered. I hope, also, that my discussion of the problems faced by our industry further clarifies for you why this country critically needs an effective export administration statute. Thank you for permitting me the opportunity to present testimony before the committee.

[Complete statement of Mr. Meinhard follows:]

TESTIMONY OF WILLIAM J. MEINHARD, CHAIRMAN, FERROUS SCRAP CONSUMERS COALITION

Mr. Chairman and members of the committee, I am pleased to have the opportunity to testify before you today at these oversight hearings on the Export Administration Act. I am William J. Meinhard, Chairman of the Ferrous Scrap Consumers Coalition ("FSCC") and Manager for Process Quality of Teledyne Casting Services. I am accompanied by David A. Hartquist of Collier, Shannon, Rill, Edwards & Scott, counsel to the FSCC. Teledyne is a small iron jobbing foundry located in La Porte, Indiana. The Ferrous Scrap Consumers Coalition is comprised of small "cold metal shop" steel firms and iron and steel foundries as well as unions representing employees in these companies. About 900 companies throughout the United States which employ in excess of 450,000 workers are members of our association. Unlike

large integrated steel producers, member companies use virtually no metallic raw material other than ferrous scrap in their iron and steel production.

The Ferrous Scrap Consumers Coalition and Teledyne have a keen interest in the Export Administration Act. Foundries and small steel firms have had a longstanding problem with excessive exports of ferrous scrap. In 1973 ferrous scrap consumers persuaded the Department of Commerce to impose export controls on this essential product and just last week our coalition requested that Secretary Kreps impose new export limits.

In my testimony today I will discuss two issues. First, I will describe current problems being experienced by my industry with respect to ferrous scrap exports. By explaining my industry's plight, I hope to highlight the unique problems our companies face and the importance of making meaningful relief available under the Export Administration Act. Second, I will explain the Ferrous Scrap Consumers' Coalition's proposed amendments to the Export Administration Act. These amendments will require that the Commerce Department establish streamlined, fair procedures for the administration of this statute.

I. CURRENT PROBLEMS RELATING TO FERROUS SCRAP EXPORTS

The recent rate of United States ferrous scrap exports has reached record levels. Current export levels parallel those experienced in the 1973 and 1974, a period in which Commerce imposed export restraints. During 1978, domestic consumption of ferrous scrap approached the 100 million ton level and United States exports rose to more than 9 million tons, 54 percent greater than in 1977. Japan accounted for almost all of the increase in United States exports. Between 1977 and 1978 domestic exports of ferrous scrap to Japan increased by 208 percent to more than 3 million tons. Scrap exports to Canada, Italy, Mexico, Taiwan, South Korea and Spain also increased. During the last six months of 1978, as domestic demand rose and exports skyrocketed, inventory stocks of industrial ferrous scrap purchased n the open market declined by 6 percent.

Why have exports increased so drastically? Foreign steel mills, particularly those built in recent years in Europe and developing countries, utilize electric furnaces to a greater extent than foundries and mills in the United States. Electric furnaces consume greater volumes of scrap per ton steel or iron produced than do the older open hearth furnaces. Moreover, many countries with growing steel industries are small or economically underdeveloped and are not large producers of scrap. These countries must import large quantities of scrap from the United States, the largest producer of this product. Exported scrap often reappears in the United States in the form of finished products.

New foreign capacity for steel manufacture will cause additional demand for domestic scrap in the future. Electric furnace steel mills have been recently constructed in South Korea, Argentina, Brazil, Venezuela, the Philippines, Taiwan, and the Peoples Republic of China. Also, many foreign countries, including the United Kingdom and Indonesia, have instituted ferrous scrap export restraint programs, thus creating additional demand for exports of this product.

While foreign demand for ferrous scrap has increased in the last two years, domestic demand for this product has also increased. Domestic steel companies and foundries have become increasingly reliant on electric furnaces. Between 1970 and 1977, the share of total United States raw steel production manufactured in electric furnaces rose from 15.3 percent to 22.2 percent. The percentage share of ferrous scrap consumed by these furnaces increased commensurately. Because electric furnaces are relatively energy efficient and environmentally clean, it is expected that the shift toward scrap based furnaces will accelerate in the years ahead, increasing domestic demand for ferrous scrap yet further.

All of this, of course, makes it more difficult for the hundreds of foundries to obtain scrap at reasonable prices as well. That is why the foundries, smaller steel companies and our workers have formed this coalition.

Members of the Ferrous Scrap Consumers Coalition have been squeezed by increasing exports during a period of increasing demand. The result of these conditions has been drastic inflation in ferrous scrap prices.

Prices for scrap have skyrocketed. Between June and December 1978 the American Metal Market three city composite price for "No. 1 heavy melt" scrap increased by 18 percent. During January 1979, the American Metal Market composite price for No. 1 heavy melt rose by 8.5 percent over the level of December 1978. The annual rate of inflation for this key commodity was 102 percent. With prices of No. 1 heavy melt ferrous scrap exceeding $130 per ton in some areas, current price levels are 72 percent higher than in June of 1978. Additionally, Cleveland auction price quotes from Fisher Body Company, Chrysler Corporation and Ford Motor

Company for "FB No. 1 industrial bundles" increased by an average 26 percent in the one month between February and March 1979 and by 74 percent from October 1978 to February 1979. Scrap price increases have surpassed price increases for other raw materials such as bituminous coal and iron ore and have increased iron and steel production costs.

Large increases in scrap prices place FSCC members in a particularly precarious position. While member companies wish to pledge their support for the President's voluntary wage and price guidelines, ferrous scrap has been excluded from these guidelines and is escalating in price at a triple digit annual rate. Members of the Ferrous Scrap Consumers' Coalition must compete with some of the largest integrated domestic enterprises, which have a secure source for their scrap supplies, and with foreign steel companies. Such a situation is untenable for smaller steel mills and foundries.

Scrap exports not only limit the availability of ferrous scrap to American consumers, they also frustrate United States energy and environmental policies. Each ton of ferrous scrap used in steel manufacture in place of iron ore and coal saves more than 17 million Btu's, or the equivalent of 3 barrels of crude oil. The 9 million tons of ferrous scrap exported during 1978 represent a net loss of 28 million barrels of oil, an amount sufficient to serve the per-capita energy needs for 500,000 Americans for an entire year. The usage of scrap also reduces the amount of pollutants generated in steel production by approximately 70 percent.

In summary, exports of ferrous scrap from the United States have increased drastically during a period of increasing domestic demand. This has caused substantial scrap price increases in the United States and frustrated our energy conservation program. If small foundries and steel companies are to survive, export controls must be instituted immediately.

II. SUGGESTED AMENDMENTS TO THE EXPORT ADMINISTRATION ACT

We propose two amendments to the Export Administration Act, one to meet our short-term needs, and a second to meet longer-term deficiencies in the Act.

First, we propose immediate enactment of legislation to establish a temporary limit of ferrous scrap exports in the amount of 600,000 short tons per month. Scrap export controls would continue only as long as there are either voluntary or mandatory federal wage and price codntrols in effect. We recommend a limit of 600,000 tons per month because, in our judgment, that level of exports would still provide for a supply to U.S. consumers adequate to meet our needs. A copy of the FSCC proposal is attached as Exhibit "A."

Second, we believe the present Export Administration Act is not adequate in affording injured parties relief. In our estimation, the statue is seriously deficient in that it does not establish a formal procedure for requesting relief or a mechanism for reviewing petitions. The Export Administration Act, like other international trade statutes, should contain rigorous procedural requirements. We favor enactment of the following amendments:

A formal petition procedure must be established. Any entity, including a trade association, firm, certified or recognized union or group of workers should be given standing to submit a request for the imposition of monitoring or export controls. The Secretary of Commerce should be directed to establish regulations governing the submission of such a petition.

Within 15 days of the receipt of such a request for relief, the Secretary should be required to publish notice in the Federal Register stating that (1) such a petition has been received and (2) comments by interested parties are invited. A suitable period should be established for receipt of such comments.

The Secretary of Commerce should be given 30 days from the close of the comment period to make a determination of whether monitoring or export controls are appropriate. If the requested relief is denied, the Secretary should be required to publish a statement explaining why relief was denied. The statute should direct the Secretary of Commerce to hold a hearing during the period of deliberations and afford parties the opportunity to present their points of view if any interested party asks for such a hearing.

Provision should also be made for temporary relief. Authority should be vested in the Secretary of Commerce to impose temporary monitoring or export controls during the pendency of an investigation if a domestic industry is threatened with imminent harm.

Finally, the Ferrous Scrap Consumers Coalition favors a widening of the circumstances in which the Department of Commerce may monitor exports. Under the present statute, monitoring is appropriate if exports contribute to an increase in domestic prices or a shortage which has a "serious adverse impact of the economy

or any sector thereof." We believe that a serious adverse impact on "the economy, any sector thereof, or any industry or substantial segment thereof" should be sufficient to allow the Commerce Department to institute export monitoring.

A copy of our proposed legislation, along with explanatory materials, is attached to my testimony as Exhibit "B."

In conclusion, I hope that our suggested amendments will be helpful to the Committee in its consideration of how the Export Administration Act should be administered. I hope, also, that my discussion of the problems faced by our industry further clarifies for you why this country critically needs and effective Export Administration statute. Thank you for permitting me the opportunity to present testimony before the Committee.

EXHIBIT "A"

Add new section (m) to 50 U.S.C. App. § 2403.

(m) Notwithstanding any other provision of this act, ferrous scrap exports classified under categories 607.0810, 607.0815, 607.0820, 607.0825, 607.0830, 607.0835, 607.0840, 607.0845, 607.0910, and 607.0920 of the *Statistical Classification of Domestic and Foreign Commodities Exported from the U.S., Schedule B,* shall not exceed in the aggregate 600,000 short tons per month during any period in which federally mandated voluntary or mandatory price controls are in effect.

EXHIBIT "B"—AMENDMENTS TO THE EXPORT ADMINISTRATION ACT

New section —— (a)(1): Any entity, including a trade association, firm, certified or recognized union or groups of workers, which is representative of an industry or a substantial segment of an industry which processes any material or commodity may transmit a written petition to the Secretary of Commerce requesting the imposition of export controls, or the monitoring of exports, or both, with respect to such material or commodity.

(2) Each petition shall be in such form as the Secretary of Commerce shall prescribe and shall contain information in support of its request.

(b) Within fifteen days of receipt of any petition described in subsection (a), the Secretary of Commerce shall cause to be published a notice in the Federal Register. The notice shall include the name of the material or commodity which is the subject of the petition, the Schedule B number of said material or commodity as set forth in the *Statistical Classification of Domestic and Foreign Commodities Exported from the United States,* whether the petitioner is requesting that control or monitoring, or both, be imposed with respect to the exportation of such material or commodity, and provide that interested persons shall have a period of thirty days commencing with the date of publication of this notice to submit to the Secretary of Commerce written data, views, or arguments, with or without opportunity for oral presentation. At the request of any persons, the Secretary shall conduct public hearings with respect to the subject of the petition, in which event said period shall be forty-five days.

(c) Within thirty days after the end of the thirty- or forty-five-day period described in subsection (b), the Secretary of Commerce shall—

(1) Determine whether to impose monitoring on the exportation of such material or commodity;

(2) Determine whether to impose controls on the exportation of such material or commodity;

(3) Determine whether to impose monitoring and controls on the exportation of such material or commodity; or

(4) Publish in the Federal Register a detailed statement of his reasons for nonimposition of such monitoring and/or controls. In stating his reasons for tne nonimposition of monitoring, the Secretary shall specifically state his reasons for believing that the criteria set forth in section 4(c)(1) of this Act have not been met.

(d) Within fifteen days following a decision under subsection (c) to impose monitoring and/or controls on the exportation of a material or commodity, the Secretary shall publish in the Federal Register proposed regulations with respect to such monitoring and/or controls. Within thirty days following the publishing of such notice, and after considering any public comments, the Secretary shall publish and implement final regulations.

(e) The procedures and time limits set forth in this section shall take precedence over any review undertaken at the initiative of the Secretary.

(f) The Secretary shall have the authority to impose monitoring and/or controls on a temporary basis during the period following the filing of a petition under subsection (a)(1) and his determination under subsection (c) if he deems such action to be necessary to effectuate the policy set forth in section 3(2)(A) of this Act.

(g) The authority under this section shall not be construed to affect the authority of the Secretary of Commerce under any other provision of this Act.

Purpose of Amendment: This amendment adds a new section to the Export Administration Act permitting persons, companies, trade associations or unions, representing a substantial segment of an industry to file a written petition with the Secretary of Commerce requesting export controls, the monitoring of exports, or both.

Within fifteen days of receiving a petition, the Secretary of Commerce must publish a notice in the Federal Register. Within the next forty-five days, hearings must be held if requested, and written submissions may be provided.

Within the next thirty days, the Secretary of Commerce must impose monitoring on exports, impose controls on exports, impose monitoring and controls on exports, or publish in the Federal Register his reasons for not imposing either monitoring or controls. If he decides to impose controls and/or monitoring, he must publish proposed regulations covering such activity and allow public comment before issuing final regulations. He may impose temporary controls during the investigation if necessary.

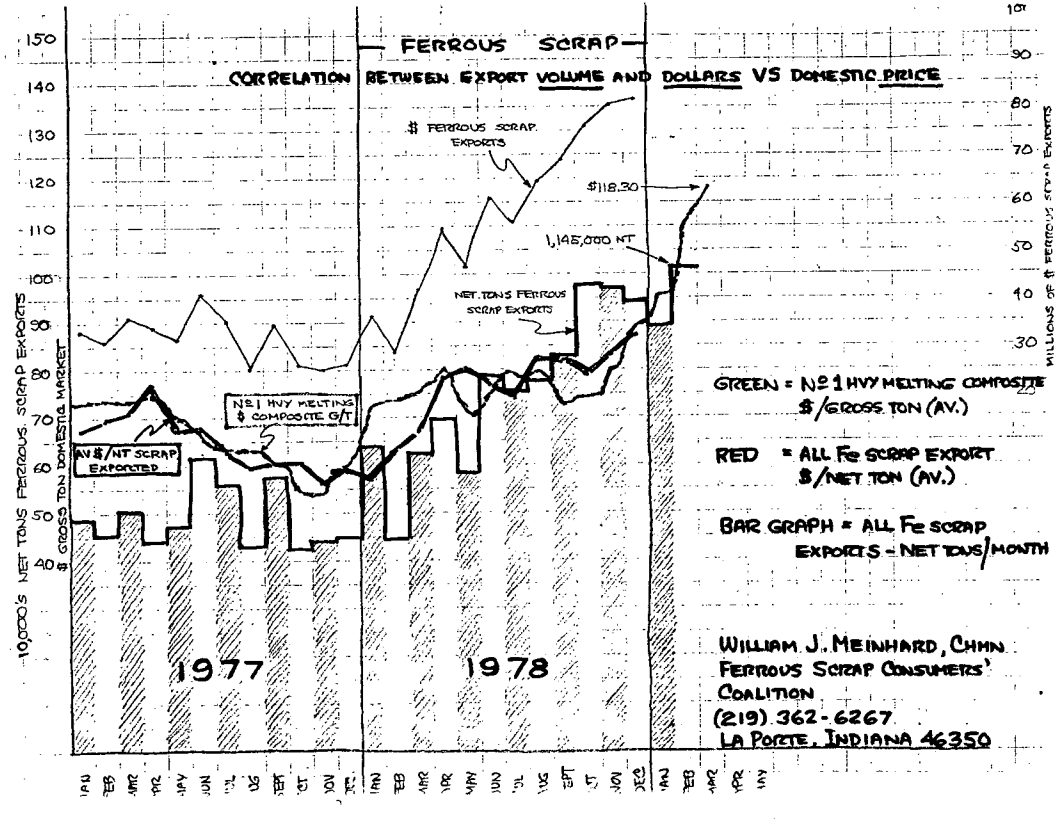
Amended section 4(c)(1): (new language underlined)

(c)(1) To effectuate the policy set forth in section 3(2)(A) of this Act, the Secretary of Commerce shall monitor exports, and contracts for exports, of any article, material, or supply (other than a commodity which is subject to the reporting requirements of section 812 of the Agricultural Act of 1970) when the volume of such exports in relation to domestic supply contributes, or may contribute, to an increase in domestic prices or a domestic shortage, and such price increase or shortage has, or may have, a serious adverse impact on the economy, any sector thereof, *or any industry or substantial segment thereof.* Such monitoring shall commence at a time adequate to insure that data will be available which is sufficient to permit achievement of the policies of this Act, and shall include the gathering of data concerning the volume of exports indicated under all contracts providing for the export of such article, material or supply following the date of the filing of a petition under section —— (a)(1). Information which the Secretary requires to be furnished in effecting such monitoring shall be confidential except as provided in paragraph (2) of this subsection and in the last two sentences of section 7(c) of this Act.

Purpose of Amendment: This amendment requires the Secretary of Commerce, in determining whether to monitor exports, to consider whether exports which contribute to increased domestic prices or domestic shortages have a serious adverse impact on the economy, any sector thereof, or any industry or substantial segment thereof. The current statute requires consideration of impact on the economy or any sector thereof. The new language is consistent with the provisions of section 5(c)(1), which refers to requests by representatives of "a substantial segment of any industry" for the formation of technical advisory committees. Thus, in determining whether to monitor exports, the Secretary would review the impact of such exports on particular industries or substantial segments of such industries.

APPENDIX 1

FSCC members include the following companies, trade associations and unions: the Cast Metals Federation (representing 850 companies), the Cast Iron Pipe Research Association, the Cast Iron Soil Pipe Institute, Atlantic Steel Company, Auburn Steel Company, Babcock and Wilcox Company, Connors Steel Company, Copperweld Corporation, Cyclops Corporation, Georgetown Steel Corporation, the International Molders and Allied Workers Union, Keystone Consolidated Industries, Korf Industries Inc., Laclede Steel Company, Lukens Steel Company, Northwestern Steel and Wire Company, Penn-Dixie Steel Corporation, Phoenix Steel Corporation, Roblin Steel Company, Standard Steel Company, the Timken Company, and Washburn Wire Company.


FERROUS SCRAP
CORRELATION BETWEEN EXPORT VOLUME AND DOLLARS VS DOMESTIC PRICE
$ FERROUS SCRAP EXPORTS
$118.30
1,145,000 NT
NET TONS FERROUS SCRAP EXPORTS
NO 1 HVY MELTING $ COMPOSITE G/T
AV $/NT SCRAP EXPORTED
10,000's NET TONS FERROUS SCRAP EXPORTS
$ GROSS TON DOMESTIC MARKET
MILLIONS OF $ FERROUS SCRAP EXPORTS
1977
1978
GREEN = NO 1 HVY MELTING COMPOSITE $/GROSS TON (AV.)
RED = ALL Fe SCRAP EXPORT $/NET TON (AV.)
BAR GRAPH = ALL Fe SCRAP EXPORTS - NET TONS/MONTH
WILLIAM J. MEINHARD, CHMN
FERROUS SCRAP CONSUMERS' COALITION
(219) 362-6267
LA PORTE, INDIANA 46350

PRICE OF FERROUS SCRAP	SHOP YIELD	LBS. OF METAL CHARGED PER 100 LBS. GOOD CSTG	1/79 CONVERSION COST PER 100 LBS. CHARGED	1/79 CONVERSION COST PER 100 LBS. GOOD CSTG	1/79 METAL COST PER 170 LBS. METAL CHARGED	HOME OR PROMPT SCRAP CHARGED PER 170 LBS	CREDIT FOR HOME OR PROMPT AT OBSOLETE COST	NET METAL COST PER 170 LBS METAL CHARGED	METAL PLUS CONV. COST PER 100 LBS GOOD CASTINGS	20% ADM LOSS OH	METAL COST PER LB GOOD CSTG.		
X $100/NT	58.7%	170	$1.69	$2.873	$13.77	66 LBS.	× 5¢/LB $3.30	$10.47	$13.343	$2.67	$.1601	X	$ .0026
Y $105/NT	58.7%	170	$1.69	$2.873	$14.16	66 LBS.	× 5¼¢/LB $3.47	$10.69	$13.563	$2.71	$.1627	Y	
			UTILITIES LABOR MAINT. ETC.		PIG IRON HOME SCR OBS. SCR RAIL SCR COKE LIMESTONE FERRO-ALLOYS ETC.	ONLY ←							
		FROM ②		③×④	EXHIBIT "A" × ③	FROM EXHIBIT "A"	①×⑦	⑥−⑧	⑤+⑨	⑩×.2	(⑩+⑪)/100		Y−X
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫		⑬

EXHIBIT "A"

3000 LB CHARGE:	¢/LB. X	¢/LB. Y
1500 # RAIL	2.5	2.63
500 # PIG	1.6	1.6
1000 # HOME (PLUS OBS.)	1.7	1.8
420 # COKE	1.2	1.2
ALL OTHERS (LIMESTONE FERRO-ALLOYS ETC.)	1.2	1.2
	8.1	8.33

CONCLUSION

$.0026 × 2000 LBS. = $5.20/NT GOOD CSTGS
PER $5.00/NT INCR STEEL SCRAP

OUR FORMULA DEVELOPED IN 1974 @ $.0020 DOES NOT REFLECT CURRENT COSTS AND YIELDS.

DETAILED ACCOUNTING OF INFLUENCE OF FERROUS SCRAP COSTS ON END PRODUCT COSTS OF TYPICAL IRON FOUNDRY.

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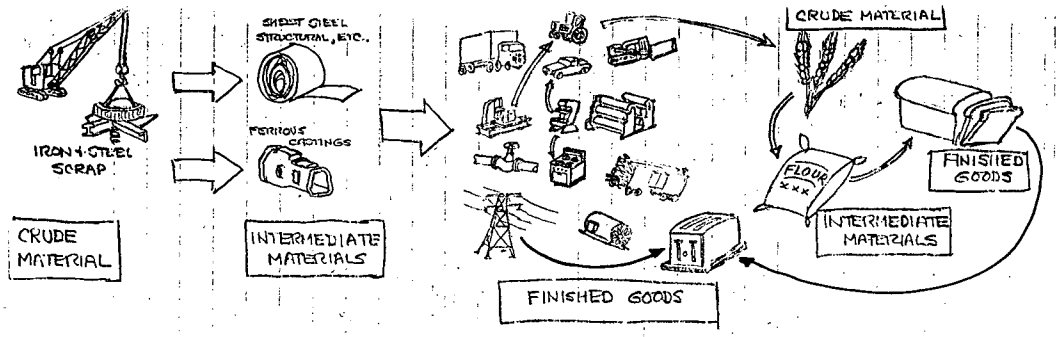


FINISHED STEEL AND FERROUS CASTINGS MAKE UP ALL THE FINISHED GOODS THAT PRODUCE AND PROCESS MORE CRUDE MATERIALS WHICH ARE TRANSPORTED AND PROCESSED INTO MORE INTERMEDIATE MATERIALS WHICH ARE TRANSPORTED AND PROCESSED INTO FINISHED GOODS WHICH ARE TRANSPORTED TO MARKET WHERE THE CONSUMER HAS DRIVEN IN A LARGELY FERROUS CAR DUE TO AN AD IN THE NEWSPAPER PRODUCED ON A MOSTLY FERROUS PRINTING PRESS DRIVEN BY ELECTRIC MOTORS WITH IRON FRAMES AND STEEL SHAFTS WITH ELECTRICITY PRODUCED FROM STEAM OR WATER DRIVEN GENERATORS WITH HUGE IRON AND STEEL SHAFTS AND THRUST BEARINGS. THE STEAM IS FORMED FROM ENERGY PRODUCED BY COAL, OIL, OR GAS (SOMETIMES NUCLEAR) ALL OF WHICH ARE: MINED OR REFINED AND TRANSPORTED BY IRON AND STEEL PRODUCTS.

50 % OF THE BASIC INTERMEDIATE MATERIALS RESPONSIBLE FOR ALL OTHER PRODUCTS – CRUDE, INTERMEDIATE, AND FINISHED – IS FERROUS SCRAP.

THE CHAIN REACTION (DOMINOE EFFECT) OF FERROUS SCRAP PRICES IN OUR ECONOMY WOULD DWARF THE CHAIN REACTION OF NUCLEAR FISSION.

INSPIRED BY THE BLS PRODUCER PRICE INDEX EXPLANATION
3/30/79

Brief Explanation of Producer Price Indexes

Producer Price Indexes measure average changes in prices received in primary markets of the United States by producers of commodities in all stages of processing. These data were previously presented as the Wholesale Price Index. The name "Producer Price Indexes" is now being used to reflect more accurately the coverage of the data. The sample used for calculating these indexes continues to contain nearly 2,800 commodities and about 10,000 quotations selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The universe includes all commodities produced or imported for sale in commercial transactions in primary markets in the United States.

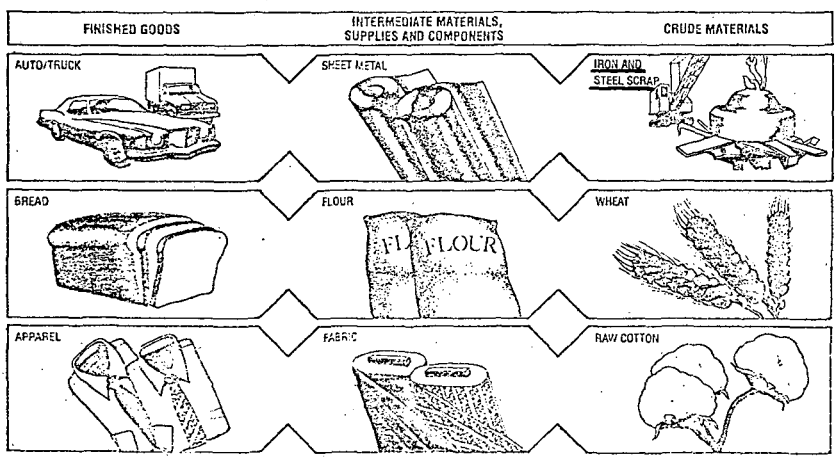
Producer Price Indexes can be organized by stage of processing or by commodity. The stage of processing structure organizes products by degree of fabrication (i.e., finished goods, intermediate or semifinished goods, and crude materials). The commodity structure organizes products by similarity of end-use or material composition.

Finished goods are commodities that will not undergo further processing and are ready for sale to the ultimate user, either an individual consumer or a business firm. Producer finished goods, frequently called capital equipment or producers' durable equipment, include commodities such as motor trucks, farm equipment, and machine tools. Consumer finished goods include foods and other types of goods eventually purchased by retailers and used by consumers. Consumer foods include unprocessed foods such as eggs and fresh vegetables, as well as processed foods such as bakery products and meats. Other consumer finished goods include durables—such as automobiles, household furniture, and jewelry—and nondurables—such as apparel and gasoline.

Intermediate materials, supplies, and components are commodities that have been processed but require further processing before they become finished goods. Examples of such semifinished goods include flour, cotton yarns, steel mill products, belts and belting, lumber, liquefied petroleum gas, paper boxes, and motor vehicle parts.

Crude materials for further processing include products entering the market for the first time which have not been manufactured or fabricated but will be processed before becoming finished goods. Scrap materials are also included. Crude foodstuffs and feedstuffs include items such as grains and livestock. Examples of crude nonfood materials include raw cotton, crude petroleum, natural gas, hides and skins, and iron and steel scrap.

For analysis of general price trends, stage of processing indexes are more useful than commodity grouping indexes. This is because commodity grouping indexes sometimes produce exaggerated or misleading signals of price changes by reflecting the same price movement through various stages of processing. For example, suppose that a price rise for steel scrap results in an increase in the price of steel sheet and then an advance in prices of automobiles produced from that steel. The All Commodities Wholesale Price Index and the Industrial Commodities Price Index



would reflect the same price movement three times—once for the steel scrap, once for the steel sheet, and once for the automobiles. This multiple counting occurs because the weighting structure for the All Commodities WPI uses the total shipment values for all commodities at all stages of processing. On the other hand, the Finished Goods Price Index would reflect the change in automobile prices, the Intermediate Materials Price Index would reflect the steel sheet price change, and the Crude Materials Price Index would reflect the rise in the price of steel scrap. (See illustration.)

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States, from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Respondents are asked to provide net prices or to provide all applicable discounts. BLS attempts to base Producer Price Indexes on actual transaction prices; however, list or book prices are used if transaction prices are not available. Most prices are obtained directly from producing companies on a voluntary and confidential basis, but some prices are taken from trade publications or from other Government agencies. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

In calculating Producer Price Indexes, price changes for the various commodities are averaged together with weights representing their importance in the total net selling value of all commodities as of 1972. The detailed data are aggregated to obtain indexes for stage of processing groupings, commodity groupings, durability of product groupings, and a number of special composite groupings. Each index measures price changes from a reference period which equals 100.0 (usually 1967, as designated by the Office of Management and Budget). An increase of 85 percent from the reference period in the Finished Goods Price Index, for example, is shown as 185.0. This change can also be expressed in dollars, as follows: "The price of a representative sample of finished goods sold in primary markets in the United States has risen from $100 in 1967 to $185."

A Note about Calculating Index Changes

Movements of price indexes from one month to another are usually expressed as percent changes rather than changes in index points because index point changes are affected by the level of the index in relation to its base period, while percent changes are not. The following example illustrates the computation of index point and percent changes. (See box.)

Percent changes for 3-month and 6-month periods are expressed as annual rates that are computed according to the standard formula for compound growth rates. These data indicate what the percent change would be if the current rate were maintained for a 12-month period.

Index Point Change

Finished Goods Price Index	185.5
less previous index	184.5
equals index point change	1.0

Index Percent Change

Index point change	1.0
divided by the previous index	184.5
equals	0.005
result multiplied by 100	0.005 x 100
equals index percent change	0.5

A Note on Seasonally Adjusted Data

Because price data are used for different purposes by different groups, the Bureau of Labor Statistics publishes seasonally adjusted as well as unadjusted changes each month.

For analyzing general price trends in the economy, seasonally adjusted data usually are preferred because they eliminate the effect of changes that normally occur at about the same time and in about the same magnitude every year—such as price movements resulting from normal weather patterns, regular production and marketing cycles, model changeovers, seasonal discounts, and holidays. For this reason, seasonally adjusted data more clearly reveal the underlying cyclical trends. Seasonally adjusted data are subject to revision when seasonal factors are revised each year.

The unadjusted data are of primary interest to users who need information which can be related to the actual dollar values of transactions. Individuals requiring this information include marketing specialists, purchasing agents, budget and cost analysts, contract specialists, and commodity traders. Unadjusted data generally are used in escalating contracts such as purchase agreements or real estate leases.

Senator STEVENSON. Thank you, sir.

Mr. Stapleton?

Mr. STAPLETON. Yes, sir.

Mr. Chairman and members of the Subcommittee on International Finance, I am pleased to have the opportunity to testify before you.

I am vice president of purchases for Inland Steel Co., but I am appearing today on behalf of the committee on critical materials supply of the American Iron and Steel Institute.

The AISI represents 63 domestic companies which account for approximately 92 percent of domestic steel production.

The steel industry supports the extension of the Export Administration Act of 1969, provided it is strengthened in several key areas.

Specifically, in view of the inflationary impact of ferrous scrap exports on scrap prices and steelmaking costs, and the corresponding difficulty in security adequate supplies to meet industry needs, we recommend:

That a permanent program to monitor ferrous scrap exports be implemented;

That mandatory action be required to impose export controls on ferrous scrap whenever the export level averages in excess of 600,000 tons per month for at least 3 months; and

That the Export Administration Act be revised to instruct U.S. negotiators to achieve reciprocity and equity in ferrous scrap trade at the international level through deliberations within, for example, the OECD steel committee.

Recycled iron and steel scrap is an essential ingredient used in steelmaking. In the basic oxygen furnaces operated by integrated steelmakers, scrap is combined with molten pig iron on roughly a 30–70 percent basis.

Over 75 percent of this country's 80-odd steel producers, however, operate exclusively with electric furnaces which require a 100 percent scrap charge. In these nonintegrated facilities, scrap purchases account for up to one-third of total steelmaking costs.

The steel industry is concerned with developments in the scrap market both in a long-term sense and on a current basis. Specifically, the lack of concern by the administration over the effect of excessive exports on scrap prices today has us deeply troubled.

Despite having the authority and statutory obligation to control exports under the Export Administration Act of 1969 when specified criteria are met, the Government has been loath to take action.

The act states that it is the policy of the United States "* * * to use export controls * * * to protect the domestic economy from the excessive drain of scarce materials and to reduce the seriously inflationary impact of foreign demand."

In order to achieve this objective, the Secretary of Commerce is given the power to monitor trade flows "* * * when the volume of * * * exports * * * contributes, or may contribute, to an increase in domestic prices or a domestic shortage and such price increase or shortage has, or may have, a serious impact on the economy or any sector thereof."

I mention this statutory language in the act to underscore what U.S. policy is, and to contrast it with how that policy has been implemented.

On January 8, 1979, the industry wrote the Secretary of Commerce requesting that ferrous scrap export monitoring commence in light of the dramatic increase in exports and corresponding increase in scrap prices.

At that point, scrap exports in the fourth quarter were running at a record annual rate of 11.6 million tons per year, and prices had risen 24 percent in 3 months to $94 from a third quarter average of $76 per ton. Inventories, another measure of market conditions, had declined to a 3-year low.

Despite these conditions and the outlook for continued deterioration in supplies, no action was taken. On February 2, and again on February 27, the industry met with Commerce policy officials with a request to impose immediate quantitative restraints on exports.

Throughout the entire period, inventories continued to fall and exports remained high. Not only were export controls rejected by the administration, monitoring was not even authorized—an unexplicable response in view of the Department's statutory obligations under the Export Administration Act.

As a result, this country is currently poorly positioned to take actions which will have a beneficial effect on the supply of scrap. It is reminiscent of 1973 and 1974. As you may recall, export controls were imposed after lengthy and costly deliberations within the Government.

As these deliberations proceeded, pipeline supplies were depleted—much as they are in the process of being depleted now. When controls were finally put into effect, the scarcity of scrap which had developed led to further price increases which could have been avoided.

At the present time, the composite price of No. 1 heavy metal scrap has risen to $135 per ton from $76 in the third quarter, an 80 percent jump. Prices of No. 1 factory bundles, a prime scrap grade, were up to $145 per ton in Chicago and $155 per ton in the Pittsburgh district.

We calculate that the impact on the the steel industry and foundry costs is now an approximate $2.5 billion. That's a $2.5 billion cost impact due to scrap prices alone. The impact on the steel industry is estimated at $1.6 billion, which, interestingly, exceeds the estimated 1978 earnings of the industry.

What will the effect of this situation be on the industry? Several companies have announced scrap surcharges on the steel they ship.

We feel it is inconsistent that on the one hand steel companies are being asked to follow the President's wage-price guidelines, while on the other hand nothing is being done to contain the price of scrap—a major cost component of the industry.

I note that Assistant Secretary of the Treasury Fred Bergsten endorsed this type of hands-off policy in testimony before the Senate Banking Committee last week. This official stated that export controls were undesirable on economic grounds since we: (1) Lose foreign exchange; (2) call into question the reliability of the United States as a supplier; and (3) invite retaliation. With respect to ferrous scrap, we feel this view is myopic.

First, if scrap exports are used to produce steel products which are then shipped back into the United States, the trade balance may not be improved at all since finished steel products—such as Toyotas and Datsuns and mill products themselves—are much higher value.

In 1978, for instance, the United States ran a $648 million surplus

On its scrap trade balance, while running a $5.6 billion deficit on its steel trade account. The small contribution made by scrap exports to the trade balance should, in this instance, be carefully weighed against the highly inflationary effect these same exports had on domestic prices.

Second, all countries except for the United States watch and control their scrap flows. Some have outright prohibitions, while others control exports more subtly through government guidance. Interestingly, the original charter founding the ECSC flatly prohibits scrap exports to third countries. EEC countries are still technically bound by this provision although a small quantity of some scrap is allowed to be exported.

During the 1973-74 steel boom, the community allowed only 400,000 tons per year to be exported to third countries. This is equivalent to little more than 2 weeks' worth of exports from the United States in recent years. Why does the United States refuse to take actions in view of the active intervention of other governments in the international scrap market?

Finally, it is ironic that the United States would export energy in the form of scrap. When economically feasible, shouldn't the 17 million Btu's of energy savings contained in every ton of scrap benefit this country? Foreign scrap shipments in the fourth quarter alone, we note, were equivalent to 8.4 million barrels of oil.

In closing, the industry feels the government should be more responsive to the needs of this country in this area.

Accordingly, we shall be recommending to Congress that a program be implemented to permanently monitor ferrous scrap exports, and to impose mandatory export controls on these exports when they average in excess of 600,000 tons per month for at least 90 days.

In addition to seeking remedy at the national level, we hope that the United States will discuss the scrap trade problem with its trading partners at the international level so as to achieve reciprocity and equity in scrap trade.

If this requires authorization through a revision in the act, we recommend that this action be taken. We feel that the OECD steel committee might be an appropriate forum to consider such an issue, and we therefore recommend that it be put on its work program.

[Complete statement of Mr. Stapleton follows:]

STATEMENT OF WILLIAM H. STAPLETON, VICE PRESIDENT, PURCHASES, INLAND STEEL CO. ON THE NEED FOR FERROUS SCRAP EXPORT CONTROLS

Mr. Chairman and members of the Subcommittee on International Finance, my name is William Stapleton. I am Vice President of Purchases for Inland Steel Company, but today I am appearing on behalf of the Committee on Critical Materials Supply of the American Iron and Steel Institute. The AISI represents 63 domes-

tic companies which account for approximately 92 percent of domestic steel production.

The steel industry supports the extension of the Export Administration Act of 1969, provided it is strengthened in several key areas. Specifically, in view of the inflationary impact of ferrous scrap exports on scrap prices and steelmaking costs, and the corresponding difficulty in securing adequate supplies to meet industry needs, we recommend:

That a permanent program to monitor ferrous scrap exports be implemented;

That mandatory action be required to impose export controls on ferrous scrap whenever the export level averages in excess of 600,000 tons per month for at least three months; and,

That the Export Administration Act be revised to instruct U.S. negotiators to achieve reciprocity and equity in ferrous scrap trade at the international level through deliberations within, for example, the OECD Steel Committee.

Recycled iron and steel scrap is an essential ingredient used in steelmaking. In the basic oxygen furnaces operated by integrated steelmakers, scrap is combined with molten pig iron on roughly a 30/70 percent basis. Over 75 percent of this country's 80 odd steel producers, however, operate exclusively with electric furnaces which require a 100 percent scrap charge. In these nonintegrated facilities, scrap purchases account for up to one-third of total steelmaking costs.

The steel industry is concerned with developments in the scrap market both in a long term sense and on a current basis. Specifically, the lack of concern by the Administration over the effect of excessive exports on scrap prices today has us deeply troubled. Despite having the authority and statutory obligation to control exports under the Export Administration Act of 1969, when specified criteria are met, the Government has been loath to take action. The Act states that it is the policy of the United States, " * * * to use export controls * * * to protect the domestic economy from the excessive drain of scarce materials and to reduce the seriously inflationary impact of foreign demand." In order to achieve this objective, the Secretary of Commerce is given the power to monitor trade flows, " * * * when the volume of * * * exports * * * contributes, or many contribute, to an increase in domestic prices or a domestic shortage and such price increase or shortage has, or may have, a serious impact on the economy or any sector thereof." I mention this statutory language in the Act to underscore what U.S. policy is, and to contrast it with how that policy has been implemented.

On January 8, 1979 the industry wrote the Secretary of Commerce requesting that ferrous scrap export monitoring commence in light of the dramatic increase in exports and corresponding increases in scrap prices. At that point scrap exports in the fourth quarter were running at a record annual rate of 11.6 million tons per year, and prices had risen 24 percent in three months, to $94 from a third quarter average of $76 per ton. Inventories, another measure of market conditions, had declined to a three year low.

Despite these conditions, and the outlook for continued deterioration in supplies, no action was taken. On February 2, and again on February 27, the industry met with Commerce policy officials with a request to impose immediate quantitative restraints on exports. Throughout the entire period, inventories continued to fall, and exports remained high. Not only were export controls rejected by the Administration, monitoring was not even authorized, an unexplicable response in view of the Department's statutory obligations under the Export Administration Act.

As a result, this country is currently poorly positioned to take actions which will have a beneficial effect on the supply of scrap. It is reminiscent of 1973 and 1974. As you may recall, export controls were imposed after lengthy and costly deliberations within the government. As these deliberations proceeded, pipeline supplies were depleted, much as they are in the process of being depleted now. When controls were finally put into effect, the scarcity of scrap which had developed led to further price increases, which could have been avoided.

At the present time, scrap prices have risen to $135 per ton from $76 in the third quarter, an 80 percent jump. We calculate the impact on steel industry and foundry costs is now an approximate $2.5 billion. That's a $2.5 billion cost impact due to scrap prices alone. The impact on the steel industry is estimated at $1.6 billion, which, interestingly, exceeds the estimated 1978 earnings of the industry.

What will the effect of this situation be on the industry? Several companies have announced scrap surcharges on the steel they ship. In 1973–74, one major integrated producer actually closed down operations at several sites because of excessive scrap prices.

We feel it is inconsistent that on the one hand, steel companies are being asked to follow the President's wage-price guidelines, while, on the other hand, nothing is being done to contain the price of scrap, a major cost component of the industry.

I note that Assistant Secretary of the Treasury Fred Bergsten endorsed this type of "hands-off" policy in testimony before the Senate Banking Committee last week. This official stated that export controls were undesirable on economic grounds since we (1) lose foreign exchange, (2) call into question the reliability of the U.S. as a supplier, and (3) invite retaliation. With respect to ferrous scrap, we feel this view is myopic.

First, if scrap exports are used to produce steel products which are then shipped back into the U.S., the trade balance may not be improved at all since finished steel products (such as Toyotas and Datsuns) are much higher value. In 1978, for instance, the U.S. ran a $648 million surplus on its scrap trade balance, while running a $5.6 billion deficit on its steel trade account. The small contribution made by scrap exports to the trade balance should, in this instance, be carefully weighed against the highly inflationary effect these same exports had on domestic prices.

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Finally, it is ironic that the Unites States would export energy in the form of scrap. When economically feasible, shouldn't the 17 million Btu's of energy savings contained in every ton of scrap benefit this country? Foreign scrap shipments in the fourth quarter alone, we note, were equivalent to 8.4 million barrels of oil.

In closing, the industry feels the government should be more responsive to the needs of this country in this area. Accordingly, we shall be recommending to the Congress that a program be implemented to permanently monitor ferrous scrap exports, and to impose mandatory export controls on these exports when they average in excess of 600,000 tons per month, for at least 90 days.

In addition to seeking remedy at the national level, we hope that the United States will discuss the scrap trade problem with its trading partners at the international level so as to achieve reciprocity and equity in scrap trade. If this requires authorization through a revesion in the Act, we recommend that this action be taken. We feel that the OECD Steel Committee might be an appropriate forum to consider such an issue, and we therefore recommend that it be put on its work program.

Senator STEVENSON. Thank you, sir.

Our next witness is Mr. Liff. I was mistaken earlier. He is accompanied by Robert R. Nathan, president of Robert R. Nathan Associates, Inc.

Mr. Liff?

Mr. LIFF. Thank you, Senator Stevenson.

I would like to introduce Mr. Nathan, our counsel, Bruce Butler, and the executive director of the Institute of Scrap Iron and Steel, Dr. Cutler, sitting directly behind me.

The statement that I am giving today is submitted on behalf of the Institute of Scrap Iron and Steel, Inc., a national trade association representing more than 1500 processors and brokers of metallic scrap and industry suppliers.

Institute members process, ship or otherwise handle approximately 90-95 percent of all purchased iron and steel scrap consumed in the United States or exported as well as equally impressive percentages of the other metallics recycled in our economy.

This testimony is directed solely at the short supply controls found in section 2(a)(A) of the act. Since the inception of the

Institute, its members have been steadfast advocates of fair, free trade. With the United States annual balance of payments deficit of $30 billion at a time when the administration has announced a national export policy which seeks to increase the number of companies involved in export market, committing the Federal Government to the encouragement of exports, it would seem inappropriate to erect new barriers to export trade.

Accordingly, the Institute fully supports the changes to section 1 of the Export Administration Act proposed by the National Governors Association in their export policy statement by which Congress would recognize that "the right of U.S. citizens to engage in international commerce is a fundamental concern of United States trade policy" and that "the stimulation of U.S. exports is vital to the national interests of the United States."

At the same time, Congress has recognized in the Export Administration Act of 1969 and its predecessor the Export Control Act that there are certain limited circumstances which justify the imposition of export controls. With respect to short supply controls, the Export Administration Act requires the Department of Commerce to make very specific findings before it can impose export controls. It is mandatory for the Department to find that controls are "necessary to protect the domestic economy from the excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand." Section 2(a)(A) of the act.

I would like to interject at this point, Mr. Stevenson, two recent research projects prepared by Robert R. Nathan & Associates that were done on the subject of the supply of scrap and a price sensitivity factor analysis. I would like to submit them as part of the record.

These reports, in short, say two things:

First, that we have a reservoir in the United States at some point, at some price, a level of scrap which Mr. Nathan estimates to be some 670 million tons.

And secondly, the documentation that a 10-percent increase in the price of scrap increases the supply by 8.3 percent. This is a price sensitive commodity.

The reports are submitted to the committee for your use.

The institute believes that the concepts which are expressed in this statutory mandate—scarce materials and serious inflationary impact of foreign demand—are universally accepted by economists and are readily defined. It has asked Robert Nathan, a well-known and highly regarded economist, to accompany us today to describe briefly for the subcommittee the generally accepted meaning of these terms. Because of the clarity of current statutory language, the Institute sees no need to tamper with existing law dealing with short supply export controls.

Mr. Chairman, I have some other points that I would like to cover, but perhaps they would be best covered during a question and answer period.

Senator STEVENSON. All right, sir.

Mr. Nathan?

Mr. NATHAN. I would like to just summarize my statement rather than read it verbatim.

Senator STEVENSON. All right. The full statement will be entered into the record.

Mr. NATHAN. I would like to testify primarily from an economic point of view with respect to the issues involved here. Just briefly I think everybody agrees that two of the major issues facing this Nation are the serious subjects of inflation and the value of the dollar. I do believe that it is important that we take a look at this issue of scrap exports and efforts to limit scrap exports in relation to both of these very serious problems.

Given the very substantial expenditures this Nation makes for the import of oil and the huge trade deficit that we have had for a considerable period of time and the deterioration of the value of the dollar, which in turn affects the price of imports, and therefore has an inflationary consequence, I believe that any effort to limit scrap exports at this time, from an economic point of view, would be highly unfortunate. I believe it would be inflationary and contrary to our national interest, our balance of payments and the value of the dollar.

Let me turn very briefly to the most important element we have here, and that has to do with one of the three objectives or conditions with respect to exports. That is the protection of the domestic economy from excessive draining of scarce materials and reducing the inflationary impact of foreign demand. I would like to concern myself with definitions of these three from an economic point of view.

I think almost every economist would agree that when the words "protecting the domestic economy" are used, they really mean the economy and not necessarily every specific or any specific or very precise segment. I think it is the overall economic implications that we ought to take a hard look at. That is what I am suggesting.

The very important subject that I would urge this committee to take a hard look at has to do with the definition of "scarce materials". And very briefly, Mr. Chairman, I think that the best way to take a look at scarce materials has to do with what we economists call elasticity of supply, namely, is there a possibility of increasing supply and increasing it substantially.

In my statement I noted that there are certain kinds of products where the possibility of increasing supply within a reasonable period of time are rather remote, and therefore we say that this has a low elasticity or responds slowly or very little to an increase in prices.

But of all of the products that one could perhaps conceive of where an increase in price brings about an increase in supply, scrap is certainly one. And all one has to think about is the very nature of the scrap that we have available in this country, which, as has been indicated, we believe to be something in excess of 670 million tons of obsolete scrap. It is clear that when the price of scrap is low, the processors and collectors are not in a position to go very far afield to acquire and accumulate the scrap. But we do find that when the price rises, the supply responds. And, as was pointed out, our study indicates that, with a 10-percent increase in price, you tend to get an 8⅓-percent increase in supply.

So that from an economic point of view, the price mechanism is a self-correcting device which tends to overcome temporary disloca-

tions in the supply of scrap. And if one tries to limit exports in order to control prices, which in essence is what is being contended, as I see it, from an economic point of view, then one precludes the solution of the problem, because one precludes bringing in that supply that is in existence in all parts of the country and where, it is only the cost that has to be covered that will be necessary to bring it in.

I think that this elasticity is a tremendously important factor to be taken into account when one looks at price as a determinant of scarcity, especially when one looks at supply and has to recognize how that responds to higher prices. I say when you have a high elasticity, as you have in scrap, it is terribly important to recognize that the only solution lies, when there are temporary dislocations, the only solution lies in overcoming those shortages by increases in supply.

We demonstrate clearly that that actually happens when prices rise.

Let me turn to the inflationary impact, because this is terribly important to all of us as we observe the double-digit inflation with us again. I think the inflation has to be looked on as an increase in prices generally and not every specific product.

But when we look at steel scrap, Mr. Chairman, we find that, except in periods of relatively short time, steel scrap prices have remained very, very low and are very volatile. I just happened to run over some figures myself, and in the first 3 years of the 1970's, steel scrap prices were lower than they were—that is, No. 1 heavy melted scrap—they were lower for the first 3 years in the 1970's, after 6 or 7 years of inflation, than they were in the first 3 years of the 1950's, or even 1955, 1956 or 1957, when you had no Korean situation.

On the other hand, the price of steel in that period had doubled.

When one looks at the longer term trend of steel prices in this country, there is almost no relationship over any time between scrap prices and steel prices. Steel prices just keep rising and rising and rising, and scrap prices go up and go down and go up and go down. Over the long run, they do not appear to even have risen relative to this general posture of inflation we have in our society.

I think that the contention that holding down steel scrap prices and therefore holding down steel prices is an exaggeration of major magnitude. If one looks at the history—and I happen to have a chart which I would be glad to leave here, Mr. Chairman, which shows, since 1952, the price of steel and the price of steel scrap, you see a nice, even upward curve, and then you see a highly fluctuating curve described.

So that these studies, in my judgment, very well reveal that scrap prices are not inflationary in the sense that they have a significant impact on the price of steel, nor on the general level of prices, which is basically our definition of inflation.

Now, I believe that the purposes of the Export Administration Act are basically to try to achieve a degree of orderliness in our international trade and to achieve a sound and solid economic development in this country, for the best interests of the United States and not of any necessarily specific industry.

In my judgment, the effort that is being proposed here is an effort to subject scrap iron to control by the steel industry. And I don't believe that that is in the interest of the United States. In my judgment, I believe the desirable objective is to continue to export when the opportunities present themselves, to reduce our trade balance thereby, to increase the whole competitive posture, to strengthen the competition between the United States and other countries, and, above all, I would say, Mr. Chairman, that any effort to limit scrap exports will be self-defeating, because by trying to reduce prices through limiting exports, what we will do will be limiting supply.

I don't think that that is in the interest of the United States or any foreign country.

Let me say one final point, Mr. Chairman. Our balance of trade is going to benefit if the economies of other countries expand relative to ours. If we are going to try to hold down expansion of other countries by refusing to export scrap, of which we have phenomenal quantities that will be forthcoming, then I think that we are hurting our trade balance and also hurting trade relations between the United States and other nations.

Thank you very much.

[Complete statement of Mr. Nathan follows:]

STATEMENT OF ROBERT R. NATHAN, CHAIRMAN, ROBERT R. NATHAN ASSOCIATES, INC.

My name is Robert R. Nathan and I am Chairman of Robert R. Nathan Associates, Inc., a firm of consulting economists.

I welcome this opportunity to comment on behalf of the Institute of Scrap Iron and Steel on this country's export policy and to evaluate the applicability of the current Export Administration Act within the context of that policy. My comments, as a policy-oriented economist, will deal with the overall concepts and objectives of export controls and their use in furthering the best interests of the United States.

It is overwhelmingly clear that two major economic crises face America at this moment. One is inflation and the other is the value of the dollar. They are closely related in that greater inflation in the United States relative to other countries reduces the relative value of the dollar, which in turn contributes to higher domestic inflation because dollar prices of imported goods rise.

It is an essential goal of this nation to expand exports so as to pay for our imports, especially the large imports of oil. Unless exports increase greatly, we will continue to suffer trade deficits and a declining value of the dollar.

The goal of maximizing exports should dominate our trade policies except under only the most unusual circumstances. Only such circumstances justify legislation such as the Export Administration Act as part of the laws of this country. But, it is important to note that the philosophy of the Export Administration Act is not to tinker with exports unless one of three specific conditions, and no others, prevail. They are: (1) national security needs; (2) foreign policy needs; and (3) "protection of the domestic economy from the excessive drain of scarce materials and reducing the serious inflationary impact of foreign demand."

Earlier hearings have dealt with the first two criteria. Only the third concept will be discussed in this testimony since we believe the issue of short supply controls is being pressed because of a combination of improper definitions of the language in the legislation and unwarranted claims of adverse consequences of scrap exports.

In economics, the words of the third criteria are clearly understood. There are commonly accepted definitions for the precise criteria enumerated:

1. *Protecting the domestic economy.*—Tthis must take into account the overall economy. It should not refer to protection for a particular segment or segments which is much more than offset by harm to the total domestic economy. Any attempt to impose export controls must take into consideration the overall economic viability and well-being of the country.

2. *Excessive drain of scarce materials.*—Scarcity can be identified by resort to traditional elasticity analysis. Such analysis indicates that there are different cate-

gories of commodities and the commonly utilized manifestation of scarcity, namely price escalation, means different things depending on which commodities are being analyzed. For example, where price elasticity of supply is low, scarcity may well be a valid conclusion based on a sharp price increase; on the other hand, where price elasticity of supply is high, a sharp escalation in price does not mean a material is scarce.

Price elasticity of supply is a measure of the degree of response in material availability in relation to a percentage change in the price offered for that material. Thus, a sharp increase in the price offered for walnut logs, because of the normal growth period of many years before a mature tree can be used for the purpose of logging, will not result in an increase in supply for many decades and the supply elasticity is properly characterized as low. Under those circumstances, and in other similar situations, where supply is virtually fixed and the commodity tends to be non-renewable, or renewable only with very lengthy delays, any sharp rise in price can reasonably be interpreted, all other things being equal, as an indication that a scarcity exists for that product.

On the other hand, where the price elasticity of supply is high, a sharp increase in price will lead to a concomitant sharp increase in supply. Thus, the rise in price for such a commodity is not evidence of scarcity. Rather, it is the means of bringing about an increase in supply to fulfill demand. Far from being an indication of basic scarcity, this reflects that the marketplace is working correctly because the supply response to higher prices will bring forth greater supplies and thereby overcome any shortages.

The elasticity of supply of scrap iron in response to higher prices means that price rises for that commodity reflect market efficiency in achieving esxpanded supplies. In a recent study of the scrap iron market conducted by Robert R. Nathan Associates, Inc., it became obvious that the higher the price of scrap, the higher the supply, particularly of obsolete scrap such as junked cars, appliances, and old machinery. Evidence indicated huge potential supplies of scrap existed and would be forthcoming when prices rose enough to cover the short run increased costs of assembling and processing enough scrap to meet demand.

3. *Serious inflationary impact of foreign demand.*—Inflation is not merely price rise in a given commodity or product; inflation is a generalized increase in price which tends to effect most segments of the economy. Inflation cannot be evidenced only by the increased cost of specific raw materials to the manufacturer of intermediate or finished products using those raw materials. Inflation encompasses rising prices of products including consumer and producer goods, which in turn are affected by raw material price increases and by costs of inputs at the different stages of fabrication and production.

If the price of scrap iron does not significantly influence the price of finished steel, as historical data demonstrate, it cannot be said that scrap prices have an inflationary impact on the domestic economy. The level of scrap prices may rise substantially in the process of achieving greater supply but if it has little or no impact on steel prices, then certainly it does not bear any relationship to the above criteria of the Export Administration Act.

From studies we have conducted and data we have reviewed, a rise in the price of scrap iron cannot possibly be considered as significantly inflationary. It bears practically no relationship to the price of finished steel. In fact, levels and margins of steel profits tend to rise during periods of high steel production which is when scrap prices tends to increase. So steel profit margins increase when scrap prices increase. It is not intended to imply a casual relationship. However, it is obvious that there is no basis for concluding, let alone contending, that there is an inflationary impact from increases in the price of scrap.

The conception and purposes of the Export Administration Act and most, if not all, of trade legislation are not to protect American industry by restraining exports of American products. Rather, it is formulated for the purpose of expanding the exports of American products in the best interests of America, including the domestic economy and its components. Various historic and now renewed efforts to control exports of scrap iron, because of alleged short supply, have actually been attempts to allow the domestic steel and foundry industries to control scrap prices. Price control by any industry over its supplies, whether voluntary or mandatory, is contrary to the principles of our free enterprise system. Also, price controls over particular raw materials cannot be determined by export controls in any sound manner. We need more exports, not less; we need more flexibility of prices and supply, not controls; and we need to apply criteria of an economic nature based on well conceived and carefully applied economic factors.

It is obvious to me that the Export Administration Act, as it stands, is in consonance with America's needs. If properly administered, it can help America overcome its major dollar and trade deficit economic problems. It can contribute to solving the inflation that is so damaging to the Nation. The Act is a fair presentation of what is needed both as a national trade and national economic policy. It should not be changed.

The applicable criteria are clear. The words used are commonly understood by economists and have long standing significance and appreciation in the economic community. There is no need either to change the words or to spell out their meaning in narrow and improper and unsound ways which would be contrary to the spirit of the Act and the well-being of the nation. The Act should be extended in its present form.

Senator STEVENSON. Thank you, sir.

Mr. Stapleton said that uncontrolled scrap exports would not significantly affect the trade balance, because scrap goes out and then it comes back in higher value in imports, in Datsuns and the like. Would you respond to that?

Mr. NATHAN. Yes, I would be glad to, Mr. Chairman.

First of all, I have testified before the International Trade Commission with respect to trade policies. We do have the trigger price mechanism, which relates to the cost of production abroad. I think that the import of the steel in finished product or intermediary stages, processes or forms, will occur as long as the industry abroad is more efficient relatively than in the United States.

I think the answer does not lie in trying to prevent them from producing more steel and producing, therefore, more cars and producing other things which can be bought here. I think the answer lies primarily in the increased efficiency in American production, both of steel and of the products from which steel is made.

And I believe that if we were to try to depress the economies of nations like Japan by failing to make available that which we have in abundance, namely, steel scrap, then I think that we would hurt our trade balance. Because, as their economy grows less, their exports must grow more. And if any one lesson we have learned in recent years is important, it is that our trade balance is adversely affected by slower growth abroad and our trade balance is enhanced by more rapid growth abroad.

To the extent that controlling exports of scrap would curtail and slow or abate the rate of economic growth abroad, I think it would be adverse for our balance of trade.

Senator STEVENSON. Slower growth rates abroad wouldn't take care of the scrap price?

Mr. NATHAN. It might or might not. It depends, Mr. Chairman, on what the domestic situation is. You must realize that there are three sources for scrap. Home scrap comes out of steel production itself within the mill, and that is kept there. There are some sales, but not much.

The other is the prompt industrial scrap that derives from a lot of our industrial production. When we are vigorously expansive in the economy, then such scrap increases. But it is the swing item, namely, obsolete scrap, we have got to take a look at what the supply will be, and there I really believe, Mr. Chairman, that this supply problem is the critical item. And, to the extent we are willing to allow the price to go to that level which will bring forth the scrap, to that extent I think that we are helping production

abroad; I think that we are offsetting the balance of trade adverse effects of slower growth abroad.

Senator STEVENSON. Mr. Stapleton?

Mr. STAPLETON. I would like to comment on the 660 millon ton scrap reservoir that has been alluded to. It includes such items as your refrigerator, my automobile, the Brooklyn Bridge and other things that are being currently utilized.

Father Hogan, of Fordham University, who prepared a companion study on the availability of scrap, draws a distinction between the total metals reservior of scrap—which includes iron and steel in secondary use—and the annual stock of recyclable discards which actually becomes available in a given year. The point is that much of the metal which is in the reservior is not readily available and it must therefore be discounted when one talks about current supply.

A second point I would like to touch on concerns the longstanding debate which has occurred on the elasticity of obsolete scrap. Father Hogan developed information in his study which directly conflicts with Mr. Nathan's. I would like to have Mr. James F. Collins, senior vice president of the American Iron and Steel Institute, elaborate on this point.

Mr. COLLINS. During 1973 and 1974, a period of peak domestic and foreign demand for scrap, scrap prices increased more than 100 percent. The history on the availability of obsolete scrap, which is the issue in contention here, shows that the obsolete supply responded to that price rise by increasing only 7 percent.

We admit that during the early stages of the price increase for ferrous scrap, the ferrous scrap obsolete supply does respond favorably. But after a certain point, no matter how much the price runs up, once that obsolete scrap has been depleted, the price elasticity of supply is minimal, or almost nonexistent.

The history of the availability in the 1973–74 period proves this.

Senator STEVENSON. Did you want to add something?

Mr. LIFF. Yes, I would have to respectfully disagree with Mr. Collins, and I would have to refer to the Nathan report which has been done in extreme detail, and has been critiqued by some of the finest economists in the country as being a substantial report.

Leaving that for a moment, I really would like to raise a question for this committee's consideration. That is: Are we really using the Export Administration Act as a price control hearing? Or are we here to talk about export administration?

There have been suggestions made by my distinguished friends about changes in the law. Obviously, no law is perfect, but this law has been functioning, and it appears to be functioning fairly well.

I would like to suggest, Mr. Chairman, that if we are in fact going to change the law and open it up to amendments, there are a whole series of other things that would have to be considered.

For example, I would suggest that maybe we ought to monitor the domestic purchasing patterns of our mills. Are they buying scrap when it is available? Are they anticipating winter? Are they anticipating railroad car shortages?

Mr. Stapleton, if he will excuse me for being very personal, I have to compliment him and his company. His particular company generally is known in the trade as very farsighted. In the third

quarter of 1978, and for reasons of their own, they wisely entered the marketplace and bought substantial tonnages of scrap, and I am told by the people in his trade area that, for the most part, Mr. Stapleton and his fine company were basically able to stay out of the panic that occurred during the fourth quarter.

Mr. Stapleton's company, I have been told, at one time within the last 30 or 45 days had some 600 to 900 railroad cars outside of their gates loaded waiting to get in because of his wise buying.

I suggest that maybe we should monitor some of his competitors who are not buying so wisely, who are all of a sudden very surprised every time a winter comes along.

I think also it might be appropriate to monitor how much buying is done by nontraditional buyers, because now we have the trigger price mechanism. Business has picked up in the United States for the steel industry—thankfully so, but certain regulations have been instituted called the "trigger price." We have now nontraditional buyers in the marketplace, people who have not been buying scrap at all, and these are the people who I submit, Mr. Chairman, are really the ones who pushed the price of the scrap up.

They are causing the foundry in Indiana to have competition for the scrap. It is the nontraditional buyers who have not been in the marketplace, and it is not the export of scrap. In fact, Mr. Chairman, I am sure your staff will be able to substantiate the statistics which I am about to give you.

Scrap exported from the United States in the month of November was less than the month of October 1978. December was a further drop. January was a drop of another 100,000 tons. And in fact, the Commerce Department in their wisdom and judgment in administering this Act, made a very strong statement, in which they said there was not going to be any export control. I submit this statement from Commerce for the record, sir.

There were going to be no export controls and no monitoring. That statement was made on a Friday morning. By that afternoon, the scrap market in the United States generally had dropped about $5 a ton. Within the past 10 days, inasmuch as our foreign buyers know that there is no panic afoot, when in fact they learned that they don't have to do any excessive buying to protect their position, they have stayed away from the market in droves. And the market is now down $5 a ton; it is down $10 to $20 a ton in many parts of the country.

We were advised this morning that a major mill in the Pittsburgh area has canceled their orders in mid-month, unheard of.

We are further advised that there is a mill in the Midwest that, last week, rejected 50 carloads of scrap, scrap which they had been buying in the past; all of a sudden the market is down, and now a rejection is taking place.

There is no question about an adequate supply of scrap being available. If this law, if this act, and if this committee is determined to introduce a question of price control, then it changes the whole thrust of the act. I will suggest that there are many other things that have to be monitored.

We need to monitor the railroad car supply and car utilization to see how that has confounded the problems of scrap prices.

I think we have to monitor the regional aspects. For example, on the west coast we have over 2 million tons of scrap exported each year because the demand for scrap by the domestic consumers of the west coast represents about 1 ton for every 3 tons that is available. That same situation exists in New England, and also in Florida.

So to say that we are going to have just export controls, we must say of what area?

Last but not least, Mr. Chairman, I think that it would also be extremely important, if we are going to open this up by law, to suggest that we also monitor the amount of scrap that the steel mills are exporting themselves.

I have it on good authority—and I think I can document it for your staff—that approximately 15 percent of all the scrap being shipped off the west coast is originating from the American domestic steel industry. Kaiser Steel is offering on an average 12,000 to 16,000 tons each month of scrap for export. There are other companies that are doing the same thing.

I think that what we are hearing today is a private sector of the economy coming to the government, acknowledging that they cannot control prices legally by getting together. What they are asking the Federal Government to do is enter into an arrangement whereby they can control prices to their benefit, to the detriment of another part of the economy.

There is no relationship, historically, between to the price of steel and the price of scrap. As Mr. Nathan has said, the price of new steel does nothing but go up. In 1952, the price of scrap represented approximately 40 percent of the manufactured cost of new steel.

Today, even at these levels, on the average the price of scrap today is only about 30 percent of the price of the cost of new steel.

Thank you, Mr. Chairman.

Senator STEVENSON. We have to end somewhere.

Mr. STAPLETON. I will be brief, Mr. Chairman.

We have just seen how statistics can be used selectively to distort a situation.

Scrap exports of 2,894,000 tons in the fourth quarter of 1978, were running at a record annualized rate of about 11.6 million tons per year.

During that period exports did, in fact, decline: 977,000 tons were shipped in October and 973,000 tons shipped in November. Some decline. In December 944,000 tons were shipped, and in January—which is usually a low export month—893,000 tons were shipped. January's tonnage is over 200,000 tons greater than that attained last year.

Furthermore, exports in the last quarter of 1978 were 500,000 tons more than those of the third quarter.

Senator Stevenson. We are going to have to continue these hostilities off the record.

One short comment.

Mr. NATHAN. Thank you, Mr. Chairman.

I just want to say that we don't include the Brooklyn Bridge, and we don't include the refrigerator from which you derive your food.

Senator STEVENSON. Don't go too far, there will be a rejoinder.

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Thank you, gentlemen. We may have some more questions.

Mr. MEINHARD. Mr. Chairman, excuse me for running this on so long. I have documentation here from our company that, for a $5-per-ton increase in the cost of steel scrap, it raises the price of our castings $5.20 a ton. I don't know where my esteemed associates get their data. I think that you would find from almost any mill or any small foundry—we are talking about some of the bigger companies. I represent 900 small companies that employ 450,000 people, and we can document without any shadow of a doubt that we have a higher increase in our end-product costs than we did in the increase for the cost of the steel scrap.

Now you probably saw J. I. Case tractors in Washington recently. We make over 7,000 transmission castings for J. I. Case tractors.

That tractor weighs over 20,000 pounds. The majority of it is ferrous components—50 percent. It is safe to say, based on testimony I have heard today, that approximately 50 percent of all of the ferrous components in that tractor are comprised of steel scrap.

When people say that there is no relationship between inflation and the cost of ferrous scrap, I certainly wonder what school of economics they went to.

That is my only comment.

Senator STEVENSON. Thank you, gentlemen.

With that, the hearing is adjourned.

[Whereupon, at 4:55 p.m., the hearing was adjourned.]

[Additional material submitted for the record follows in the Appendix:]

96TH CONGRESS
1ST SESSION

S. 737

To provide authority to regulate exports, to improve the efficiency of export regulation, and to minimize interference with the right to engage in commerce.

IN THE SENATE OF THE UNITED STATES

MARCH 22 (legislative day, FEBRUARY 22), 1979

Mr. STEVENSON (for himself and Mr. HEINZ) introduced the following bill; which was read twice and referred to the Committee on Banking, Housing, and Urban Affairs

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A BILL

To provide authority to regulate exports, to improve the efficiency of export regulation, and to minimize interference with the right to engage in commerce.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That this Act may be cited as the "Export Administration
4 Act of 1979".

5 FINDINGS

6 SEC. 2. The Congress makes the following findings:

1 (1) The right of United States citizens to engage
2 in international commerce is a fundamental concern of
3 United States policy.
4 (2) Exports contribute significantly to the balance
5 of trade, employment, and production of the United
6 States.
7 (3) The availability of certain materials at home
8 and abroad varies so that the quantity and composition
9 of United States exports and their distribution among
10 importing countries may affect the welfare of the do-
11 mestic economy and may have an important bearing
12 upon fulfillment of the foreign policy of the United
13 States.
14 (4) The unrestricted export of goods and technol-
15 ogy without regard to whether they make a significant
16 contribution to the military potential of any other
17 nation or nations may adversely affect the national se-
18 curity of the United States.
19 (5) The unwarranted restriction of exports from
20 the United States has a serious adverse effect on our
21 balance of payments and domestic employment and
22 production, particularly when export restrictions ap-
23 plied by the United States are more extensive than
24 export restrictions imposed by other countries.

1 (6) The uncertainty of policy toward certain cate-
2 gories of exports has curtailed the efforts of American
3 business in those categories to the detriment of the
4 overall attempt to improve the trade balance of the
5 United States and to decrease domestic unemployment.
6 (7) Unreasonable restrictions on access to world
7 supplies can cause worldwide political and economic in-
8 stability, interfere with free international trade, and
9 retard the growth and development of nations.

10 DECLARATION OF POLICY

11 SEC. 3. The Congress makes the following declarations:
12 (1) It is the policy of the United States to mini-
13 mize uncertainties in export control policy and to en-
14 courage trade as a right not a privilege with all coun-
15 tries with which we have diplomatic or trading rela-
16 tions, except those countries with which such trade has
17 been determined by the President to be against the na-
18 tional interest.
19 (2) It is the policy of the United States to restrict
20 the right to export only after full consideration of the
21 impact on the economy of the United States and only
22 to the extent necessary—
23 (A) to protect the domestic economy from
24 the excessive drain of scarce materials and to

1 reduce the serious inflationary impact of foreign
2 demand;
3 (B) to further significantly the foreign policy
4 of the United States or to fulfill its declared inter-
5 national obligations; and
6 (C) to prevent the export of goods and tech-
7 nology which would make a significant contribu-
8 tion to the military potential of any other nation
9 or nations which could prove detrimental to the
10 national security of the United States.
11 (3) It is the policy of the United States (A) to for-
12 mulate, reformulate, and apply any necessary controls
13 to the maximum extent possible in cooperation with all
14 nations, and (B) to encourage observance of a uniform
15 export control policy by all nations with which the
16 United States has defense treaty commitments.
17 (4) It is the policy of the United States to use its
18 economic resources and trade potential to further the
19 sound growth and stability of its economy as well as to
20 further its national security and foreign policy objec-
21 tives.
22 (5) It is the policy of the United States—
23 (A) to oppose restrictive trade practices or
24 boycotts fostered or imposed by foreign countries

against other countries friendly to the United States or against any United States person;

(B) to encourage and, in specified cases, require United States persons engaged in the export of goods and technology to refuse to take actions, including furnishing information or entering into or implementing agreements, which have the effect of furthering or supporting the restrictive trade practices or boycotts fostered or imposed by any foreign country against a country friendly to the United States or against any United States person; and

(C) to foster international cooperation and the development of international rules and institutions to assure reasonable access to world supplies.

(6) It is the policy of the United States that the desirability of subjecting, or continuing to subject, particular goods or technology to United States export controls should be subjected to review by and consultation with representatives of appropriate United States Government agencies and private industry.

(7) It is the policy of the United States to use export controls, including license fees, to secure the removal by foreign countries of restrictions on access to

1 supplies where such restrictions have or may have a
2 serious domestic inflationary impact, have caused or
3 may cause a serious domestic shortage, or have been
4 imposed for purposes of influencing the foreign policy
5 of the United States. In effecting this policy, the Presi-
6 dent shall make every reasonable effort to secure the
7 removal or reduction of such restrictions, policies, or
8 actions through international cooperation and agree-
9 ment before resorting to the imposition of controls on
10 exports from the United States. No action taken in ful-
11 fillment of the policy set forth in this paragraph shall
12 apply to the export of medicine or medical supplies.
13 (8) It is the policy of the United States to use
14 export controls to encourage other countries to take
15 immediate steps to prevent the use of their territories
16 or resources to aid, encourage, or give sanctuary to
17 those persons involved in directing, supporting, or par-
18 ticipating in acts of international terrorism. To achieve
19 this objective, the President shall make every reason-
20 able effort to secure the removal or reduction of such
21 assistance to international terrorists through interna-
22 tional cooperation and agreement before resorting to
23 the imposition of export controls.

1 AUTHORITY

2 SEC. 4. (a)(1) To the extent necessary to effectuate the
3 policies set forth in section 3 of this Act, the President may
4 prohibit or curtail the export, except under such rules and
5 regulations as he shall prescribe, of any goods or technology
6 subject to the jurisdiction of the United States or exported by
7 any person subject to the jurisdiction of the United States. To
8 the extent necessary to achieve effective enforcement of this
9 Act, such rules and regulations may apply to the financing,
10 transporting, and other servicing of exports and the participa-
11 tion therein by any person subject to the jurisdiction of the
12 United States. In curtailing the export of any goods or tech-
13 nology to effectuate the policy set forth in section 3(2)(A) of
14 this Act, the President is authorized to allocate a portion of
15 export licenses on the basis of factors other than a prior his-
16 tory of exportation.

17 (2)(A) In administering export controls for national se-
18 curity purposes as prescribed in section 3(2)(C) of this Act
19 and for foreign policy purposes as prescribed in section
20 3(2)(B) of this Act, United States policy toward individual
21 countries shall not be determined exclusively on the basis of a
22 country's Communist or non–Communist status but shall
23 take into account such factors as the country's present and
24 potential relationship to the United States, its present and
25 potential relationship to countries friendly or hostile to the

1 United States, its ability and willingness to control re-
2 transfers of United States exports in accordance with United
3 States policy, and such other factors as the President may
4 deem appropriate. The President shall review at least annu-
5 ally United States policy toward individual countries to de-
6 termine whether such policy is appropriate in light of the
7 factors specified in the preceding sentence. The results of
8 such review, together with the justification for United States
9 policy in light of such factors, shall be reported to Congress
10 in each report required by section 11 of this Act.

11 (B) Rules and regulations under this subsection may
12 provide for denial of any request or application for authority
13 to export goods or technology from the United States, its
14 territories and possessions, which would make a significant
15 contribution to the military potential of any nation or combi-
16 nation of nations threatening the national security of the
17 United States if the President determines that their export
18 could prove detrimental to the national security of the United
19 States. In administering export controls for national security
20 purposes as prescribed in section 3(2)(C) of this Act, priority
21 shall be given to preventing the effective transfer to countries
22 to which exports are controlled for national security purposes
23 of goods and technology critical to the design, development,
24 or production of military systems which would make a signifi-
25 cant contribution to the military potential of any nation or

1 nations which could prove detrimental to the national secu-
2 rity of the United States. The Secretary of Commerce, in
3 consultation with the Secretary of Defense, shall review not
4 less frequently than annually all controls maintained for na-
5 tional security purposes pursuant to this Act for the purpose
6 of making such revisions as may be necessary to insure that
7 export controls are limited, to the maximum extent possible
8 consistent with the purposes of this Act, to such militarily
9 critical goods and technologies and the mechanisms through
10 which they may be effectively transferred. A description of
11 actions taken to carry out this subsection shall be included in
12 each report required under section 11 of this Act. Such de-
13 scriptions shall contain as much detail as may be included
14 consistent with the national security and the need to maintain
15 the confidentiality of proprietary information.

16 (C) Prior to imposing, increasing, or extending export
17 controls for foreign policy purposes pursuant to the authority
18 provided by this Act, the President shall give full considera-
19 tion to—

20 (i) alternative means to further the foreign policy
21 purposes in question;

22 (ii) the ability of the United States Government to
23 control effectively the export of the goods or technol-
24 ogy in question;

1 (iii) the likelihood that foreign competitors will
2 join the United States in effectively controlling such
3 exports;
4 (iv) the probability that such controls will achieve
5 the intended foreign policy purpose;
6 (v) the effect of such controls on United States
7 exports, employment, and production, and on the inter-
8 national reputation of the United States as a supplier
9 of goods and technology; and
10 (vi) the reaction of other countries to the imposi-
11 tion or enlargement of such export controls by the
12 United States.
13 (D) Whenever the President imposes, increases, or ex-
14 tends export controls for foreign policy purposes pursuant to
15 authority provided by this Act, he shall immediately inform
16 the Congress of such action and make public a report specify-
17 ing his conclusions with respect to the considerations set
18 forth in this paragraph and indicating how such export con-
19 trols will further significantly the foreign policy of the United
20 States or fulfill its declared international obligations.
21 (E) The President shall not impose export controls for
22 foreign policy or national security purposes on the export
23 from the United States of goods or technology which he de-
24 termines is available without restriction from sources outside
25 the United States in significant quantities and comparable in

1 quality to those produced in the United States, unless the
2 President determines that adequate evidence has been pre-
3 sented to him demonstrating that the absence of such con-
4 trols would prove detrimental to the foreign policy or nation-
5 al security of the United States. Where, in accordance with
6 this paragraph, export controls are imposed for foreign policy
7 or national security purposes notwithstanding foreign avail-
8 ability, the President shall take steps to initiate negotiations
9 with the governments of the appropriate foreign countries for
10 the purpose of eliminating such availability.

11 (b)(1) Except as otherwise provided in this Act, the Sec-
12 retary of Commerce shall reorganize the Department of
13 Commerce as necessary to effectuate the policies set forth in
14 this Act. The Secretary of Commerce shall maintain a list of
15 goods and technology the export of which from the United
16 States, its terrorities and possessions, is prohibited or regu-
17 lated pursuant to this Act. The Secretary shall review such
18 list not less frequently than annually in order to make
19 promptly such changes and revisions as may be necessary or
20 desirable in furtherance of the policies set forth in this Act.
21 The Secretary shall include in each review an assessment of
22 the availability from sources outside the United States, its
23 territories and possessions, of goods and technology in signifi-
24 cant quantities and comparable in quality to those items in-
25 cluded on such list. In order to further effectuate the policies

1 set forth in this Act, the Secretary shall establish an Office of
2 Foreign Product and Technology Assessment, whose func-
3 tions shall include monitoring and gathering information on
4 the foreign availability of goods and technology subject to
5 export control. The Secretary shall include a detailed state-
6 ment with respect to actions taken in compliance with the
7 provisions of this paragraph in each report to the Congress
8 pursuant to section 11 of this Act.

9 (2) The Secretary of Commerce shall keep the public
10 fully apprised of changes in export control policy and proce-
11 dures instituted in conformity with this Act with a view to
12 encouraging trade. The Secretary shall meet regularly with
13 representatives of the business sector in order to obtain their
14 views on export control policy and the foreign availability of
15 goods and technology.

16 (c)(1)(A) To effectuate the policies set forth in this Act,
17 the Secretary of Commerce shall establish the following three
18 types of export licenses:

19 (i) A validated license.

20 (ii) A qualified general license.

21 (iii) A general license.

22 (B) As used in this subsection—

23 (i) a "validated license" is a license authorizing
24 the export of goods or technology pursuant to a docu-
25 ment issued upon application by an exporter in accord-

1 ance with rules and regulations issued pursuant to this
2 Act. A validated license may be required for the export
3 of goods and technology subject to multilateral controls
4 in which the United States participates or as deter-
5 mined pursuant to paragraph (2) of this subsection;
6 (ii) a "qualified general license" is a license au-
7 thorizing the export of goods or technology, or a class
8 of goods or technology, subject to the conditions con-
9 tained in rules and regulations issued pursuant to this
10 Act, and further subject to approval of the particular
11 consignee and end-use of the goods or technology. The
12 goods and technology subject to control by qualified
13 general license shall be determined pursuant to para-
14 graph (2) of this subsection; and
15 (iii) a "general license" is a license authorizing
16 the export of a class of goods or technology without
17 specific approval if the export is effected in accordance
18 with the conditions contained in rules and regulations
19 issued pursuant to this Act. All goods and technology
20 not subject to control by a validated license or by a
21 qualified general license shall be exportable pursuant to
22 a general license.
23 (2) To effectuate the policies set forth in section 3 of this
24 Act, it is the intent of Congress that the use of validated
25 licenses be limited to the greatest extent possible to the con-

1 trol of the export of goods and technology which are subject
2 to multilateral controls in which the United States partici-
3 pates. To the extent that the President determines that the
4 policies set forth in section 3 of this Act require the control of
5 the export of other goods and technology, or more stringent
6 controls than the multilateral controls, he will report to the
7 Congress within six months from the date of enactment of
8 this Act, and annually thereafter, the reasons for the need to
9 impose, or to continue to impose, such controls. It is further
10 the intent of Congress that export controls which exceed the
11 multilateral controls shall be effected to the greatest extent
12 possible by means of qualified general licenses.

13 (3) Within sixty days from the date of enactment of this
14 Act, the Secretary of Commerce shall prescribe conditions for
15 the use of end-use statements and the form of such state-
16 ments, and establish procedures for the approval of consign-
17 ees of goods and technology that may be exported pursuant
18 to a qualified general license.

19 (4) It is the intent of the Congress that any export li-
20 cense application required under this Act shall be approved
21 or disapproved within ninety days of its receipt. Upon the
22 expiration of the ninety-day period beginning on the date of
23 its receipt, any export license application required under this
24 Act which has not been approved or disapproved shall be
25 deemed to be approved and the license shall be issued unless

1 the Secretary of Commerce or other official exercising au-
2 thority under this Act finds that additional time is required
3 and notifies the applicant in writing of the specific circum-
4 stances requiring such additional time. Any application pend-
5 ing more than ninety days shall be referred to the Export
6 Administration Board established by paragraph (7) of this
7 subsection.

8 (5)(A) With respect to any export license application not
9 finally approved or disapproved within ninety days of its re-
10 ceipt as provided in paragraph (4) of this subsection, the ap-
11 plicant shall, to the maximum extent consistent with the na-
12 tional security of the United States, be informed in writing of
13 the specific questions raised and negative considerations or
14 recommendations made by any agency or department of the
15 Government with respect to such license application, and
16 shall be accorded an opportunity to respond to such ques-
17 tions, considerations, or recommendations in writing prior to
18 final approval or disapproval. In making such final approval
19 or disapproval, each official exercising authority under this
20 Act shall take fully into account the applicant's response.

21 (B) Whenever the Secretary determines that it is neces-
22 sary to refer an export license application to any interagency
23 review process for approval, he shall first, if the applicant so
24 requests, provide the applicant with an opportunity to review
25 any documentation to be submitted to such process for the

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1 purpose of describing the export in question, in order to de-
2 termine whether such documentation accurately describes the
3 proposed export and to provide additional information in writ-
4 ing to be appended to the application.

5 (6) In any denial of an export license application, the
6 applicant shall be informed in writing of the specific statutory
7 basis for such denial. The Secretary shall establish appropri-
8 ate procedures for applicants to appeal denials of applica-
9 tions, and such procedures may include the opportunity for
10 appeals to the Export Administration Board established
11 under paragraph (7) of this subsection.

12 (7)(A) There is established an Export Administration
13 Board (hereinafter referred to as the "Board") composed of
14 three voting members, who shall be designated by the Secre-
15 tary of Commerce, the Secretary of Defense, and the Secre-
16 tary of State, respectively, and nonvoting, advisory members
17 named by the heads of such other departments and agencies
18 as the President may designate from time to time. The
19 member from the Department of Commerce shall preside
20 over all Board meetings. License applications referred to the
21 Board shall be approved or denied by an affirmative vote of
22 at least two of its three voting members. Any voting member
23 of the Board may appeal a decision of the Board to the
24 Export Administration Review Council, but only if such
25 appeal is made within five days of the Board's decision.

1 (B) There is established an Export Administration
2 Review Council (hereinafter referred to as the "Review
3 Council") composed of the Secretary of Commerce, the Sec-
4 retary of Defense, and the Secretary of State. The Secretary
5 of Commerce shall preside over meetings of the Review
6 Council. License applications referred to the Review Council
7 shall be approved or denied by an affirmative vote of at least
8 two of its three members. Any member of the Review Coun-
9 cil may appeal a decision of the Review Council to the Presi-
10 dent, but only if such appeal is made within five days of the
11 Review Council's decision.

12 (C) The President shall decide appeals from decisions of
13 the Review Council made pursuant to this Act, and review
14 annually the activities of the Board, the Review Council, and
15 the Department of Commerce to insure efficient implementa-
16 tion of the policies of this Act.

17 (D) Any application upon which the Board has reached
18 no decision within thirty days of receipt shall be referred to
19 the Review Council. Any application upon which the Review
20 Council has reached no decision within thirty days shall be
21 referred to the President. Any application not approved or
22 disapproved within one hundred and eighty days from initial
23 receipt by the Department of Commerce shall be deemed to
24 be approved and the license shall be issued by the Depart-

1 ment of Commerce, unless the applicant has consented in
2 writing to a longer period.
3 (d) The Secretary of Defense is authorized to review
4 any proposed export of goods or technology to any country to
5 which exports are controlled for national security purposes
6 and shall determine, in consultation with the Secretary of
7 Commerce and confirm in writing the types and categories of
8 transactions which should be reviewed by the Secretary of
9 Defense to carry out the purpose of this subsection. When-
10 ever a license or other authority is requested for the export of
11 goods or technology within such types or categories of trans-
12 actions to any country to which exports are restricted for
13 national security purposes, the Secretary of Commerce shall
14 notify the Secretary of Defense of such request, and may not
15 issue any license prior to the receipt of the recommendation
16 of the Secretary of Defense or the expiration of thirty days
17 after notification, whichever first occurs. The Secretary of
18 Defense shall carefully consider all notifications submitted
19 pursuant to this subsection and, not later than thirty days
20 after notification of the request shall—
21 (1) recommend to the Secretary of Commerce that
22 the proposed export be disapproved if he determines
23 that the export of such goods or technology will make
24 a significant contribution, which would prove detrimen-

1 tal to the national security of the United States, to the
2 military potential of such country or any other country;
3 (2) notify the Secretary of Commerce that he will
4 interpose no objection if appropriate conditions de-
5 signed to achieve the purposes of this Act are imposed;
6 or
7 (3) indicate that he does not intend to interpose
8 an objection to the export of such goods or technology.
9 If the Secretary of Commerce does not accept the recommen-
10 dation of the Secretary of Defense, upon the request of the
11 Secretary of Defense, the application shall be submitted to
12 the Export Administration Review Council.
13 (e) The Secretary of State is authorized to review any
14 proposed export of goods or technology to any country to
15 which exports are restricted for foreign policy purposes and
16 shall determine, in consultation with the Secretary of Com-
17 merce, and confirm in writing the types and categories of
18 transactions which should be reviewed by the Secretary of
19 State to carry out the purpose of this subsection. Whenever a
20 license is requested for the export of goods or technology
21 within such types or categories of transactions to any country
22 to which exports are restricted for foreign policy purposes,
23 the Secretary of Commerce shall notify the Secretary of
24 State of such request, and may not issue any license prior to
25 the receipt of the recommendation of the Secretary of State

1 or the expiration of thirty days after notification, whichever
2 first occurs. The Secretary of State shall carefully consider
3 all notifications submitted to him pursuant to this subsection
4 and, not later than thirty days after notification of the request
5 shall—

6 (1) recommend to the Secretary of Commerce that
7 the proposed export be disapproved if he determines
8 that prohibiting the export of such goods or technology
9 is necessary to further significantly the foreign policy
10 of the United States or to fulfill its declared interna-
11 tional obligations;

12 (2) notify the Secretary of Commerce that he will
13 interpose no objection if appropriate conditions de-
14 signed to achieve the purposes of this Act are imposed;
15 or

16 (3) indicate that he does not intend to interpose
17 an objection to the export of such goods or technology.
18 If the Secretary of Commerce does not accept the recommen-
19 dation of the Secretary of State, upon the request of the Sec-
20 retary of State, the application shall be submitted to the
21 Export Administration Review Council.

22 (f) Notwithstanding any other provision of law, any de-
23 partment, agency, or official of the Federal Government au-
24 thorized to review or make recommendations with respect to
25 export license applications required pursuant to this Act shall

1 determine, in consultation with the Secretary of Commerce,
2 and confirm in writing the types and categories of transac-
3 tions with specified countries which should be reviewed by
4 such department, agency, or official. Whenever a license is
5 requested for the export to such countries of goods or tech-
6 nology within such types and categories of transactions, the
7 Secretary of Commerce shall notify such department, agency,
8 or official of such request, and may not issue any license prior
9 to the receipt of the recommendation of such department,
10 agency, or official, or the expiration of thirty days following
11 such notification, whichever first occurs. Such department,
12 agency, or official shall carefully consider all notifications
13 submitted pursuant to this Act and, not later than thirty days
14 after notification of the request shall—

15 (1) recommend to the Secretary of Commerce that
16 the export of such goods or technology be disapproved;

17 (2) notify the Secretary of Commerce that such
18 department, agency, or official will interpose no objec-
19 tion if appropriate conditions are imposed; or

20 (3) indicate that such department, agency, or offi-
21 cial does not intend to interpose an objection to the
22 export of such goods or technology.

23 (g)(1) To effectuate the policy set forth in section 3
24 (2)(A) of this Act, the Secretary of Commerce shall monitor
25 exports, and contracts for exports, of any goods (other than a

1 commodity which is subject to the reporting requirements of
2 section 812 of the Agricultural Act of 1970) when the
3 volume of such exports in relation to domestic supply contrib-
4 utes, or may contribute, to an increase in domestic prices or a
5 domestic shortage, and such price increase or shortage has,
6 or may have, a serious adverse impact on the economy or
7 any sector thereof. Such monitoring shall commence at a
8 time adequate to insure that data will be available which is
9 sufficient to permit achievement of the policies of this Act.
10 Information which the Secretary requires to be furnished in
11 effecting such monitoring shall be confidential, except as pro-
12 vided in paragraph (2) of this subsection and in the last two
13 sentences of section 9(c) of this Act.
14 (2) The results of such monitoring shall, to the extent
15 practicable, be aggregated and included in weekly reports
16 setting forth, with respect to each item monitored, actual and
17 anticipated exports, the destination by country, and the do-
18 mestic and worldwide price, supply, and demand. Such re-
19 ports may be made monthly if the Secretary determines that
20 there is insufficient information to justify weekly reports.
21 (h) In imposing export controls to effectuate the policy
22 stated in section 3(2)(A) of this Act, the President's authority
23 shall include but not be limited to, the imposition of export
24 license fees.

1 (i)(1) Notwithstanding any other provision of this Act
2 and notwithstanding subsection (u) of section 28 of the Min-
3 eral Leasing Act of 1920, no domestically produced crude oil
4 transported by pipeline over rights-of-way granted pursuant
5 to section 28 of such Act (except any such crude oil which
6 (A) is exchanged in similar quantity for convenience or in-
7 creased efficiency of transportation with persons or the gov-
8 ernment of an adjacent foreign state, or (B) is temporarily
9 exported for convenience or increased efficiency of transpor-
10 tation across parts of an adjacent foreign state and reenters
11 the United States) may be exported from the United States,
12 its territories and possessions, during the two-year period be-
13 ginning on the date of enactment of this Act, unless the re-
14 quirements of paragraph (2) of this subsection are met.
15 (2) Crude oil subject to the prohibition contained in
16 paragraph (1) may be exported only if—
17 (A) the President makes and publishes an express
18 finding that exports of such crude oil—
19 (i) will not diminish the total quantity or
20 quality of petroleum available to the United
21 States;
22 (ii) will have a positive effect on consumer oil
23 prices by decreasing the average crude oil acquisi-
24 tion costs of refiners;

1 (iii) will be made only pursuant to contracts
2 which may be terminated if the petroleum sup-
3 plies of the United States are interrupted or seri-
4 ously threatened;
5 (iv) are in the national interest; and
6 (v) are in accordance with the provisions of
7 this Act; and
8 (B) the President reports such finding to the Con-
9 gress.
10 If the Congress, within thirty days of continuous session after
11 receipt of a report of the President under the preceding sen-
12 tence, adopts a concurrent resolution stating expressly that it
13 disapproves such export, the President shall promptly take
14 all necessary steps to prevent such export. For the purpose of
15 the preceding sentence—
16 (i) continuity of session is broken only by an ad-
17 journment of Congress sine die; and
18 (ii) the days on which either House is not in ses-
19 sion because of an adjournment of more than three
20 days to a day certain are excluded in the computation
21 of any period of time in which Congress is in continu-
22 ous session.
23 (j) Petroleum products refined in United States Foreign
24 Trade Zones, or in the United States Territory of Guam,
25 from foreign crude oil shall be excluded from any quantitative

1 restrictions imposed pursuant to section 3(2)(A) of this Act,
2 except that, if the Secretary of Commerce finds that a prod-
3 uct is in short supply, the Secretary of Commerce may issue
4 such rules and regulations as may be necessary to limit
5 exports.

6 (k)(1) The authority conferred by this section shall not
7 be exercised with respect to any agricultural commodity, in-
8 cluding fats and oils or animal hides or skins, without the
9 approval of the Secretary of Agriculture. The Secretary of
10 Agriculture shall not approve the exercise of such authority
11 with respect to any such commodity during any period for
12 which the supply of such commodity is determined by him to
13 be in excess of the requirements of the domestic economy,
14 except to the extent the President determines that such exer-
15 cise of authority is required to effectuate the policies set forth
16 in sections 3(2) (B) or (C) of this Act. The Secretary of Agri-
17 culture shall not approve the exercise of such authority with
18 respect to any such commodity unless he has (i) given full
19 consideration to the alternative of using the Commodity
20 Credit Corporation to purchase such commodity and arrange
21 sales to foreign governments in accordance with the provi-
22 sions of the Commodity Credit Corporation Charter Act so as
23 to stabilize markets and maximize returns to agricultural pro-
24 ducers, and (ii) determined that export controls are preferable

1 to such use of the authority granted by the Commodity
2 Credit Corporation Charter Act.
3 (2) Upon approval of the Secretary of Commerce, in
4 consultation with the Secretary of Agriculture, agricultural
5 commodities purchased by or for use in a foreign country may
6 remain in the United States for export at a later date free
7 from any quantitative limitations on export which may be
8 imposed pursuant to section 3(2)(A) of this Act subsequent to
9 such approval. The Secretary of Commerce may not grant
10 approval hereunder unless he receives adequate assurance
11 and, in conjunction with the Secretary of Agriculture, finds
12 that such commodities will eventually be exported, that nei-
13 ther the sale nor export thereof will result in an excessive
14 drain of scarce materials and have a serious domestic infla-
15 tionary impact, that storage of such commodities in the
16 United States will not unduly limit the space available for
17 storage of domestically owned commodities, and that the pur-
18 pose of such storage is to establish a reserve of such com-
19 modities for later use, not including resale to or use by an-
20 other country. The Secretary of Commerce is authorized to
21 issue such rules and regulations as may be necessary to im-
22 plement this paragraph.
23 (l) Nothing in this Act or the rules or regulations there-
24 under shall be construed to require authority or permission to

1 export, except where required by the President to effect the
2 policies set forth in section 3 of this Act.
3 (m) The President may delegate the power, authority,
4 and discretion conferred upon him by this Act to such depart-
5 ments, agencies, or officials of the Government as he may
6 deem appropriate, except that no authority under this Act
7 may be delegated to, or exercised by, any official of any de-
8 partment or agency whose head is not appointed by and with
9 the advice and consent of the Senate.

10 FOREIGN BOYCOTTS

11 SEC. 5. (a)(1) For the purpose of implementing the poli-
12 cies set forth in sections 3(5) (A) and (B), the President shall
13 issue rules and regulations prohibiting any United States
14 person, with respect to his activities in the interstate or for-
15 eign commerce of the United States, from taking or knowing-
16 ly agreeing to take any of the following actions with intent to
17 comply with, further, or support any boycott fostered or im-
18 posed by a foreign country against a country which is friendly
19 to the United States and which is not itself the object of any
20 form of boycott pursuant to United States law or regulation:
21 (A) Refusing, or requiring any other person to
22 refuse, to do business with or in the boycotted country,
23 with any business concern organized under the laws of
24 the boycotted country, with any national or resident of
25 the boycotted country, or with any other person, pur-

1 suant to an agreement with, a requirement of, or a re-
2 quest from or on behalf of the boycotting country. The
3 mere absence of a business relationship with or in the
4 boycotted country with any business concern organized
5 under the laws of the boycotted country, with any na-
6 tional or resident of the boycotted country, or with any
7 other person, does not indicate the existence of the
8 intent required to establish a violation of rules and reg-
9 ulations issued to carry out this subparagraph.

10 (B) Refusing, or requiring any other person to
11 refuse, to employ or otherwise discriminating against
12 any United States person on the basis of race, religion,
13 sex, or national origin of that person or of any owner,
14 officer, director, or employee of such person.

15 (C) Furnishing information with respect to the
16 race, religion, sex, or national origin of any United
17 States person or of any owner, officer, director, or em-
18 ployee of such person.

19 (D) Furnishing information about whether any
20 person has, has had, or proposes to have any business
21 relationship (including a relationship by way of sale,
22 purchase, legal or commercial representation, shipping
23 or other transport, insurance, investment, or supply)
24 with or in the boycotted country, with any business
25 concern organized under the laws of the boycotted

1 country, with any national or resident of the boycotted
2 country, or with any other person which is known or
3 believed to be restricted from having any business rela-
4 tionship with or in the boycotting country. Nothing in
5 this paragraph shall prohibit the furnishing of normal
6 business information in a commercial context as defined
7 by the Secretary of Commerce.

8 (E) Furnishing information about whether any
9 person is a member of, has made contributions to, or is
10 otherwise associated with or involved in the activities
11 of any charitable or fraternal organization which sup-
12 ports the boycotted country.

13 (F) Paying, honoring, confirming, or otherwise im-
14 plementing a letter of credit which contains any condi-
15 tion or requirement compliance with which is prohibit-
16 ed by rules and regulations issued pursuant to this
17 paragraph, and no United States person shall, as a
18 result of the application of this paragraph, be obligated
19 to pay or otherwise honor or implement such letter of
20 credit.

21 (2) Rules and regulations issued pursuant to paragraph
22 (1) shall provide exceptions for—

23 (A) complying or agreeing to comply with require-
24 ments (i) prohibiting the import of goods or services
25 from the boycotted country or goods produced or serv-

1 ices provided by any business concern organized under
2 the laws of the boycotted country or by nationals or
3 residents of the boycotted country, or (ii) prohibiting
4 the shipment of goods to the boycotting country on a
5 carrier of the boycotted country, or by a route other
6 than that prescribed by the boycotting country or the
7 recipient of the shipment;
8 (B) complying or agreeing to comply with import
9 and shipping document requirements with respect to
10 the country of origin, the name of the carrier and route
11 of shipment, the name of the supplier of the shipment
12 or the name of the provider of other services, except
13 that no information knowingly furnished or conveyed in
14 response to such requirements may be stated in nega-
15 tive, blacklisting, or similar exclusionary terms on or
16 after June 22, 1978, other than with respect to carri-
17 ers or route of shipment as may be permitted by such
18 rules and regulations in order to comply with precau-
19 tionary requirements protecting against war risks and
20 confiscation;
21 (C) complying or agreeing to comply in the
22 normal course of business with the unilateral and spe-
23 cific selection by a boycotting country, or national or
24 resident thereof, of carriers, insurers, suppliers of serv-
25 ices to be performed within the boycotting country or

1 specific goods which, in the normal course of business,
2 are identifiable by source when imported into the boy-
3 cotting country;
4 (D) complying or agreeing to comply with export
5 requirements of the boycotting country relating to ship-
6 ments or transshipments of exports to the boycotted
7 country, to any business concern of or organized under
8 the laws of the boycotted country, or to any national
9 or resident of the boycotted country;
10 (E) compliance by an individual or agreement by
11 an individual to comply with the immigration or pass-
12 port requirements of any country with respect to such
13 individual or any member of such individual's family or
14 with requests for information regarding requirements of
15 employment of such individual within the boycotting
16 country; and
17 (F) compliance by a United States person resident
18 in a foreign country or agreement by such person to
19 comply with the laws of that country with respect to
20 his activities exclusively therein, and such rules and
21 regulations may contain exceptions for such resident
22 complying with the laws or regulations of that foreign
23 country governing imports into such country of trade-
24 marked, tradenamed, or similarly specifically identifi-
25 able products, or components of products for his own

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1 use, including the performance of contractual services
2 within that country, as may be defined by such rules
3 and regulations.
4 (3) Rules and regulations issued pursuant to paragraphs
5 (2)(C) and (2)(F) shall not provide exceptions from para-
6 graphs (1)(B) and (1)(C).
7 (4) Nothing in this subsection may be construed to su-
8 persede or limit the operation of the antitrust or civil rights
9 laws of the United States.
10 (5) Rules and regulations pursuant to this subsection
11 shall be issued not later than 90 days after the date of enact-
12 ment of this section and shall be issued in final form and
13 become effective not later than 120 days after they are first
14 issued, except that (A) rules and regulations prohibiting neg-
15 ative certification may take effect not later than 1 year after
16 the date of enactment of this section, and (B) a grace period
17 shall be provided for the application of the rules and regula-
18 tions issued pursuant to this subsection to actions taken pur-
19 suant to a written contract or other agreement entered into
20 on or before May 16, 1977. Such grace period shall end on
21 December 31, 1978, except that the Secretary of Commerce
22 may extend the grace period for not to exceed 1 additional
23 year in any case in which the Secretary finds that good faith
24 efforts are being made to renegotiate the contract or agree-
25 ment in order to eliminate the provisions which are inconsist-

1 ent with the rules and regulations issued pursuant to para-
2 graph (1).

3 (6) This Act shall apply to any transaction or activity
4 undertaken, by or through a United States or other person,
5 with intent to evade the provisions of this Act as implement-
6 ed by the rules and regulations issued pursuant to this sub-
7 section, and such rules and regulations shall expressly pro-
8 vide that the exceptions set forth in paragraph (2) shall not
9 permit activities or agreements (expressed or implied by a
10 course of conduct, including a pattern of responses) otherwise
11 prohibited, which are not within the intent of such
12 exceptions.

13 (b)(1) In addition to the rules and regulations issued
14 pursuant to subsection (a) of this section, rules and regula-
15 tions issued under section 4(b) of this Act shall implement the
16 policies set forth in section 3(5).

17 (2) Such rules and regulations shall require that any
18 United States person receiving a request for the furnishing of
19 information, the entering into or implementing of agreements,
20 or the taking of any other action referred to in section 3(5)
21 shall report that fact to the Secretary of Commerce, together
22 with such other information concerning such request as the
23 Secretary may require for such action as he may deem appro-
24 priate for carrying out the policies of that section. Such
25 person shall also report to the Secretary of Commerce

1 whether he intends to comply and whether he has complied
2 with such request. Any report filed pursuant to this para-
3 graph after the date of enactment of this section shall be
4 made available promptly for public inspection and copying,
5 except that information regarding the quantity, description,
6 and value of any goods or technology to which such report
7 relates may be kept confidential if the Secretary determines
8 that disclosure thereof would place the United States person
9 involved at a competitive disadvantage. The Secretary of
10 Commerce shall periodically transmit summaries of the infor-
11 mation contained in such reports to the Secretary of State for
12 such action as the Secretary of State, in consultation with
13 the Secretary of Commerce, may deem appropriate for carry-
14 ing out the policies set forth in section 3(5) of this Act.

15 PROCEDURES FOR HARDSHIP RELIEF FROM EXPORT
16 CONTROLS

17 SEC. 6. (a) Any person who, in his domestic manufac-
18 turing process or other domestic business operation, utilizes a
19 product produced abroad in whole or in part from a commod-
20 ity historically obtained from the United States but which has
21 been made subject to export controls, or any person who
22 historically has exported such a commodity, may transmit a
23 petition of hardship to the Secretary of Commerce requesting
24 an exemption from such controls in order to alleviate any
25 unique hardship resulting from the imposition of such con-

1 trols. A petition under this section shall be in such form as
2 the Secretary of Commerce shall prescribe and shall contain
3 information demonstrating the need for the relief requested.
4 (b) Not later than thirty days after receipt of any peti-
5 tion under subsection (a), the Secretary of Commerce shall
6 transmit a written decision to the petitioner granting or deny-
7 ing the requested relief. Such decision shall contain a state-
8 ment setting forth the Secretary's basis for the grant or
9 denial. Any exemption granted may be subject to such condi-
10 tions as the Secretary deems appropriate.
11 (c) For purposes of this section, the Secretary's decision
12 with respect to the grant or denial of relief from unique hard-
13 ship resulting directly or indirectly from the imposition of
14 controls shall reflect the Secretary's consideration of such
15 factors as—
16 (1) whether denial would cause a unique hardship
17 to the petitioner which can be alleviated only by grant-
18 ing an exception to the applicable regulations. In de-
19 termining whether relief shall be granted, the Secre-
20 tary will take into account:
21 (A) ownership of material for which there is
22 not practicable domestic market by virtue of the
23 location or nature of the material;
24 (B) potential serious financial loss to the ap-
25 plicant if not granted an exception;

1 (C) inability to obtain, except through
2 import, an item essential for domestic use which
3 is produced abroad from the commodity under
4 control;
5 (D) the extent to which denial would conflict,
6 to the particular detriment of the applicant, with
7 other national policies including those reflected in
8 any international agreement to which the United
9 States is a party;
10 (E) possible adverse effects on the economy
11 (including unemployment) in any locality or region
12 of the United States; and
13 (F) other relevant factors, including the ap-
14 plicant's lack of an exporting history during any
15 base period that may be established with respect
16 to export quotas for the particular commodity; and
17 (2) the effect a finding in favor of the applicant
18 would have on attainment of the basic objectives of the
19 short supply control program.
20 In all cases, the desire to sell at higher prices and thereby
21 obtain greater profits will not be considered as evidence of a
22 unique hardship, nor will circumstances where the hardship is
23 due to imprudent acts or failure to act on the part of the
24 petitioner.

1 CONSULTATION AND STANDARDS

2 SEC. 7. (a) In determining what shall be controlled or
3 monitored under this Act, and in determining the extent to
4 which exports shall be limited, any department, agency, or
5 official making these determinations shall seek information
6 and advice from the several executive departments and inde-
7 pendent agencies concerned with aspects of our domestic and
8 foreign policies and operations having an important bearing
9 on exports. Such departments and agencies shall fully coop-
10 erate in rendering such advice and information. Consistent
11 with considerations of national security, the President shall
12 from time to time seek information and advice from various
13 segments of private industry in connection with the making
14 of these determinations. In addition, the Secretary of Com-
15 merce shall consult with the Secretary of Energy to deter-
16 mine whether, in order to effectuate the policy stated in sec-
17 tion 3(2)(A) of this Act, monitoring of controls are necessary
18 with respect to exports of facilities, machinery, or equipment
19 normally and principally used, or intended to be used, in the
20 production, conversion, or transportation of fuels and energy
21 (except nuclear energy), including but not limited to, drilling
22 rigs, platforms, and equipment; petroleum refineries, natural
23 gas processing, liquefication, and gasification plants; facilities
24 for production of synthetic natural gas or synthetic crude oil;
25 oil and gas pipelines, pumping stations, and associated equip-

1 ment; and vessels for transporting oil, gas, coal, and other
2 fuels.

3 (b)(1) In authorizing exports, full utilization of private
4 competitive trade channels shall be encouraged insofar as
5 practicable, giving consideration to the interests of small
6 business, merchant exporters as well as producers, and estab-
7 lished and new exporters, and provision shall be made for
8 representative trade consultation to that end. In addition,
9 there may be applied such other standards or criteria as may
10 be deemed necessary by the head of such department, or
11 agency, or official to carry out the policies of this Act.

12 (2) Upon imposing quantitative restrictions on exports of
13 any goods or technology to carry out the policy stated in
14 section 3(2)(A) of this Act, the Secretary of Commerce shall
15 include in the notice published in the Federal Register an
16 invitation to all interested parties to submit written com-
17 ments within fifteen days from the date of publication of the
18 impact of such restrictions and the method of licensing used
19 to implement them.

20 (c)(1) Upon written request by representatives of a sub-
21 stantial segment of any industry which produces goods or
22 technology which are subject to export controls or are being
23 considered for such controls because of their significance to
24 the national security of the United States, the Secretary of
25 Commerce shall appoint a technical advisory committee for

1 any grouping of such goods or technology which he deter-
2 mines is difficult to evaluate because of questions concerning
3 technical matters, worldwide availability and actual utiliza-
4 tion of production and technology, or licensing procedures.
5 Each such committee shall consist of representatives of
6 United States industry and government, including the De-
7 partments of Commerce Defense, and State, and, when ap-
8 propriate, other Government departments and agencies. No
9 person serving on any such committee who is representative
10 of industry shall serve on such committee for more than four
11 consecutive years.

12 (2) It shall be the duty and function of the technical
13 advisory committees established under paragraph (1) to
14 advise and assist the Secretary of Commerce and any other
15 department, agency, or official of the Government of the
16 United States to which the President has delegated power,
17 authority, and discretion under section 4(e) with respect to
18 actions designed to carry out the policy set forth in section 3
19 of this Act. Such committees, where they have expertise in
20 such matters, shall be consulted with respect to questions
21 involving (A) technical matters, (B) worldwide availability
22 and actual utilization of production technology, (C) licensing
23 procedures which affect the level of export controls applica-
24 ble to any goods or technology, and (D) exports subject to
25 multilateral controls in which the United States participates

1 including proposed revisions of any such multilateral controls.
2 The Secretary shall include in each report required by section
3 11 of this Act an accounting of the consultation undertaken
4 pursuant to this paragraph, the use made of the advice ren-
5 dered by the technical advisory committees pursuant to this
6 paragraph, and the contributions of the technical advisory
7 committees to carrying out the policies of this Act. Nothing
8 in this subsection shall prevent the Secretary from consult-
9 ing, at any time, with any person representing industry or
10 the general public regardless of whether such person is a
11 member of a technical advisory committee. Members of the
12 public shall be given a reasonable opportunity, pursuant to
13 regulations prescribed by the Secretary of Commerce, to
14 present evidence to such committees.

15 (3) Upon request of any member of any such committee,
16 the Secretary may, if he determines it appropriate, reimburse
17 such member for travel, subsistence, and other necessary ex-
18 penses incurred by him in connection with his duties as a
19 member.

20 (4) Each such committee shall elect a chairman, and
21 shall meet at least every three months at the call of the
22 Chairman, unless the Chairman determines, in consultation
23 with the other members of the committee, that such a meet-
24 ing is not necessary to achieve the purposes of this Act. Each
25 such committee shall be terminated after a period of two

1 years, unless extended by the Secretary for additional periods
2 of two years. The Secretary shall consult each such commit-
3 tee with regard to such termination or extension of that
4 committee.

5 (5) To facilitate the work of the technical advisory com-
6 mittees, the Secretary of Commerce, in conjunction with
7 other departments and agencies participating in the adminis-
8 tration of this Act, shall disclose to each such committee ade-
9 quate information, consistent with national security, pertain-
10 ing to the reasons for the export controls which are in effect
11 or contemplated for the grouping of goods or technology with
12 respect to which that committee furnishes advice.

13 (6) Whenever a technical advisory committee certifies to
14 the Secretary of Commerce that goods or technology have
15 become or will imminently become available in fact from
16 sources outside the United States in sufficient quantity and of
17 comparable quality so as to render United States export con-
18 trols ineffective in achieving the purposes of this Act, and
19 provides adequate documentation for such certification, the
20 Secretary of Commerce shall either remove export controls
21 on such goods or technology or submit a recommendation to
22 the President regarding the termination or continuation of
23 such controls.

1 VIOLATIONS

2 SEC. 8. (a) Except as provided in subsection (b) of this
3 section, whoever knowingly violates any provision of this Act
4 or any regulation, order, or license issued thereunder shall be
5 fined not more than $25,000 or imprisoned not more than
6 one year, or both. For a second or subsequent offense, the
7 offender shall be fined not more than three times the value of
8 the exports involved or $50,000, whichever is greater, or
9 imprisoned not more than five years, or both.

10 (b) Whoever willfully exports anything contrary to any
11 provision of this Act or any regulation, order, or license
12 issued thereunder, with knowledge that such exports will be
13 used for the benefit of any country to which exports are re-
14 stricted for national security or foreign policy purposes, shall
15 be fined not more than five times the value of the exports
16 involved or $50,000, whichever is greater, or imprisoned not
17 more than five years, or both.

18 (c)(1) The head of any department or agency exercising
19 any functions under this Act, or any officer or employee of
20 such department or agency specifically designated by the
21 head thereof, may impose a civil penalty not to exceed
22 $10,000 for each violation of this Act or any regulation,
23 order, or license issued under this Act, either in addition to or
24 in lieu of any other liability or penalty which may be
25 imposed.

1 (2)(A) The authority under this Act to suspend or
2 revoke the authority of any United States person to export
3 goods or technology may be used with respect to any viola-
4 tion of the rules and regulations issued pursuant to section
5 5(a) of this Act.

6 (B) Any administrative sanction (including any civil pen-
7 alty or any suspension or revocation of authority to export)
8 imposed under this Act for a violation of the rules and regula-
9 tions issued pursuant to section 5(a) of this Act may be im-
10 posed only after notice and opportunity for an agency hearing
11 on the record in accordance with sections 554 through 557 of
12 title 5, United States Code.

13 (C) Any charging letter or other document initiating ad-
14 ministrative proceedings for the imposition of sanctions for
15 violations of the rules and regulations issued pursuant to sec-
16 tion 5(a) of this Act shall be made available for public inspec-
17 tion and copying.

18 (d) The payment of any penalty imposed pursuant to
19 subsection (c) may be made a condition, for a period not ex-
20 ceeding one year after the imposition of such penalty, to the
21 granting, restoration, or continuing validity of any export li-
22 cense, permission, or privilege granted or to be granted to
23 the person upon whom such penalty is imposed. In addition,
24 the payment of any penalty imposed under subsection (c) may
25 be deferred or suspended in whole or in part for a period of

1 time no longer than any probation period (which may exceed
2 one year) that may be imposed upon such person. Such a
3 deferral or suspension shall not operate as a bar to the collec-
4 tion of the penalty in the event that the conditions of the
5 suspension, deferral, or probation are not fulfilled.

6 (e) Any amount paid in satisfaction of any penalty im-
7 posed pursuant to subsection (c) shall be covered into the
8 Treasury as a miscellaneous receipt. The head of the depart-
9 ment or agency concerned may, in his discretion, refund any
10 such penalty, within two years after payment, on the ground
11 of a material error of fact or law in the imposition. Notwith-
12 standing section 1346(a) of title 28, United States Code, no
13 action for the refund of any such penalty may be maintained
14 in any court.

15 (f) In the event of the failure of any person to pay a
16 penalty imposed pursuant to subsection (c), a civil action for
17 the recovery thereof may, in the discretion of the head of the
18 department or agency concerned, be brought in the name of
19 the United States. In any such action, the court shall deter-
20 mine de novo all issues necessary to the establishment of
21 liability. Except as provided in this subsection and in subsec-
22 tion (d), no such liability shall be asserted, claimed, or recov-
23 ered upon by the United States in any way unless it has
24 previously been reduced to judgment.

25 (g) Nothing in subsection (c), (d), or (f) limits—

1 (1) the availability of other administrative or judi-
2 cial remedies with respect to violations of this Act, or
3 any regulation, order, or license issued under this Act;
4 (2) the authority to compromise and settle admin-
5 istrative proceedings brought with respect to violations
6 of this Act, or any regulation, order, or license issued
7 under this Act; or
8 (3) the authority to compromise, remit or mitigate
9 seizures and forfeitures pursuant to section 1(b) of title
10 VI of the Act of June 15, 1917 (22 U.S.C. 401(b)).

11 ENFORCEMENT

12 SEC. 9. (a) To the extent necessary or appropriate to
13 the enforcement of this Act or to the imposition of any penal-
14 ty, forfeiture, or liability arising under the Export Control
15 Act of 1949, the head of any department or agency exercis-
16 ing any function thereunder (and officers or employees of
17 such department or agency specifically designated by the
18 head thereof) may make such investigations and obtain such
19 information from, require such reports or the keeping of such
20 records by, make such inspection of the books, records, and
21 other writings, premises, or property of, and take the sworn
22 testimony of, any person. In addition, such officers or em-
23 ployees may administer oaths or affirmations, and may by
24 subpena require any person to appear and testify or to appear
25 and produce books, records, and other writings, or both, and

1 in the case of contumacy by, or refusal to obey a subpena
2 issued to, any such person, the district court of the United
3 States for any district in which such person is found or re-
4 sides or transacts business, upon application, and after notice
5 to any such person and hearing, shall have jurisdiction to
6 issue an order requiring such person to appear and give testi-
7 mony or to appear and produce books, records, and other
8 writings, or both, and any failure to obey such order of the
9 court may be punished by such court as a contempt thereof.
10 (b) No person shall be excused from complying with any
11 requirements under this section because of his privilege
12 against self-incrimination, but the immunity provisions of the
13 Compulsory Testimony Act of February 11, 1893 (27 Stat.
14 443; 49 U.S.C. 46) shall apply with respect to any individual
15 who specifically claims such privilege.
16 (c) Except as otherwise provided by the third sentence
17 of section 5(b)(2) and by section 8(c)(2)(C) of this Act, infor-
18 mation obtained under this Act, which is deemed confidential
19 or with reference to which a request for confidential treat-
20 ment is made by the person furnishing such information, shall
21 be exempt from disclosure under section 552(b)(3)(B) of title
22 5, United States Code, and such information shall not be
23 published or disclosed unless the Secretary of Commerce de-
24 termines that the withholding thereof is contrary to the na-
25 tional interest. Nothing in this Act shall be construed as au-

1 thorizing the withholding of information from Congress, and
2 all information obtained at any time under this Act or previ-
3 ous Acts regarding the control of exports, including any
4 report or license application required under section 4(a), shall
5 be made available upon request to any committee or subcom-
6 mittee of Congress of appropriate jurisdiction. No such com-
7 mittee or subcommittee shall disclose any information ob-
8 tained under this Act or previous Acts regarding the control
9 of exports which is submitted on a confidential basis unless
10 the full committee determines that the withholding thereof is
11 contrary to the national interest.

12 (d) In the administration of this Act, reporting require-
13 ments shall be so designed as to reduce the cost of reporting,
14 recordkeeping, and export documentation required under this
15 Act to the extent feasible consistent with effective enforce-
16 ment and compilation of useful trade statistics. Reporting,
17 recordkeeping, and export documentation requirements shall
18 be periodically reviewed and revised in the light of develop-
19 ments in the field of information technology. A detailed state-
20 ment with respect to any action taken in compliance with this
21 subsection shall be included in the report required by section
22 11 of this Act.

23 (e) The Secretary of Commerce, in consultation with ap-
24 propriate United States Government departments and agen-
25 cies and with appropriate technical advisory committees es-

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1 tablished under section 7(c), shall review the rules and regu-
2 lations issued under this Act and the lists of goods and tech-
3 nology which are subject to export controls in order to deter-
4 mine how compliance with the provisions of this Act, can be
5 facilitated by simplifying such rules and regulations, by sim-
6 plifying or clarifying such lists, or by any other means. The
7 Secretary of Commerce shall report periodically to Congress
8 on the actions taken on the basis of such review to simplify
9 such rules and regulations. Such reports may be included in
10 the report required by section 11 of this Act.

11 EXEMPTION FROM CERTAIN PROVISIONS RELATING TO
12 ADMINISTRATIVE PROCEDURE AND JUDICIAL REVIEW

13 SEC. 10. The functions exercised under this Act shall be
14 subject to the provisions of sections 551, 553 through 559,
15 and 701 through 706 of title 5, United States Code, except in
16 those cases described in regulations prescribed by the Secre-
17 tary of Commerce where applicability of such provisions
18 would be inconsistent with the purposes of this Act, but such
19 regulations may not apply to any case described in section
20 8(c)(2) or 9(c) of this Act.

21 ANNUAL REPORT

22 SEC. 11. (a) The Secretary of Commerce shall make an
23 annual report to the President and to the Congress of his
24 operations hereunder.

1 (b)(1) Each such report shall include summaries of the
2 information contained in the reports required by section
3 4(c)(2) of this Act, together with an analysis by the Secretary
4 of Commerce of—
5 (A) the impact on the economy and world trade of
6 shortages or increased prices for goods and technology
7 subject to monitoring under this Act;
8 (B) the worldwide supply of such goods and tech-
9 nology; and
10 (C) actions taken by other nations in response to
11 such shortages or increased prices.
12 (2) Each such report shall also contain an analysis by
13 the Secretary of Commerce of—
14 (A) the impact on the economy and world trade of
15 shortages or increased prices for commodities subject
16 to the reporting requirements of section 812 of the Ag-
17 ricultural Act of 1970;
18 (B) the worldwide supply of such commodities;
19 and
20 (C) actions being taken by other nations in re-
21 sponse to such shortages or increased prices.
22 The Secretary of Agriculture shall fully cooperate with the
23 Secretary of Commerce in providing all information required
24 by the Secretary of Commerce in making such analysis.
25 (c) Each such report shall include—

1 (1) any organizational and procedural changes in-
2 stituted, any reviews undertaken, and any means used
3 to keep the business sector of the Nation informed,
4 pursuant to section 4(a) of this Act;
5 (2) any changes in the exercise of the authorities
6 of section 4(b) of this Act;
7 (3) any delegations of authority under section 4(e)
8 of this Act;
9 (4) the disposition of export license applications
10 pursuant to section 4 (g) and (h) of this Act;
11 (5) consultations undertaken with technical advi-
12 sory committees pursuant to section 7(c) of this Act;
13 (6) violations of the provisions of this Act and
14 penalties imposed pursuant to section 8 of this Act;
15 and
16 (7) a description of actions taken by the President
17 and the Secretary of Commerce to effect the policies
18 set forth in section 3(5) of this Act.
19 DEFINITIONS
20 SEC. 12. As used in this Act—
21 (1) the term "person" includes the singular and
22 the plural and any individual, partnership, corporation,
23 or other form of association, including any government
24 or agency thereof;

1 (2) the term "United States person" means any
2 United States resident or national (other than an indi-
3 vidual resident outside the United States and employed
4 by other than a United States person), any domestic
5 concern (including any permanent domestic establish-
6 ment of any foreign concern) and any foreign subsidi-
7 ary or affiliate (including any permanent foreign estab-
8 lishment) of any domestic concern which is controlled
9 in fact by such domestic concern, as determined under
10 regulations of the President;
11 (3) the term "goods" means any article, material,
12 supply or manufactured product, including inspection
13 and test equipment, and excluding technical data; and
14 (4) the term "technology" means the information
15 and know-how that can be used to design, produce,
16 manufacture, utilize, or reconstruct goods, including
17 computer software and technical data.

18 EFFECTS ON OTHER ACTS

19 SEC. 13. (a) The Act of February 15, 1936 (49 Stat.
20 1140), relating to the licensing of exports of tinplate scrap, is
21 hereby superseded; but nothing contained in this Act shall be
22 construed to modify, repeal, supersede, or otherwise affect
23 the provisions of any other laws authorizing control over ex-
24 ports of any commodity.

1 (b) The authority granted to the President under this
2 Act shall be exercised in such manner as to achieve effective
3 coordination with the authority exercised under section 414
4 of the Mutual Security Act of 1954 (22 U.S.C. 1934).

5 AUTHORIZATION OF APPROPRIATIONS

6 SEC. 14. (a) Notwithstanding any other provision of
7 law, no appropriation shall be made under any law to the
8 Department of Commerce for expenses to carry out the pur-
9 poses of this Act for any fiscal year commencing on or after
10 October 1, 1980, unless previously and specifically author-
11 ized by legislation.

12 (b) There are authorized to be appropriated to the De-
13 partment of Commerce $8,000,000 (and such additional
14 amounts as may be necessary for increases in salary, pay,
15 retirement, other employee benefits authorized by law, and
16 other nondiscretionary costs) for fiscal year 1980 to carry out
17 the purposes of this Act, of which $1,250,000 shall be availa-
18 ble only for the Office of Foreign Product and Technology
19 Assessment.

20 EFFECTIVE DATE

21 SEC. 15. (a) This Act takes effect upon the expiration of
22 the Export Administration Act of 1969.

23 (b) All outstanding delegations, rules, regulations,
24 orders, licenses, or other forms of administrative action under
25 the Export Control Act of 1949 or section 6 of the Act of

1 July 2, 1940 (54 Stat. 714), of the Export Administration
2 Act of 1969 shall, until amended or revoked, remain in full
3 force and effect, the same as if promulgated under this Act.

4 TERMINATION DATE

5 SEC. 16. The authority granted by this Act terminates
6 on September 30, 1983, or upon any prior date which the
7 President by proclamation may designate.

O

96TH CONGRESS
1ST SESSION

S. 977

To amend the Export Administration Act of 1969, as amended, and for other purposes.

IN THE SENATE OF THE UNITED STATES

APRIL 23 (legislative day, APRIL 9), 1979

Mr. PROXMIRE (by request) introduced the following bill; which was read twice and referred to the Committee on Banking, Housing, and Urban Affairs

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A BILL

To amend the Export Administration Act of 1969, as amended, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That section 2 of the Export Administration Act of 1969, as
4 amended (50 U.S.C. App. 2401), is further amended by—
5 (a) revising subsection (2) to read as follows:
6 "The export of goods or technology without regard to
7 whether it makes a significant contribution to the mili-
8 tary potential of individual countries or combinations of

1 countries may adversely affect the national security of
2 the United States.";
3 (b) revising subsection (3) to read as follows:
4 "The restriction of exports from the United States can
5 have serious adverse effects on the balance of pay-
6 ments and on domestic employment, particularly when
7 restrictions applied by the United States are more ex-
8 tensive than those imposed by other countries."; and
9 (c) adding at the end thereof the following two
10 new subsections:
11 "(6) Exports are important to the economic well-being
12 of the United States.
13 "(7) It is important that the administration of export
14 controls imposed for national security purposes give special
15 emphasis to the need to control exports of technology (and
16 goods which contribute significantly to the transfer of such
17 technology) which could make a significant contribution to
18 the military potential of any country or combination of coun-
19 tries which would be detrimental to the national security of
20 the United States.".
21 SEC. 2. Section 3 of the Export Administration Act of
22 1969, as amended (50 U.S.C. App. 2402) is further amended
23 by—
24 (a) revising subsection (2) to read as follows: "It
25 is the policy of the United States to use export con-

1 trols to the extent necessary to restrict the export of
2 (A) goods and technology which would make a signifi-
3 cant contribution to the military potential of any coun-
4 try or combination of countries which would prove det-
5 rimental to the national security of the United States;
6 (B) goods and technology where necessary to further
7 significantly the foreign policy of the United States or
8 to fulfill its international responsibilities; and (C) goods
9 where necessary to protect the domestic economy from
10 the excessive drain of scarce materials and to reduce
11 the serious inflationary impact of foreign demand.";
12 (b) deleting in subsection (5) "articles, materials,
13 supplies, or information" and inserting in lieu thereof,
14 "goods, technical data, or other information";
15 (c) deleting in subsection (6) "articles, materials,
16 or supplies, including technical data or other informa-
17 tion," and inserting in lieu thereof, "goods, technical
18 data, or other information"; and
19 (d) adding at the end thereof the following new
20 subsection:
21 "(9) It is the policy of the United States to cooperate
22 with other nations with which the United States has defense
23 treaty commitments in restricting the export of goods and
24 technical data which would make a significant contribution to
25 the military potential of any country or combination of coun-

1 tries which would prove detrimental to the security of the
2 United States and of those countries with which the United
3 States has defense treaty commitments.".

4 SEC. 3. Section 4 of the Export Administration Act of
5 1969, as amended (50 U.S.C. App. 2403), is further amend-
6 ed by—

7 (a) deleting "nations with which the United
8 States is engaged in trade" in subsection (a), para-
9 graph (1), and inserting in lieu thereof "countries with
10 which the United States has diplomatic or trading rela-
11 tions";

12 (b) deleting "articles, materials, or supplies, in-
13 cluding technical data or other information," in subsec-
14 tion (a), paragraph (1), and inserting in lieu thereof
15 "goods and technical data";

16 (c) deleting the last sentence of subsection (a),
17 paragraph (1);

18 (d) revising subsection (b), paragraph (1) to read
19 as follows: "To the extent necessary to carry out the
20 policies set forth in section 3 of this Act, the President,
21 by rule or regulation, may prohibit or curtail the
22 export of any goods, technology, or any other informa-
23 tion subject to the jurisdiction of the United States or
24 exported by any person subject to the jurisdiction of
25 the United States. To the extent necessary to achieve

1 effective enforcement of this Act, these rules and regu-
2 lations may apply to the financing, transporting, and
3 other servicing of exports and the participation therein
4 by any person. In curtailing exports to carry out the
5 policy set forth in section 3(2)(C) of this Act, the Presi-
6 dent is authorized and directed to allocate a portion of
7 export licenses on the basis of factors other than a
8 prior history of exportation.";
9 (e) deleting "(C)" in subparagraph (A), paragraph
10 (2), subsection (b), and inserting in lieu thereof "(A),"
11 and by deleting the last sentence of that subparagraph;
12 (f) deleting "articles, materials, or supplies, in-
13 cluding technical data or other information" in subpar-
14 agraph (B), paragraph (2), subsection (b) and inserting
15 in lieu thereof "goods, technical data, or any other in-
16 formation," and adding the following sentence at the
17 end of that subparagraph: "In administering export
18 controls for foreign policy purposes, weight will be
19 given to whether the goods or technology in question
20 are also available from countries other than the United
21 States.";
22 (g) deleting "(A)" in paragraph (1), subsection (c),
23 and inserting in lieu thereof "(C)";
24 (h) deleting "(C)" in paragraph (1), subsection (f),
25 and inserting in lieu thereof "(A)";

1 (i) deleting "(A)" in paragraph (3), subsection (f),
2 and inserting in lieu thereof "(C)";
3 (j) inserting after the words "national security" in
4 the first sentence of subparagraph (A), paragraph (2),
5 subsection (g), the words "and foreign policy";
6 (k) deleting "(A)" as it appears in subsection (i)
7 and inserting in lieu thereof "(C)";
8 (l) relettering that subsection (m) which begins
9 with the words, "No article, material, or supply," as
10 subsection (n);
11 (m) deleting "article, material, or supply, includ-
12 ing technical data or other information," in relettered
13 subsection (n) and inserting in lieu thereof "goods,
14 technical data, or any other information,"; and
15 (n) adding at the end thereof the following two
16 new subsections:
17 "(o)(1) Any United States firm, enterprise, or other non-
18 governmental entity which, for commercial purposes, enters
19 into an agreement with an agency of a government in an-
20 other country to which exports are restricted for national se-
21 curity purposes, which agreement cites an intergovernmental
22 agreement calling for the encouragement of technical cooper-
23 ation and is intended to result in the export from the United
24 States to the other party of unpublished technical data of

1 United States origin, shall report such agreement to the Sec-
2 retary of Commerce.
3 "(2) The provisions of this subsection shall not apply to
4 colleges, universities, or other educational institutions.
5 "(3) The Secretary of Commerce is authorized to issue
6 such rules and regulations as are necessary to implement the
7 provisions of this subsection.
8 "(p) The Secretary of State, in consultation with the
9 Secretary of Defense, the Secretary of Commerce, and the
10 heads of other appropriate departments and agencies, shall be
11 responsible for negotiations with other countries regarding
12 their cooperation in restricting the export of goods and tech-
13 nologies whose export should be restricted pursuant to sec-
14 tion 3(9) of this Act, as authorized under section 4(b)(1) of
15 this Act, including negotiations on the basis of approved ad-
16 ministration positions as to which goods and technologies
17 should be subject to multilaterally agreed export restrictions
18 and what conditions should apply for exceptions from those
19 restrictions.".
20 SEC. 4. Section 5 of the Export Administration Act of
21 1969, as amended (50 U.S.C. App. 2404), is further amend-
22 ed by—
23 (a) deleting "Federal Energy Administration" in
24 subsection (a) and inserting in lieu thereof "Depart-
25 ment of Energy";

1 (b) deleting "article, material, or supply" in para-
2 graph (2), subsection (b) and inserting in lieu thereof
3 "goods";
4 (c) deleting "(A)" in paragraph (2), subsection (b)
5 and inserting in lieu thereof "(C)";
6 (d) deleting "articles, materials, and supplies, in-
7 cluding technical data and other information" each
8 time it appears in paragraph (1), subsection (c) and in-
9 serting in lieu thereof "goods and technical data";
10 (e) deleting from paragraph (2), subsection (c) "ar-
11 ticles, materials, and supplies, including technical data
12 or other information" and inserting in lieu thereof,
13 "goods and technical data";
14 (f) deleting the following sentence from paragraph
15 (2) subsection (c): "The Secretary shall include in each
16 semiannual report required by section 10 of this Act an
17 accounting of the consultation undertaken pursuant to
18 this paragraph, the use made of the advice rendered by
19 the technical advisory committees pursuant to this
20 paragraph, and the contributions of the technical advi-
21 sory committees in carrying out the policies of this
22 Act."; and
23 (g) deleting from paragraph (5), subsection (c),
24 "articles, materials, and supplies" and inserting in lieu
25 thereof "goods and technical data".

1 SEC. 5. Section 6 of the Export Administration Act of
2 1969, as amended (50 U.S.C. App. 2405) is further amended
3 by—

4 (a) revising subsection (a) to read as follows:
5 "Except as provided in subsection (b) of this section,
6 whoever knowingly violates any provision of this Act
7 or any regulation, order, or license issued thereunder
8 shall be fined not more than five times the value of the
9 exports involved or $50,000, whichever is greater, or
10 imprisoned not more than five years, or both.";

11 (b) revising subsection (b) to read as follows:
12 "Whoever willfully exports anything contrary to any
13 provision of this Act or any regulation, order, or li-
14 cense issued thereunder, with knowledge that such ex-
15 ports will be used for the benefit of any country to
16 which exports are restricted for national security or
17 foreign policy purposes, shall be fined not more than
18 five times the value of the exports involved or
19 $100,000, whichever is greater, or imprisoned not
20 more than ten years, or both."; and

21 (c) deleting "articles, materials, supplies, or tech-
22 nical data or other information" from subparagraph
23 (A), paragraph (2), subsection (c) and inserting in lieu
24 thereof, "goods, technical data, or any other informa-
25 tion".

1 SEC. 6. Section 7 of the Export Administration Act of
2 1969, as amended (50 U.S.C. App. 2406) is further amended
3 by—
4 (a) revising subsection (c) to read as follows:
5 "Except as otherwise provided by the third sentence of
6 section 4A(b)(2) and by section 6(c)((2)(C) of this Act,
7 information obtained under this Act which is deemed
8 confidential or with reference to which a request for
9 confidential treatment is made by the person furnishing
10 such information shall be exempt from disclosure under
11 section 552(b)(3)(B) of title 5, United States Code, and
12 such information shall not be published or disclosed
13 unless the Secretary of Commerce determines that the
14 withholding thereof is contrary to the national interest.
15 Nothing in this act shall be construed as authorizing
16 the withholding of information from Congress, and all
17 information obtained at any time under this Act or pre-
18 vious Acts regarding the control of exports, including
19 any report or license application required under section
20 4(b), shall be made available upon request to any com-
21 mittee or subcommittee of Congress of appropriate ju-
22 risdiction. No such committee or subcommittee shall
23 disclose any information obtained under this Act or
24 previous Acts regarding the control of exports which is
25 submitted on a confidential basis unless the full com-

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1 mittee determines that the withholding thereof is con-
2 trary to the national interest.";
3 (b) deleting the last sentence of subsection (d); and
4 (c) deleting subsection (e).
5 SEC. 7. Section 9 of the Export Administration Act of
6 1969, as amended (50 U.S.C. App. 2408), is repealed.
7 SEC. 8. Section 10 of the Export Administration Act of
8 1969, as amended (50 U.S.C. App. 2409) is revised to read
9 as follows:
10 "REPORT
11 "SEC. 9. (a) The Secretary of Commerce shall make an
12 annual report to the President and to the Congress on the
13 implementation of this Act.
14 "(b) Each annual report shall include an accounting
15 of—
16 "(1) actions taken by the President and the Secre-
17 tary of Commerce to effect the antiboycott policies set
18 forth in section 3(5) of this Act;
19 "(2) organizational and procedural changes insti-
20 tuted and any reviews undertaken in furtherance of the
21 policies set forth in this Act;
22 "(3) efforts to keep the business sector of the
23 Nation informed about policies and procedures adopted
24 under this Act;

1 "(4) any changes in the exercise of the authorities
2 of section 4(b) of this Act;
3 "(5) the results of review of United States policy
4 toward individual countries called for in section
5 4(b)(2)(A);
6 "(6) evidence demonstrating a need to impose
7 export controls for national security purposes in the
8 face of foreign availability as set forth in section
9 4(b)(2)(B);
10 "(7) the information contained in the reports re-
11 quired by section 4(c)(2) of this Act, together with an
12 analysis of—
13 "(A) the impact on the economy and world
14 trade of shortages or increased prices for com-
15 modities subject to monitoring under this Act or
16 section 812 of the Agricultural Act of 1970;
17 "(B) the worldwide supply of such commod-
18 ities; and
19 "(C) actions being taken by other nations in
20 response to such shortages or increased prices;
21 "(8) delegations of authority by the President as
22 provided for under section 4(e) of this Act;
23 "(9) the number and disposition of export license
24 applications taking more than ninety days to process
25 pursuant to section 4(g) of this Act;

1 "(10) consultations undertaken with technical ad-
2 visory committees pursuant to section 5(c) of this Act,
3 the use made of advice given, and the contribution
4 such committees made in carrying out the policies of
5 this Act;
6 "(11) violations of the provisions of this Act and
7 penalties imposed pursuant to this Act; and
8 "(12) any revisions to reporting requirements pre-
9 scribed in section 7(d).
10 "(c) The heads of other involved departments and agen-
11 cies shall fully cooperate with the Secretary of Commerce in
12 providing all information required by the Secretary of Com-
13 merce to complete the annual reports.".
14 SEC. 9. Section 11 of the Export Administration Act of
15 1969, as amended (50 U.S.C. App. 2410), is renumbered as
16 section 10.
17 SEC. 10. Section 12 of the Export Administration Act
18 of 1969, as amended (50 U.S.C. App. 2411) is amended
19 by—
20 (a) renumbering it as section 11; and
21 (b) deleting "section 414 of the Mutual Security
22 Act of 1954 (22 U.S.C. 1934)." in subsection (b) and
23 inserting in lieu thereof "section 38 of the Arms
24 Export Control Act (22 U.S.C. 2778).".

1 SEC. 11. Section 13 of the Export Administration Act
2 of 1969, as amended (50 U.S.C. App. 2411a) is further
3 amended by—
4 (a) renumbering it as section 12;
5 (b) revising subsection (a) to read as follows:
6 "(a) For fiscal years commencing on or after October 1,
7 1979, there are hereby authorized to be appropriated to the
8 Department of Commerce such sums as may be necessary to
9 carry out the purposes of this Act."; and
10 (c) adding at the end thereof the following new
11 subsection:
12 "(c) For fiscal years commencing on or after October 1,
13 1979, there are hereby authorized to be appropriated to the
14 Department of State such sums as may be necessary to im-
15 plement the provisions of sections 3(9) and 4(p) of this Act.".
16 SEC. 12. Section 15 of the Export Administration Act
17 of 1969, as amended (50 U.S.C. App. 2413), is further
18 amended by deleting "1979" and inserting in lieu thereof
19 "1983".
20 SEC. 13. Sections 14 and 15 of the Export Administra-
21 tion Act of 1969, as amended (50 U.S.C. App. 2412 and
22 2413), are renumbered as section 13 and section 14, respec-
23 tively.

1 SEC. 14. As of October 1, 1979, the Mutual Defense
2 Assistance Control Act of 1951, as amended (22 U.S.C.
3 1611–1613d), is superseded.

PRESIDENT
CHARLES W. STEWART

VICE PRESIDENTS
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March 26, 1979

The Honorable Adlai E. Stevenson
Chairman, Subcommittee on
International Finance
Senate Committee on Banking,
Housing and Urban Affairs
5300 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Chairman Stevenson:

We welcome this opportunity to present our views in connection with your Subcommittee's hearings concerning amendment and extension of the Export Administration Act. In the last few years the U.S. business community has witnessed a proliferation of export controls and other measures affecting exports which has resulted in a substantial volume of lost orders and has created an unprecedented amount of uncertainty with respect to prospects for U.S. firms to initiate and sustain business activities in an ever-growing number of markets. The current review of the Export Administration Act will provide the Congress with a major opportunity to reverse this direction in U.S. policy.

As you know, the Machinery and Allied Products Institute is a national organization of capital goods and allied industrial product manufacturers. The capital goods industries, which MAPI represents, produce the facilities of production, distribution, transportation, communication, and commerce. Thus, the MAPI membership includes a broad range of producers of machinery (electrical and nonelectrical), industrial equipment, components, cutting tools, farm equipment, graphic arts equipment, electronics, scientific and industrial instruments, controls, forgings, testing equipment, etc. The capital goods industries have a substantial stake in foreign trade. In 1978 U.S. exports of machinery and transport equipment totaled $46 billion.

The MAPI Position

In recent years the U.S. government has taken a number of piecemeal, unrelated, and uncoordinated actions which are damaging to the international commercial position of the United States without, seemingly, any attempt to weigh --to give sufficient weight to--the foreign trade or other

MACHINERY & ALLIED PRODUCTS INSTITUTE AND ITS AFFILIATED ORGANIZATION, COUNCIL FOR TECHNOLOGICAL ADVANCEMENT, ARE ENGAGED IN RESEARCH IN THE ECONOMICS OF CAPITAL GOODS (THE FACILITIES OF PRODUCTION, DISTRIBUTION, TRANSPORTATION, COMMUNICATION AND COMMERCE) IN ADVANCING THE TECHNOLOGY AND FURTHERING THE ECONOMIC PROGRESS OF THE UNITED STATES

possible impacts of the actions. These include measures of broad application to foreign trade--such as the statutes aimed principally against the Arab boycott of Israel and the Foreign Corrupt Practices and Domestic and Foreign Investment Improved Disclosure Act of 1977--and measures directed against particular categories of exports (nuclear equipment, arms, police equipment) and particular foreign countries (communist countries, South Africa, Argentina, Uganda, etc.). The "punitive" actions have included selective denial of exports and denial of export financing, as well as virtually total embargoes. With the exception of some international support with respect to restricting exports of strategic items to certain communist countries, the United States measures are unilateral. While these various impediments to trade have demonstrably affected adversely U.S. exports, it is not at all clear that they have advanced important U.S. foreign policy interests. Our economic loss has been substantial; our only gain has been the enhancement of our international reputation as a naif.

In his statement on export policy last September President Carter recognized the importance of ". . . the reduction of government-imposed disincentives and barriers which unnecessarily inhibit our firms from selling abroad" and promised that laws and policies affecting the international business community will be administered "with a greater sensitivity to the importance of exports than has been the case in the past." The President stated that he was directing the heads of all departments and agencies to "take into account" the possible adverse export consequences of regulatory actions, and export licensing departments were being directed to take export consequences fully into account when considering the imposition of controls for "foreign policy" purposes. However, the President's statement appears to be aimed at curbing--or dampening--<u>future</u> restrictions on exports. Although it has been six months since the President issued his statement, we do not see even a beginning of any effort on the part of the Executive branch to reduce the array of <u>existing</u> restrictions on U.S. exports.

We hope that in its current review of the Export Administration Act the Congress will go beyond provisions intended to minimize the introduction of new controls and to improve controls administration and will make a beginning toward the <u>dismantling</u> of controls which do not clearly serve <u>important</u> U.S. interests.

After discussing some general considerations concerning the application of export controls, this statement examines:

-- "Foreign Policy" controls. This section includes a discussion of (1) the array of controls directed against South Africa, (2) the controls on exports to the Soviet Union of products (and related technology) which can be utilized in oil or gas exploration or production, (3) the embargo--except for exports of agricultural products--on trade with Uganda, and (4) the controls on exports of equipment particularly useful in crime control and detection.

-- "National Security" controls. Certain aspects of government organization for administration of export controls and the importance of minimizing the volume of applications for validated licenses are discussed in this section.

-- Other matters related to the Export Administration Act: confidentiality of information submitted to the government by exporters pursuant to the Export Administration Act and the antiboycott provisions.

The central conclusions of this statement are:

-- The national interests of the United States require that a heavier burden of proof should fall on advocates of export controls.

-- Export controls for foreign policy purposes seemingly are imposed without any detailed analysis of what the cost to the United States is likely to be or whether the controls are likely to achieve their objectives. In addition, so far as we have been able to determine, little--or no--effort has been made to determine from the U.S. foreign trade community what the impact of existing controls has been.

-- The effective administration of national security export controls requires a more streamlined system of interagency review, a broader interpretation of national security that takes into consideration the long-range trade, economic and competitive effects of license denial, and continuing efforts to minimize the number of products and technologies subject to control by defining those items which it is most important to protect and by more intensive effort to determine foreign availability.

Introduction: Some General Considerations Concerning the Application of Export Controls

There are several factors which should be considered before export controls are applied for "national security" or "foreign policy" purposes, and these factors also are relevant to other economic measures (such as denial of Export-Import Bank financing) which are initiated in an attempt to further U.S. objectives.

-- With the exception of the "national security" controls intended to prevent exports of "strategic" products to certain communist countries (which are supported by most--but not all--industrial countries

through CoCom/1), U.S. export controls are not supported by any other major industrial country.

While the lack of international support for U.S. "foreign policy" controls is frequently explained away by Executive branch officials and others as a result of most other industrial countries' being more dependent on foreign trade than the United States, we do not find this acceptable. The United States has suffered for several years from massive trade deficits, a declining share of world trade, and a chronically weak dollar which should dictate a more aggressive export posture. It also may be the case that the leadership of other industrial countries, like former senior U.S. foreign policy officials who have expressed their views on the subject, have doubts about the efficacy of economic denial measures as a means of influencing foreign countries' policies. An appendix to this statement contains the recently-expressed views on this subject of Dean Rusk, George W. Ball, George F. Kennan, and Edwin M. Martin.

-- Since there are very few industrial sectors where the United States can deny a country an economic capability, the result of controls is likely to be the substitution of foreign products for those of the United States. Even when the United States does not have a general policy of denial, the mere existence of a validated export license requirement creates uncertainty and a strong incentive for foreign purchasers to seek non-U.S. sources of supply because of the delays likely to be incurred and the uncertainty as to whether a license will be issued. In the capital goods industries, deliveries may be scheduled many months or even several years after an order has been placed, and it is understandable that the purchaser may prefer not to take a chance that the U.S. government will deny--or revoke--a license that could place his commercial activity in jeopardy.

-- The sheer volume of applications received by the U.S. government calls for greater selectivity with respect to products controlled and targets of those controls. In 1978 the Department of Commerce alone received 65,000 export license applications and, during the first two and

1/ CoCom (Coordinating Committee) is an informal international arrangement through which the United States, members of NATO (except Iceland), and Japan coordinate "national security" export control policies. Among the industrial countries not members of CoCom are Austria, Sweden, and Switzerland. It also is noteworthy that the CoCom system does not apply to North Korea, Cambodia, Vietnam, and Cuba.

a half months of this year, applications were received at an annual rate of 77,000. Typically, only about 10 percent of applications involve exports to communist countries; the remainder involve applications to export controlled items to noncommunist countries (principally in order to minimize the risk of diversion) and applications under foreign policy controls. Even if greater manpower resources were allocated to processing those applications (which is unlikely), such a volume inevitably must result in considerable uncertainty for U.S. exporters and their foreign customers, frequent delay, and licensing mistakes.

-- Controls involve substantial administrative costs for companies, which must prepare instructions for their personnel involved in exports and prepare license applications, and for government which must act on applications and enforce the regulations.

-- Sanctions and other economic measures which could adversely affect U.S. trade interests--and probably other interests--for decades seemingly are undertaken without any detailed analysis of what the cost to the United States is likely to be or whether the sanctions are likely to achieve their objectives. For example, we have been unable to find any evidence that, prior to imposing any of the unilateral "sanctions" introduced in recent years, either the Executive branch or the Congress made any attempt to analyze the possible impact of the actions on U.S. trade or other interests or even whether, in the light of the availability of products from other countries, the United States denial would have any significant economic impact. Controls can result in a reorientation of the foreign trade of the target country which may not be reversed for many years, if ever. For capital goods exporters an order lost now as a result of government action means lost future orders for spare and replacement parts and may mean additional lost orders when the purchaser makes further additions to production capacity.

-- The increasing proclivity of the Executive branch and the Congress to attempt unilaterally to "punish" foreign countries or influence their policies through economic measures is puzzling in view of the fact that there is so little evidence that even broadly-supported (at least nominally) international sanctions are effective. Few countries are willing to pay the price. For example, a report last year by the U.K. government indicates that British oil companies, with the knowledge of senior officials of their government, provided about one-half of Rhodesia's oil import requirements for a decade

during the United Nations' embargo against Rhodesia. And it is noteworthy that the United Nations' embargo against Rhodesia was imposed at the behest of the U.K. government. In addition to the question of "leakage" even with a broadly-supported embargo there is also the very important question of the extent to which embargoes--unilateral or international--have the intended effect on the government and populace of the target country.

I. Foreign Policy Controls

In our view the most extensive changes in the Export Administration Act are needed in the provisions dealing with "foreign policy" controls.

As a result of actions by the Executive branch and the Congress, controls and other economic denial measures for "foreign policy" (including "human rights") purposes have proliferated. Among these are four important export controls introduced for foreign policy purposes in just a little over a year:/1

-- A prohibition against all exports to the military and police forces of South Africa and Namibia introduced in 1978. The related controls on exports of proprietary technical data to South Africa prohibit such exports if the exporter knows, or has reason to know, that the data or the products made with the data will be sold to the South African military or police forces. The imposition of these controls, added to those already in place, results in a range of economic punitive measures directed against South Africa comparable to those against the Soviet Union, our principal potential adversary. This range of measures, including the controls introduced in February 1978, are discussed below.

-- A requirement for a validated license for exports to the Soviet Union of products (and related technology) which can be utilized in oil or gas exploration or production. These controls also extend to exports of U.S.-origin technical data to importers in noncommunist countries.

1/ In addition to these exports controls, the United States also exercises other "punitive" measures and regulatory activities which can have the same result--loss of exports. These include: denial of Export-Import Bank financing to the Soviet Union, the People's Republic of China and certain other communist countries, South Africa, Chile, Uruguay, and, possibly, Argentina; and arms embargoes against Argentina, Chile, and South Africa, among others.

-- An embargo--except for exports of agricultural products--on trade with Uganda.

-- A requirement for a validated license for exports of equipment particularly useful in crime control and detection to all destinations except members of the North Atlantic Treaty Organization, Japan, Australia, and New Zealand.

Each of the above controls is discussed below.

Controls on Exports to South Africa and Namibia

In February 1978 the United States introduced controls to prevent U.S. firms from providing any U.S. products to the South African and Namibian military and police forces. This was the latest in a series of restrictions imposed against South Africa. These actions include the following:

-- Following a U.N. Security Council Resolution in 1963 calling for a voluntary arms embargo against South Africa, the United States has embargoed sales of arms and related materiel since that time. While some other countries (notably the United Kingdom and Sweden) observed that voluntary embargo, others--notably France, the major arms supplier to South Africa, Italy, and Israel--did not.

After the repressive actions by the South African government in the fall of 1977, the U.N. Security Council adopted a resolution directing a mandatory arms embargo by member nations. While the major arms-supplying nations have indicated that they intend to observe the mandatory arms embargo, the extent to which this will be done remains to be seen./1

-- In addition to embargoing exports of arms and related materiel (i.e., U.S. Munitions List articles set forth in Section 121.01 of the Department of State's International Traffic in Arms Regulations), the United States also has restricted for several years exports to South Africa of items which have application to combat or internal security organizations, equipment

1/ According to a recent article in Harper's, France has provided South Africa with some 80 percent of its arms imports during the first half of this decade and the French government has, on four occasions, announced that it was embargoing arms exports to South Africa! See "Seminar in African Diplomacy," by Ken Adelman, Harper's, September 1978, p. 26. Mr. Adelman lived and studied in Africa from 1972 to 1975 and was Assistant to the Secretary of Defense in 1975 and 1976.

used in arms production, and "a [illegible] nt and equipment particularly useful i [illegible] ntrol and detection."

-- The Export-Import Bank has not extended direct loans to South Africa since 1963 and its role in supporting short- and medium-term transactions was a modest one until October 1978. In October, amendments to the Export-Import Bank Act were adopted which appear to preclude any Bank support for exports to South Africa.

The controls on exports to the South African and Namibian military and police forces adopted in February 1978 added a new, broad dimension to U.S. punitive measures against South Africa. These controls (1) prohibit exports--directly or indirectly--of U.S. products or technical data to the military or police entities of South Africa or Namibia and (2) prohibit exports of any unpublished technical data when the exporter knows, or has reason to know, that the data or any product of the data will be sold to the South African (or Namibian) military or police entities. Thus, these controls affect not only U.S. exports to South African (and Namibian) military and police services but also sales by South African holders of U.S.-origin products and technical data--local subsidiaries of U.S. companies as well as unaffiliated companies--from selling to a unit of their own governnment! Since many South African companies sell at least some portion of their products to the South African military or police services, the impact on U.S. firms of these controls probably will be very substantial. First, they will deter some South African firms from obtaining U.S.-origin products for their other (nonmilitary and police) customers. Second, they will prevent U.S. firms from introducing new products to their affiliates and to unaffiliated licensees when they know, or have reason to know, that the U.S.-origin proprietary manufacturing data or the end product of that data will be sold to South Africa (or Namibia) military or police services.

With the exception of the mandatory arms embargo directed by the United Nations in the fall of 1977 which United Nations' members have stated that they will support, none of the above U.S. actions are supported by any major industrial country.

It also should be noted that, so far as we have been able to determine, in none of the above cases did the Executive branch attempt to determine, prior to introducing the controls, what the impact on U.S. trade might be or whether the U.S. action could have any significant effect on South African supplies of the items in question. For example, we are aware of no evidence that the U.S. government knew the volume or nature of South African military and police purchases of U.S.-origin products and data when controls on sales to those agencies were introduced in February 1978 and, so far as we have been able to determine, has made no effort to assess the adverse impact of those controls.

Impact of U.S. controls.--Not surprisingly, this array of U.S. economic measures has adversely affected U.S. trade with South Africa. In

addition to orders lost because of denial of Export-Import Bank financing,/1 we are aware that several member companies have lost sales because of the embargo on exports to the South African military and police forces and the prior restrictions on sales to South African ordnance and atomic energy facilities. Beyond the lost sales which could be documented, we believe that U.S. exports are being far more adversely affected by the widespread resentment in the South African government and private industry over the U.S. actions and the belief in South African government and industry that still more U.S. restrictions may be imposed. In this environment potential private as well as government purchasers are concluding that it is imprudent to enter into business arrangements with U.S. firms which will require purchases of spare parts or services or acquisitions of technical data some years in the future. While we have not undertaken any survey of our member companies with respect to this point, the following company experiences have come to our attention in recent months:

-- A company negotiated a multi-year technical assistance agreement with a South African firm which was rejected by the latter's board. The U.S. company's management believes the agreement was rejected because the board concluded that it was unsafe to rely on a U.S. firm for future transfers of technology.

-- A company negotiating a sale to a longtime South African customer received a request from the latter that drawings related to key parts be placed in trust in case U.S. export controls blocked future exports of parts. The U.S. company refused this request and the outcome of this order is still uncertain.

-- A U.S. company's South African subsidiary received a request from a major customer firm in the South African mining industry to supply its drawings so the customer would not be without spare parts in the event U.S. investment in South Africa was prohibited or further controls were introduced. This request was refused but the South African customer, in order to develop a non-U.S. source, now purchases from other

1/ As a result of Executive branch denial of Eximbank financing in 1976 for a coal gasification plant undertaken by the South African Coal, Gas, and Oil Company ("SASOL" II), some $800 million in orders for equipment and services for this plant were placed in Western Europe and Japan instead of the United States. Foreign government-supported export credit agencies are backing their exporters in sales for this project. Orders recently were let for further expansion of the facility ("SASOL" III and IV) and U.S. exporters will not be allowed to participate in at least $500 million in equipment orders to be placed for this project because of the unavailability of export financing.

South African firms (which "pirated" the U.S. company's design) a portion of the orders for spare parts formerly placed with the U.S. company's South African plant.

-- Prior to placing a large order, a senior executive of a U.S. company's major customer in South Africa visited the United States to receive personal assurances from the U.S. company's most senior officers that the company did not intend to withdraw its parts and service facilities from South Africa.

The impact of U.S. punitive measures and the doubts they have engendered in the minds of South Africans as to future availability of U.S. products, services and technology apparently are now being reflected in United States-South African trade statistics. In 1976 the United States enjoyed a $422 million trade surplus with South Africa; in 1978 the United States suffered a deficit of $1.3 billion, primarily as a result of sharply increased imports. During 1978 U.S. exports to South Africa showed no gain over 1977 (i.e., a decline in real terms), while South Africa's imports from all sources increased some 16 percent.

The data with respect to U.S. market share are even more revealing. According to data obtained from South African government trade statistics,/1 in 1977 the U.S. share of all South African imports was 19 percent. During the first six months of 1978 the U.S. share decreased to 15.7 percent and was exceeded by that of West Germany (20.3 percent) and the United Kingdom (17.5 percent). As might be expected, the decrease in the U.S. market share for machinery, transport equipment, and scientific apparatus/2--the types of products for which potential customers would be most concerned about future availability of spare parts and service--was even greater. In 1977 the U.S. market share for these three groups of products was 20.6 percent, while the shares of West Germany, the United Kingdom, Japan, and France were 23.5 percent, 16.1 percent, 15 percent, and 6.1 percent, respectively. During the first six months of 1978 the U.S. share had declined by about one-fourth to 15.6 percent, and was exceeded by that of West Germany (25.9 percent) and the United Kingdom (17.5 percent). The share of Japan remained relatively constant (14.8 percent) while the share of France increased sharply to 10.2 percent.

1/ Bulletin of Statistics, Department of Statistics, South African Government.

2/ The data presented here cover imports by South Africa covered by sections 16, 17, and 18 of its import statistics. Section 16 includes "Machinery and mechanical appliances, electrical equipment, and parts thereof"; Section 17 includes "Vehicles, aircraft, and parts thereof, vessels and certain associated transport equipment"; and Section 18 includes "Optical, photographic cinematographic, measuring, checking, precision . . . instruments." These categories include a wide variety of capital goods equipment, as well as consumer durables.

While there are undoubtedly a number of products the South Africans would prefer to continue to obtain from the United States and there may be a few which are obtainable only from the United States, it seems clear that South African purchasers are turning to alternative sources in increasing numbers. If the present trend is not reversed, the U.S. share of South African imports may well dwindle to such a low level that the United States will have virtually no equity--through export controls--to influence South African policies. And it may take a generation for the United States to regain its market share of recent years.

Controls on Exports to the Soviet Union of Products and Technology Related to Oil and Gas Exploration and Production

The controls introduced in August 1978 on U.S. exports to the Soviet Union of products and technology related to oil and gas exploration and production apply not only to exports and reexports of U.S.-origin products and technology but also to exports by foreign licensees of products subject to the controls which are made with U.S.-origin technical data. Thus the controls affect not only direct U.S.-Soviet trade but, like many other U.S. controls, have a significant extraterritorial impact by restricting exports by foreign holders of U.S.-origin technical data.

These controls were imposed during a time of strain in U.S.-Soviet relations--following the trial of Soviet dissidents--and were imposed before it was determined whether or not (1) it is in the U.S. national interest to attempt to restrict Soviet production of oil and gas and (2) the United States is in a technological position to be able unilaterally to deny the Soviet Union equipment and technology which could in fact restrict Soviet production capabilities. Since then the Executive branch determined--even prior to the disruption of Iranian oil production--that it is not in the U.S. national interest to attempt to restrict Soviet production and it has not denied any applications to export products or technology related to Soviet oil and gas production.

In view of the world energy situation, and the necessity to increase supplies, it is difficult to believe that the continuation of these controls will afford the United States any significant diplomatic leverage. However, the controls remain to (1) add to the administrative burden of U.S. firms, their foreign licensees and the U.S. government, (2) provide a strong element of uncertainty for exporters and Soviet purchasers, and (3) cause delay in the consummation of business transactions.

Prohibition on Exports (Except Agricultural Products) to Uganda

In P.L. 95-435 which was enacted last October the Congress prohibited, until the President determines and certifies to the Congress that the Ugandan government is no longer committing a consistent pattern of gross violations of human rights, (1) the export to Uganda of products

and technical data "subject to the jurisdiction of the United States" and (2) exports to Uganda by "any person subject to the jurisdiction of the United States." (That law also prohibits all imports from Uganda.) The Congress took this action against the advice of the Departments of State and Commerce which argued that the prohibition on exports to Uganda would be inconsistent with U.S.obligations under the General Agreement on Tariffs and Trade (GATT) and that, since there was no significant international support for restrictions on either imports from, or exports to, Uganda, such action was unlikely to have any impact on Uganda.

Uganda is not a significant market for the capital goods industries; indeed, total U.S. exports to Uganda were only $14 million in 1977. However, we believe the imposition of these export controls should be reviewed because:

-- They represent another example of the United States proceeding unilaterally to impose sanctions with no international support, even from Uganda's fellow African states in the Organization of African Unity./1

-- The Department of Commerce has issued proposed regulations implementing the export control provisions of P.L. 95-435 which would prohibit foreign firms controlled by U.S. firms from engaging in any trade with Uganda even when the products contain no items of U.S. origin and are not made with U.S.-origin technical data. These proposed regulations are of concern to our membership because of their (1) extraterritorial reach which would prohibit transactions with Uganda by U.S.-controlled firms in friendly foreign countries (e.g., West Germany and the United Kingdom) which have more substantial trade with Uganda than does the United States and (2) possible precedential character for present and future trade restrictions imposed for foreign policy purposes.

As noted, P.L. 95-435 prohibits the export or reexport of products and technical data "subject to the jurisdiction of the United States" to Uganda and prohibits transactions with Uganda involving "any person subject to the jurisdiction of the United States." While the legislative history of this provision is not entirely clear, because of the use of the phrase, "subject to the jurisdiction of the United States," the Department of Commerce has issued proposed regulations which would prohibit foreign firms "controlled in fact" by U.S. firms from engaging in any trade with

1/ Although P.L. 95-435 directs the President to encourage international actions, including economic restrictions, against Uganda, there has been no international support for the United States actions except that, according to press reports, the United Kingdom recently stopped one or more flights of supplies sought by the Ugandan government when it was pressed by the invasion from Tanzania.

Uganda even when the products contain no items of U.S. origin and are not made with U.S.-origin technical data.

These restrictions on exports to Uganda would impose a burden on industry out of all proportion to the volume of trade with that country by U.S. firms and their foreign affiliates. It is particularly disturbing that the regulations implementing the embargo against Uganda, which clearly was imposed for "foreign policy" as distinguished from "national security" reasons, might provide a precedent for other controls imposed for foreign policy reasons. We have the following comments concerning this aspect of the proposed regulations:

-- Although P.L. 95-435 extends the embargo to "any person subject to the jurisdiction of the United States," neither the statute nor the legislative history indicate how this term is to be defined. However, it appears that in taking a broad interpretation of "any person subject to the jurisdiction of the United States," the Department of Commerce is following the language of a 1977 amendment to the Export Administration Act. In December 1977, in connection with its review of emergency legislation, the Congress enacted P.L. 95-233 to amend (1) the Trading With the Enemy Act to limit its use to wartime, and (2) the Export Administration Act to establish authority for the Department of Commerce to implement non-emergency controls over "any person subject to the jurisdiction of the United States" located outside of the United States. The legislative history of this 1977 provision indicates that the Congress intended that the authority, like that exercised by the Treasury through the Foreign Assets Control Regulations and the Transaction Control Regulations, would be used only where major national security interests are involved. The proposed regulations directed against Uganda would be the Department of Commerce's first use of this authority.

-- The discussion of the Ugandan embargo on the Senate floor, where the measure was initially introduced and debated, indicates that the sponsors wanted to stop trade involving U.S. exports to Uganda and imports of Ugandan products into the United States. Indeed, the sponsors' principal extraterritorial concern was that the embargo on U.S. imports of Ugandan products (mainly coffee, the only important product in trade between the two countries) not be circumvented by purchases abroad by foreign affiliates of U.S. firms which could then transship Ugandan products (e.g., coffee) to the United States. The legislative history does not support an interpretation calling for a prohibition on exports of non-U.S.-origin products by foreign affiliates of U.S. companies.

U.S. government definitions of "person subject to the jurisdiction of the United States" issued in connection with embargoes imposed for foreign policy purposes have been more limited in scope than those imposed for national security reasons. For example, the Treasury's Rhodesian Sanctions Regulations and the Cuban Assets Control Regulations (as issued initially in 1963/1) defined "person subject to the jurisdiction of the United States" more narrowly to permit trade with those countries by U.S. firms' affiliates in foreign countries where such trade did not involve U.S. citizens or residents or goods of U.S. origin. In contrast, the Foreign Assets Control Regulations and the Transaction Control Regulations, which were implemented for national security reasons on the basis of a presidential national emergency declaration under the Trading With the Enemy Act, define "person subject to the jurisdiction of the United States" to include foreign firms controlled by U.S. companies as well as U.S. firms and persons who are citizens or residents of the United States.

Any extraterritorial application of U.S. law poses risks in terms of U.S. diplomatic relations with friendly governments whose policy on trade with the targets of U.S. regulations differs from that of the United States. Over the years successive Administrations have sought to minimize such confrontations by stopping short of dictating the activities of foreign

1/ Even though the controls against Cuba were imposed initially for a mixture of national security and foreign policy reasons, they did not --for over a decade--reach foreign affiliates of U.S. firms when U.S. persons were not involved in the management and the products to be exported were not of U.S. origin. This approach was adopted to minimize diplomatic difficulties with other countries which did not share U.S. policy objectives, but did not prevent problems from arising with Canada and Argentina in particular when the United States attempted to block transactions by U.S. firms' affiliates in these countries. Although these regulations were amended in 1975 to reach foreign affiliates controlled by U.S. firms, at the same time the U.S. government adopted the policy of approving almost automatically nonstrategic exports to Cuba from U.S.-controlled firms so long as they do not contain U.S.-origin components making up more than 20 percent of the value of the exported product. It also should be noted that the status of Cuba is different in another important respect. Not only is it not the target of an embargo by any other major trading nation, but also it is not a target of the CoCom system of international controls on exports of strategic items.

firms controlled by U.S. companies when implementing controls for foreign policy purposes.

-- It would be inappropriate, as proposed by the Department of Commerce, to include Uganda in Country Group Z (North Korea, Vietnam, Cambodia, and Cuba) which is composed of countries subject to embargoes resulting from hostilities and primarily national security concerns. A more appropriate category for Uganda would be Country Group S which now includes only Rhodesia. The controls against Rhodesia, like those against Uganda, were imposed for foreign policy reasons. Such a classification for Uganda would relieve U.S. exporters of technical data relating to certain products which are controlled for national security reasons from requiring that their worldwide licensees (affiliated and unaffiliated companies) provide assurances that they will not export the data or the product made with the data to Uganda, as well as the communist countries which are the target of national security controls.

-- In the absence of any evidence that the Congress considered the important question of the scope of the definition of "person subject to the jurisdiction of the United States" as used in the Ugandan embargo law, and in the interest of minimizing the adverse impact of U.S. controls on U.S. investments abroad and on U.S. diplomatic relations, the Department of Commerce should adopt a definition of "person subject to the jurisdiction of the United States" which does not reach U.S.-controlled foreign affiliates.

Legislative Recommendations

We believe the Congress should provide for the termination of controls in instances when (1) there is not broad international participation in such controls by the industrial nations and (2) it cannot be demonstrated that they are likely to achieve an important foreign policy objective. The controls against Uganda clearly do not meet the first test and we know of no evidence that they will meet the second. If the Congress is unwilling to repeal or modify the Ugandan embargo, we hope that it will consider amending the Export Administration Act to make clear that U.S. controls should not be extended to foreign firms controlled in fact by U.S. companies unless national security considerations require such an action.

Controls on Exports of Equipment Particularly Useful in Crime Control and Detection

The Executive branch introduced the requirement for a validated license for exports of equipment particularly useful in crime control and detection to all destinations except members of the North Atlantic Treaty Organization, Japan, Australia, and New Zealand and this policy is now mandatory by statute.

Although the products affected by these controls do not make up a significant part of our membership's exports, we offer the following observations:

-- The implementation of these controls, which apply to friendly, moderate governments (e.g., Mexico and Saudi Arabia) as well as to brutal regimes, was undertaken without determining existing U.S. exports of such equipment and, so far as we have been able to determine, no effort has been made since to determine what effect they are having on U.S. exports or on the purchasing practices of the police organizations in the countries affected. As in the other instances when the United States imposes a requirement for a validated license, it can be expected that exports would be lost because of delay, uncertainty, and the possibility of embarrassment. Since the governments of about two-thirds of mankind are affected by these controls and a number of those governments may not be sure when they will become the targets of United States "human rights" objections or other controls for foreign policy reasons, the loss might be substantial. If, as we expect, the policy is causing a shifting of purchases by foreign police organizations to non-U.S. sources, the result may be diminished U.S. equity to influence a given country's policy at a time such equity is needed to advance major U.S. interests.

-- The U.S. policy is not followed by any other country.

Legislative Recommendations

We believe the Export Administration Act should be amended to:

-- Establish a strong presumption in favor of trade with all countries except where "national security" considerations are paramount.

-- Authorize "foreign policy controls" only when the President determines that such action is necessary to (1) carry out U.S. international legal obligations flowing from actions of the United Nations, the Organization of American States, or some other

international organization of which the United States is a member and there is acceptable evidence that the action will be joined by other nations which are significant suppliers of goods and services to the target country and (2) cope with emergency situations abroad which affect vital U.S. interests.

- Require, prior to the imposition of foreign policy controls, the preparation of a detailed analysis of the proposed action covering such matters as the probable cost to the U.S. in terms of trade and diplomatic interests, support by industrial and other countries (including the availability of products from countries which will not participate in the action) and the likelihood that the action will further major U.S. national interests. This report should be submitted to the Congress and made available to the public. As the discussion of foreign policy controls has indicated, so far as we have been able to determine, the imposition of foreign policy controls has not been preceded by such an analysis.

- Require, when the controls to be imposed are not of an emergency nature, public hearings on the proposed controls to afford industry and others an opportunity to provide their views and to enable government to determine more accurately the probable cost of the proposed controls in terms of U.S. economic interests. (Such a procedure would have posed no special problems prior to the imposition of controls on exports to the Soviet Union of products and technical data related to oil or gas equipment or on exports to the South African military and police services.)

- Establish a "sunset" procedure whereby any control imposed by the President for foreign policy purposes would be terminated unless specifically authorized by the Congress. We believe that controls should expire no later than six months after their introduction unless approved by the Congress. Where the Congress has authorized their extension, they should be subject to further extension at intervals of no more than one year so that their impact may be assessed. If the Congress should decide to give the President broader authority, it should require continuing audit of--and periodic reports on--the effects of the controls and the progress toward achievement of U.S. foreign policy objectives.

  Such a provision would be prospective in nature. In its amendments to the Export Administration Act this year, we believe the Congress should adopt provisions

calling for the expiration of existing foreign policy controls within six months unless approved by the Congress. As our discussion has indicated, we believe the present controls were introduced without adequate analysis as to their probable cost and effectiveness, and we question whether they are serving any important U.S. foreign policy interests.

- Terminate the virtual embargo on exports to Uganda or modify the statute to permit trade in peaceful goods. In addition, the Act should be amended to make clear that U.S. controls should not be extended to foreign firms controlled by U.S. companies unless national security considerations require such action.

- Establish procedures--analogous to those of the "national security" provisions of the Export Administration Act--which would set time limits for the consideration of applications for export licenses and would require that exporters be informed as to the status of their applications.

II. National Security Export Controls

The objective of national security export controls is understood and supported by industry. To the extent that advanced technology and products with military applications reach the Soviet Union prematurely and diminish U.S. lead time with respect to military capabilities, national security is endangered and the "leakage" must be countered by increased outlays for national defense. However, technological developments cannot be contained indefinitely and the most that can be achieved is some delay in these developments reaching the Soviet Union.

Export control policy involves broad and difficult questions concerning timing and "trade-offs." The timing of the release of new technologies and products is extremely important; if a new technology is held too long, the international advantages--commercial and other--to be derived from it may be minimal or even lost. Judgments concerning "trade-offs" also are difficult--e.g., do the benefits to national security derived from denial (or, more accurately, from delay) outweigh the economic disadvantages to the United States? A U.S. policy of denial which simply leads to the purchase of equivalent technology and products from other countries does not serve U.S. interests. It must be remembered that the earnings from commitment of new technology to international trade provides the wherewithal for further technological advance. In view of the continuing technological advances in the United States, communist countries and third countries (particularly the industrial countries of Western Europe and Japan), determinations as to whether the United States and its CoCom partners can effectively deny a capability to the Soviet Union frequently are difficult.

Exporter objections to the national security export controls system are directed less at the objectives than the administration of controls--the system for review of licensing applications, the specific items subject to control, and the delay and resulting uncertainty which are frequently encountered.

Organization

The export licensing process involves a number of departments and agencies in order to obtain a broad range of viewpoints, but its structure and method of operation (including the unanimity rule followed in the Advisory Committee on Export Policy and the Operating Committee) appear to result in a bias against granting licenses. In the emotional atmosphere surrounding trade with the Soviet Union and other communist countries, it appears that an argument that a particular export might have some military application normally prevails over other factors--such as the long-range trade, economic, and competitive effects of denial--which should go into an evaluation of the "trade-offs" involved in given transactions.

While it is best left to the Executive branch to determine the precise organizational format for the most effective and expeditious method of controls administration, some congressional direction to the Executive branch to modify the present unanimity rule seems in order. (We also believe the Export Administration Act provisions according a special role to the Department of Defense in the licensing review process should be modified.) We find attractive the framework suggested by former Secretary of State Dean Rusk during his appearance before the Senate Committee on Banking, Housing and Urban Affairs last October./1 Mr. Rusk suggested placing the decision-making responsibility for export licensing on the Secretaries of Commerce, State, and Defense. Below these individuals there would be an operational group of senior officers who would be responsible for reviewing applications and making prompt decisions. Decisions would be by majority vote and the minority member could decide whether to appeal the decision to the cabinet level. If there still were differences at the cabinet level, the minority member could appeal to the President. Other departments and agencies with an interest in a particular transaction could provide their views, but would not have a vote.

Mr. Rusk also made two other observations which we believe are very pertinent to the U.S. approach to export controls administration:

> . . . A close examination of the decisions we have made about restrictions imposed for national security considerations over the past twenty years would reveal, I suspect, that most of these decisions

1/ See "Statement of Dean Rusk, Professor of International Law, School of Law, University of Georgia," Hearings Before the Committee on Banking, Housing and Urban Affairs, United States Senate, Ninety-Fifth Congress, October 10-11, 1978, pp. 145-157.

have had little or no consequence to our national security. The concept of scientific, technological and industrial "secrets" succumbs to the very nature of science, the availability of products from other nations, and the ability of other nations to develop for themselves what we refuse to sell.

* * *

. . . There will be some decisions on these [export control] matters, made according to law, to which some Senators and Congressmen may object. Many Senators and Congressmen have access to or lead Committees or Subcommittees which could assert some basis for investigation, hearings, reports, and public clamor. If individual decisions are to be frequently challenged by this or that Committee or Subcommittee, despite the law, this becomes government by intimidation and the resulting timidity of both officials and businessmen could well frustrate the very purposes of the Congress. . . .

The Importance of Minimizing the Volume of Applications

As noted earlier in this statement, the volume of applications for validated licenses--for exports under national security as well as foreign policy controls--is expected to reach a total of at least 77,000 this year. In addition to the problems this poses in terms of delay and uncertainty, it represents an enormous administrative burden for exporters and for the government.

This situation underlines the importance of minimizing the products and technologies subject to national security controls (as well as minimizing foreign policy and other export restrictions). With respect to national security controls, the government should seek to define--and industry should help in defining--those technologies and products which it is most important for the United States to protect in the interest of national security. In this connection we find encouraging DOD's attempt to develop a list of critical technologies:

-- It holds out the prospect that, as government determines which technologies and products are important and which are not, clearer guidelines will emerge concerning trade with communist countries. Presumably, this will result in more products--and perhaps some types of unpublished technical data--being permitted to go to communist countries without a validated license and a reduction in the number of products which require licenses for exportation to other

areas in order to prevent diversion. Such a result would of course enable the giving of more attention to applications involving transactions of truly important items.

-- The refinement of U.S. interests, coupled with revision of CoCom controls now under way, hopefully will lead to better understanding among all CoCom members as to precisely which items (technologies and products) are to be controlled.

Needless to say, the process of defining the most important technologies and products must be a continuing activity as new technologies and products are developed and the competitive position of the United States changes vis-a-vis the Soviet Union and other industrial nations. This raises the question of determining accurately "foreign availability," a subject that, deservedly, is now receiving major attention in the Executive branch. We believe that the responsibility within government for determining foreign availability should be placed primarily with the Department of Commerce which has an existing staff of technical specialists and day-to-day contact with exporters. The Department does of course receive information bearing on foreign availability from exporters, DOD product and technology specialists, and from other departments and agencies and the intelligence community. Since there still are doubts in government frequently as to the availability abroad of a particular product or technology, we believe the matter is of sufficient importance that the government should expand its staff of scientific and commercial officers based in the major industrial countries to supplement its other sources of information.

Legislative Recommendations

In the interest of a more positive U.S. policy toward exports and to minimize the paperwork connected with export license applications and to facilitate their most expeditious handling, we believe the provisions of the Export Administration Act calling for the Secretary of Defense to review proposed exports to any country to which exports are restricted for national security purposes should be modified. While it probably would not be necessary, the Act could be amended to make it clear that the Secretary of Defense should be included in any group established by the Executive branch to administer export control policy.

We also believe it would be helpful to provide, at least in the legislative history of the 1979 amendments, (1) direction to the Executive branch to abandon the unanimity rule in export licensing decisions and (2) greater discretion for the Secretary of Commerce with respect to licensing decisions and the determination of foreign availability.

III. Other Matters

We have brief comments concerning two other matters related to the Export Administration Act: the provisions relating to confidentiality of information submitted to the government by exporters pursuant to the Act and the antiboycott provisions.

Confidentiality Provisions

There are two cases in the courts involving the Freedom of Information Act (FOIA) which could result in the disclosure of information submitted by exporters to the government pursuant to provisions of the Export Administration Act. In a 1978 decision by the Court of Appeals for the District of Columbia in American Jewish Congress v. Kreps, the court held that Section 7(c) of the Export Administration Act was not a statute which meets the FOIA exemption ("Exemption 3") from disclosure of information specifically exempted by other statutes. Although Section 7(c) states that disclosure of information deemed confidential or with reference to which a request for confidential treatment is made by the person furnishing such information shall not be disclosed unless the head of a department or agency determines that withholding such information is contrary to the national interest, the court found that this element of executive discretion was sufficient to disqualify Section 7(c) under "Exemption 3" of the Export Administration Act.

A second case, Twin Coast Newspaper, Inc. v. United States Department of Commerce, et. al., filed in the U.S. District Court for the District of Columbia, calls for the public release of some 15 million Shipper's Export Reductions (SEDs) on file and another 9 million filed each year. These SEDs, which are submitted pursuant to the Export Administration Act, contain information on the price, quantity, destination, route, etc., of exports which exporters would not voluntarily make public.

In view of this litigation, we believe the Congress should amend the Act at this time to show even more clearly congressional intent concerning disclosure of information submitted pursuant to the Act. This could be accomplished either by leaving no discretion to agency heads to disclose or by listing in the Act the specific types of information which may not be disclosed.

Antiboycott Provisions

We realize that, in the absence of an Administration initiative, there is little likelihood that there will be any reduction in the massive regulatory burden imposed on U.S. firms by the antiboycott provisions of the Export Administration Act, the "Ribicoff Amendments" to the Tax Reform Act of 1976 and interpretations of antitrust law applicable to foreign boycott practices. However, we offer the following comments concerning these government measures:

-- The various regulations have resulted in some lost business in the Middle East because of U.S. firms' inability to comply with Arab boycotting country conditions, and U.S. firms undoubtedly have been deterred from undertaking business in the Middle East because of the legal complexities of such business.

-- Although the form of the Arab boycott appeared to pose a potential problem for the United States in terms of Americans discriminating against other Americans, the numerous hearings in both Houses of Congress concerning the boycott produced only two or three instances where this actually occurred. In those cases, the "discrimination" was directed by the Arab purchasers and presumably would be permissible under present law.

-- The small number of U.S. blacklisted industrial companies with whom we have contact did not seek the "protection" afforded by the antiboycott statutes and their enactment has not broadened those firms' opportunities for business in the Middle East. That is, the firms which the legislation was intended to help have not been helped.

-- No other country has adopted antiboycott measures comparable to those of the United States.

* * *

We hope this statement will prove useful to the Subcommittee. If we can be of any further assistance, please let us know.

Respectfully,

Charles Stewart

President

CWS:sss

APPENDIX A

USE OF ECONOMIC DENIAL MEASURES TO INFLUENCE OTHER COUNTRIES' POLICIES--Excerpts From the Views Expressed by Dean Rusk, George W. Ball, George F. Kennan, and Edwin M. Martin

DEAN RUSK

> . . . We should begin by reminding ourselves that trade occurs when it is of benefit to both parties. When we refuse to trade for security or political reasons, we should recall that we are depriving ourselves of the benefits of that trade, whether in the form of convertible currencies or goods and services which we ourselves need for our own national life. During the post-war decades when we were in a strong trade position, many of us tended to think of trade as a "favor" which we were doing for someone else. That attitude is a luxury which we may not be able to afford with our present large trading deficit. We must turn the question around and ask ourselves what ought to be the policies and practices which justify denying ourselves the benefits of trade in a tumultuous and diverse world.
>
> When we look at the present world situation we can count about 30 countries which might be called constitutional democracies, whose institutions and attitudes toward political values are reasonably congenial to us. We can be very critical about some aspect of almost every one of the rest of the 150 nations in the international community. I would strongly advise against a drift into self-imposed economic isolationism by weighing trade in terms of approval or disapproval of the institutions of other trading nations./1

GEORGE W. BALL

> . . . The efficacy of such economic denial [the use of export controls and credit restrictions to try

1/ Informal Opening Remarks by Dean Rusk before the Senate Committee on Banking, Housing and Urban Affairs, October 11, 1978.

to dissuade foreign countries from pursuing certain lines of policy] depends on many factors: the size and industrial competence of the country towards which that policy is directed, the degree to which the country depends on outside resources, the extent to which other major industrial suppliers join our effort and, finally, the type of conduct we are seeking to influence--whether it relates to the external activities of the country (that is, its relations with other countries) or to its internal relations with its own nationals. In my judgment, the use of economic denial as an instrument to influence the policies of other nations has been grossly overrated. We can sometimes influence the policies of a small, weak nation heavily dependent on outside assistance by threatening to terminate economic help, particularly when that threat implies the loss of political support. One example of this is the way President Eisenhower persuaded the Israeli Government to withdraw from the Sinai after the Suez affair in 1956.

But when we are dealing with a major nation, such as the Soviet Union, which does not depend on us for economic help, I think it highly doubtful that, by threatening to deny certain supplies, we can influence their conduct in any material way. Indeed, if we signal to the world that we are blocking, or threatening to block, such transfers to press a powerful nation to alter its pattern of conduct, we may only strengthen the hands of its most aggressive leaders. A significant factor in foreign policy is national pride and no political leader of a major country can ever admit, either by word or action, that he is taking instruction from the United States Government. Thus, though the threat to block certain transactions may be applauded by the American people, it is likely to do little to advance American interests.

* * *

Even when a nation is far weaker and less industrially self-sufficient than the Soviet Union, there is no serious base for thinking that we can, by economic denial, bring about a benign change in the structure of its society or the treatment of its own nationals. . . ./1

1/ Statement by George W. Ball before the Senate Committee on Banking, Housing and Urban Affairs, October 10, 1978.

GEORGE F. KENNAN

> . . . Misgovernment, in the sense of the rise to power of the most determined, decisive, and often brutal natures, has been the common condition of most of mankind for centuries and millennia in the past. It is going to remain that condition for long into the future, no matter how valiantly Americans insist on tilting against the windmills. American policy-makers would do better to concentrate on those areas of international relations where the dangers and challenges are greatest and where America has the greatest possibilities for useful and effective action. These, as it happens, are ones that have little relation to the cause of democracy as such. And they are quite enough to absorb all the energies and resources we can devote to them./1

EDWIN M. MARTIN

> . . . What is needed in countries that are politically repressive, socially discriminatory, or economically backward as to the size and/or distribution of their per capita GNP is, above all, change. Involvement with and not isolation from the outside world is called for.
>
> In fact, a worsening economic situation created by a loan boycott is most often apt to increase political repression to maintain order and impose austerity. A depressed economy is never a fertile breeding ground for democratic political structures or political parties devoted to liberal principles. . . .
>
> . . . [T]he changes we seek in the respect given to human rights in any and all of its dimensions are in

1/ The Cloud of Danger: Current Realities of American Foreign Policy, George F. Kennan, Little, Brown and Company, 1977, pp. 45-46. Mr. Kennan had a long career in the U.S. Foreign Service and his assignments included the position of Ambassador to the Soviet Union and Ambassador to Yugoslavia, and Director of the Policy Planning Staff in the Department of State. Since retirement from the Foreign Service, he has been a member of the Institute for Advanced Studies in Princeton, New Jersey. He is the author of several books on U.S. foreign policy, with special concentration on the history of, and U.S. relations with, the Soviet Union.

individual attitudes. Only thus can respect permeate daily life as well as control high political decision-makers. Concessions at the top under outside pressure, not based on firm beliefs, are no guarantee of lasting improvement; they are apt to have to be bought time and time again. . . ./1

1/ See Statement by Edwin M. Martin, in U.S. Participation in Multilateral Development Institutions; Hearings Before the Subcommittee on International Development Institutions and Finance of the Committee on Banking, Finance and Urban Affairs, House of Representatives, Ninety-Fifth Congress, Second Session, February 28; March 14 and 15, and May 18, 1978, p. 416. In the course of his diplomatic career, Mr. Martin served as Ambassador to Argentina, Assistant Secretary of State for Economic Affairs, Assistant Secretary of State for Latin American Affairs, and Chairman, Development Assistance Committee, Organization for Economic Cooperation and Development. He currently is affiliated with the World Bank's Consultative Group on Food Production in Developing Countries. Although Mr. Martin's statement dealt with the U.S. efforts to influence human rights practices in foreign countries through the multilateral financing institutions, he indicated that his views would apply to U.S. bilateral relations as well.

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COPPER & BRASS FABRICATORS COUNCIL, INC.
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SUITE 440
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March 26, 1979

The Honorable Adlai E. Stevenson
Chairman, Subcommittee on
International Finance
Senate Banking, Housing and Urban
Affairs Committee
456 Russell Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

The Copper and Brass Fabricators Council, Inc. submits this letter to you in connection with your current review of the Export Administration Act of 1969 (the "Act"), which expires on September 30, 1979. We are especially concerned with the administrative framework for implementing the provisions of the Act which require the monitoring and control of exports to prevent potential harmful economic effects of domestic supply shortages. During the course of your statutory review we believe that the Committee should focus particular attention on the organization and implementation of the short supply monitoring and control programs.

The Council is a membership association formed for the purpose of serving the interests of domestic fabricators of copper and brass mill products. The Council consists of 24 domestic brass mill companies, which together account for approximately 85% of the total domestic production of these products. A list of the members of the Council is included as an enclosure hereto.

The brass mill industry is composed of mills that roll, draw, or extrude from copper and copper alloys various types of mill products such as sheet, strip, plate, tube, pipe, rod, and non-electrical (or mechanical) wire.

Brass mill products constitute the basic raw materials for many manufacturing industries. They are used extensively in a wide variety of industries including building construction (especially residential building), automotive, appliance,

electronic, industrial and commercial fastenings, heat exchangers, and general metal fabrication.

On average, the metal intake of a brass mill is composed of about 45% copper scrap, the remainder refined copper and alloying elements such as zinc and the like.

Due to the nature of copper scrap production, in the event of a domestic supply shortage arising out of excessive exports, the regeneration of scrap to fill domestic industrial needs would require a substantial amount of time. During this period, industrial users of scrap would be forced to rely on higher priced refined copper which would increase costs to the industry and consumers. The production of refined copper requires up to six-fold the amount of energy as is required to process copper scrap for use in brass mill products.

As you know, in the Export Administration Amendments of 1974, Congress clarified its intention that export controls be used as a preventive measure in a timely manner to protect the economy from excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand for scarce materials.*/ To implement this policy, the 1974 Amendments require that the Secretary of Commerce monitor exports and contracts for export whenever the volume of exports in relation to domestic supply

(1) contributes or may contribute to an increase in domestic prices, or contributes or may contribute to a domestic shortage, and

(2) such price increase or shortage has or may have a serious adverse impact on the economy.**/

During the course of your current review of the Export Administration Act, we think it is important that the Committee examine: (a) the criteria used by the Department of Commerce in determining whether to monitor exports or apply short supply controls, (b) the organizational structures and procedures adopted by the Department to execute the short supply provisions, and (c) the cases in which these criteria and procedures have been implemented since the 1974 Amendments.

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*/ Export Administration Amendments of 1974 § 2, 50 U.S.C. App. § 2402 (2)(A) (Supp. 1978). House Conference Report, H.R. Rep. No. 93-1412, 93d Cong., 2d Sess. 9-10 (1974).

**/ Export Administration Amendments of 1974 § 3(a), 50 U.S.C. App. § 2403 (c)(1) (Supp. 1978).

We would be pleased to meet with you or your staff to review further the short supply issues and to assist in formulating questions to submit to the Commerce Department which would elicit information useful in evaluating the current monitoring system and in identifying potential weaknesses. We recognize that, at the current time, the Committee is concentrating on other aspects of the Export Administration Act. We believe, however, that the importance of the short supply issue should not be overlooked and should receive your careful attention during your review of the Act.

Sincerely,

Robert J. Wardell
President

cc: Members of the Subcommittee

Enclosure

MEMBERSHIP LIST

The Anaconda Company-Brass Division
414 Meadow Street
Waterbury, Connecticut 06720

Bridgeport Brass Company
30 Grand Street
Bridgeport, Connecticut 06602

Bridgeport Rolling Mills Company
Bridgeport, Connecticut 06601

The Bristol Brass Corporation
Box 1320
Bristol, Connecticut 06010

Century Brass Products Inc.
59 Mill Street
Waterbury, Connecticut 06720

Cerro Copper Products Co.
A Member of The Marmon Group
P. O. Box 681
East St. Louis, Illinois 62202

Cerro Metal Products
Division of The Marmon Group, Inc.
Bellefonte, Pennsylvania 16823

Chase Brass & Copper Co.
20600 Chagrin Boulevard
Cleveland, Ohio 44122

Chicago Extruded Metals Company
600 Hunter Drive
Oak Brook, Illinois 60521

Hussey Metals Division
Copper Range Company
Leetsdale, Pennsylvania 15056

Linderme Tube Co.
1500 East 219th Street
Cleveland, Ohio 44117

The Miller Company
99 Center Street
Meriden, Connecticut 06450

The National Copper & Smelting Co.
6075 Cochran Road
Solon, Ohio 44139

New England Brass Company
Taunton, Massachusetts 02780

New Haven Copper Operations
Cities Service Company
79 Main Street
Seymour, Connecticut 06483

Olin Corporation-Brass Group
East Alton, Illinois 62024

Phelps Dodge Brass Company
1050 Wall Street West
Lyndhurst, New Jersey 07071

Reading Industries, Inc.
P. O. Box 126
Reading, Pennsylvania 19603

Revere Copper and Brass Incorporated
605 Third Avenue
New York, New York 10016

Robintech Incorporated
P. O. Box 2342
Fort Worth, Texas 76101

Scott Brass, Inc.
1637 Elmwood Avenue
Cranston, Rhode Island 02910

Ullrich Copper Inc.
2 Mark Road
Kenilworth, New Jersey 07033

Volco Brass and Copper Company
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BEFORE THE
SUBCOMMITTEE ON INTERNATIONAL FINANCE
SENATE COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS

HEARINGS RE: EXTENSION OF EXPORT ADMINISTRATION ACT

Mr. Chairman:

My name is M. J. Mighdoll, Executive Vice President of the National Association of Recycling Industries, Inc. (NARI). My offices are located at 330 Madison Avenue in New York City, and I appear before the Committee today in support of either (a) simple extension of the Export Administration Act in its present form, or (b) possible further liberalization of the Act so it will operate to facilitate and increase exports from the United States at a time when our nation is suffering the most devastating balance of payments deficits in its history.

More specifically, NARI is unalterably opposed to the imposition of modified, more stringent export controls on recyclable scrap iron and steel or on any other recyclable commodity. The enactment of such legislation at this perilous economic stage would have a serious, adverse impact on the domestic recycling industry throughout the United States and it would lead to spiraling price increases, international shortages of vitally important recyclable materials and increased balance of payments deficits for the United States.

This paper is made from Recycled Material

THE CRUCIAL IMPORTANCE OF UNRESTRICTED MAXIMUM INDUSTRIAL RECYCLING OF MATERIALS TO BOTH THE UNITED STATES AND ITS TRADING PARTNERS ABROAD

NARI is the national trade association for the nation's metals, wastepaper, textile and rubber recycling industries. Its membership consists of more than 850 firms located throughout the United States, all of which are engaged in the collection, processing or industrial utilization of the above recyclable materials. Each year, America's recyclers recover millions of tons of recyclable ferrous and nonferrous metals, including iron and steel, copper and brass, aluminum, lead, zinc, nickel, stainless steel, wastepaper, textiles and rubber from solid waste streams in all parts of the United States. About 40 to 50 million tons of ferrous scrap are recovered annually. Some 12 million tons of paper and close to 3 billion pounds of textiles are recycled each year. Thousands of tons of rubber also move through the recycling process.

In addition to meeting domestic needs, the recycling industries represented by NARI ship surplus tonnages overseas to America's trading partners. This export activity helps the nation's balance of payments position and expands international business opportunities.

Energy conservation, of course, is a major priority for the United States and its allies overseas. Costs of energy are soaring, and industries, both here in the United States and abroad, use 40% or more of all the energy consumed. Obviously, the issue here and abroad, therefore, is clearly one of attaining most efficient and economic industrial utilization of energy at every level of industrial production.

Congress has repeatedly recognized that the role of resource recovery or industrial recycling is thus essential to true industrial energy conservation. Federal studies have uniformly confirmed that industrial utilization of recycled metals, paper, textiles, rubber and other materials saves significant quantities of energy units.

In the case of aluminum, the energy savings are as high as 96%. In copper, they are more than 85%. Recycling iron and steel, zinc, lead, paper and rubber results in energy savings of over 60%.

Thus, it is imperative to both the economic and energy conservation interests of both the United States and its trading partners overseas that no unnecessary, shortsighted, artificial controls be imposed on the flow of recyclable materials from the solid waste stream to industrial plants, located in the United States and abroad. In 1979, the world has grown smaller and more inter-dependent than ever before -- if the United States reduces the flow of energy-saving recyclable materials to Europe or Japan, the increased industrial energy demands automatically created in those foreign nations immediately adversely impacts the availability and price of industrial energy here in the United States.

Moreover, unrestricted ability of the recycling industries here in the United States to extract ever-increasing volumes of recyclable metals, paper, textiles and rubber from our domestic solid waste streams for utilization both here and abroad is also absolutely indispensable to sound environmental management and

solid waste control in this country. Recycling transforms the environmental liability of millions of tons of solid waste materials into new raw material assets. Thus, the recycling industry absorbs millions of old vehicles and other metallic wastes, using giant shredding equipment and other technology to extract iron, copper, aluminum, lead, zinc and other valuable materials from industrial, commercial and post-consumer solid waste streams. The industry recaptures the millions of tons of old newspapers, corrugated and paperboard packaging that comprise over half of all municipal solid waste, recycling the used fibers into new paper and paperboard products.

Accordingly, recycling here in the United States (whether for industrial utilization here or abroad) reduces mounting solid waste disposal costs for cities and states throughout the nation. These costs are now estimated at over $6 billion annually, and they continue to climb. With available solid waste landfill sites, particularly in urban areas, rapidly disappearing, many communities must now transport their wastes greater distances at considerable expense.

Finally, maximum industrial recycling helps diminish air and water pollution, both here in the United States and abroad. Federal Government studies have demonstrated that the utilization of recycled metals, fibers and other materials in industrial production results in greatly reduced levels of pollution.

Throughout the nation, therefore, states and communities are developing solid waste control and resource recovery facilities. As these facilities come on stream, the ability of the recycling

industry to maximize its recovery and utilization of recyclable materials -- both here in the United States and for export abroad -- will be critical to the economic viability of these new environmental installations.

IN THE LAST DECADE, THEREFORE, CONGRESS HAS PASSED A SERIES OF LAWS DIRECTING THE FEDERAL GOVERNMENT TO REMOVE ALL ARTIFICIAL BARRIERS TO MAXIMUM INDUSTRIAL RECYCLING AND TO CREATE NEW DEMAND AND MARKETS FOR RECYCLABLE MATERIALS

Congress, of course, has been fully aware of the numerous vital economic and environmental roles industrial recycling here in the United States and in foreign nations has played in the past, and more importantly, the much more decisive roles it can play in the future as natural resources and energy become less abundant.

Thus, in the National Environmental Policy Act of 1970, Congress directed all federal agencies -- the Department of Commerce included - to "use all practicable means . . . to enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources" (42 U.S.C. 4331(b)(6)).

In 1976, Congress went further and enacted the Resource Conservation and Recovery Act (42 U.S.C. 6901, et seq.). Section 2 of that Act contains the following Congressional Findings (42 U.S.C. 6901):

"(b) Environment and Health - The Congress finds with respect to the environment and health that --

(1) although land is too valuable a natural resource to be needlessly polluted by discarded materials, most solid waste is disposed of on land in open dumps and sanitary landfills . . . .

(6) alternatives to existing methods of land disposal must be developed since

many of the cities in the United States will be running out of suitable solid waste disposal sites within five years unless immediate action is taken.

"(c) Materials - The Congress finds with respect to materials that --

"(1) millions of tons of recoverable material which could be used are needlessly buried each year;

"(2) methods are available to separate usable materials from solid waste; and

"(3) the recovery and conservation of such materials can reduce the dependence of the United States on foreign resources and reduce the deficit in its balance of payments."

Having made these "Findings," Congress enacted the following statutory directives to the Secretary of Commerce (42 U.S.C. 6951):

"The Secretary of Commerce shall encourage greater commercialization of proven resource recovery technology by providing --

"(1) accurate specifications for recovered materials;

"(2) stimulation and development of markets for recovered materials."

More specifically, Congress directed the Secretary (42 U.S.C. 6953):

"Development of markets for recovered materials

"The Secretary of Commerce shall within two years after October 21, 1976, take such actions as may be necessary to --

"(1) identify the geographical location of existing or potential markets for recovered materials;

"(2) identify the economic and technical barriers to the use of recovered materials; and

"(3) encourage the development of new uses for recovered materials."

Finally, just last year, in November, 1978, President Carter signed into law the National Energy Conservation Policy Act of 1978, which requires the Secretary of Energy to establish targets for maximum increases in the recovery of energy-saving solid waste materials during each year for the next ten (10) years (P.L. 95-619, §461). The "Congressional Findings" section of that statute states:

"The Congress finds that --

"(1) significant amounts of industrial energy and other scarce natural resources are conserved in certain major energy-consuming industries where recovered materials are utilized in their manufacturing operations;

"(2) substantial additional volumes of industrial energy and other scarce natural resources will be conserved in future years if such major energy-consuming industries increase to the maximum feasible extent utilization of recovered materials in their manufacturing operations;

"(3) millions of tons of recoverable materials, which would be used by industries are needlessly wasted and buried each year at great cost to State and local governments, while technology and methods exist whereby those materials could readily be made available for utilization; and

"(4) the recovery and utilization of such recovered materials can substantially reduce the dependence of the United States on foreign natural resources and reduce the growing deficit in its balance of payments."

THE SECRETARY OF COMMERCE AND THE SECRETARY OF ENERGY WILL NEVER ATTAIN MAXIMUM INDUSTRIAL RECYCLING AND RESOURCE RECOVERY OF SOLID WASTE MATERIALS IN THE UNITED STATES IF THE EXPORT ADMINISTRATION ACT IS AMENDED TO REQUIRE UNREASONABLE, UNWISE, UNNECESSARY EXPORT CONTROLS ON RECYCLABLE METALS OR OTHER RECYCLABLE MATERIALS.

THE ACT SHOULD THUS BE EXTENDED IN ITS PRESENT FORM OR SUBSTANTIALLY LIBERALIZED INSOFAR AS EXPORTS OF RECYCLABLE MATERIALS ARE CONCERNED

Nothing could possibly be more destructive of the industrial recycling and resource recovery goals set forth in the Resource Conservation and Recovery Act of 1976 and the National Energy Conservation Policy Act of 1978 than blind enactment at this critical stage in our country's economic and environmental history of crippling, unreasonable amendments to the Export Administration Act, which would require the Department of Commerce to impose unreasonable, unwise, unnecessary artificial "export controls" on the free exportation of recyclable metals or other recyclable materials to our nation's trading partners abroad.

As presently written, the Export Administration Act correctly recognizes (50 App. U.S.C. 2401):

> "(3) The unwarranted restriction of exports from the United States has a serious adverse effect on our balance of payments, particularly when export restrictions applied by the United States are more extensive than export restrictions imposed by countries with which the United States has defense treaty commitments;
>
> "(4) The uncertainty of policy toward certain categories of exports has curtailed the efforts of American business in those categories to the detriment of the overall attempt to improve the trade balance of the United States.
>
> "(5) Unreasonable restrictions on access to world supplies can cause worldwide

> political and economic instability, interfere with free international trade, and retard the growth and development of nations."

Thus, in its present form, the Export Administration Act authorizes the Secretary of Commerce to impose export controls only when such action is necessary --

> "to protect the domestic economy from the excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand (and) to the extent necessary . . . to the national security of the United States." [Emphasis supplied.]

This statutory policy has certainly worked well during some of the most turbulent economic periods in our nation's history, and there is no valid reason to amend the Export Administration Act at this time to provide stricter controls -- especially stricter controls on exports of recyclable materials, the recovery of which from growing volumes of solid waste Congress is seeking to maximize.

Indeed, considering the Government's recent announcement that the United States' deficit in balance of payments is currently at an all-time high, if the export control provisions of the Act are to be modified at all, they really should be substantially liberalized.

Basically, therefore, NARI urges this Committee either --

(1) simply to extend the Export Administration Act for several years in its current form, or

(2) liberalize the Act to prevent unnecessary, unwise Government "monitoring" of exports of recyclable materials -- or controls on such exports -- unless it is clear that such actions are essential to the national security of the United States.

THE DEPARTMENT OF COMMERCE, IN COOPERATION WITH THE COUNCIL ON WAGE AND PRICE STABILITY, RECENTLY CORRECTLY APPLIED THE EXPORT ADMINISTRATION ACT TO REFUSE TO IMPOSE DEVASTATING EXPORT CONTROLS OR MONITORING PROCEDURES ON EXPORTS OF RECYCLABLE SCRAP IRON

For years, the domestic steel industry and its trade association, the American Iron and Steel Institute, have been urging both Congress and the Executive Branch to adopt an "economic straightjacket policy" which would constantly artificially insulate the steel industry against both imports of foreign steel and exports of domestic scrap iron.

Industry trade papers report that recently these"steel campaigners" organized a massive lobbying effort, the sole purpose of which is to convince Congress or the Department of Commerce, or both, that strict quotas should be clamped on U. S. exports of recyclable scrap iron and steel.

Fortunately, after detailed study, the Department of Commerce earlier this month flatly rejected the steel industry's spurious proposals -- so now, the American Iron and Steel Institute and some of its members are trying to sell the same bill of goods to Congress.

Clearly, however, the Commerce Department's rejection of export controls in this case was correct in every respect, and there is no reasonable basis of any kind for special legislative treatment of the steel industry in the Export Administration Act at this time.

Exports of ferrous scrap in January, 1979, the latest month for which the Census has issued statistics, totaled 795,370

tons -- down significantly from September, October, November and December monthly export levels. Thus, this is the third consecutive month in which exports of ferrous scrap declined. Since December, 1978, exports declined 13%, and the January total is approximately equivalent to the months of June, July and August, 1978, before exports temporarily rose somewhat. On an annualized basis, the current export level is below that of 1975, and the present level is within the range of both the 1976 and 1978 levels.

Moreover, as the attached exhibits demonstrate --

(i) during the period from 1970-1978, scrap iron's share of the domestic markets for iron and steel-making raw materials (virgin ore and recyclable scrap) has never exceeded approximately 25% (Exhibit A);

(ii) during 1978, purchased scrap iron's share of the domestic markets for iron and steel-making raw materials (ore and scrap) has never exceeded 25% (Exhibit B);

(iii) during the period 1970-1978, (a) the relationship of scrap iron exports from the United States to "purchased scrap consumption" in the United States during 1978 is roughly the same as it has been in past years, and (b) the relationship of scrap iron exports to "total steel production" in the United States was estimated at only 6.5%, i.e., approximately the same or lower than the relationship in past years (Exhibit C) -- and during 1978, the month-by-month comparison of the same relationships of scrap exports to total scrap consumption and total steel production connotes nothing startling, alarming, or significantly different (Exhibit D), and finally,

(iv) the relationship of scrap prices to finished steel prices in 1978 is not substantially different from what it has been in past years -- and while finished steel prices have steadily increased over the period from 1970 to 1978 (they have more

than doubled), 1978 scrap prices are actually far lower than scrap prices in 1974 and 1976 (Exhibit E).

Plainly, therefore, the Department of Commerce was eminently correct when it ruled that scrap iron exports are not at unreasonable levels, nor are they the cause of any serious inflationary trend in the domestic steel industry. In fact, the expensive and well-publicized lobby campaign of the steel industry itself was responsible for actually driving scrap prices higher by falsely raising the specter of export controls and short supplies abroad. It caused scrap purchasers overseas to engage in "scare buying" -- at higher prices and in increased quantities, and if the Commerce Department had not acted promptly and courageously to stop the vicious spiral foolishly created by the domestic steel industry, the consequences could have further deteriorated artificially and without reference to the true market forces of supply and demand.

To those who know the facts, it is clear that any problems actually being experienced by the domestic steel industry are of its own making. The domestic steel industry establishes its own production and scrap purchasing policies and prices. Its constant failure properly to anticipate its raw material needs and to purchase scrap iron and steel on a regular, continuing basis when low price levels prevail are the real causes of its alleged problems. Scrap iron is readily available at reasonable prices at all times. Thus, the steel industry's persistent attempts to force export controls of recyclable scrap iron must be considered nothing more than an unveiled attempt to control prices of

that raw material at a very low, depressed level through the utilization of a Government control mechanism intended by the Export Administration Act for only other, legitimate purposes.

Congress must understand that imposition of export controls on recyclable materials -- whether it be scrap iron or some other recyclable commodity -- is always counterproductive to Congress' contemplated expansion of domestic supplies to maximum levels. Controls distort normal supply relationships and do grievous harm to the marketing patterns for these solid waste materials, both here in the United States and abroad. The present use of scrap iron by the domestic steel industry, for example, is not expanding -- the latest data shows that purchased scrap consumption has remained practically the same for the last three (3) years. Scrap exports as a percentage of domestic production in 1978 were lower than in 1975, and approximately equal to 1976. It is only higher than in 1977 because of the severely depressed state of the international ferrous scrap export market in that year.

It is also interesting to note, of course, that the steel industry, which seeks protectionism at both ends of its marketing cycle, is being challenged by the Justice Department. Noting that the steel industry's economic health has steadily improved in recent years, the Justice Department contends there is no further need for artificial quotas on certain types of foreign steel imports at this time.

CONCLUSION

1. The Export Administration Act should either simply

be extended in its present form, or in the alternative, its export control provisions should be liberalized insofar as exports of recyclable materials are concerned -- i.e., export controls should be applied only where required by national security.

2. The steel industry's baseless plea for stringent export quotas on scrap iron must be rejected, as they were rejected earlier this month by the Department of Commerce.

RAW MATERIAL MARKET SHARE OF PURCHASED FERROUS SCRAP

(In Thousands of Tons)

1970 - 1978

	Total Ore & Scrap Consumption	Purchased Scrap Consumption	Share of Market For Scrap
1970	175,685	34,148	19.4%
1971	164,032	34,208	20.9%
1972	182,511	41,671	22.8%
1973	205,123	44,711	21.8%
1974	202,274	51,334	25.4%
1975	161,969	36,753	22.7%
1976	176,955	41,399	23.4%
1977	174,201	41,933	24.1%
1978	187,032*	41,977*	22.4%

*Estimated

EXHIBIT A

RAW MATERIAL MARKET SHARE OF PURCHASED FERROUS SCRAP
(In Thousands of Tons)

1978 By Month

	Total Ore & Scrap Consumption	Purchased Scrap Consumption	Share of Market For Scrap
January	14,007	2,980	21%
February	13,374	3,102	23%
March	15,356	3,808	25%
April	15,831	3,649	23%
May	15,804	3,919	25%
June	16,359	3,636	22%
July	15,345	3,336	22%
August	15,793	3,563	23%
September	15,759	3,337	21%
October	16,805	3,500	21%
November	16,099	3,447	21%
December	16,500*	3,700*	22%*
Total	187,032*	41,977*	22%*

*Estimated

EXHIBIT B

RELATIONSHIP OF FERROUS SCRAP EXPORTS TO TOTAL
PURCHASED SCRAP CONSUMPTION AND STEEL PRODUCTION
(In Thousands of Tons)

1970 - 1978

	Purchased Scrap Consumption	Scrap Exports	% Exports To Total Purchased Scrap Consumption	Steel Production	% Exports to Total Steel Production
1970	34,148	10,362	23%	131,500	7.9%
1971	34,208	6,257	15%	120,400	5.2%
1972	41,671	7,384	15%	133,200	5.5%
1973	44,711	11,256	20%	150,800	7.5%
1974	51,334	8,696	14%	145,700	6.0%
1975	36,753	9,602	21%	116,600	8.2%
1976	41,399	8,118	16%	128,000	6.3%
1977	41,933	6,176	13%	125,300	4.9%
1978	41,977*	8,941	17.5%*	136,900*	6.5%*

*Estimated

EXHIBIT C

RELATIONSHIP OF FERROUS SCRAP EXPORTS TO TOTAL
PURCHASED SCRAP CONSUMPTION AND STEEL PRODUCTION
(In Thousands of Tons)

1978 By Month

	Purchased Scrap Consumption	Scrap Exports	% Exports To Total Purchased Scrap Consumption	Steel Production	% Exports to Total Steel Production
January	2,980	642	18%	10,301	6.2%
February	3,102	444	13%	9,643	4.6%
March	3,808	627	14%	11,083	5.7%
April	3,649	695	16%	11,528	6.0%
May	3,919	582	13%	12,320	4.7%
June	3,636	786	18%	11,861	6.6%
July	3,336	757	18%	11,388	6.6%
August	3,563	777	18%	11,550	6.7%
September	3,337	804	19%	11,467	7.0%
October	3,500	962	22%	12,105	7.9%
November	3,447	952	21%	11,654	8.2%
December	3,700*	913	20%*	12,000*	7.6%*
Total	41,977*	8,941	18%*	136,900*	6.5%*

*Estimated

EXHIBIT D

EXHIBIT OF PRICES: FINISHED STEEL AND PRICES OF FERROUS SCRAP

1970-1978

	Iron Age Finished Steel Composite Price**	***Iron Age - No. 1 Scrap Composite Price	High	Low
	(Cents per Lb.)	(Dollars per Gr. Ton)		
1970	7.650	41.06	46.03	35.95
1971	8.429	34.09	40.81	30.81
1972	8.999	36.89	41.97	33.09
1973	9.380	57.95	79.34	47.31
1974	11.141	108.51	120.84	80.69
1975	13.102	71.86	85.50	58.44
1976	14.213	77.79	92.27	63.80
1977	15.957	63.15	74.10	48.97
1978*	17.957	76.15	72.00	90.00
January, 1979	19.549	104.17	106.50	95.80

* Estimated

** Weighted index of steel bars, plates, wire, rails, pipe, hot and cold rolled sheets and strips.

*** Average of No. 1 heavy melting sheet scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

EXHIBIT E

ADDRESS
of

J. FRED BUCY

President and Chief Operating Officer
Texas Instruments Incorporated

to

The Armed Forces Communications and
Electronics Association (AFCEA) Symposium

"EXPORT OF TECHNOLOGY TO COMMUNIST COUNTRIES"
Washington, D. C.
January 11, 1979

In the spring of 1974, the Defense Science Board was asked by the Department of Defense Research and Engineering to form a task force to assess the control of technology transfers of military significance. The debate regarding export controls for technology of military significance to Communist countries has intensified over the past five years, receiving increased attention by the Congress, Executive Branch, industry, and the media. These many discussions and articles may be developing a consensus as a basis for action. However, it is my observation that the basic issues are still obscured and distorted either through:

First: Widespread misunderstanding of what is meant by technology, and how it differs from products and science.

Second: Generalizations that refocus the issues from the narrow and specific technologies of military significance to all technology transfers, or even, all East-West trade.

Third: Unfamiliarity, and also generalizations, regarding both the effective mechanisms for transfer of technology, and the impact of a significant technology transfer on U.S. national security.

And fourth: This background of misunderstandings, generalizations, and no coherent policy, allows the strong political pressures that develop with each international technology transfer case to obscure the basic issues.

Unfortunately, throughout this period, there has been minimal progress by the Executive Branch in either specifically defining critical technologies or making any discernible changes in the implementation of present controls. This intransigence by the administrative bureaucracy has further aroused the anxieties of industry, and heightens the suspicion that their intent is only to pursue a "zero risk" policy and overcontrol exports to Communist countries.

The definition of technology must be used in a specific sense, if these issues are to be clarified.

Technology is the application of science to the design and manufacture of products and services. These products are the end result of technology. Products are not technology. Neither is science.

Science is directed to obtaining knowledge. Scientific information and data are exchanged around the world, and in so doing add to man's understanding. It should continue to flow freely.

On the other hand, technology is specific know-how required for design and manufacture. It is usually privately owned and closely guarded.

My perspective of technology controls is to pursue a policy that will meet the challenges of both protecting national security while encouraging East-West trade. I am searching for the most meaningful controls to enhance our security with minimal disruption of trade. As such, I am neither an advocate against East-West trade, nor am I an advocate of liberalizing controls to the furthest extent in order to maximize trade.

One of the principal characteristics of the American electronics industry is its technology intensity. Over the past 20 years, several major sectors of electronics, particularly industrial electronics and semiconductors, have aggressively pursued participation in world markets, gaining significant market share and contributing positive margins to U.S. balance of trade. The leading firms in these sectors have practiced strategies that do accomplish both tasks -- emphasizing the sale of products, while at the same time protecting their technology, which is their design and manufacturing know-how.

Those of us who have devoted our careers to furthering innovation in the semiconductor and electronic industries, understand the value of technology and the importance of both nourishing its development and guarding against its release to third parties. For in this technology-intensive industry, economic survival is dependent upon gaining market share in worldwide markets, which can only be realized by the timely application of technology to products for these markets.

Unfortunately, in each industry segment, there are some companies who view their technology as another commodity for sale or who are lax in its protection. In either case, the release of technology may significantly hurt not only themselves but their industry in the long run; and, in some instances, the security of the country.

One of the primary objectives of any policy for American technology of military significance is to maximize the performance of U.S. weapon systems for as long as possible, as compared to the Soviet's weapon systems. There are two principal strategies supporting this objective. First, is the continued development and application of new technology to weapon systems. This is being pursued, although often impeded by government regulations and bureaucratic delays. The other strategy is the export control of technologies that are critical to U.S. weapon systems.

My comments are directed to this latter strategy, and in particular the development of policies for controlling critical technologies, more so than products, as a means of meeting the dual challenge of enhancing military capability through technology, while encouraging East-West trade.

There are a number of trends and events that make export control of technology a much more difficult problem today than it was ten years ago. Three significant ones are:

First: U.S. foreign policy toward the Soviets has emphasized an increase in commercial trade.

Second: Soviets continue to place highest priority on acquisition of Western technology, particularly electronics and aerospace.

And third: In some fields of militarily significant technologies, such as electronics, commercial applications are now occurring three to five years in advance of military applications. For example, Large Scale Integration integrated circuits were first applied to handheld calculators in the early 1970s, followed by microprocessors in the mid-1970s which have been applied to a variety of consumer and industrial products. As of today, there has been only minimal application of these LSI integrated circuits to weapon systems. Yet, LSI integrated circuits will have profound impact on electronics for weapon systems of the 1980s and beyond.

In addition to these three problems, we do not have an effective export control policy that copes with the complexities of our environment and these new challenges. Too many technology issues are considered in isolation from each other; and, often, they are subordinate to other policies.

As the complexities of technology transfer issues increase, it is important to define a "baseline" policy for the control of strategically significant technologies. Without such a baseline policy, confusion and inconsistency will continue to be generated by the injection of economic and political issues.

In addition to problems created by these environmental trends and non-technology policy issues, there are three barriers to forming a coherent policy for controlling technology of military significance:

First, as underscored earlier, technology, products and science are misunderstood and confused by many people in both the public and private sectors. It is not uncommon to see the meanings of these three words used interchangeably. The specific design and manufacturing know-how required to produce products is really the issue and it is of major importance. This is what technology is all about.

The second barrier which compounds the problem of export controls is that virtually all American technology is the property of private firms. Although federal R&D expenditures have advanced scientific knowledge, and federal procurement of weapon systems has advanced the translation of this knowledge to products, the underlying design and manufacturing know-how have almost always remained as corporate property.

As a consequence, the need for controls on the export of technology should be on those commercial trade mechanisms which most effectively "transfer" know-how. The "reverse engineering" of products -- engineering dissection and analysis -- is not an effective technique for transferring technology.

The principal mechanisms for the transfer of design and manufacturing know-how are those based upon special and extensive communications by the donor with the objective of teaching specific know-how. Usually, such information and data are provided to the receiver so that he may achieve a stated manufacturing capability within a relatively short period of time. Thus, effective mechanisms for transferring technology to state-controlled

enterprises include sales of "turnkey" factories, sales of manufacturing and technical data, licenses with extensive teaching, consulting agreements, and the training of technical personnel.

The third barrier impacting the development of a cohesive technology policy for national security is a widespread recognition by most nations that technology, particularly "high-technology" industrial segments, is important to their economic development and national security. Although technology sales may be only a small percentage of total commercial exports, they are increasingly the focus of intense political stress.

It was with this definition of technology as the really critical issue, and its principal transfer mechanisms as just noted, that a group of senior industrial and government participants in a task force for the Defense Science Board underscored these recommendations:

First: That the emphasis on export controls should be shifted from products to critical technologies.

Second: That these critical technologies must be defined by the Defense Department, based upon factors such as:

-- direct contributions to current or future weapon systems;

-- their rate of advance, and principal support items;

-- and current practice in both controlled countries and other Western nations.

And third: The strategies for implementing control of critical technologies should recognize:

A. That the chief criterion for assessing the impact of a technology transfer should be its advance of an adversary's capabilities.

B. That each technology's value to weapon systems is time-dependent; therefore, its criticality must be periodically reviewed.

and,

C. That critical products should be controlled based on their intrinsic utility, and not on commercial specifications, end-use statements, or safeguards.

The control of critical technologies does not need to be absolute in order to be effective. Their objective is to delay their rapid acquisition by the Soviets and other controlled countries.

Although U.S. controls and those of its allies have been less effective in the past five years than in prior decades, they do continue to provide some measurable lead time in the practice of these critical technologies by the U.S. and its allies. Various studies by research institutions, industry committees, and the intelligence community continue to estimate that lead times are two to ten years for selected technologies.

As is often the case when major policy changes are proposed, objections arise either because there is uncertainty about their implementation, or because of ignorance and distortion of the need for the policy.

In this case, the uncertainty is further increased due to a lack of specific definitions for critical technologies. This uncertainty will continue to exist until critical technologies are defined and applied to export controls by the Defense Department. Unfortunately, DoD has given minimal support to the administration of export controls over the past five years, and other government departments have serious doubts about DoD's ability to carry forward and implement this policy.

It is apparent that the resources and priorities of the Defense Department are aligned with the strategy of advancing militarily significant technologies, almost to the exclusion of support for control of critical technology. There is no argument regarding advancement of technology as being first priority. However, resource alignment should be modified so that both strategies can be pursued on a timely basis.

Without controls on the transfer of critical technologies, the effective advancement of military capabilities through R&D becomes an almost impossible problem, for this know-how would be transferred to ComeCon countries as quickly as they can purchase it.

Some of the objections cited by those in industry to either the current technology control practices or the Defense Science Board recommendations are:

1. Strategic criteria for control of technology should give recognition to the opportunity for U.S. firms to sell obsolete technology, rather than only its impact on the receiving country.

2. A second objection is that the U.S. control list should not have unilateral listings, as compared to CoCom lists. This practice denies U.S. firms East-West trade, while allowing CoCom partners to capitalize on opportunities. This objection has merit. However, the items under control must be based on their criticality to significant weapon systems.

   At times, when a new technology is unique to the U.S., it may be necessary to place it unilaterally on the U.S. list.

3. A third objection is that the transfer of high technology to the Soviets is not a significant problem, since they have limited resources or abilities to adapt technologies to new applications. My answer to this objection is that generalizations cannot be applied between practices in their commercial and military programs. While Eastern Bloc nations do tend to

have serious deficiencies in defining requirements and implementing technologies for their visible commercial sectors, their military sectors are mission oriented, and have high priorities. These programs do not have the administrative and planning barriers that exist in the commercial sectors.

and,

4. The last objection, which is frequently noted, is that the Department of Defense has too limited a knowledge of current technology practice in the Eastern Bloc countries, as well as in other Western nations and therefore its assumptions regarding uniqueness of some technology items are obsolete. This objection is often valid, and this deficiency can be overcome by assigning adequate intelligence resources to this area, and by interacting with industry in the review and update of critical technology elements.

Other objections by individuals in the Federal Government to a change in emphasis of export control policy from products to critical technologies have been:

First objection: The present controls were effective in controlling East-West trade, and a good job was done prior to Detente. Now, additional resources and only fine tuning are needed, rather than a major change.

Second objection: The principal problem in commercial trade is really West-West to East flow. However, it is not practical for the U.S. to enforce controls on reexportation of technology from either its allies or neutral nations.

And third objection: There is no data base to support the control of critical technologies, and since it cannot be quantified and measured, there is no basis for formulating policy.

These arguments ignore the negative impact of present case-by-case reviews with their delays, ambiguities, and resulting low credibility of the process held by segments of industry and some of our allies. This practice is an unnecessary interference in the commercial trade of many products. Without a policy framework, case-by-case reviews based on the precedents of history offer no opportunity to develop a cohesive policy, and a defocused policy is no policy at all.

A clear definition of critical technologies is necessary to win support from our allies. As for neutral nations, if we cannot control reexportation of critical technologies, then there should be serious question as to why it is transferred to them at all.

As to the last objection cited, not all logical deductions can be quantified, and where it is attempted, the data is often subjective or poorly defined. The lack of quantitative measures places greater reliance on the

involvement and judgment of senior personnel for definition and implementation.

The challenge that we face is to implement a policy that will allow the U.S. an effective means of meeting two conflicting goals:

1. Enhancement of East-West trade, particularly in the products of "high technology."

While at the same time,

2. Protection of technology itself, to provide a qualitative advantage for U.S. military systems.

The complexity of today's weapon systems and the rapid dispatch of commerce in high-technology goods and services throughout the world places our national security in jeopardy, unless we can effectively delay the acquisition of critical technologies by the Soviets and her partners. The overwhelming consideration in controlling technology transfers must be U.S. national security.

As each month goes by, we are losing ground in the protection of our critical technologies for national security, and in the U.S. competitive position for East-West trade.

In order to reverse this trend, the specific definition of technology, as design and manufacturing know-how, distinguishing it from products and science must be understood by policymakers in Congress and the Executive Branch.

The immediate task requires a realistic identification of critical technologies by the Defense Department and the implementation of strategies for effectively controlling them by the U.S. and its allies. Without this definition, only generalities exist which further fuel the controversy over export controls.

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/DOD Export Curbs Policy Still Not 'Coherent': Bucy

Electronic News Feb 5, 197

FILE

WASHINGTON — J. Fred Bucy, Texas Instruments president, has charged that the Defense Department has failed to come up with a "coherent policy on export controls" to the Communist Bloc 2 years after the Pentagon approved the recommendations of the task force study he headed.

"DOD has given minimal support to the administration of export controls. Other parts of the government have serious doubts about DOD's commitment to any new policy," Mr. Bucy said.

He spoke to a special 1-day meeting on communications issues sponsored by the Armed Forces Communications and Electronics Association at the State Department.

Urged Removal of Controls

The "Bucy Report" of the Defense Science Board task force 2 years ago urged that DOD lead the way in controlling the transfer of critical technology to the Communist Bloc, by removing much of the export controls on products. Mr. Bucy told the AFCEA session that the government is still tied up in bureaucratic knots trying to review exports of routine products on a case-by-case basis.

Interviewed after the meeting, the TI executive said he had no confidence that the government would be able to come up with a policy removing needless product export controls in time for such a policy to be presented at the current round of Free World CoCom (Coordinating Committee) negotiations.

"DOD has yet to come up with even a list of critical technologies that should be controlled," he said.

In the past, Mr. Bucy has been mildly critical of DOD's action on his panel's recommendations. His AFCEA address was his most pointed criticism so far.

He questioned much of the government's current controls on products to prevent reverse engineering by Communist Bloc members. "High technology products, such as microprocessors or jet engines, involve so many processing steps and so much proprietary know-how that another country cannot duplicate the product unless they have the manufacturing technology."

'Satchels Full'

He said it was "impractical to try to keep many sophisticated semiconductors out of the hands of foreign persons. Their representatives can buy satchels full of integrated circuits from U.S. distributors and carry them right out of the country."

He also charged that DOD has "too limited knowledge of technical practices in the Eastern Bloc and foreign availability of products and technology to customers there.

"I'm astonished at how little the government knows about the availability of technology overseas."

The TI executive urged the Pentagon "to devote adequate intelligence resources" to getting this knowledge. He also said DOD should consult more with industry to get data on the foreign availability of products and technology to the Communist Bloc.

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Washington commentary

TI's Bucy calls for U. S. policy on technology trade

The issue of technology trade between the U. S. and Warsaw Pact powers continues to intensify in the absence of any clear national policy, says J. Fred Bucy, president of Texas Instruments Inc. of Dallas. Bucy believes the issue can only be resolved if the Congress, Executive Branch, and industry agree on a definition of what is meant by technology, determine how much of it is critical to U. S security, and modernize U. S. export controls accordingly. These highlights from Bucy's presentation last month before a Washington symposium of the Armed Forces Communications and Electronics Association deserve a wider audience than they received. —**Ray Connolly**

The debate regarding export controls for technology of military significance to Communist countries has intensified over the past five years. Unfortunately, throughout the period, there has been minimal progress by the Executive Branch in either specifically defining critical technologies or making any discernible changes in the implementation of present controls. This intransigency by the administrative bureaucracy has further aroused the anxieties of industry and heightens the suspicion that their intent is only to pursue a "zero risk" policy and overcontrol exports to Communist countries.

Products are not technology

The definition of technology must be used in a specific sense, if these issues are to be clarified. Technology is the application of science to the design and manufacture of products and services. These products are the end result of technology. Products are not technology. Neither is science. Science is directed to obtaining knowledge. Scientific information is exchanged around the world and adds to man's understanding. It should continue to flow freely.

On the other hand, technology is specific know-how required for design and manufacture. It is usually privately owned and closely guarded. In this technology-intensive industry, economic survival is dependent on gaining market share in worldwide markets, which can only be realized by the timely application of technology to products for these markets.

The need for controls on the export of technology should be on those commercial trade mechanisms which most effectively "transfer" know-how. The "reverse engineering" of products—dissection and analysis—is not an effective technique for transferring technology. Effective mechanisms for transferring technology to state-controlled enterprises include sales of "turnkey" factories, sales of manufacturing and technical data, licenses with extensive teaching, consulting agreements, and the training of technical personnel.

The control of critical technologies does not need to be absolute in order to be effective. Its objective is to delay their rapid acquisition by the Soviets and other controlled countries.

As is often the case when major policy changes are proposed, objections arise because there is uncertainty about their implementation, or because of ignorance and distortion of the need for the policy. Objections by individuals in the Federal Government ignore the negative impact of present case-by-case reviews with their delays, ambiguities, and resulting low credibility of the process held by segments of industry and some of our allies. This practice is an unnecessary interference in the commercial trade of many products. Without a policy framework, case-by-case reviews based on the precedents of history offer no opportunity to develop a cohesive policy, and a defocused policy is no policy at all.

A clear definition of critical technologies is necessary to win support from our allies. As for neutral nations, if we cannot control reexportation of critical technologies, then there should be no serious question as to why it is transferred to them at all.

Need for judgment

As to the objection that no basis exists for policy formulation since the critical technologies lack a data base and in fact cannot be quantified or measured, [let me say] not all logical deductions can be quantified. Where it is attempted, data is often subjective or poorly defined. The lack of quantitative measures places greater reliance on the involvement and judgment of senior personnel for definition and implementation.

The challenge that we face is to implement a policy that will allow the U. S. an effective means of meeting two conflicting goals: enhancement of East-West trade, particularly in the products of "high technology," while at the same time protecting the technology itself to provide a qualitative advantage for U. S. military systems. The immediate task requires a realistic definition of critical technologies by the Defense Department and the implementation of strategies for effectively controlling them by the U. S. and its allies. Without this definition, only generalities exist which further fuel the controversy over export controls.

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UNITED STATES DEPARTMENT OF
COMMERCE
NEWS
WASHINGTON, D.C. 20230

INDUSTRY AND
TRADE
ADMINISTRATION

CONTACT: William Scouton, (202) 377-4654 ITA 79-45

FOR RELEASE FRIDAY,
MARCH 2, 1979

COMMERCE DEPARTMENT SEES NO NEED TO CONTROL FERROUS SCRAP EXPORTS

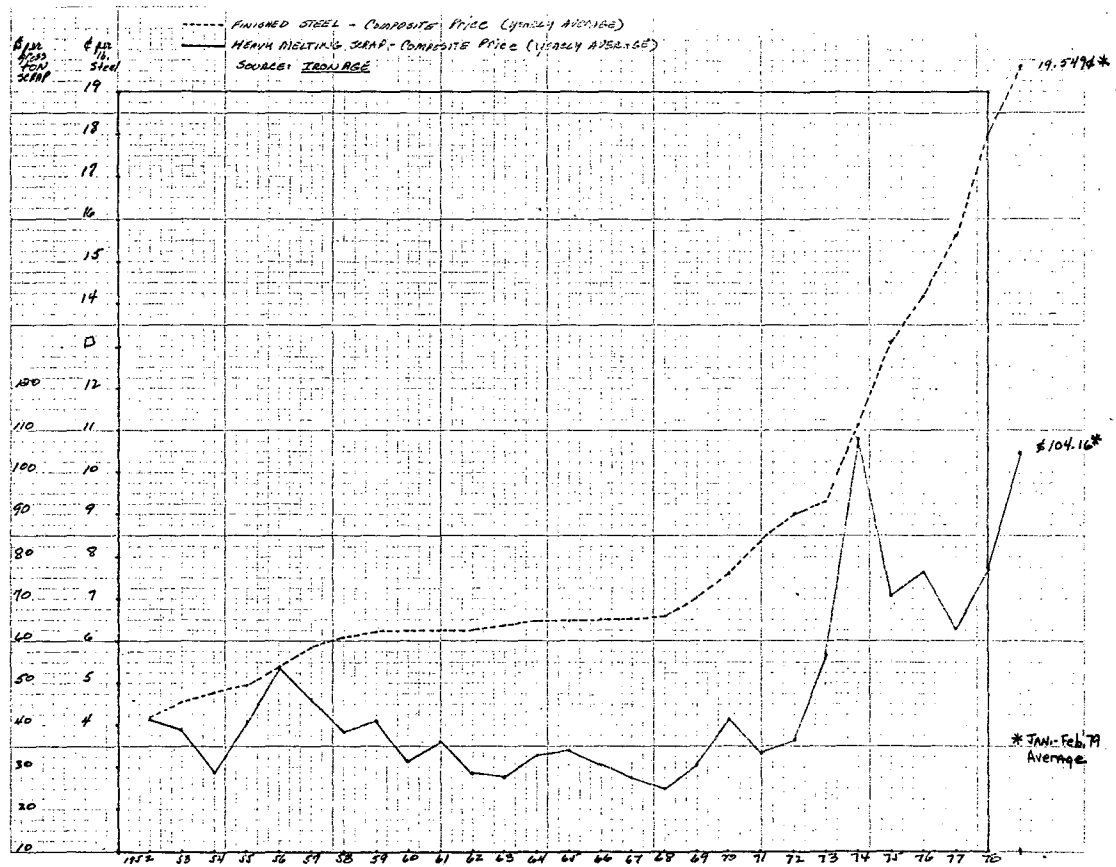
The Department of Commerce announced today that it has completed its analysis of the ferrous scrap market situation in consultation with other interested agencies of the Government and has concluded that no action to restrict or control exports is warranted.

Frank A. Weil, Assistant Secretary of Commerce for Industry and Trade, said recent increases in scrap prices are not unusual in view of current market and seasonal factors and are not expected to continue. He pointed out that the Council on Wage and Price Stability has advised the Department that recent ferrous scrap prices should not have an undue adverse impact on the President's anti-inflation program.

Mr. Weil explained that the Department does not consider that the rise in export levels in the last quarter of 1978 constitutes a sustained trend, especially in light of the depressed level of exports in 1977.

In January of 1979, U.S. exports of ferrous scrap declined for the third consecutive month. Exports of ferrous scrap in January were 893,000 short tons, down 5.3 percent from December and 7.5 percent from the average monthly exports of the last quarter of 1978. There are indications that these rises have been attributable to short term inventory rebuilding efforts by foreign purchasers and overall export demand is expected to slacken in the coming months. Similarly, improving weather conditions can be expected to bring out additional supplies of scrap in this country.

-over-


FINISHED STEEL - COMPOSITE PRICE (YEARLY AVERAGE)
HEAVY MELTING SCRAP - COMPOSITE PRICE (YEARLY AVERAGE)
SOURCE: IRON AGE
$ per Ton from Scrap
¢ per lb. Steel
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
130
110
100
90
80
70
60
50
40
30
20
10
1952 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78
19.549¢*
$104.16*
* JAN.-FEB. '79 Average

Mr. Weil observed that the ferrous scrap market is typically volatile, showing rapid fluctuations both up and down as a result of short term market factors, and that experience has shown that price swings tend to work themselves out and return to normal within relatively brief time periods.

The Department of Commerce believes that recent price movements in this market have been related in part to speculation that this Department might institute export controls. The Department believes that the mere expectation of action to control or restrict exports can and has contributed in the past to the increase in price and export levels of this and other commodities. Mr. Weil expressed the view that controls are burdensome to both industry and the Government. This was clearly demonstrated by our experience with such controls in 1973 and 1974. He cautioned exporters not to draw parallels between the present situation and that of 1973 and not to anticipate that the Department will respond in the same manner as it did in 1973.

Mr. Weil said this Administration is dedicated to maintaining an open international trading system and the least possible Government interference in the marketplace. The Administration is also currently urging certain of its trading partners to remove their impediments to such free trade. "It would be counterproductive to these efforts, to our export promotion programs, and to our balance of trade to take any precipitate action which might inhibit the expansion of such trade. Crucial to our efforts in this respect is the maintenance of the United States' reputation as a reliable supplier to the world market."

While the Export Administration Act requires the Department to maintain surveillance over commodities in potential tight supply, the Department has determined that it already has and will continue to have available to it adequate and timely data to meet the intent of the Congress in maintaining a close watch on the situation. Accordingly, the Department will continue its present surveillance over the ferrous scrap market situation but will not utilize its authority under the Act to institute a formal monitoring system.

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PRICE-VOLUME RELATIONSHIPS FOR THE SUPPLY OF SCRAP IRON AND STEEL: A STUDY OF THE PRICE ELASTICITY OF SUPPLY

LAYMAN'S SUMMARY

Higher prices bring out more scrap. That, in essence, is the finding of a study undertaken by Robert R. Nathan Associates, Inc., for the Metal Scrap Research and Education Foundation, research affiliate of the Institute of Scrap Iron and Steel.

The study examines the relationship between various historical price levels and the quantities of ferrous scrap marketed at those prices. In other words, it measures the changes in the quantities of delivered ferrous scrap which are associated with changes in the price level.

Advanced statistical techniques were used to estimate the supply of scrap and its relationship to the price level. The analysis incorporated factors such as scrap processing costs, freight rates, gondola car availability, and exports of iron and steel scrap.

The results of the study are shown for three different scrap classifications: home, prompt, and obsolete ferrous scrap.

ROBERT R. NATHAN ASSOCIATES, INC.
Washington, D.C. 20036

Home scrap supply was determined to be unresponsive, or insensitive, to changes in the price level. This was as expected since home scrap is composed of the by-products, waste and discards of iron-and steel-making processes. As a result, home scrap is not usually sold through a market, but retained by the producing firm for its own use.

The supply of purchased scrap, which is the total amount of scrap bought through the market structure, includes prompt industrial and obsolete ferrous scrap. Prompt industrial scrap is a by-product of industrial manufacturing and is composed of items such as punchings, stampings, turnings and borings. Its availability is considered to be determined by factors other than supply and demand for scrap and it was found to be virtually insensitive to scrap price level changes.

Obsolete scrap originates from discarded iron and steel goods such as old ships, railroad equipment and rails, junked automobiles, and worn-out household appliances. Since empirical data are not available for purchases of obsolete scrap, a methodology of deducting recycled prompt industrial scrap from total purchased scrap receipts was devised, thus permitting estimates to be made of obsolete scrap purchases.

Obsolete scrap supply was shown to be highly sensitive to changes in the scrap price level. Thus an increase in the price of scrap is associated with a large increase in the amount of obsolete scrap supplied. For example, a 10

percent increase in the price of scrap would be accompanied on the average by an 8.3 percent increase in the quantity of obsolete scrap supplied. For the period studied 1961 through 1976, this volume increase would correspond to approximately 106,000 tons of obsolete scrap per month.

Freight rates were determined to have a strong negative influence on the supply of obsolete scrap. A decrease in the freight rates would contribute significantly to an increase in the quantity of obsolete scrap supplied to the market.

Since purchased scrap supply is a combination of prompt industrial and obsolete scrap, it is characterized by a weighted average of the attributes of both types. It is therefore sensitive to changes in the scrap price level, but not to the degree of obsolete scrap alone.

Of the period studied, it is interesting to note that, due to conditions prevailing in certain periods, the price sensitivity of obsolete scrap was such that for each 1 percent increase in price, the quantity of obsolete scrap supplied increased by more than 1 percent. This high degree of price sensitivity was reached most recently during the first two quarters of 1974, though similar price responsiveness occurred on several occasions prior to 1974.

Robert R. Nathan
Associates, Inc.
Consulting Economists

January 8, 1979

PRICE-VOLUME RELATIONSHIPS FOR THE SUPPLY OF SCRAP IRON AND STEEL: A STUDY OF THE PRICE ELASTICITY OF SUPPLY

Submitted to

The Metal Scrap Research and Education Foundation

by

Robert R. Nathan Associates, Inc.
Consulting Economists
Washington, D. C.

January 8, 1979

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I. EXECUTIVE SUMMARY

This report presents the findings of a study undertaken by Robert R. Nathan Associates, Inc. for the Metal Scrap Research and Education Foundation. The study examines the supply of iron and steel scrap and, in particular, the elasticity or responsiveness of supply to changes in price. That is, it measures the percentage change in supply which is found to be associated with a given percentage change in scrap prices. In addition, the report presents the study's findings regarding the effect of rail car shortages and freight rates on the supply of obsolete scrap.

The study assumes a demand-dominant framework within which obsolete ferrous scrap is traded. Steel mills and foundries use, first, "home" scrap, which is produced as a byproduct of the basic iron- and steel-making industry, and, second, prompt industrial scrap, which is a byproduct of metal fabricating and manufacturing industries. Integrated steel mills and foundries use obsolete scrap only to the extent that the two preferred classes of material, home and prompt industrial, are insufficient in quantity to satisfy requirements. Consequently, as in the estimation of any supply-demand system, it has been necessary to distinguish clearly the determinants of supply from those of demand, so that demand and supply characteristics can be determined

separately. Similarly, it has been necessary to examine separately the price responsiveness of obsolete and total purchased scrap.

The study concentrates on the time period from 1961 through 1976, and uses quarterly data. The findings of the study may be summarized as follows:

1. Obsolete ferrous scrap supply is much more price responsive than the supply of total purchased scrap. Mean elasticity of obsoltete scrap supply was calculated at .833, indicating that an average scrap price increase of 10 percent would result in an 8.3 percent increase in quantity supplied to domestic steel mills and foundries.

The impact of this finding may be more fully appreciated when translated into quantitative terms. During the period under review the quantity of obsolete scrap received by mills and foundries averaged 1,284,241 tons per month. Thus, an average price increase of 10 percent, holding other factors such as gondola car availability and freight rates constant, would have brought forth an additional 106,000 tons of obsolete scrap per month.

2. During the four quarters of 1974, the supply elasticity of obsolete scrap averaged .994. Receipts of obsolete scrap during the year averaged 2,006,871 tons per month. A 10 percent increase in price above the prevailing price in 1974 would thus have called forth an additional 199,483 tons per month.

3. The marketed supply of total purchased scrap (prompt industrial and obsolete scrap combined) is less responsive to price changes than the obsolete component of purchased scrap. The mean elasticity of supply of total purchased scrap, measured over the entire period studied, was .365. Thus if average scrap prices increase by 10 percent, one may expect a 3.6 percent increase in the total quantity of purchased scrap delivered to the market.

4. Freight charges have a negative influence on the quantity of obsolete scrap delivered. Specifically, a 10 percent increase in freight rates leads one to expect a 9.1 percent decrease in the quantity of obsolete scrap provided to consumers.

5. Shortages of gondola cars also affect the supply picture. It was estimated that, on the average, potential deliveries of obsolete scrap were reduced by approximately 112 tons per month for every gondola car which was ordered but unavailable from the railroads.

The report thus concludes that, unlike the generation of home scrap and the shipment of prompt industrial scrap, obsolete ferrous scrap supply is responsive to price changes, and that a price increase will be met by a substantial increase in the quantity supplied for iron- and steel-making purposes.

II. INTRODUCTION

This study is based in part on previous work performed by Robert R. Nathan Associates, Inc. (RRNA), for the Metal Scrap Research and Education Foundation, research affiliate of the Institute of Scrap Iron and Steel. The previous work includes an evaluation of the inventory of ferrous scrap potentially available for collection, processing, and consumption within the United States in 1975 and, more recently, an update of that inventory to 1977.[1] The present study estimates the price elasticity of the ferrous scrap supply. The term supply as used in this study refers to the quantity of ferrous scrap which will be made available to buyers in response to prices offered.

Distinct mechanisms operate to bring ferrous scrap to the steel mills and foundries of this country. A substantial portion of this material, called home scrap, consists of the byproducts, wastes, and discards of the iron-and steel-making processes. Home scrap seldom passes through a market.

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1. Iron and Steel Scrap: Its Accumulation and Availability as of December 31, 1975, (August 23, 1977) and Iron and Steel Scrap: Its Accumulation and Availability, Updated to December 31, 1977, (August 25, 1978), prepared for the Metal Scrap Research and Education Foundation by Robert R. Nathan Associated, Inc.

As this study is concerned with the analysis of that portion of the total scrap supply which is commercially traded, the role of home scrap is limited to the influence its generation exerts on total ferrous scrap volumes marketed.

Purchased scrap receipts at steel mills and foundries are composed of two broad categories of scrap whose characteristics are so different as to require treatment as separate commodities. These are prompt industrial scrap and obsolete scrap.

Prompt industrial scrap is a byproduct of industrial manufacturing and is promptly and routinely recycled through scrap marketing channels. As it consists of items such as punchings, stampings, turnings, and borings, is generally clean and of uniform quality and density, it is therefore readily acceptable on a preferential basis by scrap consumers. Because it is a waste product of metal manufacturing, and one which manufacturers are generally anxious to have cleared from their facilities, its availability is largely unaffected by price fluctuations.

Obsolete ferrous scrap, on the other hand, originates in iron and steel goods -- ships, railroad equipment and rails, automobiles, structures, refrigerators, radiators, etc. -- which have been discarded by their final owners. It is a highly heterogeneous material, often widely dispersed when discarded, and requires considerable expenditures by collectors and processors to bring it to market in a usable form. Marginal cost-price relationships can therefore be assumed to be of critical importance in determining the volume of obsolete ferrous scrap marketed.

The fundamental differences in origin, quality, processing, and marketing mechanisms which exist between obsolete and prompt industrial scrap make it necessary to treat these materials separately in the study of market behavior and price responsiveness. Unfortunately, the empirical data necessary to differentiate between the volume of shipments or receipts of these two broad classifications do not exist. Standard industry grades have been established with reference to consumer requirements as to size, density, composition, etc., and many grades can be composed of a mix of obsolete and prompt industrial materials. Aggregate figures, reported by the Bureau of Mines, refer to total purchased scrap receipts at the steel mills and foundries and include scrap from both sources.

A methodology was developed by RRNA in the course of its previous work for estimating the annual volumes of prompt industrial scrap generated by metal manufacturers.[1] By following a slightly modified version of this methodology, it has been possible to estimate obsolete scrap receipts on a quarterly basis.[2] This in turn has permitted the estimation of distinct supply functions for both obsolete and total purchased scrap and the measurement of the responsiveness of these functions to changes in price.

Price Elasticities

Price elasticity of supply is defined as the ratio of the percentage change in quantity supplied resulting from a

1. Ibid.
2. See Appendix B, p. 35.

percentage change in price. In order to estimate price elasticity, it is necessary to isolate the effect of price on quantity supplied from the effects of all other factors affecting supply. This requires the specification of equations that incorporate nonprice determinants of market supply. As a result, useful information was also generated on the impact of freight rates and gondola car availabilities on quantities delivered.

Over the period 1961:1[1] to 1976:4, prompt industrial scrap accounted for, on average, approximately 56 percent of purchased scrap receipts (varying from a low of 40 percent in 1959 to a high of 76 percent in 1968:3). As noted above, these ratios are the direct result of the level of metal manufacturing activity, which is generally independent of scrap prices, and of the level of scrap demand by steelmakers. Therefore, the volume of prompt industrial scrap generated, while not induced by scrap price, helps set the price at which purchased scrap is transacted.

Figure 1 presents a simplified view of the various intermarket and process linkages which generate supply and demand for ferrous scrap. Implicit in this view is the treatment of demand for obsolete scrap as a residual equal to the excess of total demand over the current supply of home and prompt industrial material. Purchased scrap prices, reflected by quality differentials (i.e., by grade), are determined by the interaction of this residual demand and the marginal costs of obsolete scrap supply.

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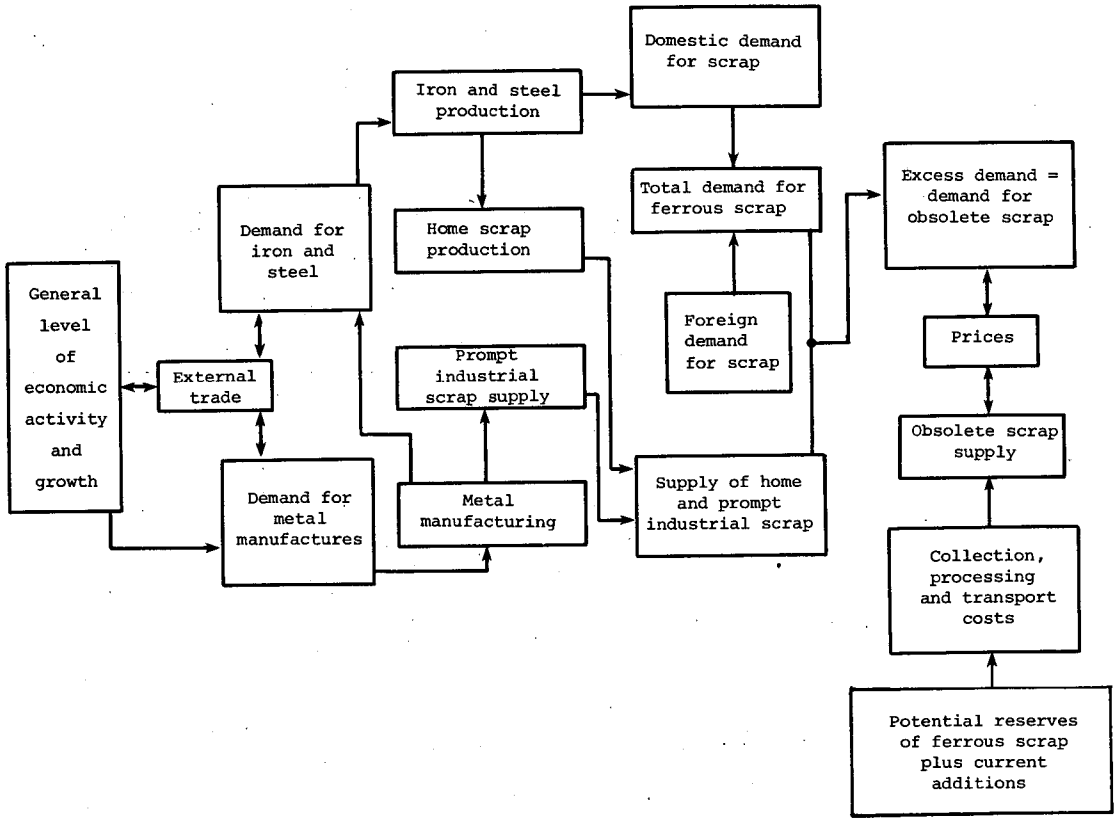
1. Figures following the colon refer to the quarter of the year.

Figure 1. Market Linkages Affecting Ferrous Scrap Demand and Supply



Transport and Ferrous Scrap Supply

Significant relationships have been found between obsolete scrap supply, the level of freight rates in real terms, and gondola car shortages expressed as average daily shortages per quarter. Indeed, an elasticity of obsolete scrap supply calculated with respect to freight rates[1] was found to be approximately -.91. That is, a 10 percent increase in freight rates would lead one to expect an 9.1 percent reduction in obsolete scrap deliveries. The magnitude of this elasticity is a strong indication of the significance of freight rates and transport costs to the ferrous scrap industry.

In addition, it was estimated that potential obsolete scrap shipments were reduced, on average, by approximately 112 tons per month for every gondola car ordered but unavailable from the railroads. (See the coefficient of GONS in Table C-4.) The coefficient of .112 indicates that, even though not all obsolete scrap moves by gondola car, each unavailable car diminished potential rail deliveries by approximately 1,344 tons per year (112 tons per month x 12 months).

The significance of this figure becomes apparent when one recalls that during 1974:1 an average daily shortage of 5,309 cars was reported. Thus, holding other factors constant,

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1. Actually, average revenue per ton-mile, in cents, for iron or steel scrap, STCC 40211. Source: DOT, Carload Waybill Statistics, several years.

an additional 1,783,824 tons might have been shipped in 1974:1 had cars been available. This is approximately 58 percent more than the quantity of obsolete scrap actually supplied during that quarter. Of course, this additional quantity would have been supplied in response to unusually high prices, which were in turn partly the result of gondola car shortages. Furthermore, to the extent other modes of transport were used during the period of severe gondola car shortages, total shipments of scrap iron and steel were not reduced to this extent.

III. THE DATA AND CONCEPTUAL FRAMEWORK OF THE MODEL

Period of Analysis and Observation Frequency

The period of analysis selected for this study extends from 1961:1 through 1976:4. Quarterly data were used throughout the analysis.

There are important tradeoffs to be considered in selecting the period and frequency of observations for an econometric study. The scope for choice is, of course, always constrained and must be adapted to data availability. In this study, for example, an alternative procedure might have used monthly data over a shorter but more recent time period. This would have produced a fairly large number of observations and a more uniform technological and structural framework. Disadvantages to such an approach, however, outweighed the possible advantages and it was decided that quarterly data would be used.

Variable Selection

The selection of variables for an econometric model involves elements of general theory, the adaptation of theory to the particular characteristics of the industry and specific purposes of the study, and judgments regarding the reliability of available data.

Ferrous Scrap Prices

Prices for some 25 different grades of ferrous scrap traded in 17 major cities are reported on a daily basis by American Metal Market and on a weekly basis by Iron Age. The Department of Labor's Bureau of Labor Statistics (BLS) maintains wholesale price indexes for the seven most important grades, which account for the bulk of the volume traded, and reports a series on each of the following markets: Pittsburgh, Chicago, Philadelphia, Detroit, Birmingham, Houston, and Los Angeles. A national composite index based on regional tonnage weights reported in periodic Census of Manufactures is also compiled and reported by the Bureau of Labor Statistics. The Bureau periodically checks the accuracy of public price quotations with spot surveys among industry representatives.

Which of the BLS price series -- #1 heavy melting, #2 bundles, or the BLS composite -- were most closely representative of a national average price for obsolete scrap remained to be determined. It was decided that the Bureau of Labor Statistics' seven cities composite series, which they refer to as WPI 1012, was the superior index, and it was used throughout the study.

Ferrous Scrap Receipts

Fundamental to this study of marketed ferrous scrap supply is the distinction between obsolete and prompt industrial scrap. These two categories of material originate from different sources through processes involving a

different series of operations and costs. Industry grades at present do not adequately distinguish these two scrap types. Although such major grades as #1 heavy melting and #2 bundles tend to be primarily obsolete, the mix is variable. As a result, the analyst is left with the aggregate, total purchased scrap receipts, which is the sum of obsolete and prompt industrial.

A methodology is available, however, whereby an estimate can be made of the tonnages of prompt industrial scrap generated by metal manufacturers and processors. This estimate can be used (making allowances for losses) to estimate obsolete scrap receipts from the total purchased figure. The methodology was adapted from the technique employed in the previously cited RRNA report[1] and consists of four steps.

First, quarterly figures on steel mill and foundry shipments must be adjusted by subtracting exports and adding imports. Second, an aggregate prompt generation rate (PGR) is applied to the adjusted shipment figures. The PGR is based on a survey of metal manufacturers conducted by the Business and Defense Services Administration in 1954. The third step involves making allowances for losses of prompt industrial scrap not recycled. These losses -- to landfills, etc. -- have been estimated at approximately 10 percent of prompt scrap generated,[2] and this estimate is adopted here.

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1. Robert R. Nathan Associates, op. cit., p. 39-50.
2. Battelle-Columbus Laboratories, Identification of Opportunities for Increased Recyling of Ferrous Solid Waste 1972.

Finally, the estimate of prompt scrap recovered is subtracted from published figures on purchased scrap receipts to arrive at an estimate of obsolete scrap receipts.[1]

The methodology is essentially consistent with that used in RRNA's previous work, as evidenced by the fact that both study estimates of total prompt industrial scrap generated between 1961 and 1975 are within 2 percent of one another. Slight variation is apparent in the yearly figures reported. In the previous work, 3-year moving averages of steel and foundry shipments formed the basis for the calculation, whereas, in the current study it was essential to retain quarter-to-quarter fluctuations in prompt scrap supplies. Thus, the methodology was applied directly to quarterly shipment figures.

A further check of the usefulness of these estimates consists of calculating the resulting ratio of obsolete-to-total purchased scrap. Although this ratio exhibits some fluctuation,[2] as would be expected from the fluctuations of the level of metal manufacturing activity (generating prompt industrial scrap) and of demand conditions, on average it is about 44 percent, consistent with independent estimates provided by the Battelle-Columbus report and knowledgeable industry observers. This figure is also consistent with results of earlier RRNA estimates when these are adjusted to exclude scrap exports.

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1. See Appendix D.
2. Ibid.

Other Supply Factors

Separate supply equations for home, total purchased, and obsolete scrap are contained in the model. As discussed previously, home scrap is a byproduct of iron and steel production which is not generally marketed and is therefore processed and consumed independently of scrap price. Its generation and use can be fully explained by the volume and technology of iron and steel production.

Obsolete and prompt industrial scrap, the components of total purchased scrap, although generated from different sources and by different processes, both require collection, processing, and distribution. These economic activities result in costs, so that prices and costs of production emerge as factors which affect supply.

Very little information is available on the costs of processing iron and steel scrap. Ideally, one would assemble information on raw materials costs, variable production costs, fixed costs associated with maintaining a given capacity, investment costs associated with capacity expansion, and, since iron and steel scrap price is quoted at the point of delivery, transport costs.

As a proxy for actual values, an estimate of scrap processing costs was obtained in the form of an index from the U.S. Department of Commerce. The scrap processing cost index, maintained for the Department of Commerce by Data Resources, Inc., is a weighted composite of average hourly

earnings by total private non-farm production workers; of the price of fuels, related products, and power; of the wholesale price of industrial commodities; and of nonresidential investment in producers' durable equipment.[1]

A proxy for transport costs, average revenue per ton-mile of iron and steel scrap transported by rail, as reported in the Department of Transportation publication, "Carload Waybill Statistics," was also incorporated in the model.

Inasmuch as the principal focus of the present study is the price elasticity of the domestic ferrous scrap supply, a control for the impact of exports on domestic supply was incorporated, in the form of the ratio of scrap exports to domestic purchased scrap receipts.

Two additional variables reflect the impact of external factors on ferrous scrap supply. One is a dummy variable indicating the presence of price controls from the beginning of 1973 through the first quarter 1974. The second is average daily gondola car shortages per quarter,[2] developed from the Association of American Railroads CS-44 Reports.

To account for fluctuations in the generation of prompt industrial scrap, a variable equal to the sum of steel mill and foundry shipments was incorporated in the supply equation for total purchased scrap.

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1. Original weights used in the index are available in 1973 Bureau of Mines study of ferrous scrap production entitled, An Economic Analysis of the Junk Automobile Problem.
2. See Appendix D, p. 60-1.

Demand Factors

Price is, of course, an important variable in the specification of the demand function. It has been found, however, that not only is current price important with respect to purchased scrap, but lagged price is important as well. As in many commodity markets, price increases induce an incremental demand in anticipation of further price increases, while during periods of declining prices, buyers adopt a wait-and-see attitude, delaying purchases in anticipation of further reductions. Thus, the relationship between last period's price and current price influences the level of current demand. The effect of last period's price is reflected as a shift of the demand curve specified in terms of current price.

Being a derived demand, the quantity of scrap demanded is also a function of the level of iron and steel production. This variable is included in the demand specifications.

Iron ore is the basic material which substitutes for ferrous scrap in the production of steel, either directly or in one of many reduced forms, e.g. pig iron, hot metal, agglomerates of various types. Iron ore consumption at U.S. consuming plants, in thousands of tons per quarter, is introduced as a variable in the estimation of the demand curves of the system to account for the impact of varying levels of availability of this substitute on the demand for ferrous scrap.

The price of pig iron, as a proxy price variable, was incorporated in the demand equations but was not found to have a significant effect.

Technological changes in steelmaking, particularly the increased utilization of basic oxygen and electric furnaces, would be expected to have an impact on scrap demand. These changes, reflected by the proportions of total steel produced by these methods, are included as variables in the demand equations.

Finally, the quantity of purchased scrap demanded is influenced by the availability of home scrap. The quantity of obsolete scrap demanded is influenced by the availability of home and prompt industrial scrap. The generation of these categories is independent of price, but they have an influence on price through their influence on demand. To control for these factors, the production of these "external" supplies in total scrap production is included as a variable in the specification of the demand function for purchased and obsolete scrap. In the purchased scrap equation, it enters as the ratio of home scrap to the sum of home scrap plus purchased scrap; whereas, for obsolete scrap, it is the ratio of home scrap plus prompt industrial scrap to the sum of home and purchased scrap.

Price Determinants

Price is jointly determined with quantity by the interaction of supply and demand in the marketplace. Supply and demand functions are specified in such a way as to provide estimates of the impact of prices on quantities traded. Estimates of the independent partial impacts of demand and supply factors on price are also of interest, however. To provide some insight into the nature of these impacts, a price equation, separate from the rest of the model, was

estimated on the basis of demand and supply factors. The variables whose effects on price were investigated are as follows:

1. The availability of nonobsolete scrap; i.e., home and prompt industrial scrap.
2. The level of scrap inventories at the steel mills in the previous period.
3. The proportion of total steel production attributable to basic oxgyen furnaces.
4. The proportion of total steel production attributable to electric furnaces.
5. Investment in plant and equipment -- steel mills and blast furnaces, lagged three periods.
6. The level of steel production.
7. Unfilled orders at the steel mills.
8. Net new orders at the steel mills.
9. Average daily gondola car shortages.

Results

Supply

Home Scrap

The production level of home scrap was determined to be solely a factor of the level of raw iron and steel production.[1] This was merely an empirical confirmation of expectations

1. See below, Appendix C, Table C-2, p. 51.

since home scrap is comprised of the byproducts, wastes and discards of the iron-and steel-making processes. Home scrap seldom passes through a market and is therefore not influenced by price.

Purchased Scrap

Price is, however, a significant factor in determining the supply of purchased scrap.[1] The effects of price in the supply equation indicate a normal market response of increased supplies associated with higher prices.

Processing costs in real terms were not found to be statistically significant. Freight charges in real terms, on the other hand, were found to exert a significant negative influence on the supply of purchased scrap. The impact on the supply of total purchased scrap, as will be seen, is smaller than the impact on the supply of obsolete scrap.

Gondola car shortages were found to have a significant negative influence on purchased scrap supplies.

Shipments of steel mill and foundry products, through their association with the generation of prompt industrial scrap, were found to have a significant positive relationship with the level of purchased scrap deliveries.

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1. See below, Appendix C, Table C-3, p. 52.

A mean price elasticity of purchased scrap supply of .365 was derived from the estimated function. Thus, if scrap prices increase by 10 percent, one may expect a 3.6 percent increase in the total supply of purchased scrap delivered to the market.

Obsolete Scrap

Processing costs and price controls were again found not to be significant in determining the supply of obsolete scrap.[1] Turning to the variables whose coefficients were found to be significant at the 95 percent level or better, we find that obsolete scrap supply is strongly influenced by price.

A mean price elasticity of supply of .833 was estimated for obsolete scrap. In the neighborhood of the mean price for the period under consideration, a 10 percent increase in price, in real terms, would have resulted in an 8.3 percent increase in the quantity of obsolete scrap supplied. Such an increase in price would have meant, to be more specific, an increase from a mean quantity supplied of 1,284,241 to 1,391,218 tons per month, a net increase of over 106,000 tons per month.

Averages do not always present the whole picture, however. For this reason, point elasticities of supply were estimated for every point along the supply curve for which an historical observation was available. These are presented in Table 1.

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1. See Appendix C, Table C-4, p. 53.

Table 1. Point Elasticities of Obsolete Scrap Supply (OBBS): 64 Quarterly Observations, 1961:1-1976:4

1961:1	1.282	1969:1	0.651
1961:2	1.394	1969:2	0.847
1961:3	1.091	1969:3	0.938
1961:4	1.040	1969:4	0.863
1962:1	0.899	1970:1	0.857
1962:2	0.963	1970:2	1.041
1962:3	1.043	1970:3	0.868
1962:4	0.856	1970:4	0.738
1963:1	0.788	1971:1	0.760
1963:2	0.872	1971:2	0.762
1963:3	1.042	1971:3	0.681
1963:4	0.861	1971:4	0.581
1964:1	0.796	1972:1	0.608
1964:2	0.853	1972:2	0.624
1964:3	0.881	1972:3	0.684
1964:4	0.822	1972:4	0.706
1965:1	0.778	1973:1	0.810
1965:2	0.815	1973:2	0.903
1965:3	0.817	1973:3	0.954
1965:4	0.714	1973:4	0.913
1966:1	0.701	1974:1	1.112
1966:2	0.746	1974:2	1.039
1966:3	0.735	1974:3	0.963
1966:4	0.733	1974:4	0.864
1967:1	0.731	1975:1	0.803
1967:2	0.775	1975:2	0.831
1967:3	0.771	1975:3	0.769
1967:4	0.672	1975:4	0.701
1968:1	0.705	1976:1	0.814
1968:2	0.675	1976:2	0.833
1968:3	0.702	1976:3	0.836
1968:4	0.641	1976:4	0.781

It is of particular interest to note point elasticities measured along that section of the supply curve corresponding to conditions prevailing during 1974. These averaged approximately .99. At the prices and levels of output prevailing at that time, our estimate indicates that a 10 percent increase in real prices would have resulted in approximately a 10 percent increase in the tonnages of obsolete scrap supplied. That is, obsolete scrap supply shows a significant price elasticity which is in the neighborhood of unity at those price levels.

These estimates result, as has been previously stated, from a procedure which held constant the impact of transportation constraints on the volumes actually supplied. They are, furthermore, fully in accord with results developed by Battelle-Columbus Laboratories[1] indicating that, with no addition to 1974 equipment in place, the ferrous scrap processing industry had the installed capacity for increasing production approximately 88 percent above levels actually reached during that year. More extensive use of double-shift operations alone could have added 25 to 30 million net tons to that year's output of 52 million tons.

Gondola car shortages significantly affect obsolete scrap supply. The impact of shortages in absolute terms was, of course, most severe when unusually large numbers of cars were unavailable during 1974. In 1976:4, by contrast, when a perhaps more normal daily shortage figure of 330 gondola cars was reported, potential obsolete scrap receipts

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1. Battelle-Columbus Laboratories, The Processing Capacity of the Ferrous Scrap Industry, August 10, 1976.

were reduced only about 2.5 percent of actual shipments according to this estimate.

As stated previously, an elasticity of obsolete scrap supply with respect to freight charges of approximately -.91 was calculated.

Demand

Ferrous Scrap

In the short run, the principal determinant of ferrous scrap demand, as would be expected, is the level of steel production. Inasmuch as approximately 60 percent of total scrap requirements are made up of home scrap, which is "free" to the steel mills, arms length price has very little effect on total scrap demand.[1]

Iron ore consumption, and hence the availability of substitute materials for scrap in the production of steel, was found to exert a significant negative influence on the level of total demand for ferrous scrap. It exerts a similar significant negative influence on the levels of demand for total purchased and obsolete ferrous scrap.

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1. See Appendix C, Table C-5, p. 54.

Both current and lagged scrap prices have a significant impact on the demand for purchased scrap.[1]

The level of steel production remains a significant positive determinant of purchased scrap demand, while the proportion of home scrap in total scrap receipts exerts the expected negative influence.

Technological change in steelmaking, as reflected by proportions of total output accounted for by electric or basic oxygen furnaces, seems not to have had a significant impact on overall demand for purchased scrap. This is shown in Table 2, which presents the percentage share of scrap used as a charging unit in each of these types of steel furnaces, basic oxygen, electric arc, and open hearth. Although the various shares have shifted with time and technological changes, the percentage of scrap (home plus purchased) used as the charging unit in total steel production has remained at approximately 50 percent since 1965.

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1. Current prices were shown to have the expected negative impact on scrap demand thus indicating, ceteris paribus, that at higher prices less scrap is demanded. Lagged scrap prices (compared to the lagged prices of the prior period) had a positive effect on the quantity of scrap demand, i.e. at higher prices, more scrap is demanded. This is thought to reflect shifts in the demand curve specified in terms of current price, rather then movements along the same demand curve, in response to anticipations regarding future price increases or decreases. See Appendix C, Table C-6, p. 55.

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Table 2. Summary of Steel Production and Scrap Charge by Furnace Type; Percent of Total Steel Production by Furnace Type, and Scrap Percentage of Total Charge for Each Type

	Furnace type							
	Basic oxygen		Electric		Open hearth		Total	
Year	Steel production	Scrap charge	Steel production	Scrap charge	Steel production	Scrap charge	Steel production	Scrap charge
1965	17.4	29.6	10.5	97.7	71.7	41.6	100.0	50.4
1966	25.3	29.0	11.1	98.4	63.4	41.5	100.0	50.0
1967	32.6	29.3	11.9	97.9	55.5	41.6	100.0	49.4
1968	37.1	29.0	12.8	97.4	50.1	44.1	100.0	49.2
1969	42.6	29.9	14.3	98.6	43.1	45.1	100.0	50.0
1970	48.1	30.1	15.4	98.1	36.5	41.4	100.0	48.7
1971	53.1	27.8	17.3	96.8	29.6	44.4	100.0	50.5
1972	56.0	28.7	17.8	96.9	26.2	45.7	100.0	51.2
1973	55.2	28.7	18.4	96.2	26.4	44.7	100.0	50.5
1974	56.0	28.5	19.6	96.8	24.4	46.0	100.0	52.1
1975	61.6	28.3	19.5	96.7	19.0	44.7	100.0	50.8
1976	62.4	28.4	19.2	98.1	18.4	46.8	100.0	50.8

Source: Derived from Facts, Institute of Scrap Iron and Steel, Inc., 1976 Yearbook, 34th Edition (1977).

Obsolete Scrap

Interpretation of the factors affecting the obsolete scrap demand function -- price, total steel production and type of furnace -- is essentially the same as in the case of total purchased scrap.[1] The level of steel production and the availability of substitutes clearly dominate the demand for purchased and obsolete scrap.

Price Equation

Ferrous Scrap

Six of the nine variables whose impacts on scrap prices were tested turned out to be significant at the 95 percent level or better.[2] Those not found to be significant were: changes in the utilization of basic oxygen furnaces, changes in utilization of electric furnaces (which reflect technological changes in steelmaking), and expenditures on plant and equipment -- blast furnaces and steel works.

As postulated in the introduction, supplies of nonobsolete scrap, i.e., home and prompt industrial, exert a significant negative influence on scrap price. Similarly, it was found that scrap price varies inversely with the level of scrap inventories at the steel mills during the

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1. See Appendix C, Table C-7, p. 56.
2. See Appendix C, Table C-8, p. 57.

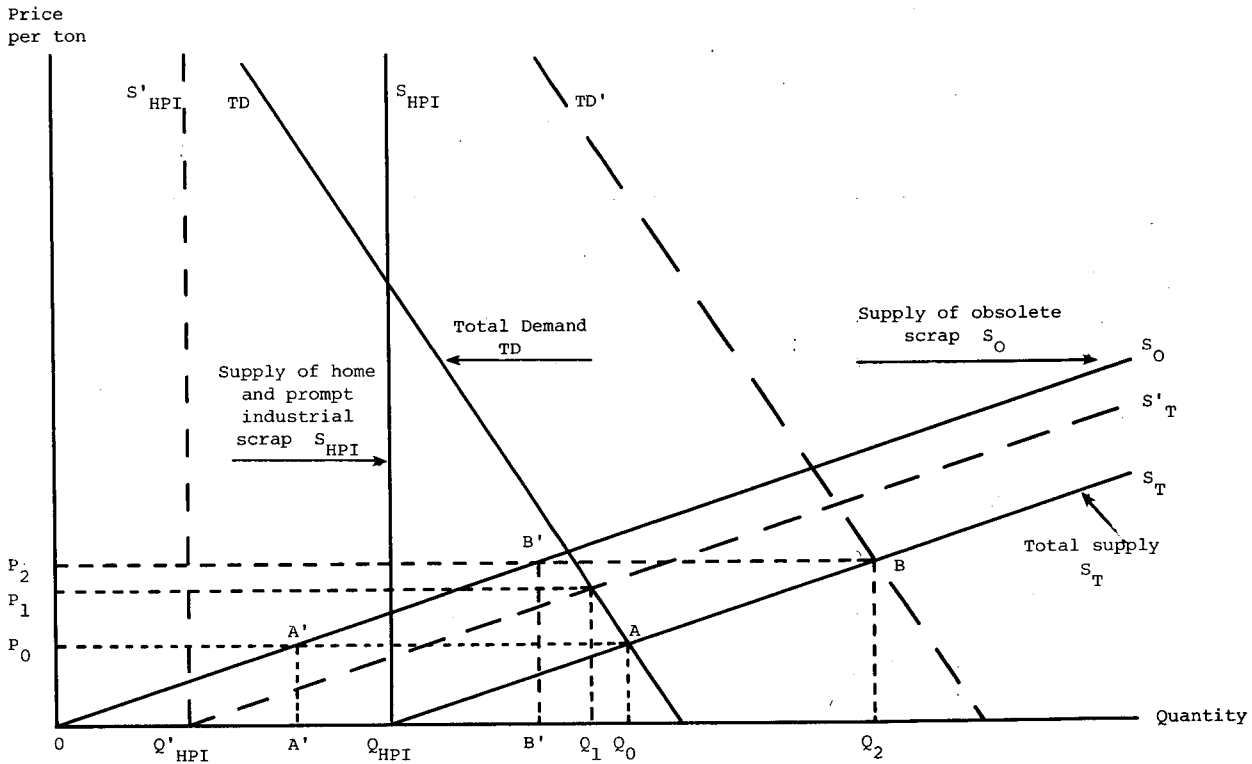
previous quarter. Scrap prices vary positively with the level of unfilled orders at the steel mills, with the level of net new orders, with the level of steel production, and with the severity of gondola car shortages.

APPENDIX A. MARKET STRUCTURE

Functional links in the forces generating scrap supply and demand are shown in Figure 1 on page 8 above. Figure A-1 presents these linkages in terms of supply and demand curves. S_{HPI} drawn vertically over Q_{HPI} depicts the supply of home and prompt industrial scrap, which is assumed to be fixed at any given point in time and independent of price. S_0 drawn as a positively sloped curve rising from the origin, depicts the supply schedule of obsolete scrap. The total market supply function is the summation of S_{HPI} and S_O and is labeled S_T. The intersection of S_T and the total demand curve (TD) determines the initial market clearing price, P_0 and the quantity traded, Q_0, respectively. Under these conditions $O\text{-}Q_{HPI}$ of home and prompt industrial scrap is supplied, the remainder, $Q_{HPI}\text{-}Q_0$ being obsolete.

A reduction in the supply of prompt industrial scrap would shift S_{HPI} to S'_{HPI} and S_T to S'_T. This results in a new price-quantity equilibrium point P_1, Q_1. Even though home and prompt industrial scrap supplies have fallen from Q_{HPI} to Q'_{HPI} the total quantity supplied has only fallen from Q_0 to Q_1. As can be seen graphically, the volume of obsolete scrap supplied has risen substantially in both absolute and relative terms.

Figure A-1. Price Determination in the Ferrous Scrap Market



Returning to the initial supply conditions as depicted by S_T an upward shift in demand from TD to TD', resulting in a shift from P_0,Q_0 to P_2,Q_2 implies a significant absolute and proportional increase in obsolete scrap supplied. This variation in the obsolete to purchased scrap ratio is confirmed by a comparison of the two series, as presented in Appendix D.

Figure A-1 seems to be a fair representation of the workings of the scrap market, and one can infer directly from it a testable hypothesis that the price elasticity of supply for obsolete scrap is significantly larger than that for total purchased scrap. Price elasticity of supply is calculated, in the neighborhood of some initial point, by dividing an observed percentage change in quantity supplied by the percentage change in price. The quotient expresses the percentage by which quantity supplied can be expected to change for each 1 percent change in price.

Ignoring home scrap for the moment, thus assuming that S_{HPI} measures the supply of prompt industrial scrap and S_T corresponds to the supply of total purchased scrap, Figure 2 shows that a shift in demand from TD to TD' results in a change in price from OP_0 to OP_2 and a change in quantity supplied from OQ_0 to OQ_2. The quantity of prompt industrial scrap, Q_{HPI} has not changed, however. The supply function for obsolete scrap, S_O shows that the total increase in scrap supplied, OQ_2-OQ_0 is attributable to the increase in obsolete scrap supplied, from OA' to OB'. For the same percentage increase in price, it is clear that obsolete has increased by a much larger percentage than has total purchased scrap.

Algebraically, the price elasticity of supply for obsolete scrap is

$$\frac{\frac{(OB' - OA')}{OA'}}{\frac{(OP_2 - OP_0)}{OP_0}} = \frac{\frac{\text{change in quantity}}{\text{initial quantity}}}{\frac{\text{change in price}}{\text{initial price}}}$$

The corresponding elasticity for total purchased scrap is

$$\frac{\frac{(OQ_2 - OQ_0)}{OQ_0}}{\frac{(OP_2 - OP_0)}{OP_0}}$$

As has been shown, $(OB' - OA') = (OQ_2 - OQ_0)$ and the denominators are the same; therefore, the fact that OA' is less than OQ_0 implies a greater elasticity for obsolete than for total purchased scrap.

Econometric estimates of these elasticities confirmed such expectations.[1] In fact, it was found that, while the supply of obsolete scrap displays a mean price elasticity of .833, the equivalent measure for total purchased scrap is .365.

Total purchased scrap, as has been noted, is only 44 percent obsolete on average. This implies an elasticity of approximately zero for prompt industrial. In fact, an

1. See Appendix C, Tables C-3 and C-4, p. 53-4, respectively.

elasticity for prompt industrial scrap supply calculated on the basis of these estimates proved to be approximately -.003, or very close to zero. The calculation proceeds from the observation that the elasticity of total purchased scrap is equal to the weighted average of obsolete and prompt industrial scrap price elasticities, where weights employed are tonnage market shares. In symbols the price elasticity of prompt industrial scrap supply, E_{PI} is derived by solving: $.44(.833) + .56\ (E_{PI}) = .365$.

APPENDIX B. METHODOLOGICAL CONSIDERATIONS AND MODEL STRUCTURE

Potential Problems

Three major potential sources of inaccuracy and bias exist in the econometric estimation of a system of supply and demand functions: specification error, simultaneous equations bias, and autocorrelation.

When an important variable is omitted from the specification of a function, estimated coefficients of the remaining variables are likely to be biased. To correct for such a bias it is necessary to collect and include data on all variables suggested by theoretical and factual reasoning as relevant to the behavior of the iron and steel scrap market. Such a procedure has been followed in this study. Estimates of coefficients associated with some of these variables proved not to be statistically significant. To avoid the possibility of specification bias, valid theoretical reasons overruled statistical insignificance, and, unless coefficients of the remaining variables were stable with respect to its inclusion or deletion, such variables were retained.[1]

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1. Examples of this include scrap processing costs and the dummy variable for periods of price control.

The estimation of supply and demand equations is particularly subject to simultaneous equations bias. The source of this bias can perhaps best be explained diagramatically.

One begins the estimation process with a series of observations, each relating to a particular time period, on prices and quantities traded. In Figure B-1 these are represented as points on a two-dimensional graph. If, in attempting to estimate a supply function, one were to proceed directly to "fit" an equation to these observations, as in Figure B-2, in general the results would be biased. The reason for this bias is illustrated by Figure B-3. In every period, prices and quantities are established by the simultaneous interaction of demand and supply. Assuming that stable demand and supply functions exist, the scatter of observations is generated by successive shifts of the demand curve, supply curve, or both. These shifts are caused by exogenous (in this case nonprice) factors affecting demand and supply. Thus, what might have appeared as an estimate of a single supply curve in Figure B-2 is actually a series of supply and demand shifts, as shown in Figure B-3. If information on these factors can be incorporated in the model, the method of two-stage least squares permits the separation, or identification, of the supply and demand curves. If a large number of observations is available, two-stage least squares will generate reliable estimates of coefficients.

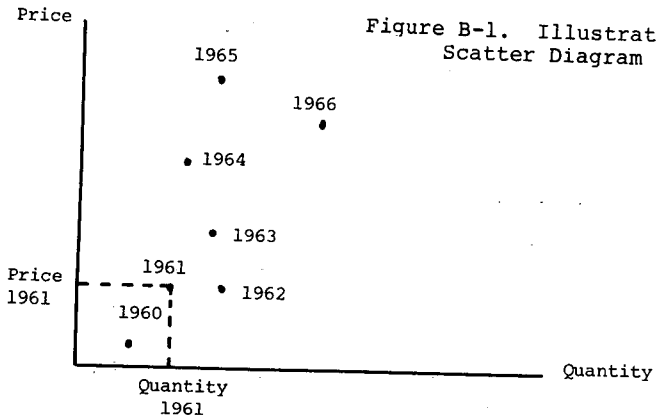

Figure B-1. Illustrative Scatter Diagram

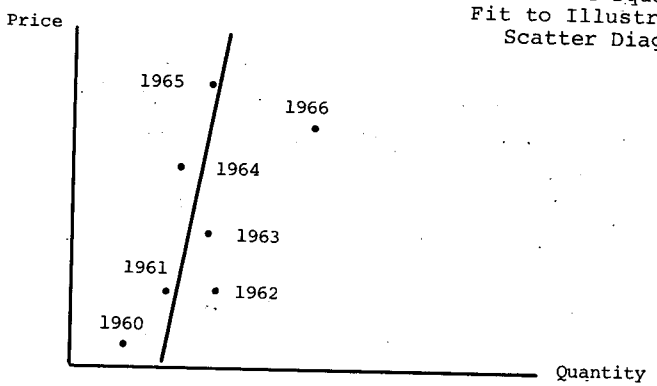

Figure B-2. Least Square Equation Fit to Illustrative Scatter Diagram

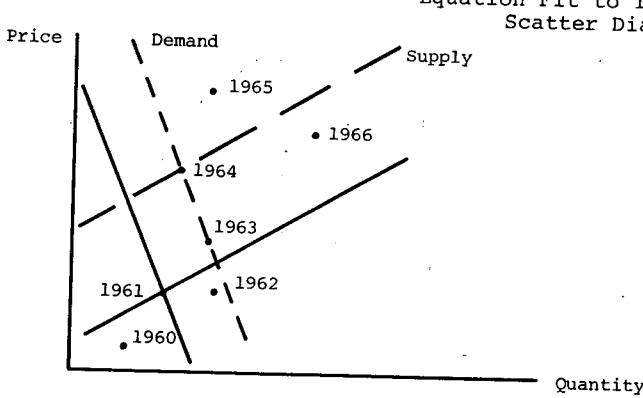

Figure B-3. Two-Stage Least Square Equation Fit to Illustrative Scatter Diagram

Even when an equation has been properly estimated, not all actual observations will "fit" the curve exactly. What are generally assumed to be purely random disturbances will cause actual realizations of price and/or quantities traded to deviate somewhat from what would be predicted on the basis of underlying behavorial equations. So long as these disturbances are truly random, standard estimation techniques make it possible to generate valid significance tests for estimates generated. When disturbances tend to follow some systematic pattern, however (i.e., when these disturbances are "autocorrelated"), these tests are invalidated. In this study the Durbin-Watson statistic was employed to test for the presence of autocorrelation (see p. 48). When autocorrelation was found, first order correction procedures were employed with satisfactory results.

Model Structure

The model structure adopted here is quite simple, consisting of three demand equations, three supply equations, and three identities reflecting the market clearing condition that demand equals supply.[1] An independent price equation was estimated separately.

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1. The model implicitly contains an equation describing changes in scrap inventory held by the steel mills as a function of the exogenous variables of the system. A separate inventory equation was not estimated, however.

Demand Equations

1. Total Demand

$$TDEM = a_0 + a_1\ PR + a_2\ PR/1 + a_3\ TSTL + a_4\ OREC + a_s PIGP + a_c ELEC + a_7 BOP$$

TDEM = Total consumption of ferrous scrap in iron and steelmaking, in thousands of tons per month. Jointly compiled monthly by the U.S. Bureau of Mines and the U.S. Bureau of the Census and reported in the Survey of Current Business.

PR = Composite price index for iron and steel scrap, WPI 1012, deflated by the price deflator for gross domestic product. Source: Bureau of Labor Statistics.

PR/1 = PR lagged one quarter.

TSTL = Domestic output of raw steel, including ingots, castings, blooms, billets, slabs, etc., in thousands of short tons per month. Compiled by the American Iron and Steel Institute and reported in the Survey of Current Business.

OREC = consumption of iron ore and agglomerates at consuming plants in the United States, in thousands of long tons. Reported monthly by the Bureau of Mines, U.S. Department of the Interior, in the various Mineral Industry Surveys.

PIGP = Pig iron composite price, in dollars per short ton. Compiled and reported in Survey of Current Business from daily price quotations published by American Metal Market.

ELEC = Proportion of total steel production produced in electric furnaces. Source: American Iron and Steel Institute (AISI).

BOP = Proportion of total steel production produced in basic oxyen furnaces. Source: AISI.

2. Demand for Purchased Scrap

$$PSCR = b_0 + b_1\ PR + b_2\ PR_{-1} + b_3\ TSTL + b_4\ OREC + b_5\ PIGP + b_6\ C + b_7\ ELEC + b_8\ BOP$$

PR, PR/1, TSTL, OREC, PIGP, ELEC, and BOP have been described in 1, above.

PSCR = Net purchased scrap receipts by iron and steel mills, in thousands of short tons per month. U.S. Bureau of Mines, U.S. Bureau of Census, reported in the Survey of Current Business.

$C = \frac{HSCR}{HSCR + PSCR}$ = home scrap production divided by the sum of home scrap production and net purchased scrap receipts.

3. Demand for Obsolete Scrap

$$OBBS = c_0 + c_1\ PR + c_2\ PR_{-1} + c_3\ TSTL + c_4\ OREC + c_5\ PIGP + c_6\ B + c_7\ ELEC + c_8\ BOP$$

PR, PR_{-1}, TSTL, OREC, PIGP, ELEC, and BOP have been described above.

OBBS = obsolete scrap receipts, in thousands of tons per month. Since empirical data were not available for obsolete scrap, a methodology of deducting prompt industrial scrap (discounted by a factor of 10 percent due to waste) from total purchased scrap receipts was used. Thus OBBS = (PSCR - .9PPS).

PPS = Prompt industrial scrap generated, in thousands of tons per month; PPS was calculated as the sum of (STLSADJ and FOUNS), multiplied by the historical percentage of scrap generation as a component of materials consumption. Thus PPS = .194 (STLSADJ + FOUNS).

STLSADJ = Shipments of steel mill products adjusted for trade, in thousands of tons per month. Source: Survey of Current Business.

FOUNS = Foundry shipments, in thousands of tons per month. Includes gray and ductile iron, malleable iron, and steel castings. Source: U.S. Department of Commerce, Bureau of the Census, Current Industrial Reports Series M33A, Iron and Steel Castings.

Supply Equations

4. Supply of Home Scrap

$$HSCR = d_0 + d_1 \ TSTL$$

HSCR = Ferrous scrap generated within the iron and steel industry, primarily home scrap, in thousands of short tons per month. U.S. Bureau of Mines/U.S. Bureau of the Census. Reported in the Survey of Current Business.

TSTL has been described in 1 above.

5. Supply of Purchased Scrap

$$PSCR = e_0 + e_1 \ PR + e_2 \ COSTR + e_3 \ FRTR + e_4 \ PRCON + e_5 \ GONS + e_6 \ SHIP + e_7 XPRTR$$

PR and PSCR have been described above.

COSTR = Index of ferrous scrap processing costs used as a proxy for actual costs deflated by the price deflator for gross domestic product. See discussion on page 15 for sources.

FRTR = Freight rate, in average revenue per ton-mile, iron and steel scrap, deflated. Source: Department of Transportation, Carload Waybill Statistics.

PRCON = Dummy variable reflecting the presence of price controls on iron and steel scrap. Equals 1 from 1973:1 to 1974:1. Equal 0 for all other quarters.

GONS = Average daily gondola car shortages per quarter. Source: Association of American Railroads, CS-44 Reports.

SHIP = STLSADJ + FOUNS = Shipments of steel mill and foundry products, adjusted for trade. See above.

XPRTR = Export ratio = $\frac{XPRT}{PSCR}$ = Exports of iron and steel scrap divided by domestic purchased scrap receipts.

XPRT = U.S. exports of iron and steel scrap, in thousands of short tons per month. Compiled by the Bureau of the Census and reported in the Survey of Current Business.

6. Supply of Obsolete Scrap

$$OBBS = f_0 + f_1\ PR + f_2\ COSTR + f_3\ FRTR + f_4\ XPRTR + f_5\ PRCON + f_6\ GONS$$

OBBS, PR, COSTR, FRTR, XPRTR, PRCON, GONS have been described above.

Identities

7. Market Clearing Identity for Total Demand and Supply

This identity takes the form:

$$TDEM + (INV - INV_{-1}) = HSCR + PPS + OBBS$$

INV = Total ferrous scrap stocks held by iron and steel producers at the end of the quarter, in thousands of short tons. Reported in the Survey of Current Business.

INV_{-1} = INV lagged one period.

This identity merely states that scrap consumption plus the change in end-of-period stocks must equal

the total receipts of ferrous scrap from home, prompt industrial, and obsolete sources.

8,9. Market Clearing Identities for Purchased Scrap and Obsolete Scrap

These identities merely set respective supplies equal to demand during every period.

Price Equation

10. Price of Scrap

$$PR = g_0 + g_1\ NONOBBS + g_2\ INV_{-1} + g_3\ BOP + g_4\ IP\&E331_{-3} + g_5\ OU331 + g_6\ 0331 + g_7\ ELEC + g_8\ GONS + g_9\ TSTL$$

PR, INV_{-1}, BOP, ELEC, GONS, and TSTL have been described above.

NONOBBS = Nonobsolete scrap = HSCR + PPS, in thousands of short tons per month.

$IP\&E331_{-3}$ = Investment in plant and equipment, blast furnaces and steel works, in billions of current dollars, lagged three months. Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business.

OU331 = Unfilled orders, blast furnace

and basic steel products, in billions of current dollars. U.S. Department of Commerce, Bureau of the Census, Manufacturers Shipments, Inventories and Orders, Series M3-1.

0331 = Net new orders, blast furnace and basic steel products, in billions of current dollars. Source: Same as OU331 above.

APPENDIX C. ECONOMETRIC ESTIMATES OF FERROUS SCRAP SUPPLY AND DEMAND FUNCTIONS

To aid in interpreting the results, a number of summary statistics are presented along with each regression. A t-statistic, labeled T-STAT, is reported for each coefficient. The larger this number in absolute value, the more precise is the corresponding estimate. For large sample sizes such as those dealt with here, a t-statistic of 1.96 means that there is a 95 percent probability that the true coefficient is not equal to zero. A t-statistic of 1.28, for example, reduces this probability to 80 percent. A value of 2.58 raises the probability to 99 percent. A standard cutoff for judging the significance or lack of significance of an estimate is the 95 percent probability level; i.e., a t-statistic greater than or equal to 1.96.

R-BAR Squared is a variable ranging in value from 0 to 1.0. It is a measure of the proportion of the variability in the dependent variable which is "explained" by the joint variation of the independent variables of the equation. Although a high value of R-BAR Squared is clearly desirable, a low value may also be associated with significant results. An F-test is used to evaluate the significance of that part of the variation of the dependent variable which is explained by the model. All results presented in what follows are highly significant in terms of the F-test.

The Durbin-Watson Statistic provides a test for the presence of autocorrelation. The critical values of this statistic depend on the sample size and the number of coefficients being estimated. For present purposes, a simplified guide to its interpretation is as follows: A value between 1.65 and 2.35 indicates no autocorrelation. Values between 1.4 and 1.65 are inconclusive, whereas values below 1.4 indicate the presence of positive autocorrelation and the need for special correction procedures.

When an equation is estimated by "Least Squares with First-Order Autocorrelation Correction," an estimated value for a parameter called "RHO" is provided. The value of RHO is of interest only in that a high T-STAT associated with it and a Durbin-Watson statistic in an acceptable range indicate that any initial autocorrelation problem which may have existed has been corrected. Therefore, values of T-STAT for remaining estimates are reliable measures of their significance.

A final statistic of interest is the standard error of the regression. As a rule of thumb, 95 percent of the "fitted" values of the dependent variable derived from the estimated equation will be within $\pm$ 2 standard errors from actual values. If, for example, the standard error of a regression is x, then the estimated equation will track within 2x of actual values 95 percent of the time. It will generate values within x of actual values approximately 68 percent of the time.

Table C-1 presents mean values for the variables of the system. These are useful in interpreting the magnitude of

Table C-1. Mean Values and Units of System Variables

BM	=	.822, home and prompt industrial scrap as a proportion of total scrap supplies
BOPM	=	36.044, percentage of total steel production produced in basic oxygen furnaces
CM	=	.591, home scrap as a proportion of total scrap supplies
COSTRM	=	129.788, index of scrap processing costs in real terms
ELECM	=	14.123, percentage of total steel production produced in electric furnaces
FRTRM	=	3.751, cents per ton-mile, average railroad revenues from iron and steel scrap transport
GONSM	=	1071.688, gondola cars, average daily shortages per quarter
HSCRM	=	4213.891, thousands of short tons per month, home scrap production
INVM	=	7907.859, thousands of short tons, end of quarter scrap inventory at steel mills
INV\1M	=	7896.359, thousands of short tons, INVM lagged one quarter
IP&E331\3M	=	1.59, index of expenditures on blast furnaces and steel works, lagged 3 quarters
NONOBBSM	=	5871.4, thousands of short tons per month, supplies of home and prompt industrial scrap (estimate)
OBBSM	=	1284.241, thousands of short tons per month, receipts of obsolete scrap (estimate)
0331M	=	2.373, billions of dollars, net new orders at steel mills
OU331M	=	5.440, billions of dollars, unfilled orders at steel mills
ORECM	=	29,874.523, thousands of short tons, U.S. consumption of iron ore and agglomerates
PIGPM	=	79.657, dollars per short ton, price of pig iron
PPSM	=	1657.509, thousands of short tons per month, prompt industrial scrap receipts (estimate)
PRM	=	1.566, BLS composite index of scrap prices, WPI1012, deflated
PR\1M	=	1.561, PRM lagged one quarter
PSCRM	=	2941.750, thousands of short tons per month, purchased scrap receipts
SHIPM	=	9493.183, thousands of short tons per month, steel mill and foundry shipments adjusted for international trade
TDEMM	=	7141.703, thousands of short tons per month, ferrous scrap consumption
TSTLM	=	10,531.922, thousands of short tons per month, raw steel production
XPRTRM	=	.229, ratio of ferrous scrap exports to purchased scrap receipts

the coefficients associated with each variable. An "M," indicating "mean," is affixed to each variable name. It must be remembered that the "impact" of every variable, regardless of units, is measured in units of the dependent variable of the equation in question. Thus, for example, in the purchased scrap supply equation, an increase of 1 cent per ton-mile in real terms, in average revenue per ton-mile, would result in a reduction of purchased scrap supplied of 241,139 tons per month. Also, it must be recalled that these coefficients represent partial effects. Total effects can be determined only on the basis of changes in all the independent variables of the system. Thus, to return to the example, if an increase in freight rates were accompanied by an increase in price, the total impact of the two changes might well be an increase in supplies, depending on the relative magnitudes of the two changes.

Mean values are calculated over the period 1961:1 to 1976:4, the period over which most regressions were run.

The regression results for both the supply and the demand components of the model, as well as the results of the price equation, are presented on pages 51 through 57.

Table C-2. Supply of Home Scrap (HSCR): Least Squares with First-Order Autocorrelation Correction, 77 Quarterly Observations, 1958:1-1977:1

	Coefficient	Standard error	T-STAT
Constant	595.195	88.06	6.759
Independent variable:			
TSTL	0.340275	0.007387	46.06
RHO	0.771607	0.07182	10.74

R-BAR Squared: 0.9804
Durbin-Watson Statistic: 2.2960
Standard error of the regression: 101.7

Note: Another way of presenting these results is to revert to a standard equation format. Thus, in the case of the supply of home scrap, the above results represent the following equation:

$$HSCR = 595.195 + .340275\ (TSTL)$$

If one substitutes the mean value for the independent variable,

$$HSCR = 595.195 + .340275\ (10{,}531.922)$$

an estimated mean value of the dependent variable HSCR results. In this case, the estimated mean value is equal to 4,178.945 thousand short tons per month, which should be compared with the mean of actual values of HSCR (HSCRM), which is equal to 4,213.891 thousand short tons per month. It can be seen that the equation "tracks" actual values closely. These equations can also be used to estimate the impact of a change in the value of an independent variable on the value of the dependent variable

Table C-3. Supply of Purchased Scrap (PSCR): Two-Stage Least Squares, 64 Quarterly Observations 1961:1-1976:4

	Coefficient	Standard error	T-STAT
Independent variables:			
Constant	1789.60	1532	1.168
PR*	684.733	189.9	3.606
COSTR	-4.42187	12.12	-0.3647
FRTR	-241.139	83.76	-2.879
PRCON	-25.7733	131.0	-0.1967
GONS	-0.133804	0.05748	-2.328
SHIP	0.211921	0.03487	6.077
XPRTR	-1341.99	456.3	-2.941

* Marks the 1 included endogenous variable.

R-Bar Squared: 0.8296
Durbin-Watson Statistic: 1.7339
Standard error of the regression: 227.6. Normalized: 0.07738.
Excluded exogenous variables: BOP, OREC, ECD, TSTL, PIGP, HSCR, IP&E331\3, OU331, O331, INV\1, ELEC, PPS.

Table C-4. Supply of Obsolete Scrap (OBBS): Two-Stage Least Squares, 64 Quarterly Observations 1961:1-1976:4

	Coefficient	Standard error	T-STAT
Independent variables:			
Constant	2558.90	1354	1.890
PR*	680.395	190.0	3.581
COSTR	-6.01127	12.04	-0.4991
FRTR	-289.703	70.45	-4.112
XPRTR	-1537.59	418.4	-3.675
PRCON	4.16000	128.1	0.03248
GONS	-0.112554	0.05398	-2.085

* Marks the 1 included exogenous variable.
R-Bar Squared: 0.6287
Durbin-Watson Statistic: 1.7226
Standard error of the regression: 227.8. Normalized: 0.1774
Excluded exogenous variables: BOP, OREC, ECD, TSTL, PIGP, HSCR, IP&E331\3, OU331, 0331, INV\1, ELEC, PPS, SHIP.

Table C-5. Total Demand for Ferrous Scrap (TDEM): Least Squares with First-Order Autocorrelation Correction, 64 Quarterly Observations, 1961:1-1976:4

	Coefficient	Standard error	T-STAT
Independent Variable:			
Constant	480.779	351.5	1.368
PR	-37.8604	143.4	-0.2640
PR/1	36.2245	151.6	0.2390
TSTL	0.830213	0.05308	15.64
OREC	-0.0826554	0.01949	-4.240
PIGP	1.95021	1.281	1.522
ELEC	48.6384	39.62	1.228
BOP	-12.5744	7.265	-1.731
RHO	0.271015	0.1332	2.035

R-BAR Squared: 0.9710
Durbin-Watson Statistic: 2.0740
Standard error of the regression: 170.4 Normalized: 0.02386

Table C-6. Demand for Purchased Scrap (PSCR): Two-Stage Least Squares, 64 Quarterly Observations, 1961:1-1976:4

	Coefficient	Standard error	T-STAT
Independent Variables:			
Constant	7296.09	459.1	15.89
PR*	-234.871	81.93	-2.867
PR/1	302.489	79.15	3.822
TSTL	0.306963	0.02226	13.79
OREC	-0.0226091	0.008369	-2.701
PIGP	-0.434674	0.5268	-0.8251
C	-11359.7	648.1	-17.53
ELEC	-24.6894	16.87	-1.463
BOP	2.08531	3.077	0.6778

*Marks the 1 included endogenous variable.

R-BAR Squared: 0.9751.
Durbin-Watson Statistic: 2.1428
Standard error of the regression: 87.02 Normalized: 0.02958

Excluded exogenous variables: COSTR, ECD, SHIP, FRTR, HSCR, IB&E33 OU331, 0331, XPRTR, PRCON, GONS, INV/1, PPS, B.

Table C-7. Demand for Obsolete Scrap (OBBS): Two-Stage Least Squares, 64 Quarterly Observations, 1961:1-1976:4

	Coefficient	Standard error	T-STAT
Independent variables:			
Constant	6881.26	289.6	23.76
*PR	-119.597	60.14	-1.989
PR/1	210.057	57.65	3.644
TSTL	0.142704	0.01616	8.831
OREC	-0.0163978	0.006066	-2.703
PIGP	-0.721962	0.3970	-1.818
B	-7937.12	303.9	-26.12
ELEC	1.58397	11.97	0.1323
BOP	0.289544	2.221	0.1304

*Marks the 1 included endogenous variable.

R-BAR Squared: 0.9714
Durbin-Watson Statistic: 2.0440
Standard error of the Regression: 63.20
Excluded exogenous variables: COSTR, ECD, SHIP, FRTR, HSCR, IP&E331/3, OU331, 0331, XPRTR, PRCON, GONS, IVN/1, PPS.

Table C-8. Ferrous Scrap Price (PR): Least Squares with First-Order Autocorrelation Correction, 64 Quarterly Observations, 1961:1-1976:4

	Coefficient	Standard error	T-STAT
Constant	2.91811	0.6882	4.240
Independent variables:			
NONOBS	-0.000341803	0.0001035	-3.301
INV\1	-0.000150926	5.084E-05	-2.968
BOP	-0.00426096	0.009913	-0.4298
IP&E331\3	0.00320922	0.1147	0.02797
OU331	0.0698875	0.02660	2.627
O331	0.146870	0.05968	2.461
ELEC	-0.00356869	0.05023	-0.07105
GONS	0.000135051	3.889E-05	3.473
TSTL	0.000119893	5.077E-05	2.361
RHO	0.828482	0.08947	9.260

R-BAR Squared: 0.9267
Durbin-Watson Statistic: 1.6473
Standard error of the regression: 0.1305

APPENDIX D. VALUES OF SYSTEM VARIABLES

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Quarterly Values of System Variables
(Units as noted in Table C-1)

Year, Qtr.	HOME SCRAP PRODUCTION -HSCR-	EOP SCRAP INVENTORY, MILLS -INV-	INDEX OF EXPD. ON PLANT&EQUIPMT. BY STEELMAKERS -IP&E331-	OBSOLETE SCRAP RECEIPTS -OBBS-	RATIO OBSOLETE TO PURCHASED SCRAP -OBBS/PSCR-	NET NEW ORDERS, MILLS -O331-	UNFILLED ORDERS, MILLS -OU331-	PRICE OF PIG IRON -PIGP-	PROMPT INDUSTRIAL SCRAP GENERATION -PPS-	COMPOSITE FERROUS SCRAP PRICE -PR-
1961:1	2,647.000	8,613.000	1.06	802.451	0.451	1.235	1.866	58.880	1,085.055	1.598
1961:2	3,227.000	8,385.000	0.90	1,039.508	0.459	1.617	2.406	58.880	1,359.436	1.772
1961:3	3,333.000	8,674.000	0.76	1,476.496	0.549	1.553	2.697	58.880	1,347.227	1.787
1961:4	3,618.000	8,741.000	0.78	1,054.079	0.457	1.828	2.840	58.880	1,388.801	1.628
1962:1	4,011.000	8,534.000	0.76	935.594	0.389	1.720	3.508	58.880	1,633.784	1.622
1962:2	3,437.000	9,196.000	0.78	765.881	0.368	1.107	2.350	58.880	1,464.577	1.311
1962:3	2,890.000	8,884.000	0.80	665.466	0.380	1.343	2.145	58.880	1,205.037	1.278
1962:4	3,210.000	8,592.000	0.75	1,020.950	0.467	1.381	2.016	57.130	1,296.722	1.188
1963:1	3,505.000	7,920.000	0.75	1,079.580	0.456	1.683	2.224	56.200	1,431.578	1.283
1963:2	4,283.000	7,731.000	0.84	1,261.149	0.439	1.835	3.016	56.200	1,793.168	1.292
1963:3	3,500.000	8,013.000	0.93	848.125	0.394	1.359	2.303	56.080	1,452.084	1.267
1963:4	3,573.000	7,937.000	0.96	1,145.893	0.475	1.502	2.216	56.030	1,407.897	1.287
1964:1	3,993.000	7,302.000	1.33	1,088.094	0.432	1.648	2.214	56.030	1,591.007	1.355
1964:2	4,424.000	7,129.000	1.31	1,120.821	0.416	1.905	2.569	56.030	1,745.754	1.439
1964:3	4,372.000	7,510.000	1.40	1,020.557	0.402	2.212	3.382	56.030	1,686.048	1.595
1964:4	4,650.000	7,413.000	1.54	1,183.275	0.424	2.207	4.253	56.030	1,783.028	1.630
1965:1	4,793.000	6,915.000	1.42	1,111.305	0.378	2.161	4.613	56.030	2,030.773	1.610
1965:2	4,918.000	7,066.000	1.50	1,301.072	0.401	1.955	4.162	56.030	2,161.031	1.581
1965:3	4,631.000	7,213.000	1.61	1,025.948	0.370	1.701	3.589	56.030	1,940.058	1.476
1965:4	4,062.000	7,638.000	1.68	1,374.957	0.488	1.687	2.962	56.030	1,600.047	1.401
1966:1	4,467.000	7,357.000	1.62	1,550.686	0.489	2.073	3.255	56.030	1,803.683	1.487
1966:2	4,801.000	7,483.000	1.73	1,369.711	0.426	2.189	3.696	56.030	2,050.321	1.373
1966:3	4,627.000	8,005.000	1.71	1,112.027	0.388	2.261	4.114	56.030	1,948.859	1.389
1966:4	4,592.000	8,193.000	1.74	1,282.13.	0.435	1.859	3.850	56.000	1,849.855	1.309
1967:1	4,406.000	7,826.000	1.89	1,284.098	0.444	1.670	3.061	55.980	1,785.447	1.290
1967:2	4,324.000	7,854.000	1.96	1,110.871	0.406	1.925	2.947	55.980	1,804.588	1.260
1967:3	4,149.000	7,840.000	1.91	970.970	0.385	2.050	3.416	55.980	1,723.367	1.258
1967:4	4,558.000	7,793.000	1.90	1,276.105	0.432	2.177	3.714	55.980	1,865.439	1.256

Continued--

Quarterly Values of System Variables
(Units as noted in Table C-1)
(Continued)

Year, Qtr.	HOME SCRAP PRODUCTION -HSCR-	EOP SCRAP INVENTORY, MILLS -INV-	INDEX OF EXPD. ON PLANT&EQIPMT. BY STEELMAKERS -IP&E331-	OBSOLETE SCRAP RECEIPTS -OBBS-	RATIO OBSOLETE TO PURCHASED SCRAP -OBBS/PSCR-	NET NEW ORDERS, MILLS -0331-	UNFILLED ORDERS, MILLS -OU331-	PRICE OF PIG IRON -PIGP-	PROMPT INDUSTRIAL SCRAP GENERATION -PPS-	COMPOSITE FERROUS SCRAP PRICE -PR-
1968:1	4,827.000	7,772.000	1.96	1,270.261	0.405	2.376	4.460	55.980	2,070.821	1.327
1968:2	5,018.000	8,225.000	1.87	922.563	0.298	2.135	4.346	55.980	2,419.374	1.119
1968:3	4,022.000	8,340.000	2.09	554.222	0.242	1.668	3.048	55.980	1,926.420	1.023
1968:4	3,909.000	7,868.000	2.07	1,122.393	0.421	1.935	3.296	55.980	1,718.452	1.038
1969:1	4,554.000	7,454.000	1.98	1,451.020	0.466	2.092	3.412	55.980	1,844.423	1.177
1969:2	4,756.000	7,218.000	1.91	1,266.575	0.397	2.362	3.725	55.980	2,133.806	1.228
1969:3	4,606.000	6,917.000	1.80	1,075.313	0.378	2.490	4.548	57.600	1,966.319	1.324
1969:4	4,774.000	6,448.000	1.70	1,351.111	0.437	2.156	4.526	58.210	1,933.210	1.371
1970:1	4,501.000	6,427.000	1.72	1,312.544	0.440	1.923	3.706	58.680	1,856.063	1.655
1970:2	4,540.000	6,360.000	1.73	1,293.084	0.434	2.234	3.992	60.890	1,875.463	1.584
1970:3	4,383.000	7,008.000	1.67	1,415.263	0.457	2.180	4.142	62.210	1,869.707	1.491
1970:4	4,055.000	7,543.000	1.60	1,061.558	0.404	2.175	4.185	65.800	1,742.702	1.345
1971:1	4,691.000	7,518.000	1.60	1,118.398	0.379	2.671	5.711	65.800	2,036.224	1.362
1971:2	4,953.000	7,597.000	1.33	911.447	0.293	2.007	4.826	66.990	2,443.947	1.197
1971:3	3,256.000	7,898.000	1.26	843.783	0.364	1.835	3.679	69.370	1,636.907	1.121
1971:4	3,492.000	8,298.000	1.35	1,147.851	0.447	1.968	4.218	69.370	1,576.832	1.091
1972:1	4,042.000	8,310.000	1.24	1,467.913	0.472	2.257	4.651	69.370	1,821.207	1.166
1972:2	4,456.000	8,373.000	1.25	1,539.674	0.453	2.572	5.110	71.750	2,064.807	1.181
1972:3	4,192.000	8,664.000	1.23	1,170.498	0.395	2.674	5.962	72.950	1,991.669	1.230
1972:4	4,433.000	8,139.000	1.26	1,382.872	0.414	2.834	6.498	72.950	2,176.809	1.295
1973:1	4,756.000	7,973.000	1.32	1,483.212	0.416	3.577	7.948	75.890	2,309.764	1.552
1973:2	4,974.000	7,789.000	1.37	1,591.362	0.426	3.751	10.425	75.890	2,386.265	1.615
1973:3	4,611.000	7,460.000	1.38	1,371.539	0.406	3.345	11.749	75.890	2,233.845	1.709
1973:4	4,718.000	6,990.000	1.44	1,674.090	0.448	3.272	12.011	75.890	2,291.011	2.218
1974:1	4,583.000	6,782.000	1.70	1,020.471	0.336	3.211	11.833	78.710	2,245.033	2.859
1974:2	4,621.000	7,565.000	1.95	2,127.228	0.506	4.388	12.603	108.600	2,305.302	3.189
1974:3	4,409.000	8,129.000	2.06	2,039.940	0.510	4.864	14.652	144.520	2,177.844	3.318
1974:4	4,446.000	8,181.000	2.60	2,839.846	0.587	3.845	14.254	158.580	2,216.838	2.855
1975:1	4,267.000	7,431.000	2.78	1,801.693	0.510	2.757	11.935	179.880	1,920.341	2.257
1975:2	3,965.000	8,279.000	3.03	1,737.127	0.540	2.630	9.460	182.380	1,642.081	2.088
1975:3	3,595.000	8,415.000	3.00	1,186.201	0.452	3.092	9.007	182.380	1,600.888	1.758
1975:4	3,602.000	8,860.000	3.16	1,531.891	0.521	3.424	9.006	182.380	1,566.421	1.665
1976:1	3,998.000	8,828.000	2.90	1,642.172	0.493	3.643	9.428	182.380	1,876.109	1.934
1976:2	4,493.000	9,381.000	2.80	2,058.409	0.527	4.250	10.195	182.340	2,049.545	2.139
1976:3	4,337.000	9,918.000	3.15	1,651.367	0.490	3.742	10.334	182.250	1,913.293	2.023
1976:4	3,853.000	9,988.000	3.10	1,478.677	0.478	3.648	9.864	182.250	1,792.948	1.673

Quarterly Values of System Variables
(Units as noted in Table C-1)
(Continued)

Year, Qtr.	RATIO NONOBSOLETE TO TOTAL SCRAP -B-	RATIO OF BASIC OXYGEN TO TOTAL STEEL PRODUCTION -BOP-	RATIO HOME TO TOTAL SCRAP -C-	IRON ORE CONSUMPTION -OREC-	DEFLATED INDEX OF PROCESSING COSTS -COSTR-	EXPORT CONTROL DUMMY -ECD-	RATIO OF ELEC. FURNACE STEEL PRODUCTION -ELEC-	FOUNDRY SHIPMENTS -FOUNS-	DEFLATED FREIGHT CHARGES -FRTR-	AVERAGE DAILY GONDOLA SHORTAGES -CONS-
1961:1	0.843	4.000	0.598	21,524.373	131.686	0.000	8.800	927.400	4.782	5.000
1961:2	0.835	4.000	0.588	27,783.435	132.851	0.000	8.800	1,125.400	4.761	7.000
1961:3	0.777	4.000	0.553	30,262.937	133.429	0.000	8.800	1,041.800	4.741	7.000
1961:4	0.845	4.000	0.611	32,851.985	135.489	0.000	8.800	1,160.100	4.727	64.000
1962:1	0.880	5.600	0.625	35,381.633	132.051	0.000	9.200	1,193.900	4.758	100.000
1962:2	0.888	5.600	0.623	28,706.150	132.813	0.000	9.200	1,225.700	4.744	88.000
1962:3	0.883	5.600	0.623	22,975.150	132.578	0.000	9.200	1,035.200	4.731	25.000
1962:4	0.835	5.600	0.595	26,371.544	133.239	0.000	9.200	1,159.800	4.704	21.000
1963:1	0.841	7.800	0.597	25,307.760	130.014	0.000	10.000	1,185.600	4.474	32.000
1963:2	0.849	7.800	0.598	30,388.781	130.672	0.000	10.000	1,389.800	4.468	562.000
1963:3	0.876	7.800	0.619	23,831.300	131.145	0.000	10.000	1,193.300	4.455	169.000
1963:4	0.832	7.800	0.597	24,500.897	131.806	0.000	10.000	1,298.200	4.431	123.000
1964:1	0.857	12.100	0.613	27,743.886	127.939	0.000	10.000	1,363.400	3.970	186.000
1964:2	0.867	12.100	0.622	30,378.393	127.862	0.000	10.000	1,496.400	3.959	566.000
1964:3	0.877	12.100	0.633	30,634.525	127.846	0.000	10.000	1,411.300	3.937	698.000
1964:4	0.865	12.100	0.625	33,440.617	128.044	0.000	10.000	1,446.200	3.926	823.000
1965:1	0.883	17.400	0.620	33,534.534	127.137	0.000	10.500	1,552.900	3.894	990.000
1965:2	0.867	17.400	0.602	33,926.590	127.568	0.000	10.500	1,683.000	3.878	1,396.000
1965:3	0.888	17.400	0.626	31,793.295	128.322	0.000	10.500	1,538.300	3.852	982.000
1965:4	0.823	17.400	0.591	25,888.463	128.438	0.000	10.500	1,496.000	3.832	575.000
1966:1	0.821	25.300	0.585	30,221.066	127.609	0.000	11.100	1,594.333	3.778	1,040.000
1966:2	0.855	25.300	0.599	33,495.783	127.676	0.000	11.100	1,680.333	3.734	1,393.000
1966:3	0.878	25.300	0.618	32,261.099	127.662	0.000	11.100	1,513.000	3.714	702.000
1966:4	0.854	25.300	0.609	31,716.338	130.245	0.000	11.100	1,546.333	3.681	913.000
1967:1	0.848	32.600	0.604	30,052.370	129.540	0.000	11.900	1,458.000	3.670	652.000
1967:2	0.868	32.600	0.613	28,683.678	126.115	0.000	11.900	1,488.333	3.682	561.000
1967:3	0.880	32.600	0.622	28,239.305	125.253	0.000	11.900	1,327.000	3.674	443.000
1967:4	0.855	32.600	0.607	32,006.316	125.187	0.000	11.900	1,472.333	3.641	786.000

Quarterly Values of System Variables
(Units as noted in Table C-1)
(Continued)

Year, Qtr.	RATIO NONOBSOLETE TO TOTAL SCRAP -B-	RATIO OF BASIC OXYGEN TO TOTAL STEEL PRODUCTION -BOP-	RATIO HOME TO TOTAL SCRAP -C-	IRON ORE CONSUMPTION -OREC-	DEFLATED INDEX OF PROCESSING COSTS -COSTR-	EXPORT CONTROL DUMMY -ECD-	RATIO OF ELEC. FURNACE STEEL PRODUCTION -ELEC-	FOUNDRY SHIPMENTS -FOUNS-	DEFLATED FREIGHT CHARGES -FRTR-	AVERAGE DAILY GONDOLA SHORTAGES -GONS-
1968:1	0.866	37.100	0.606	33,558.206	125.862	0.000	12.800	1,522.000	3.621	1,349.000
1968:2	0.916	37.100	0.618	34,378.967	124.726	0.000	12.800	1,600.000	3.593	1,485.000
1968:3	0.943	37.100	0.637	26,873.072	124.970	0.000	12.800	1,396.667	3.583	497.000
1968:4	0.855	37.100	0.594	25,638.392	124.732	0.000	12.800	1,437.000	3.543	174.000
1969:1	0.835	42.600	0.594	31,369.337	125.059	0.000	14.300	1,581.000	3.529	1,635.000
1969:2	0.867	42.600	0.599	33,161.082	127.294	0.000	14.300	1,634.000	3.484	2,075.000
1969:3	0.882	42.600	0.618	31,130.338	127.117	0.000	14.300	1,530.333	3.432	1,703.000
1969:4	0.853	42.600	0.607	33,088.781	126.102	0.000	14.300	1,588.667	3.390	2,127.000
1970:1	0.849	48.100	0.601	30,832.113	126.251	0.000	15.300	1,461.000	3.404	2,343.000
1970:2	0.853	48.100	0.604	31,808.715	126.593	0.000	15.300	1,508.667	3.429	2,601.000
1970:3	0.836	48.100	0.586	30,640.732	126.580	0.000	15.300	1,318.000	3.475	1,544.000
1970:4	0.867	48.100	0.607	29,979.603	123.978	0.000	15.300	1,219.333	3.495	366.000
1971:1	0.880	53.100	0.614	32,049.486	125.847	0.000	17.400	1,415.000	3.517	1,939.000
1971:2	0.917	53.100	0.614	33,291.393	122.443	0.000	17.400	1,508.667	3.528	2,304.000
1971:3	0.878	53.100	0.584	21,100.744	122.360	0.000	17.400	1,217.000	3.571	328.000
1971:4	0.837	53.100	0.576	22,524.425	122.998	0.000	17.400	1,292.667	3.614	57.000
1972:1	0.820	56.000	0.565	28,173.883	122.470	0.000	17.800	1,457.333	3.644	156.000
1972:2	0.830	56.000	0.567	31,184.819	122.613	0.000	17.800	1,579.667	3.618	252.000
1972:3	0.864	56.000	0.586	29,349.875	123.131	0.000	17.800	1,375.667	3.589	464.000
1972:4	0.850	56.000	0.570	31,228.814	125.247	0.000	17.800	1,536.333	3.550	589.000
1973:1	0.849	55.200	0.572	33,121.288	125.073	0.000	18.400	1,685.333	3.431	1,445.000
1973:2	0.845	55.200	0.571	34,583.182	125.908	0.000	18.400	1,736.333	3.375	2,606.000
1973:3	0.856	55.200	0.577	34,357.958	126.197	1.000	18.400	1,563.667	3.315	2,442.000
1973:4	0.829	55.200	0.558	35,010.567	127.548	1.000	18.400	1,672.000	3.242	3,867.000
1974:1	0.896	55.900	0.601	33,421.353	133.784	1.000	19.700	1,592.667	3.261	5,309.000
1974:2	0.785	55.900	0.524	33,459.357	138.630	1.000	19.700	1,664.667	3.178	5,218.000
1974:3	0.783	55.900	0.524	32,248.152	143.162	1.000	19.700	1,490.333	3.094	3,452.000
1974:4	0.718	55.900	0.479	29,948.647	141.411	1.000	19.700	1,473.667	3.004	2,993.000
1975:1	0.794	61.500	0.547	29,982.092	137.964	0.000	20.500	1,290.667	3.158	1,081.000
1975:2	0.781	61.500	0.552	27,493.596	137.500	0.000	19.400	1,306.000	3.113	355.000
1975:3	0.835	61.500	0.578	24,192.312	138.967	0.000	18.600	1,175.667	3.059	50.000
1975:4	0.790	61.500	0.550	24,562.000	139.985	0.000	19.800	1,264.333	3.012	23.000
1976:1	0.802	62.400	0.546	27,836.000	140.382	0.000	19.200	1,399.667	3.725	334.000
1976:2	0.779	62.400	0.535	31,026.000	139.488	0.000	19.300	1,504.667	3.677	597.000
1976:3	0.811	62.400	0.562	30,085.000	141.014	0.000	19.000	1,353.000	3.639	589.000
1976:4	0.813	62.400	0.555	25,377.000	142.826	0.000	19.300	1,349.000	3.591	330.000

Quarterly Values of System Variables
(Units as noted in Table C-1)
(Continued)

Year, Qtr.	PRICE CONTROL DUMMY -PRCON-	PURCHASED SCRAP RECEIPTS -PSCR-	TOTAL SHIPMENTS -SHIP-	STEEL MILL SHIPMENTS ADJUSTED FOR TRADE -STLSADJ-	SCRAP CONSUMPTION -TDEM-	RAW STEEL PRODUCTION -TSTL-	EXPORTS OF SCRAP -XPRT-	RATIO OF EXPORTS TO PURCHASED SCRAP -XPRTR-
1961:1	0.000	1,779.000	5,593.067	4,665.667	4,642.000	6,580.000	718.000	0.404
1961:2	0.000	2,263.000	7,007.400	5,882.000	5,577.000	8,373.000	1,061.000	0.469
1961:3	0.000	2,689.000	6,944.467	5,902.667	5,325.000	8,556.000	847.000	0.315
1961:4	0.000	2,304.000	7,158.767	5,998.667	5,899.000	9,163.000	615.000	0.267
1962:1	0.000	2,406.000	8,421.567	7,227.667	6,497.000	10,212.000	394.000	0.164
1962:2	0.000	2,084.000	7,549.367	6,323.667	5,318.000	7,821.000	463.000	0.222
1962:3	0.000	1,750.000	6,211.533	5,176.333	4,745.000	6,841.000	483.000	0.276
1962:4	0.000	2,188.000	6,684.133	5,524.333	5,493.000	7,902.000	366.000	0.167
1963:1	0.000	2,368.000	7,379.267	6,193.667	6,058.000	8,898.000	374.000	0.158
1963:2	0.000	2,875.000	9,243.133	7,853.333	7,219.000	10,850.000	537.000	0.187
1963:3	0.000	2,155.000	7,484.967	6,291.667	5,560.000	8,098.000	695.000	0.323
1963:4	0.000	2,413.000	7,257.200	5,959.000	6,277.000	8,575.000	515.000	0.213
1964:1	0.000	2,520.000	8,201.067	6,837.667	6,751.000	9,836.000	627.000	0.249
1964:2	0.000	2,692.000	8,998.733	7,502.333	7,174.000	10,602.000	719.000	0.267
1964:3	0.000	2,538.000	8,690.967	7,279.667	6,786.000	10,440.000	701.000	0.276
1964:4	0.000	2,788.000	9,190.867	7,744.667	7,498.000	11,491.000	579.000	0.208
1965:1	0.000	2,939.000	10,467.900	8,915.000	7,901.000	11,681.000	465.000	0.158
1965:2	0.000	3,246.000	11,139.333	9,456.333	8,104.000	11,857.000	564.000	0.174
1965:3	0.000	2,772.000	10,000.300	8,462.000	7,369.000	10,941.000	607.000	0.219
1965:4	0.000	2,815.000	8,247.667	6,751.667	6,747.000	9,248.000	420.000	0.149
1966:1	0.000	3,174.000	9,297.333	7,703.000	7,737.000	10,970.000	309.000	0.097
1966:2	0.000	3,215.000	10,568.667	8,888.333	7,991.000	11,721.000	492.000	0.153
1966:3	0.000	2,866.000	10,045.667	8,532.667	7,473.000	11,056.000	551.000	0.192
1966:4	0.000	2,947.000	9,535.333	7,989.000	7,476.000	10,944.000	540.000	0.183
1967:1	0.000	2,891.000	9,203.333	7,745.333	7,217.000	10,548.000	604.000	0.209
1967:2	0.000	2,735.000	9,302.000	7,813.667	7,045.000	10,167.000	752.000	0.275
1967:3	0.000	2,522.000	8,883.333	7,556.333	6,663.000	10,119.000	717.000	0.284
1967:4	0.000	2,955.000	9,615.667	8,143.333	7,523.000	11,474.000	471.000	0.159

Quarterly Values of System Variables
(Units as noted in Table C-1)
(Continued)

Year, Qtr.	PRICE CONTROL DUMMY -PRCON-	PURCHASED SCRAP RECEIPTS -PSCR-	TOTAL SHIPMENTS -SHIP-	STEEL MILL SHIPMENTS ADJUSTED FOR TRADE -STLSADJ-	SCRAP CONSUMPTION -TDEM-	RAW STEEL PRODUCTION -TSTL-	EXPORTS OF SCRAP -XPRT-	RATIO OF EXPORTS TO PURCHASED SCRAP -XPRTR-
1968:1	0.000	3,134.000	10,674.333	9,152.333	7,935.000	12,177.000	456.000	0.146
1968:2	0.000	3,100.000	12,471.000	10,871.000	7,981.000	12,352.000	474.000	0.153
1968:3	0.000	2,288.000	9,930.000	8,533.333	6,283.000	9,498.000	622.000	0.272
1968:4	0.000	2,669.000	8,858.000	7,421.000	6,742.000	9,672.000	639.000	0.239
1969:1	0.000	3,111.000	9,507.333	7,926.333	7,819.000	11,466.000	348.000	0.112
1969:2	0.000	3,187.000	10,999.000	9,365.000	8,022.000	12,193.000	828.000	0.260
1969:3	0.000	2,845.000	10,135.667	8,605.333	7,567.000	11,436.000	1,017.000	0.357
1969:4	0.000	3,091.000	9,965.000	8,376.333	8,050.000	12,017.000	868.000	0.281
1970:1	0.000	2,983.000	9,567.333	8,106.333	7,496.000	11,209.000	704.000	0.236
1970:2	0.000	2,981.000	9,667.333	8,158.667	7,551.000	11,428.000	1,075.000	0.361
1970:3	0.000	3,098.000	9,637.667	8,319.667	6,878.000	10,757.000	932.000	0.301
1970:4	0.000	2,630.000	8,983.000	7,763.667	6,460.000	10,382.000	744.000	0.283
1971:1	0.000	2,951.000	10,496.000	9,081.000	7,722.000	11,598.000	524.000	0.178
1971:2	0.000	3,111.000	12,597.667	11,089.000	8,059.000	12,325.000	582.000	0.187
1971:3	0.000	2,317.000	8,437.667	7,220.667	5,486.000	7,798.000	595.000	0.257
1971:4	0.000	2,567.000	8,128.000	6,835.333	5,937.000	8,349.000	384.000	0.150
1972:1	0.000	3,107.000	9,387.667	7,930.333	7,277.000	10,523.000	480.000	0.154
1972:2	0.000	3,398.000	10,643.333	9,063.667	7,838.000	11,086.000	579.000	0.170
1972:3	0.000	2,963.000	10,266.333	8,890.667	7,081.000	10,866.000	655.000	0.221
1972:4	0.000	3,342.000	11,220.667	9,684.333	7,963.000	11,644.000	748.000	0.224
1973:1	1.000	3,562.000	11,906.000	10,220.667	8,387.000	12,362.000	942.000	0.264
1973:2	1.000	3,739.000	12,300.333	10,564.000	8,793.000	12,817.000	1,015.000	0.271
1973:3	1.000	3,382.000	11,514.667	9,951.000	8,076.000	12,234.000	1,130.000	0.334
1973:4	1.000	3,736.000	11,809.333	10,137.333	8,565.000	12,728.000	677.000	0.181
1974:1	1.000	3,041.000	11,572.333	9,979.667	8,297.000	12,361.000	815.000	0.268
1974:2	0.000	4,202.000	11,883.000	10,218.333	8,575.000	12,460.000	815.000	0.194
1974:3	0.000	4,000.000	11,226.000	9,735.667	8,242.000	11,947.000	851.000	0.213
1974:4	0.000	4,835.000	11,427.000	9,953.333	8,414.000	11,730.000	617.000	0.128
1975:1	0.000	3,530.000	9,898.667	8,608.000	8,105.000	11,475.000	728.000	0.206
1975:2	0.000	3,215.000	8,464.333	7,158.333	6,897.000	9,758.000	1,050.000	0.327
1975:3	0.000	2,627.000	8,252.000	7,076.333	6,195.000	8,771.000	808.000	0.308
1975:4	0.000	2,941.670	8,074.333	6,810.000	6,387.000	8,923.000	687.000	0.234
1976:1	0.000	3,330.670	9,670.667	8,271.000	7,290.000	10,345.000	643.000	0.193
1976:2	0.000	3,903.000	10,564.667	9,060.000	8,206.000	11,727.000	750.000	0.192
1976:3	0.000	3,373.330	9,862.333	8,509.333	7,519.000	10,997.000	703.000	0.208
1976:4	0.000	3,092.330	9,242.000	7,893.000	6,909.000	9,668.000	611.000	0.198

IRON AND STEEL SCRAP

Its Accumulation and Availability
Updated to December 31, 1977

Prepared for the
Metal Scrap Research and Education Foundation

by
Robert R. Nathan Associates, Inc.
Consulting Economists
Washington, D.C.

August 25, 1978

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IRON AND STEEL SCRAP: ITS ACCUMULATION AND AVAILABILITY UPDATED TO DECEMBER 31, 1977

This report represents an update of an earlier study which assessed the national inventory of obsolete ferrous scrap at the end of 1975.[1] This update revises the 1975 base slightly, and adds data for two subsequent years, arriving at an estimate of the 1977 year-end situation. As in the previous study, the update disaggregates the national inventory geographically among the nine Bureau of Census regions, and thus provides data on the location of the available scrap iron and steel.

The update uses the same basic concept and procedures as did the previous study. Conceptually, it measures the net accumulation of "potential reserves" of obsolete ferrous scrap. Obsolete scrap is that which is generated by the discard of the products made from ferrous metals. "Potential reserves" are defined as quantities which are recoverable with the use of existing technology and at high but realistic prices (that is, prices possibly several times higher than those generally prevailing in mid-1977). This definition implies that, at any given price above the present prices,

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1. Robert R. Nathan Associates, Inc., Iron and Steel Scrap: Its Accumulation and Availability as of December 31, 1975, August 23, 1977, Metal Scrap Research and Education Foundation, Washington, D.C.

an additional amount of scrap will be available to move into the hands of processors and, through them, to the domestic iron and steel industry or to export. A price-supply continuum exists. As prices increase the volume of available scrap increases -- although not necessarily in a linear fashion. Thus the prices used to define "potential reserves" refer to the prices required to extract the last increment of scrap from potential reserves, and place that increment in the ferrous supply system.

Procedurally, the update begins with the 1975 year-end inventory from the previous study and works forward using annual iron and steel shipments to various categories of industrial users. Each of fifteen major product categories is separately analyzed as to its life cycle and annual discard rate. Also analyzed on an individual product category basis are system losses which account for nonrecoverable scrap. International trade in mill and foundry products and manufactured products are similarly taken into consideration, thus arriving at annual estimates of obsolete recoverable ferrous scrap. Domestic and international purchases of scrap are then deducted, leaving an amount of scrap which is recoverable. This recoverable scrap is of course subject to further continual loss through corrosion, leaving finally an amount remaining in recoverable inventory at any point in time. In this update, that point in time is December 31, 1977, and all scrap which has accumulated as a "potential reserve" is measured at that point.

The update analysis indicates a 1977 year-end national obsolete ferrous scrap inventory of 672.3 million tons. This represents an increase of 36.1 million tons from the

636.2 million recorded at the end of 1975. That change is accounted for as follows:

	Millions of tons
1975 year-end inventory:	
As previously reported	636.2
As revised	639.0
Net inventory change in 1976	+14.8
Equals: 1976 year-end inventory	653.8
Net inventory change in 1977	+18.5
Equals: 1977 year-end inventory	672.3

Details of this calculation are shown below in table 1.

As noted above, the 672.3 million tons of inventory is based on a concept of potential reserves. Some earlier studies of ferrous scrap,[1] however, employed a different, but related, "resource base" concept. The previous RRNA report reconciled the 1975 inventories resulting from the use of these different concepts. A similar reconciliation, for 1977, is shown below in table 2. From that table it may be seen that, using a "resource base" concept, 1977 year-end inventories of ferrous scrap totaled over 895 million tons.

The annual generation of obsolete scrap since 1955, and the amount ultimately remaining as inventory, are shown on table 3. As might be expected, the 1977 potential generation of 66 million tons was larger than during any previous

1. See, for example, the Battelle Memorial Institute, Final Report on a Survey and Analysis of the Supply and Availability of Obsolete Iron and Steel Scrap, prepared for B.D.S.A., U.S. Department of Commerce, January 15, 1957.

year for which data are available. The amount of obsolete scrap recoverable after system losses was also larger in 1977 than ever before.

The "total prompt and obsolete scrap recovered" column on table 3 represents actual purchases of scrap for domestic use plus net exports. The 1977 amount of 48.2 million tons was slightly below the 1970-1977 average of 49.0 million tons. As a percentage of total prompt and obsolete recovered, obsolete amounted to 53.8 percent in 1977 (25.9 ÷ 48.2 million tons); the 1970-77 average was around 57 percent.

The increase in the obsolete scrap inventory (before taking corrosion into account) amounted to 20.9 million tons in 1977, compared to average increases of 13.2 million tons and 15.8 million tons for the periods 1956-69 and 1970-77 respectively.

Tables 4-A through 4-P show the recoverable scrap by individual product categories for 1973 through 1977 plus the cumulative totals for the periods 1956-69, 1970-77, and 1956-77. (Comparable data for prior years may be found in Part 2 of the previous RRNA report.) In terms of the individual categories, automotive products continues to be the largest single source of scrap, accounting for about 37 percent of the total recoverable obsolete scrap in 1977. In terms of annual changes in the amount of recoverable scrap, construction products showed the largest absolute change. The 1977 level of recoverable scrap from construction products increased by 1.2 million tons over 1976, and 2.1 million tons over 1975.

Table 5 shows the total inventory disaggregated into the nine Census regions. No new distribution patterns were identified during the period 1975-77. As can be seen, the West North Central Region contains the largest share of the inventory (over 128 million tons or 19.1 percent).

Table 1. Obsolete Ferrous Scrap Inventory: December 31, 1975 - December 31, 1977

(Thousands of tons)

	Dec. 31, 1975	Year 1976	Dec. 31, 1976	Year 1977	Dec. 31, 1977
				---preliminary---	
From 1955 inventory					
As previously published[a]	374,316.0				
Less: corrosion losses since 1975[b]		-1,451.9		-1,451.9	
Net remaining			372,864.1		371,412.2
From additions to inventory 1956-75					
As previously published[a]	261,901.3				
Revised[c]	264,672.9				
Less: corrosion losses since 1975		-982.0		-981.9	
Net remaining			263,690.9		262,709.0[d]
1976 addition to inventory[d]		+17,276.2	17,276.2		
Less: corrosion loss since 1976				-62.2	
Net remaining[d]					17,214.0
1977 addition to inventory[d]				+20,944.0	20,944.0
NET INVENTORY CHANGE		+14,842.3		+18,448.0	
TOTAL YEAR-END INVENTORY:					
As previously published	636,217.3				
Revised	638,988.9		653,831.2		672,279.2

a. Source: Robert R. Nathan Associates, Inc., Iron and Steel Scrap: Its Accumulation and Availability as of December 31, 1975, August 23, 1977, Metal Scrap Research and Education Foundation, Washington, D.C., p. 119.

b. Based on 1955 inventory (403,316,000 tons), using a loss rate of .0036 per year.

c. Revised to reflect 3-year moving average data for iron and steel shipments.

d. Source: Table 3 following.

Table 2. Obsolete Ferrous Scrap Inventory, December 31, 1977
Reconciliation Between Potential Reserves Base and Resource Base

(Thousands of tons)

	Potential reserves base		Resource base	
A. 1955 Inventory				
1. As originally published[a]	537,000.0		537,000.0	
2. Adjustment to shift to potential reserve base[a]	-70,884.0		--	
3. Adjusted for corrosion				
a. Prior to 1955[a]	-62,800.0		--	
b. 1956-75[a]	-29,000.0		--	
c. 1967-77 (403.3)(.0036)(2)	- 2,903.8		--	
4. Total as adjusted		371,412.2		537,000.0
B. Net additions to inventory, 1956-77:				
1. As originally calculated[b]	311,061.5		311,061.5	
2. Adjusted to shift to resource base[c]	--		+47,281.3	
3. Adjusted for corrosion[b]	-10,194.5		--	
4. Total as adjusted		300,867.0		358,342.8
C. 1977 year-end inventory		672,279.2		895,342.8

a. Source: Robert R. Nathan Associates, Inc., Iron and Steel Scrap: Its Accumulation and Availability as of December 31, 1975, August 23, 1977, Metal Scrap Research and Education Foundation, Washington, D.C., p. 119.
b. Source: Table 3 below.
c. Source: RRNA op. cit., p. 119, footnote c.

TABLE 3. CHANGES IN THE IRON AND STEEL SCRAP INVENTORY FOR THE YEARS 1956-77

(THOUSANDS OF TONS)

	OBSOLETE POTENTIAL SCRAP GENERATED (1)	OBSOLETE NON-RECOVERABLE SCRAP (2)	OBSOLETE RECOVERABLE SCRAP (3)	TOTAL PROMPT AND OBSOLETE SCRAP RECOVERED (4)	OBSOLETE SCRAP RECOVERED (5)	OBSOLETE SCRAP INVENTORY CHANGE (6)	CORROSION LOSS IN OBSOLETE INVENTORY (7)	NET AMOUNT REMAINING IN INVENTORY IN 1977 (8)
1956	37,844.1	12,910.3	24,933.7	43,036.0	26,798.5	-1,864.8	-141.0	-1,723.8
1957	41,113.7	13,979.9	27,133.8	37,613.0	23,239.7	3,894.1	280.4	3,613.7
1958	43,298.6	14,500.6	28,798.0	25,886.0	11,991.9	16,806.1	1,149.5	15,656.6
1959	45,289.2	14,826.2	30,463.0	33,673.0	19,982.4	10,480.7	679.1	9,801.5
1960	46,026.4	14,918.2	31,108.2	33,956.0	19,674.0	11,434.2	699.8	10,734.4
1961	45,305.8	14,780.5	30,525.3	34,751.0	20,487.9	10,037.4	578.2	9,459.3
1962	44,564.8	14,706.2	29,858.6	30,186.0	15,370.6	14,488.0	782.4	13,705.7
1963	44,913.9	14,607.5	30,306.5	35,579.0	19,404.3	10,902.2	549.5	10,352.7
1964	49,955.5	15,608.4	34,347.2	39,447.0	21,397.9	12,949.3	606.0	12,343.2
1965	54,090.2	16,741.2	37,349.0	41,762.0	22,265.1	15,083.8	651.6	14,432.2
1966	57,709.7	17,860.4	39,849.3	42,122.0	22,031.1	17,818.2	705.6	17,112.6
1967	59,904.7	19,070.8	40,833.9	40,059.0	20,052.7	20,781.1	748.1	20,033.0
1968	62,316.4	20,001.3	42,315.1	39,864.0	19,437.2	22,877.9	741.2	22,136.7
1969	65,488.0	20,990.5	44,497.5	45,771.0	25,272.3	19,225.2	553.7	18,671.5
1970	64,871.3	20,743.9	44,127.4	44,209.0	24,263.4	19,864.0	500.6	19,363.4
1971	62,940.9	19,748.0	43,192.9	40,182.0	20,314.0	22,878.9	494.2	22,384.7
1972	60,520.0	18,818.7	41,701.3	48,743.0	27,158.8	14,542.5	261.8	14,280.7
1973	58,632.1	18,325.7	40,306.4	55,618.0	32,408.7	7,897.7	113.7	7,784.0
1974	60,889.4	19,113.6	41,775.8	59,829.0	37,842.1	3,933.7	42.5	3,891.2
1975	63,533.1	19,319.9	44,213.3	46,050.0	25,402.2	18,811.0	135.4	18,675.6
1976	65,450.9	19,453.6	45,997.3	49,010.0	28,721.1	17,276.2	62.2	17,214.0
1977 (preliminary)	66,090.9	19,220.7	46,870.2	48,231.0	25,926.3	20,944.0	0.0	20,944.0
TOTAL: 56 TO 69	697,821.0	225,501.9	472,319.1	523,705.0	287,405.6	184,913.5	8,584.1	176,329.4
TOTAL: 70 TO 77	502,928.7	154,744.1	348,184.6	391,872.0	222,036.6	126,148.0	1,610.4	124,537.6
TOTAL: 56 TO 77	1,200,749.7	380,246.0	820,503.7	915,577.0	509,442.2	311,061.5	10,194.5	300,867.0

TABLE 4. CALCULATION OF RECOVERABLE IRON AND STEEL SCRAP BY PRODUCT CATEGORY THROUGH END OF 1977

(THOUSANDS OF TONS)

TABLE 4-A. AUTOMOTIVE

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	35,866.4	32,195.3	9,755.2	22,440.1	25,104.1	16,231.5	1,298.5	14,933.0
1974	30,424.7	29,907.3	9,061.9	20,845.4	23,165.4	17,625.6	1,410.0	16,215.6
1975	23,430.9	28,673.2	8,688.0	19,985.2	21,544.2	18,849.0	1,507.9	17,341.0
1976	32,164.0	29,827.4	9,037.7	20,789.7	23,112.7	18,493.2	1,479.5	17,013.7
1977	33,887.1	33,887.1	10,267.8	23,619.3	26,258.5	18,598.2	1,487.9	17,110.3
TOTAL: 56 TO 69	329,420.7	329,275.9	99,770.6	229,505.3	232,278.5	157,670.1	12,613.6	145,056.5
TOTAL: 70 TO 1977	236,551.9	238,993.0	72,414.9	166,578.1	187,324.3	134,256.9	10,740.6	123,516.4
TOTAL: 56 TO 1977	565,972.6	568,268.9	172,185.5	396,083.4	419,602.8	291,927.0	23,354.2	268,572.9

TABLE 4-B. RAILROAD RAILS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	1,374.5	1,414.0	79.2	1,334.8	1,334.8	938.1	18.8	919.4
1974	1,439.5	1,429.3	80.0	1,349.3	1,349.3	980.9	19.6	961.2
1975	1,473.8	1,570.6	88.0	1,482.7	1,482.7	1,273.7	25.5	1,248.3
1976	1,798.5	1,689.5	94.6	1,594.9	1,594.9	1,572.0	31.4	1,540.6
1977	1,796.1	1,796.1	100.6	1,695.5	1,695.5	1,632.4	32.6	1,599.8
TOTAL: 56 TO 69	13,442.5	13,454.1	753.4	12,700.7	12,700.7	35,598.0	712.0	34,886.1
TOTAL: 70 TO 1977	11,818.0	11,801.4	660.9	11,140.5	11,140.5	10,778.6	215.6	10,563.0
TOTAL: 56 TO 1977	25,260.5	25,255.5	1,414.3	23,841.2	23,841.2	46,376.6	927.5	45,449.1

TABLE 4-C. RAILROAD EQUIPMENT

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	3,085.0	3,008.3	445.2	2,563.0	2,563.0	2,590.7	51.8	2,538.8
1974	3,427.0	3,113.2	460.8	2,652.4	2,652.4	2,443.3	48.9	2,394.4
1975	2,827.6	2,822.5	417.7	2,404.8	2,404.8	2,583.5	51.7	2,531.8
1976	2,213.0	2,578.5	381.6	2,196.9	2,196.9	2,913.4	58.3	2,855.1
1977	2,694.9	2,694.9	398.8	2,296.0	2,296.0	2,748.8	55.0	2,693.8
TOTAL: 56 TO 69	43,825.5	43,299.7	6,408.4	36,891.4	36,891.4	39,316.8	786.3	38,530.4
TOTAL: 70 TO 1977	22,915.1	23,211.6	3,435.3	19,776.3	19,776.3	22,411.9	448.2	21,963.6
TOTAL: 56 TO 1977	66,740.6	66,511.3	9,843.7	56,667.7	56,667.7	61,728.6	1,234.6	60,494.1

TABLE 4-D. SHIPS AND MARINE EQUIPMENT

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	1,574.2	1,725.5	441.7	1,283.8	1,283.8	606.5	236.5	370.0
1974	2,152.3	1,967.5	503.7	1,463.9	1,463.9	655.2	255.5	399.7
1975	2,176.1	1,929.4	493.9	1,435.5	1,435.5	639.5	249.4	390.1
1976	1,459.7	1,668.7	427.2	1,241.5	1,241.5	706.7	275.6	431.1
1977	1,370.3	1,370.3	350.8	1,019.5	1,019.5	825.9	322.1	503.8
TOTAL: 56 TO 69	17,612.6	17,506.5	4,481.7	13,024.8	13,024.8	26,167.5	10,205.3	15,962.2
TOTAL: 70 TO 1977	13,361.3	13,344.4	3,416.2	9,928.2	9,928.2	13,872.8	5,410.4	8,462.4
TOTAL: 56 TO 1977	30,974.0	30,850.8	7,897.8	22,953.0	22,953.0	40,040.3	15,615.7	24,424.6

TABLE 4-E. AIRCRAFT

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	106.6	112.8	33.9	78.8	78.8	81.9	0.8	81.0
1974	127.0	113.3	34.1	79.2	79.2	100.8	1.0	99.8
1975	106.3	107.4	32.3	75.1	75.1	113.7	1.1	112.6
1976	88.9	98.2	29.5	68.6	68.6	112.0	1.1	110.8
1977	99.3	99.3	29.9	69.4	69.4	97.5	1.0	96.6
TOTAL: 56 TO 69	1,873.4	1,837.8	553.2	1,284.6	1,284.6	1,318.8	13.2	1,305.6
TOTAL: 70 TO 1977	806.5	824.5	248.2	576.4	576.4	755.7	7.6	748.2
TOTAL: 56 TO 1977	2,679.9	2,662.3	801.4	1,861.0	1,861.0	2,074.5	20.7	2,053.8

TABLE 4-F. CONSTRUCTION MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	40,274.9	38,668.8	3,093.5	35,575.3	35,575.3	9,848.1	1,477.2	8,370.9
1974	40,518.0	36,479.8	2,918.4	33,561.4	33,561.4	8,988.5	1,348.3	7,640.2
1975	28,646.4	33,292.2	2,663.4	30,628.9	30,628.9	8,827.6	1,324.1	7,503.4
1976	30,712.3	30,630.2	2,450.4	28,179.8	28,179.8	9,825.3	1,473.8	8,351.5
1977	32,532.0	32,532.0	2,602.6	29,929.5	29,929.5	11,264.5	1,689.7	9,574.8
TOTAL: 56 TO 69	387,839.4	387,192.8	30,975.4	356,217.4	356,217.4	127,845.4	19,176.8	108,668.6
TOTAL: 70 TO 1977	272,320.9	273,246.7	21,859.7	251,387.0	251,387.0	85,466.6	12,820.0	72,646.6
TOTAL: 56 TO 1977	660,160.4	660,439.5	52,835.2	607,604.4	607,604.4	213,312.0	31,996.8	181,315.2

TABLE 4-G. INDUSTRIAL MACHINERY

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	15,238.7	14,731.1	2,931.5	11,799.6	11,091.6	4,710.5	565.3	4,145.2
1974	15,184.0	14,118.0	2,809.5	11,308.5	9,596.5	5,563.8	667.7	4,896.2
1975	11,931.2	13,124.7	2,611.8	10,512.9	8,128.9	6,398.7	767.8	5,630.9
1976	12,259.0	12,684.3	2,524.2	10,160.2	8,346.2	6,928.6	831.4	6,097.2
1977	13,862.8	13,862.8	2,758.7	11,104.1	9,121.6	6,735.5	808.3	5,927.3
TOTAL: 56 TO 69	157,761.9	156,931.7	31,229.4	125,702.3	108,048.8	34,501.0	4,140.1	30,360.9
TOTAL: 70 TO 1977	106,969.4	108,109.6	21,513.8	86,595.8	76,097.6	42,243.6	5,069.2	37,174.4
TOTAL: 56 TO 1977	264,731.3	265,041.4	52,743.2	212,298.1	184,146.3	76,744.6	9,209.4	67,535.3

TABLE 4-H. ELECTRICAL MACHINERY

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	8,033.2	7,628.0	1,579.0	6,049.0	6,049.0	3,033.8	394.4	2,639.4
1974	7,643.9	6,896.4	1,427.6	5,468.9	5,468.9	3,408.3	443.1	2,965.2
1975	5,012.2	6,325.8	1,309.4	5,016.3	5,016.3	3,711.7	482.5	3,229.2
1976	6,321.2	5,968.7	1,235.5	4,733.2	4,733.2	3,801.8	494.2	3,307.5
1977	6,572.7	6,572.7	1,360.6	5,212.2	5,212.2	3,615.7	470.0	3,145.7
TOTAL: 56 TO 69	80,863.9	80,585.3	16,681.2	63,904.2	63,904.2	19,571.7	2,544.3	17,027.3
TOTAL: 70 TO 1977	53,764.3	54,030.2	11,184.3	42,845.9	42,845.9	25,566.0	3,323.6	22,242.4
TOTAL: 56 TO 1977	134,628.3	134,615.5	27,865.4	106,750.1	106,750.1	45,137.7	5,867.9	39,269.8

TABLE 4-I. MINING MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	1,281.3	1,360.3	232.6	1,127.7	1,127.7	583.1	145.8	437.3
1974	1,518.4	1,391.5	237.9	1,153.5	1,153.5	537.8	134.5	403.4
1975	1,374.7	1,387.2	237.2	1,150.0	1,150.0	533.4	133.4	400.1
1976	1,268.5	1,284.6	219.7	1,064.9	1,064.9	590.2	147.6	442.7
1977	1,210.4	1,210.4	207.0	1,003.5	1,003.5	593.6	148.4	445.2
TOTAL: 56 TO 69	10,971.5	10,933.1	1,869.6	9,063.5	9,063.5	7,895.8	1,974.0	5,921.9
TOTAL: 70 TO 1977	10,327.1	10,285.3	1,758.8	8,526.5	8,526.5	4,551.7	1,137.9	3,413.8
TOTAL: 56 TO 1977	21,298.6	21,218.4	3,628.3	17,590.1	17,590.1	12,447.5	3,111.9	9,335.6

TABLE 4-J. OIL AND GAS MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	4,690.6	4,637.5	1,219.7	3,417.8	3,417.8	2,511.4	1,255.7	1,255.7
1974	5,246.7	5,031.2	1,323.2	3,708.0	3,708.0	2,438.1	1,219.0	1,219.0
1975	5,156.2	4,778.6	1,256.8	3,521.8	3,521.8	2,212.9	1,106.5	1,106.5
1976	3,932.9	4,777.6	1,256.5	3,521.1	3,521.1	2,364.6	1,182.3	1,182.3
1977	5,243.8	5,243.8	1,379.1	3,864.7	3,864.7	2,240.9	1,120.5	1,120.5
TOTAL: 56 TO 69	47,479.7	47,329.5	12,447.7	34,881.8	34,881.8	25,910.9	12,955.5	12,955.5
TOTAL: 70 TO 1977	35,231.1	35,815.9	9,419.6	26,396.3	26,396.3	19,867.3	9,933.6	9,933.6
TOTAL: 56 TO 1977	82,710.8	83,145.4	21,867.2	61,278.2	61,278.2	45,778.2	22,889.1	22,889.1

TABLE 4-K. AGRICULTURAL MACHINERY

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	2,771.3	2,713.5	445.0	2,268.5	2,268.5	2,270.1	681.0	1,589.1
1974	2,914.2	2,706.3	443.8	2,262.5	2,262.5	1,995.2	598.6	1,396.6
1975	2,433.4	2,736.3	448.8	2,287.5	2,287.5	1,961.1	588.3	1,372.8
1976	2,861.2	2,609.2	427.9	2,181.3	2,181.3	1,882.4	564.7	1,317.7
1977	2,533.0	2,533.0	415.4	2,117.6	2,117.6	1,961.0	588.3	1,372.7
TOTAL: 56 TO 69	31,830.2	32,020.1	5,251.3	26,768.8	26,768.8	30,600.3	9,180.1	21,420.2
TOTAL: 70 TO 1977	19,886.3	19,826.5	3,251.6	16,575.0	16,575.0	17,223.0	5,166.9	12,056.1
TOTAL: 56 TO 1977	51,716.6	51,846.6	8,502.8	43,343.8	43,343.8	47,823.3	14,347.0	33,476.3

TABLE 4-L. OTHER AGRICULTURAL MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	1,480.4	1,388.9	227.8	1,161.1	1,161.1	489.0	146.7	342.3
1974	1,468.9	1,270.7	208.4	1,062.3	1,062.3	519.5	155.8	363.6
1975	862.7	1,230.8	201.8	1,028.9	1,028.9	517.6	155.3	362.3
1976	1,360.8	1,265.0	207.5	1,057.5	1,057.5	537.6	161.3	376.3
1977	1,571.6	1,571.6	257.7	1,313.8	1,313.8	502.9	150.9	352.1
TOTAL: 56 TO 69	9,859.1	9,812.2	1,609.2	8,203.0	8,203.0	6,087.6	1,826.3	4,261.3
TOTAL: 70 TO 1977	9,575.5	9,664.5	1,585.0	8,079.5	8,079.5	4,044.4	1,213.3	2,831.1
TOTAL: 56 TO 1977	19,434.5	19,476.7	3,194.2	16,282.5	16,282.5	10,132.1	3,039.6	7,092.4

TABLE 4-M. CONTAINERS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	8,721.5	8,559.1	992.9	7,566.3	7,566.3	7,069.3	6,857.2	212.1
1974	9,206.4	8,235.6	955.3	7,280.3	7,280.3	7,490.6	7,265.9	224.7
1975	6,779.0	7,940.3	921.1	7,019.2	7,019.2	7,207.5	6,991.3	216.2
1976	7,835.6	7,500.5	870.1	6,630.5	6,630.5	6,949.1	6,740.6	208.5
1977	7,887.0	7,887.0	914.9	6,972.1	6,972.1	6,564.2	6,367.2	196.9
TOTAL: 56 TO 69	101,950.1	102,112.5	11,845.0	90,267.4	90,267.4	87,476.5	84,852.2	2,624.3
TOTAL: 70 TO 1977	64,982.0	64,800.9	7,516.9	57,284.0	57,284.0	57,436.4	55,713.3	1,723.1
TOTAL: 56 TO 1977	166,932.0	166,913.4	19,362.0	147,551.5	147,551.5	144,912.9	140,565.5	4,347.4

TABLE 4-N. CONSUMER DURABLES

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	8,484.7	8,049.6	2,133.1	5,916.4	5,916.4	4,173.9	3,798.2	375.7
1974	8,047.1	7,328.5	1,942.0	5,386.4	5,386.4	4,488.3	4,084.4	403.9
1975	5,453.5	6,656.2	1,763.9	4,892.3	4,892.3	4,811.3	4,378.3	433.0
1976	6,467.9	6,344.5	1,681.3	4,663.2	4,663.2	4,906.3	4,464.7	441.6
1977	7,112.0	7,112.0	1,884.7	5,227.3	5,227.3	4,892.1	4,451.8	440.3
TOTAL: 56 TO 69	82,485.8	82,328.3	21,817.0	60,511.3	60,511.3	49,760.8	45,282.4	4,478.5
TOTAL: 70 TO 1977	56,517.8	56,865.8	15,069.4	41,796.4	41,796.4	34,828.2	31,693.7	3,134.5
TOTAL: 56 TO 1977	139,003.6	139,194.1	36,886.4	102,307.7	102,307.7	84,589.0	76,976.0	7,613.0

TABLE 4-O. OTHER

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	9,516.6	9,074.1	2,177.8	6,896.3	6,896.3	3,494.2	1,397.7	2,096.5
1974	9,081.9	8,353.0	2,004.7	6,348.2	6,348.2	3,653.5	1,461.4	2,192.1
1975	6,460.4	7,532.9	1,807.9	5,725.0	5,725.0	3,892.0	1,556.8	2,335.2
1976	7,056.5	7,081.3	1,699.5	5,381.8	5,381.8	3,867.8	1,547.1	2,320.7
1977	7,726.9	7,726.9	1,854.5	5,872.5	5,872.5	3,817.6	1,527.0	2,290.6
TOTAL: 56 TO 69	70,137.6	70,258.2	16,862.0	53,396.2	53,396.2	48,099.7	19,239.9	28,859.8
TOTAL: 70 TO 1977	63,797.2	63,970.6	15,352.9	48,617.7	48,617.7	29,625.5	11,850.2	17,775.3
TOTAL: 56 TO 1977	133,934.8	134,228.8	32,214.9	102,013.9	102,013.9	77,725.3	31,090.1	46,635.2

TABLE 4-P. TOTAL PRODUCT CATEGORIES

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	OBSOLETE RECOVERABLE SCRAP
1973	142,500.0	135,266.7	25,788.1	109,478.6	111,434.6	58,632.1	18,325.7	40,306.4
1974	138,400.0	128,341.7	24,429.9	103,911.8	104,519.8	60,889.4	19,113.6	41,775.8
1975	104,125.0	120,108.3	22,942.0	97,166.3	96,341.3	63,533.1	19,319.9	44,213.3
1976	117,800.0	116,008.3	22,543.2	93,465.2	93,974.2	65,450.9	19,453.6	45,997.3
1977	126,100.0	126,100.0	24,783.0	101,317.0	101,973.6	66,090.9	19,220.7	46,870.2
TOTAL: 56 TO 69	1,387,354.0	1,384,877.7	262,554.9	1,122,322.7	1,107,442.4	697,821.0	225,501.9	472,319.1
TOTAL: 70 TO 1977	978,825.0	984,791.7	188,705.9	796,085.8	806,333.7	502,928.7	154,744.1	348,184.6
TOTAL: 56 TO 1977	2,366,179.0	2,369,669.3	451,260.9	1,918,408.5	1,913,776.1	1,200,749.7	380,246.0	820,503.7

Table 5. Obsolete Ferrous Scrap Inventory by Geographic Region, December 31, 1975 and December 31, 1977

(Thousands of tons)

Region[a]	December 31, 1975 As previously published[b]	December 31, 1975 Revised	December 31, 1977	Percent of total
New England	69,411	69,713	73,345	10.9
Middle Atlantic	41,998	42,181	44,379	6.6
East North Central	99,333	99,766	104,964	15.6
West North Central	121,574	122,104	128,465	19.1
South Atlantic	101,914	102,358	107,691	16.0
East South Central	10,766	10,813	11,376	1.7
West South Central	106,155	106,618	112,172	16.7
Mountain	39,333	39,504	41,562	6.2
Pacific	45,733	45,932	48,325	7.2
TOTAL	636,217	638,989	672,279	100.0

a. U.S. Bureau of Census regions.
b. Robert R. Nathan Associates, Inc., Iron and Steel Scrap: Its Accumulation and Availability as of December 31, 1975, August 23, 1977, Metal Scrap Research and Education Foundation, Washington, D.C., Table IX-4, p. 112.

IRON AND STEEL SCRAP

Its Accumulation and Availability as of December 31, 1975

Part 1: Study Report

Prepared for the
Metal Scrap Research and Education Foundation

by
Robert R. Nathan Associates, Inc.
Consulting Economists
Washington, D.C.

August 23, 1977

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PREFACE

This analysis of the generation and withdrawal of ferrous metal scrap through 1975, and of the ferrous scrap inventory, as of December 31, 1975, was conducted by Robert R. Nathan Associates, Inc., at the request of the Metal Scrap Research and Education Foundation, the research arm of the Institute of Scrap Iron and Steel. The analysis was conducted during the first half of 1977 and relied both on previous studies of the ferrous scrap industry and on empirical findings. A wide variety of data sources was utilized. These sources are cited in the text of the study report.

A description of the study and its findings is presented in two parts. Part 1 is a study report which contains a comprehensive explanation of the concepts and methodology employed and summarizes the findings. Part 2 provides computer printouts of the scrap generated by each of the product groups which were individually analyzed, thus enabling the interested reader to replicate much of the quantitative analysis summarized in Part 1. Annexes to Part 1 contain a comprehensive bibliography and a reconciliation of two different conceptual bases for considering the ferrous scrap inventory.

The study was prepared under the general supervision of Maurice D. Atkin; principal contributors were Joseph R. Gunn, Richard Jeffe, Susan Scolnik, Roger Sedjo, and David Tillman. Responsibility for the entire content of the report rests solely with Robert R. Nathan Associates, Inc.

SECTION 1

I. EXECUTIVE SUMMARY

Statistical information regarding the ferrous metal scrap industry is extremely limited. Some data exist on current prices and on receipts and consumption by reporting iron and steel mills and foundries. Home scrap, which is generated in the steel-making process, is measured on a monthly basis, as is foreign trade in scrap. While home scrap typically represents around half the scrap which is annually withdrawn for domestic consumption and exports, it accounts for only some 35 percent of the total scrap which is actually generated each year. In fact, the majority of total ferrous scrap generated comes as a by-product of metal manufacturing and fabricating operations (prompt industrial scrap) and from the discard of products made from ferrous metals (obsolete scrap). This last category of scrap represents approximately 42 percent of the total annual scrap generation and is particularly difficult to quantify, primarily because of the unpredictable manner in which ferrous metal products are discarded. Some special studies have been conducted on various aspects of obsolete scrap,[1] but no comprehensive data are collected, and relatively few statistics exist.

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1. References to several of the more prominent studies are contained in the Bibliography, Annex A, to this report.

This report represents the findings of a newly completed research effort by Robert R. Nathan Associates, Inc., consulting economists, to determine and quantify the inventory of obsolete ferrous scrap in the United States at the end of 1975.

The study employs the concept of "potential reserves" of obsolete scrap, defined as quantities which are recoverable with the use of existing technology and at high but realistic prices (that is, prices possibly several times higher than present levels). Specifically, the definition of potential reserves implies that, at any given price above the present price, an additional amount of scrap will move into the hands of processors and, through them, to the iron and steel industry. A price-supply continuum exists. As the price increases, so the volume of scrap moved increases--although not necessarily in a linear fashion. Thus the statement, "prices possibly several times higher than present levels," refers to the price required to extract the last increment of scrap from potential reserves, and place that increment in the ferrous supply system.

Using this concept, the study works forward from a 1955 benchmark figure, and that reference figure is converted from its original "resources" base to the more conservative "potential reserves" concept.

In the present study, net annual changes in the inventory, or reservoir, of obsolete ferrous scrap are derived for each of the 20 years between 1956 and 1975. These net

changes represent the difference between the annual generation of obsolete scrap and the amount which is commercially withdrawn for recycling by the domestic iron and steel industries and for export purposes. Losses to the system, occasioned by physical loss and inaccessibility, are reckoned in determining the annual generation of recoverable obsolete scrap, and losses from corrosion are accounted for in tracing the net changes in the scrap inventory through time.

In addition to an analysis of the national total inventory picture, the study offers an estimate of the distribution of obsolete scrap among the nine Bureau of Census geographic regions in the country. That estimate is made by examining both the regional generation and the regional withdrawal of obsolete scrap.

Both the methodology employed in the study and the findings are presented in detail in the following chapters of this report. The salient conclusions, however, may be summarized briefly as follows:

1. Net additions were made to the inventory of obsolete ferrous scrap in the United States during 19 of the 20 years between 1956 and 1975. Only in 1956 was there a net withdrawal from the inventory. These additions ranged from a high of 22.9 million tons in 1971 to a low of 3.9 million tons in 1974. The net withdrawal in 1956 amounted to only 1.9 million tons. For the entire 20-year period covered by

the study, net annual inventory changes amounted to a total addition of 270 million tons, an annual average net addition of 13.5 million tons (table I-1).

Table I-1. Net Changes in the Inventory of Obsolete Ferrous Scrap, 1956-75
(Millions of net tons)[a]

Year	Net change	Year	Net change
1956	-1.9	1966	+17.8
1957	+3.9	1967	+20.8
1958	+16.8	1968	+22.9
1959	+10.5	1969	+19.2
1960	+11.4	1970	+19.9
1961	+10.0	1971	+22.9
1962	+14.5	1972	+14.6
1963	+10.9	1973	+7.9
1964	+13.0	1974	+3.9
1965	+15.1	1975	+16.0
		Total 1956-75	+270.1
		Annual Average	+13.5

a. It should be noted here that the data in this report are presented in net or short tons (2,000 lb. = 1 ton). Ferrous scrap, however, is usually sold on a gross or long-ton basis. The presentation is made in short tons to keep the data consistent with information available from such sources as the U.S. Bureau of Mines and the U.S. Department of Commerce. Further, by maintaining a short-ton measure in handling data on ferrous scrap, comparability is maintained with other series of data.

2. These additions to inventory may be added to the scrap reservoir that existed in 1955 in order to arrive at a 1975 inventory total. It should be noted here that 41 percent of the potential-reserves figure was accumulated between 1955 and 1975. When the 1955 benchmark figure of 537 million tons[1] is adjusted to a "potential reserves" definition, and when both the benchmark and the additions to inventory are reduced to account for the metallic corrosion which has occurred since the components of the inventory were initially discarded, the sum represents a 1975 national obsolete ferrous scrap inventory of 636.2 million tons:

From the 1955 inventory	(Millions of tons)
As originally published	537.0
Less: adjustment to "potential reserves" base	-70.9
Less: corrosion loss	-91.8
Net remaining in 1975	374.3
From additions to inventory after 1955	
Sum of annual inventory changes	270.1
Less: corrosion loss	-8.2
Net remaining in 1975	261.9
Total inventory in 1975	636.2

1. Source: Battelle Memorial Institute, Final Report on a Survey and Analysis of the Supply and Availability of Obsolete Iron and Steel Scrap, prepared for B.D.S.A., U.S. Department of Commerce, January 15, 1957.

3. The 1975 inventory is estimated to be distributed regionally as follows:

Census region	(Millions of tons)
New England	69.4
Middle Atlantic	42.0
East North Central	99.3
West North Central	121.6
South Atlantic	101.9
East South Central	10.8
West South Central	106.2
Mountain	39.3
Pacific	45.7
Total	636.2

The study makes no predictions about the future behavior of the scrap inventory. It is apparent, however, that the size of the scrap reservoir in the future will depend on a number of interrelated factors, among which technological developments and practices in the iron- and steel-making industries (domestically and internationally); rates of technological, economic, or physical obsolescence of ferrous metal products; and the long-term relationship between the total cost of producing steel from iron ore as opposed to ferrous scrap will be paramount. No forecast is required, however, in order to identify a pool of obsolete ferrous scrap -- the December 31, 1975, inventory -- which is sufficient in size to satisfy fully the total purchased scrap requirements (at the 1975 level) of the entire American steel and foundry industries, plus the export demand, for nearly 14 years, without consideration of the millions of tons of new obsolete scrap which is being generated each year.

METHODOLOGY

Introduction

The goal of this study has been to provide a reliable estimate of the national inventory of obsolete ferrous scrap. The data were to be regionalized over the nine Census Bureau regions into which the 50 states are divided. The year 1975 was taken as a terminal point in the analysis.

Conceptually, the inventory of scrap may be thought of as a pool of material, the size of which fluctuates according to the rate at which additions are made and the rate at which withdrawals take place. In the case of obsolete ferrous scrap, additions to the pool occur as ferrous-containing products are discarded; withdrawals take place as scrap is removed and recycled by the iron- and steel-making industries. The task of the study has been to determine the size and the location of that pool of obsolete scrap at the end of 1975.

The basic approach to the task was to locate a reliable benchmark inventory and then to concentrate the analysis on changes which occurred in the inventory between the benchmark year and the terminal year of 1975. Initially, the benchmark

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year was taken as 1969, on the basis of a study prepared for the U.S. Environmental Protection Agency.[1] That study was, in fact, built upon a still earlier study which had referenced the obsolete ferrous scrap inventory to the year 1955.[2] The present study therefore went back to the 1955 benchmark and developed independent estimates for annual changes in the inventory reservoir since that time.[3] By adding these net changes to the 1955 benchmark figure it has been possible to arrive at an estimate of the 1975 inventory. Verification of critical components in the updating process was undertaken wherever possible, and all key elements were subjected to sensitivity analyses to determine their individual effects on the overall product. Finally, the 1975 inventory estimates were regionalized on the basis of a set of derived key determinants.

Inventory Concepts

Inventory, in the normal business sense, implies a stock of items on the shelf which may be put into use at a chosen moment, depending upon the level of business. Clearly, the "on the shelf" aspect makes that definition unworkable for this study. The inventory of scrap iron

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1. Battelle Memorial Institute, Identification of Opportunities for Increased Recycling of Ferrous Solid Waste (Washington, D.C.: U.S. Environmental Protection Agency, 1972).
2. Battelle Memorial Institute, Final Report on a Survey and Analysis of the Supply and Availability of Obsolete Iron and Steel Scrap, prepared for B.D.S.A., U.S. Department of Commerce, January 15, 1957.
3. The use of the 1955 inventory permitted a validation of the later (1969) inventory published in 1972 (see footnote 1). It also maximized the period of time available for developing the new methodology.

and steel is not controlled by processors and brokers of scrap iron and steel.

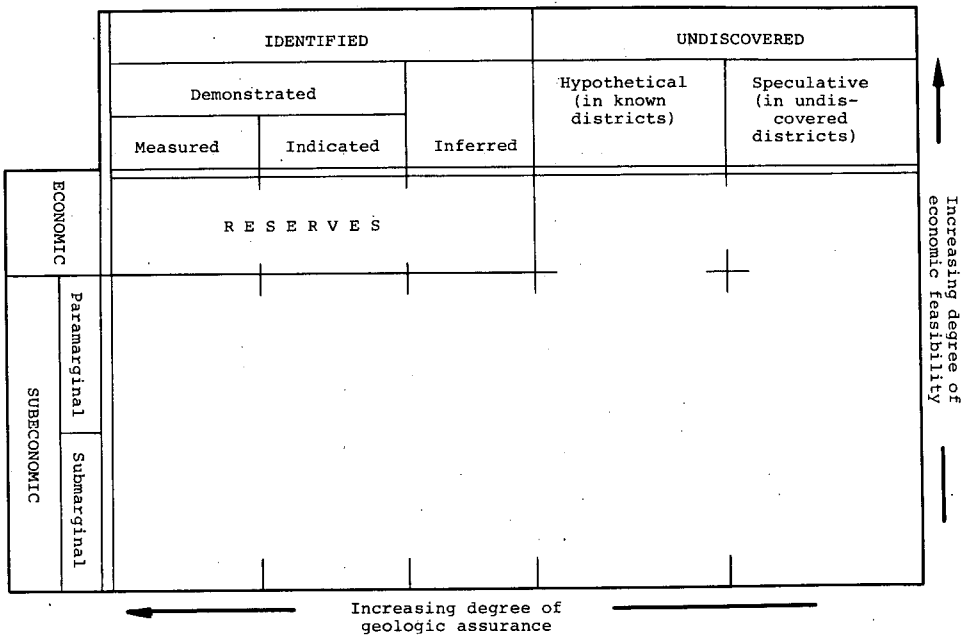
A more useful approach is to employ the geologic concepts of resources and reserves. These geologic definitions are as follows:

> Resources -- concentrations of elements in the earth's crust or under the sea existing in such a form that they may be extracted and used
>
> Reserves -- masses of rock whose extent and grade are known to a greater or lesser degree and whose physical natures are such that they may be extracted at a profit with existing technology and present price levels

The relationship of these two classifications is defined by the McKelvey Diagram, depicted as Figure II-1.

This concept in its present state cannot be applied to scrap iron and steel. It must be modified somewhat to account for basic dissimilarities in the types of material being considered. Geologic definitions deal with materials which are presumed to exist but which must be discovered in their geologic setting; measured as "proved" in terms of composition, grade, and quantity; and then either employed, held for future use, or abandoned. Thus the geologic concept has both technical-discovery and technical-economic dimensions. Ferrous scrap, on the other hand, does not present the magnitude of discovery problems inherent in natural deposits: Scrap will be derived from ferrous products. Thus, a more technical-economic approach can be

Figure II-1. The Relationship of Resources and Reserves: the McKelvey Diagram



Source: John J. Schanz, Jr., Resource Terminology: An Examination of Concepts and Terms and Recommendations for Improvement, prepared by Resources for the Future for the Electric Power Research Institute, August 1975, pp. 12-13.

taken, and the three-part classification scheme can be employed:

- Resources (of iron and steel scrap) -- discarded material located on the earth's surface or in land fills, existing in such a form that it could be extracted and used

  Potential reserves -- concentrations of iron and steel scrap whose quantity may be known or inferred, whose condition is such that it may be used immediately, and whose availability is such that it may be recovered within the constraints of high but realistic prices (that is, prices possibly several times higher than present levels)[1] and known technology

  Reserves -- concentrations of iron and steel scrap of which the extent and quality are known and which are economically recoverable at general prevailing prices and known technology

Figure II-2 illustrates the relationship of the elements in this classification.

For purposes of this study, the term "inventory" is synonymous with "potential reserves." The movement of supplies from resources to potential reserves, and from potential reserves to reserves, involves questions of

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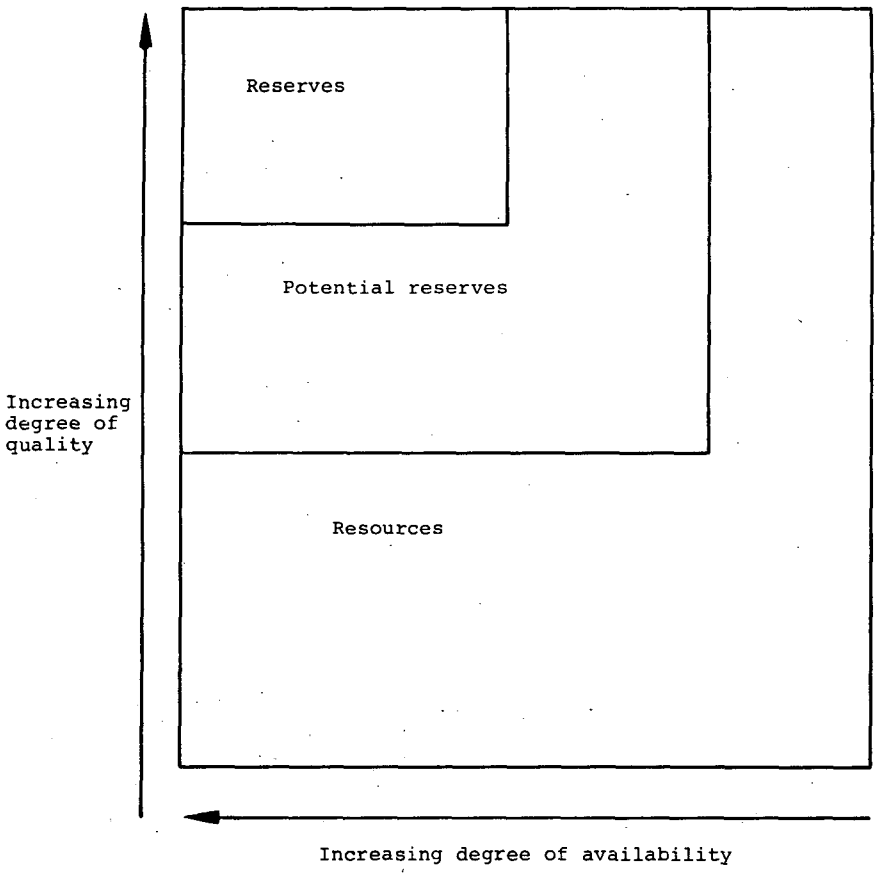
1. As noted in the Executive Summary, this concept implies that with every significant price increase, more scrap will be forthcoming. A price-supply curve is, therefore, implied. The "several times higher than present levels" implies that for the last increment of potential reserves to enter the supply system, the price of that increment would have to be several times higher then present levels.

'igure II-2. Resources, Potential Reserves, and Reserves of Iron and Steel Scrap



supply elasticity with respect to price, an issue which lies beyond the scope of this study.[1]

For several reasons, the "potential reserves" category was considered the most appropriate measure of the ferrous scrap inventory:

1. The "resource" number, to have any validity, must include inaccessible material which could be used only in emergency situations (for example, the digging up of landfills if wartime conditions mandated). Such resources, moreover, may be extensively oxidized and therefore of low quality.

2. The range of fluctuations of scrap prices in the 1970s makes the measurement of "reserves" less than useful for these purposes. Resulting from such an analysis would be a series of price reserve calculations more appropriate for the Phase III analysis.

3. "Potential reserves," as a concept, includes only material which is relatively accessible and which offers the advantage of scrap (for example, existing in the metallic state) as opposed to one which must be reduced to the metallic state. Therefore it can be called upon, and within a short time frame, in situations where scrap is demanded by the economy, assuming that prices reach appropriate levels.

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1. It may be noted that the Metal Scrap Research Education Foundation (MSREF) contemplates a 3-phase research study to analyze comprehensively the ferrous scrap industry, including processing capacity and the inventory of available scrap (the latter topic being the subject of this study). Phase III of that 3-phase effort is designed to deal with the general topic of price elasticity and thus provide an appropriate research base from which to consider shifts among and between the various conceptual inventory classifications noted above.

Taken together, these reasons present a strong case for using the "potential reserves" concept as the appropriate measure of scrap inventories and inventory changes.

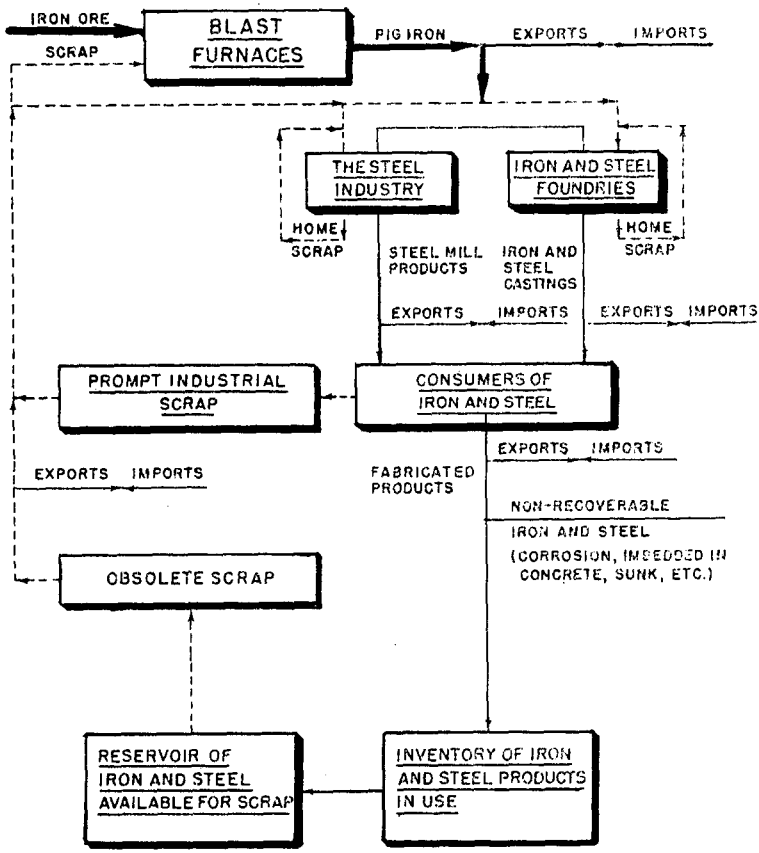
Methodology Employed

The approach taken in this study in general traces the flow of ferrous materials through the U.S. economy. It starts with the production of iron and steel and moves through product fabrication and utilization to discard. Figure II-3 depicts the flow of iron and steel through the U.S. economy and illustrates that, at each significant stage, some material is returned to the iron and steel industry for recycling, some is discarded, and some is destroyed, either by system losses or by disposal techniques. Each critical point in the materials cycle was examined by individual product categories, and the flow of products, recycled materials, trade values, losses to the system, and net inventory changes were all quantified.

The following critical areas were subjected to careful analysis:

- Iron and steel shipments
- Prompt industrial scrap generation and products in use
- Product discard rates or life cycles
- Losses to the system
- Obsolete scrap inventory generation and utilization
- The net inventory change of obsolete scrap

Figure II-3. Flow Chart of Ferrous Metallics



Source: U.S. Department of Commerce.

Also, foreign trade impacts were specifically assessed in those areas (iron and steel mill products, automotive and industrial machinery product categories, and ferrous scrap itself) where they were determined to be significant.

Sensitivity analyses were applied to the most critical of these factors: prompt scrap generation, life cycles, and losses to the system. Validation techniques were then employed to verify results where data permitted. Finally, the national inventory and the inventory changes were disaggregated geographically into the nine U.S. census regions. Figure II-4 presents a schematic flow diagram of the methodology employed.

Disaggregation by Product Category

The study was undertaken on the basis of fifteen end-use product categories, and the flow of ferrous metal through the entire cycle was performed for each individual category. Figure II-5 presents, in tabular form, the product categories employed.

This level of disaggregation was necessary because:

- Different product categories command varying shares of the iron and steel market
- The production processes for certain iron and steel products result in different prompt scrap generation rates
- Different products (for example, consumer durables, industrial machinery) are discarded at varying rates over time
- The discard process for different products is carried on in such a manner as to generate totally distinct and separate loss rates

FIGURE II-4

METHODOLOGY FLOW DIAGRAM

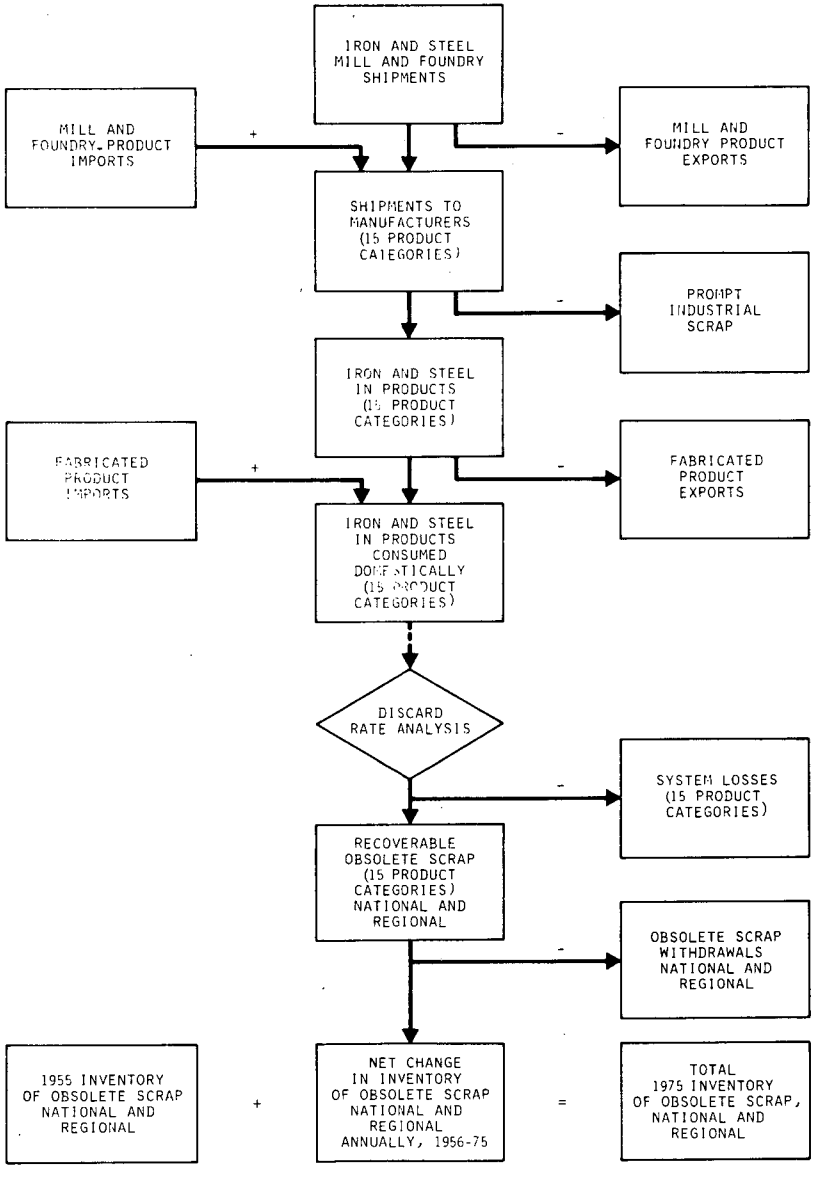


Figure II-5

Product Categories Employed

1. Automotive
2. Railroad rails
3. Railroad equipment
4. Ships and marine equipment
5. Aircraft
6. Construction materials
7. Industrial machinery
8. Electrical machinery
9. Mining materials
10. Oil and gas materials
11. Agricultural machinery
12. Other agricultural materials
13. Containers
14. Consumer durables
15. All other

These product categories were developed on the basis of the American Iron and Steel Institute user categories for ferrous metal shipments and were then modified so that they would better reflect discrete product groups. A reconciliation was made between the product categories used in this study, the AISI categories, and the Standard Industrial Classification system used by the U.S. Department of Commerce, Bureau of the Census.

Iron and Steel Shipments

Iron and steel shipments were considered to be finished shipments from the basic industry to end-use product manufacturers. Iron and steel shipments were carried together, rather than separately, because they are used together in the production of end-use products. The distribution of castings to product categories was performed in accordance with U.S. Bureau of Mines procedures. These are detailed in Chapter III, "Iron and Steel Shipments."

Three slightly different procedures were employed in the development of these data. This was necessary to accommodate changes in the quality of information available. For the period 1941-75, AISI data were used directly as they appear in the AISI statistical reports. Certain AISI categories (for example, "fasteners") were distributed to the categories shown in Figure II-5 on a percentage basis. For the period 1923-40, the only available data on shipments by end-use categories were percentages of total shipments, as published by AISI and Iron Age. For the period before 1923, only data on total shipments of iron and steel were available. Certain product categories (for example, automotive) have a relatively short product life, and for these categories it was not necessary to obtain product disaggregations earlier than 1923. For categories where disaggregation was necessary (for example, railroad rails), a linear trend line was developed to establish the category's share of total shipments for later years and was projected back to the turn of the century.

Following the development of data on annual total shipments of iron and steel, adjustments were made to remove exports and include imports of primary metal (that is, iron and steel mill products). The imports were then distributed to product categories on the basis of the percentages of the total market that they represent. Chapter III presents the annual iron and steel shipments by product categories, along with the detailed assumptions used to develop those data.

Prompt Industrial Scrap Generation and Steel in Products

Prompt industrial scrap is that scrap generated by the manufacture of products (for example, automobiles) from primary materials. In order to obtain the iron and steel content by products manufactured, prompt scrap generation rates were developed for each product category. The only available data for performing this analysis were developed by the U.S. Department of Commerce, Business and Defense Administration, in 1954. These estimates were judged to be of value because of their age. The Department of Commerce study was performed in the period when many of the products now being discarded were manufactured. Technological forces are at work now influencing prompt scrap generation. These forces are in conflict. Potentially increasing the rate of prompt scrap generation are such factors as the application of tighter specifications for heat treating, machining, and

assembly. Such specifications tend to increase both stock removal and part rejection in the metal-working plant. Countervailing forces include the forming of complex parts with metal powders, computer-controlled machining to reduce error, and similar technological developments.[1,2]

The data from the Commerce study were used and, by the use of weighted averages, a correspondence between the Commerce prompt generation rates by SIC Code Category and the product category rates in this study was achieved. The correspondence of the two disaggregation methods is examined in detail in Chapter IV.

For each product category, the prompt scrap was subtracted from the steel shipments, annually, to obtain an estimate of the iron and steel contained in products.

Following the development of such data, an adjustment was made for imports and exports of products. Data were obtained concerning the most extensively traded fabricated

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1. It was observed in the 1976 American Machinist inventory of metal working machinery, for example, that computer-controlled machines are making increasing inroads -- capturing even larger shares of the machine-tool market. This would suggest a gathering of momentum for this force which reduces the rate of prompt scrap generation. All forces, however, are continuously acting upon the rate of prompt scrap generation.

2. The net effect of increasing and decreasing rates of prompt scrap generation is explored in the sensitivity analysis (Chapter VII). The effect is not as significant as other factors tested. For example, if less prompt scrap is generated, then steel is used more efficiently by manufacturing concerns. Thus less steel is needed by such firms (hence less steel is made and less scrap is consumed).

metal products, electrical and nonelectrical machinery, and transportation equipment. Exports and imports of these products were then studied for the relevant years, on a commodity-by-commodity basis. A net import estimate for each end-use product category resulted from these estimates. Appropriate adjustments were made for all relevant years. Chapter IV presents the detailed calculations of these data.

The results of these statistical analyses were annual estimates of the amount of iron and steel contained in products employed in the U.S. economy. These estimates became the basis for further analysis regarding product life, discard rates, and scrap generation.

Product Life Cycles

The term "product life cycle" can be taken to imply several dissimilar meanings. The average life of a product and the ultimate life of the product at the time of discard are two common definitions. The choice of definition obviously influences the study, by changing the rate of discard and, concomitantly, including or excluding periods of low-level production (for example, the Depression) from the inventory-updating exercise.

For the purposes of this study, life cycle has been translated into separate rates of discard for each product category, beginning in the year of production and ending in the year by which all the products produced in a given year were assumed to have been discarded. A typical discard-rate or life-cycle curve is presented in Chapter V. It permits the examination of several points on the life-cycle curve (for example, when the first few percent of products are

discarded, when 50 percent are discarded, and when all products are discarded). For most product categories used in this study, at least five points were analyzed.

To estimate the actual discard-rate values for the product categories, extensive research was conducted in the literature. For products such as motor vehicles, agricultural machinery, and some industrial machinery, essentially all points on the curve could be documented, though five points were judged to be a sufficient number. For other commodities, fewer points (in some cases only two -- the average life and the total life) could be documented. In the latter cases, general discard-rate curves were generated to fit the documented points.

By applying these product-discard rates to the iron and steel in products, over time, and by adjusting for loss caused by corrosion, abrasion, and wear,[1] the theoretical pool of obsolete scrap was estimated.

Losses from the System

In all cases where material is transferred from one stage to another in the economy, losses occur. Some prompt industrial scrap goes out with the sweepings. Many obsolete home appliances and virtually all containers end up in the landfill. Rail roof supports in coal mines are trapped by subsidence. Military goods are shipped overseas and never return to the United States. As a consequence, potential

1. Estimated to total 1 percent from all causes over the useful life of the product. Battelle, Final Report, 1957, p. E-3.

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recovery rates, and their complement, irrecoverable loss rates, need to be estimated for all end-use categories.

There is no precise definition, for quantitative purposes, of material lost to the supply system. For the purposes of this study it was assumed that if an object containing ferrous metal, when no longer in use, fits the following descriptions, it is lost to the system:

- It is disposed of in a dump, landfill, or abandoned mine
- Its secondary use is destructive (iron used in copper cementation, for example)
- The cost to collect and process the material is prohibitive because of its remote location dispersion.

Through a search of the literature, recovery rates were developed for each product category. These rates were applied to the theoretical amount of scrap generated by that particular category to derive estimates of the potential annual additions to the inventory of obsolete ferrous scrap. The results of these investigations are presented in Chapter VI. They document the reasons that certain recovery rates appear lower, or higher, than in previous studies.

The Development of a Net Inventory for 1975

When withdrawals of obsolete scrap are subtracted from the potential additions to inventory, the net changes in inventory can be estimated for each year studied. When annual changes are summed, the process of updating the inventory is complete.

To perform this function, withdrawals of obsolete scrap from inventory were calculated. The annual data of the U.S. Bureau of Mines on domestic purchased scrap receipts, plus scrap imports and exports, provided the starting point. From these, 90 percent of the estimates of prompt scrap generation for each year were subtracted. The balance of purchased scrap receipts was assumed to be obsolete scrap.

The potential recycle rate for prompt scrap, 90 percent, was chosen on the basis of estimates of the condition of various grades of prompt industrial scrap.[1] Manufacturing residues were estimated to be 25-75 percent recoverable; trimmings, 90 percent recoverable; overruns, nearly 100 percent recoverable; composite wastes, 0-100 percent recoverable; flue dusts, "often not economic to recover"; and chemical wastes (for example, plating solutions), "often recoverable." Because residues,

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1. See "Recycling as an Industry," in Solid Wastes -- II, edited by Stanton S. Miller (Washington, D.C.: American Chemical Society, 1973), Table 1, p. 41.

trimmings, and overruns make up the bulk of manufacturing wastes, the figure of 90 percent was chosen.

Once the subtraction had been made and the years had been aggregated, the net national inventory update was complete.

In order to arrive at a total 1975 inventory of obsolete scrap, it was necessary to take the total additions since 1955 and add them to a base figure for that year. This task was made complex by the fact that the previous Battelle study employed assumptions different from those used in the present study. In order to estimate potential reserves, it was necessary to adjust the previous estimates to account for both system losses and oxidation losses. Once adjusted, this base number was added to the present "net inventory addition" estimate to achieve the total inventory estimate.

For purposes of comparison a "resources" estimate was prepared for the inventory change since 1955. To accomplish this the "system loss" rate was reduced to be consistent with the earlier estimate of the "irrecoverable" loss rate (physical loss). No correction for corrosion was made. Then the two numbers were again added.

Recognizing that 41 percent of the additions to potential reserves were made between 1956 and 1975, and because data were developed for the period 1956-69 on both bases independently, such comparative resource and potential reserves estimates were possible for the entire volume of

ferrous scrap generated. By making such estimates, one can differentiate immediately between the amounts being used, the amounts reasonably available for use, and the total amounts which could possibly be located under conditions which would warrant the identification of all domestic ferrous materials.

Verification Procedures

Following the development of estimates of "potential reserves" and "resources," the conclusions were subjected to verification procedures. Several approaches were taken to verify both the methodology and the results. These procedures included the development of statistical counts of scrap generation for automobiles.

Statistical counts were developed where data existed -- the case of automobiles. In that situation, the amount of iron and steel per vehicle was estimated on the basis of research by the U.S. Bureau of Mines. Such estimates were prepared by model year. Then the number of automobile deregistrations was used to approximate the rates of discard for each model year. In automobiles, the iron and steel content by model year has been changing. This change has resulted in a fairly steady decline in ferrous content since 1968. Such changes have been measured and applied to the scrap-generation inventory.

By multiplying the number of deregistered cars by the ferrous content, physical counts of the theoretical scrap generated were developed. Similar estimates were developed for trucks and buses. These statistical counts were then

compared to the life-cycle or discard-rate counts (based on steel shipments) for the purpose of verifying the methodology.

The results of the 1956-69 estimate of the inventory are included as part of Chapter VII -- the updated net inventory. The verifications of the statistical count are contained in Chapter VIII.

Regional Disaggregations

Regional estimates of the net additions to inventory over the period 1956-75 are obtained by estimating the annual additions to the regional inventory by product sector and cumulating them through time. The regional product-sector cumulations were then aggregated to give a regional total. From this total, regional obsolete scrap withdrawals for 1956-75 are subtracted, leaving a residual which is identified as the addition to regional inventory since 1955. The regional proportions of the 1956-75 inventory were imputed to the entire inventory.

Regionalization of scrap generation was developed using the following data series to disaggregate national statistics: population, motor-vehicle registrations, personal income, mining and lumbering value added, oil and gas output, agricultural receipts, and other similar indexes of economic activity. Regionalization of withdrawals was developed by using information from the U.S. Bureau of Mines plus export data.

The regional estimates were made only for "potential reserves." No effort was attempted to regionalize the "resources" concept.

III. IRON AND STEEL SHIPMENTS

Steel Shipments

Iron and steel shipments form the key element in the data base required to make estimates of changes in the ferrous inventory. The approach employed in this study involved disaggregating the total shipments of iron and steel into a set of 15 end-use product categories. The basic compilation involved data on total iron and steel shipments for the period 1900-1975. The principal sources of data used were the American Iron and Steel Institute[1] and the American Metal Market.[2] Those basic sources provided data from 1940 to 1975. No data on total shipments for years earlier than 1940 are available. For this period steel shipments were estimated on the basis of a derived relationship between rolled steel and total steel production of 97.1 percent (which was found to exist for the period 1940-45).

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1. See especially the Annual Statistical Report of the American Iron and Steel Institute, Washington, D.C.
2. Metal Statistics, published annually by the American Metal Market Company, New York.

Foundry Shipments

Foundry shipments are composed of three categories: commercial steel, malleable iron, and gray iron castings. From 1943 to the present, data on these categories were reported in the annual issues of Metal Statistics. Before 1943 gray iron castings were not reported. From the period 1924-42 foundry shipments were estimated on the basis of a derived ratio of total foundry shipments to steel and malleable iron castings of 4.32 percent (which was found to exist in 1943). Similarly, before 1924, statistics on malleable iron castings were not available, and a similar procedure, using a factor of 7.6 percent (based on 1924-28), was used to estimate total foundary shipments for the period 1900-1923.

Net Trade in Iron and Steel

An adjustment must be made in iron and steel mill and foundry shipments to account for exports and imports of such materials, in order to obtain estimates of net shipments to U.S. manufacturers of steel products. Such adjustments were made annually back to 1900, using such sources of data as were available.

Annual series on imports and exports of iron and steel are available in the editions of Metal Statistics. For years earlier than 1917 Metal Statistics did not separate trade in ferrous scrap from total iron and steel trade figures. Consequently, data on scrap trade published by the

Institute of Scap Iron and Steel[1] were used to adjust the total steel-trade series to account for imports and exports of scrap from 1910 to 1977. Before 1910, the adjustment for scrap imports had to be estimated on the basis of the average ratio of scrap imports to total iron and steel imports which was found to exist during the period 1910-15. A corresponding ratio was used to adjust for scrap exports.

The net result of these adjustments was the development of data on iron and steel mill and foundry shipments which represent the quantities actually shipped from both domestic and foreign sources to U.S. producers and manufacturers.

Development of Iron and Steel Shipments by AISI Product Category

In developing data on iron and steel shipments at the AISI product-category level, different procedures were employed for the periods 1941-75; 1922-40; and 1900-1923. For the period 1941-75 AISI data were available by 26 product categories. (These are shown in table III-1.) In certain cases during World War II, AISI data (for example, railroad data) were not sufficiently disaggregated, so it was necessary to develop allocation factors, based on a weighted average of categories used during the period 1946-53, in order to determine the proper disaggregation.

For the period 1923-40, the only available sources of data on iron and steel shipments by product categories were

1. Institute of Scrap Iron and Steel, Facts, 1975 Yearbook (Washington, D.C., 1976), p. 4.

Table III-1. AISI Product Categories

	Category	Abbreviation
1.	Steel for converting and processing	STLC&P
2.	Forgings	STLFORG
3.	Bolts, nuts, rivets, and screws	STLFAST
4.	Warehouse and distributors (other than oil and gas)	STLSSC
5.	Construction	STLCONST
6.	Contractors' products	STLCONP
7.	Automotive	STLAUTO
8.	Railroad rails	STLRTRK
9.	Railroad cars and locomotives	STLFC&L
10.	Street railroads and rapid transit systems	STLSR&RT
11.	Shipbuilding	STLSHIP
12.	Aircraft	STLAIR
13.	Warehouse and distributors (oil and gas)	STLSSCO&G
14.	Construction (oil and gas)	STLCO&G
15.	Drilling (oil and gas)	STLDRIL
16.	Mining, quarrying, and lumbering	STLMINE
17.	Agricultural machinery	STLAGMACH
18.	All other agricultural	STLAGOTHER
19.	Machinery (industrial)	STLIMACH
20.	Machinery (electrical)	STLEMACH
21.	Appliances, utensils, and cutlery	STLAPPL
22.	Other domestic and commercial equipment	STLD&CE
23.	Containers	STLCONTR
24.	Ordnance and other direct military	STLORD
25.	Construction (rail transportation)	STLCONR
26.	Nonclassified shipments	STLNC

Source: American Iron and Steel Institute, Annual Statistical Report, selected years.

those developed by Iron Age. These data were given by categories more aggregated than the AISI market categories and, moreover, were available only on the basis of a percentage of a total steel shipments. The percentage values were disaggregated into the set of 26 AISI basic categories based on averages derived from the period 1941-53 (see table III-2). The resulting percentages were then multiplied by total steel shipments (less exports plus imports) to arrive at values based on the AISI categories.

For the period before 1923, consistent data concerning steel shipments by product categories were not available. Estimates were required only for the five product categories whose life cycles were greater than 32 years (namely railroad rails, railroad equipment, construction materials, industrial machinery, and electrical machinery), because scrap generation rates before 1956 were not central to the study. For rails and construction, least-squares methods were used in estimating values before 1923. Steel shipments for railroad equipment were considered equal to steel-rail shipments, on the basis of an analysis of rail steel production for years between 1912 and 1929 as well as the relationship of rail steel to railroad equipment in subsequent years. Steel shipments for industrial and electrical machinery were estimated using an average percentage of total steel from the period 1923-40.

Development of Iron and Steel Shipments by RRNA Product Categories

The approach used to estimate iron and steel shipments by the 15 end-use product categories employed in this study

Table III-2. Iron and Steel Shipments: Percentage Distribution Factors for the Period 1923-40

	AISI category abbreviation	Distribution basis of Iron Age categories
1.	STLC&P	17 percent of all other
2.	STLFORG	7 percent of all other
3.	STLFAST	7 percent of all other
4.	STLSCC	53 percent of all other
5.	STLCONST	100 percent of buildings
6.	STLCONP	included in STLCONST
7.	STLAUTO	100 percent of automotive
8.	STLRTRK	40 percent of railroads
9.	STLFC&L	60 percent of railroads
10.	STLSR&RT	included in STLFC&L
11.	STLSHIP	0 percent of total steel for 1923-31 1 percent of total steel for 1932-40
12.	STLAIR	0 percent
13.	STLSSCO&G	58 percent of oil, gas, and mining
14.	STLOCO&G	included in STLCONST
15.	STLDRIL	29 percent of oil, gas, and mining
16.	STLMINE	13 percent of oil, gas, and mining
17.	STLAGMACH	84 percent of agriculture
18.	STLAGOTHER	16 percent of agricultrue
19.	STLIMACH	40 percent of machinery
20.	STLEMACH	19 percent of machinery
21.	STLAPPL	20 percent of machinery
22.	STLD&CE	21 percent of machinery
23.	STLCONTR	100 percent of container
24.	STLORD	0 percent
25.	STLCONR	included in STLCONST
26	STLNC	15 percent of all other

Note: Percentages represent the average for the period 1953-41.
Source: See text.

involved a two-stage process. First, the AISI-category data were allocated to a set of major demand categories based on procedures developed by the Bureau of Mines. The demand categories were then disaggregated to arrive at the final 15 end-use categories. The procedures, which have been converted into the set of equations below, are from unpublished documents in the files of the Bureau of Mines, Division of Ferrous Metals. The procedures are used by the Bureau of Mines in the preparation of the table "Iron and Steel Supply-Demand Relationships," contained in the Minerals in the U.S. Economy: Ten Year Supply-Demand Profiles for Mineral and Fuel Commodities.

The Bureau of Mines procedures used as input the AISI market categories and the total iron and steel shipments, net of foreign trade. The relationships between the AISI categories and the Bureau of Mines demand categories are given below. The left-hand side of each equation represents the Bureau of Mines demand category; the right-hand side represents the AISI category plus foundry shipments. As can be seen from the relationships, the demand categories provide procedures for allocating both the AISI intermediate and final product categories.

Transportation = automotive + railroad + shipbuilding and marine + aircraft + .25 (steel service centers) + .25 (foundry shipments)

Construction = construction, including maintenance + contractor's products + .25 (industrial fasteners) + .25 (steel service centers) + .75 (steel for converting and processing + .60 (nonclassified) + .25 (foundry shipments)

Machinery = machinery and industrial equipment and tools + electrical equipment + agricultural, total + .60 (domestic and commercial equipment) + .20 (steel service centers) + mining, quarrying, and lumbering + independent forging + .25 (industrial fasteners, + .35 (foundry shipments)

Oil and gas = oil and gas supply houses + oil and gas drilling + .10 (steel for converting) + .05 (foundry)

Household appliance = appliances + .40 (other domestic and commercial) + .15 (steel service centers) + .05 (foundries)

Containers = containers

Other = .15 (steel service centers) + .05 (foundry) + .15 (steel for converting) + .4 (nonclassified) + ordnance and military

After the AISI data had been assigned to the proper demand category they were summed to arrive at an unadjusted total. Two adjustments were then required: first, the remaining unassigned 50 percent of industrial fasteners was allocated proportionally to each demand category; second, a proportional adjustment was made to the AISI data to reflect net imports.

As indicated above, in the Bureau of Mines procedures the 26 AISI categories plus foundry shipments were combined

into 7 demand categories. These 7 categories were then disaggregated in the second step to form the 15 RRNA end-use product categories (table III-3). Of the 15 RRNA categories, 5 were equivalent to the Bureau of Mines categories and so required no further adjustment. Of the remaining 10 RRNA categories, 5 were in the transport demand category and 5 in the machinery category. Within the demand-category group the intermediate products (for example, industrial fasteners, foundry shipments) were allocated to the end-use categories on a proportional basis. (The one exception was the case of railroad rails, which was assumed to contain no intermediate steel products.) Thus, for example, the RRNA automotive category is equal to the AISI automotive category plus a proportion of the 25 percent of steel service center and 25 percent of foundry shipments included in the transportation category on the basis of the ratio of AISI automotive to the sum of AISI automotive, railroad (net of rails), shipbuilding, and aircraft.

Results

Steel shipments, dissaggregated by product category, are presented for selected years in table III-4. The table shows both tonnage and the percentage composition of total shipments (net of foreign trade) by each of the 15 product categories employed in this study.

Table III-3. Relation between RRNA and Bureau of Mines Product Categories

	Bureau of Mines demand category	RRNA product category
1.	Transportation	Automotive
2.	Transportation	Railroad rails
3.	Transportation	Railroad equipment
4.	Transportation	Ships and marine equipment
5.	Transportation	Aircraft
6.	Construction	Construction materials
7.	Machinery	Industrial machinery
8.	Machinery	Electrical machinery
9.	Machinery	Mining materials
10.	Oil and gas	Oil and gas
11.	Machinery	Agricultural machinery
12.	Machinery	Other agricultural materials
13.	Containers	Containers
14.	Appliances	Consumer durables
15.	Other	All other

Table III-4. Iron and Steel Shipment by Product Category for Selected Years
(Thousands of tons and percent of total)

Product category	1923		1930		1940		1950		1960		1970		1975	
	Thousands of tons	Percent of total	Thousands of tons	Percent of total	Thousands of tons	Percent of total	Thousands of tons	Percent of total	Thousands of tons	Percent of total	Thousands of tons	Percent of total	Thousands of tons	Percent of total
Automotive	5,268.8	12.3	6,798.3	17.9	9,860.7	21.7	20,529.6	24.0	20,835.1	24.4	24,632.3	21.1	23,430.9	22.5
Railroad rails	3,824.3	8.9	2,000.7	5.3	1,466.8	3.2	2,263.4	2.7	756.5	0.9	1,271.0	1.1	1,473.8	1.4
Railroad equipment	7,759.5	18.1	3,947.4	10.4	3,097.2	6.8	2,946.4	3.5	2,569.8	3.0	3,411.9	2.9	2,827.6	2.7
Ships and marine equipment	0	0	0	0	661.8	1.5	463.9	0.5	887.0	1.0	1,461.8	1.2	2,176.1	2.1
Aircraft	0	0	0	0	0	0	73.8	0.1	111.2	0.1	95.3	0.1	106.3	0.1
Construction materials	10,507.9	24.5	10,518.1	27.8	12,628.7	27.8	22,816.2	26.7	24,288.1	28.5	33,940.4	29.0	28,646.4	27.5
Industrial machinery	1,256.5	2.9	1,025.7	2.7	2,773.7	6.1	8,531.1	10.0	9,384.2	11.0	13,137.9	11.2	11,931.8	11.6
Electrical machinery	596.8	1.4	487.2	1.3	1,317.5	2.9	4,511.1	5.3	4,926.8	5.8	6,847.3	5.9	5,012.2	4.8
Mining materials	1,429.3	3.3	1,277.9	3.4	531.6	1.2	709.7	0.8	682.8	0.8	1,263.2	1.1	1,374.7	1.3
Oil and gas materials	3,848.5	9.0	3,786.5	10.0	1,572.4	3.4	3,503.5	4.1	2,611.8	3.1	3,550.5	3.0	5,156.2	5.0
Agricultural machinery	3,518.2	8.2	2,872.0	7.5	2,837.7	6.2	3,187.5	3.8	1,813.8	2.1	2,056.2	1.8	2,433.4	2.3
Other agricultral materials	670.1	1.6	547.0	1.4	540.5	1.2	589.4	0.7	564.3	0.7	805.7	0.7	862.7	0.8
Containers	1,239.4	2.9	2,000.7	5.3	2,914.8	6.4	6,021.2	7.0	6,727.1	7.9	9,040.9	7.7	6,779.0	6.5
Consumer durables	1,347.0	3.1	1,161.6	3.1	2,186.7	4.8	5,405.4	6.3	5,149.2	6.0	7,076.9	6.1	5,453.5	5.2
All other	1,635.7	3.8	1,462.0	3.9	3,080.9	6.8	3,879.8	4.5	4,007.3	4.7	8,308.7	7.1	6,460.4	6.2
Total	42,902.0	100.0	37,885.0	100.0	45,471.0	100.0	85,432.0	100.0	85,315.0	100.0	116,900.0	100.0	104,125.0	100.0

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IV. IRON AND STEEL IN PRODUCT FORM

In order to determine the iron and steel in products which may ultimately become part of the U.S. scrap reservoir, several operations were involved. For each of the 15 product categories, the following calculations were made:

- Iron and steel shipments, as presented in Chapter III, were converted into a series of 3-year moving averages
- Generation rates of prompt industrial scrap were calculated, and the resulting tonnages were subtracted from steel shipments
- The remainder, "iron and steel in products," was adjusted to reflect foreign trade of finished commodities

The result of these three steps is an estimate of the products which are consumed, and ultimately scrapped, in the United States.

Three-Year Moving Averages

The first step in this process was to convert the annual shipments of iron and steel into 3-year moving

averages. Also, this adjustment provided a smoothing out of annual fluctuations of steel shipments and resulted in a less erratic estimate of the annual use of iron and steel by product category.

Prompt Scrap Adjustments

In order to assess the amount of the iron and steel content of products manufactured in the United States, the prompt scrap generated in the manufacturing process must be subtracted from the annual use data. This was done on a commodity-by-commodity basis.

The U.S. Department of Commerce estimates of the generation rates of prompt scrap were the starting point for this adjustment. The 3-digit SIC code prompt generation rates, rep duced in Table IV-1, provided the basis for developing prompt generation rates in most of the product categories. Four-digit codes were used selectively, where the level of disaggregation made it necessary to do so.

The Department of Commerce prompt generation rates were converted into the product categories used in this study. Weighted averages of prompt scrap generation rates were taken for the following categories: construction materials -- SIC categories 254, 342, 343, and 344; industrial machinery -- SIC 351, 352, 353, 354, 355, 356, 357, and 359; and electrical machinery -- SIC 347, 361, 364, and 366. All other specific categories were represented by one SIC code number.

Table IV-1. Generation of Iron and Steel Prompt Industrial Scrap, by Industry, 1954

Code no.[a]	Industry	Scrap generation ratios[b] (percent)	Prompt industrial scrap generation[c] (net tons)	Standard error of estimate of scrap generation ratios[d] (percent)
251	Household furniture	8.6	40,600	11
252	Office furniture	14.9	31,500	2
254	Partitions and fixtures	11.5	26,700	8
339	Miscellaneous primary metal industries	25.7	384,700	1
341	Tin cans and other tinware	11.6	476,600	3
342	Cutlery, hand tools and general hardware	22.8	231,500	5
343	Heating apparatus (except electric) and plumbers' supplies	11.8	169,500	6
344	Fabricated structural metal products	5.6	523,300	6
346	Metal stamping, coating, and engraving	30.8	730,900	4
347	Lighting fixtures	19.2	51,500	20
349	Miscellaneous fabricated metal products	16.5	403,100	11

continued--

Code no.[a]	Industry	Scrap generation ratios[b] (percent)	Prompt industrial scrap generation[c] (net tons)	Standard error of estimate of scrap generation ratios[d] (percent)
351	Engines and turbines	22.0	98,600	2
352	Tractors and farm machinery	18.0	466,000	2
353	Construction and mining machinery	20.1	272,700	4
354	Metalworking machinery	20.7	197,100	3
355	Special-industry machinery, n.e.c.	16.1	120,000	12
356	General industrial machinery	17.1	308,000	7
357	Office and store machines	34.0	42,300	n.a.
358	Service-industry and household machines	14.2	198,200	20
359	Miscellaneous machinery parts	26.9	251,400	8
361	Electrical industrial apparatus	20.5	379,200	6
362	Electrical appliances	26.5	73,600	3
364	Engine electrical equipment	39.1	80,300	n.a.

continued--

Code no.[a]	Industry	Scrap generation ratios[b] (percent)	Prompt industrial scrap generation[c] (net tons)	Standard error of estimate of scrap generation ratios[d] (percent)
366	Communication equipment	24.6	52,500	8
371	Motor vehicles and equipment	30.3	4,110,100	3
372	Aircraft and parts	30.1	153,100	1
373	Ship and boat building and repairing	25.6	134,700	6
374	Railroad equipment	14.8	165,600	1
375	Motorcycles, bicycles and parts	8.5	6,600	n.a.
	Total, all industries surveyed	19.4	10,579,400	2

n.e.c. = not elsewhere classified.

n.a. = not applicable. For these industries, the survey did not include any sampling of plants with fewer than 250 employees.

a. Standard Industrial Classification.

b. Ratios derived from BDSAF-319, Prompt Industrial Scrap Survey, as follows: Scrap generation (shipments) divided by materials consumption as reported in the survey.

c. Prompt industrial scrap generation is computed by applying the ratio in column (1) to consumption data derived from the 1954 Census of Manufactures as modified.

continued--

d. The percentage standard errors shown in this column indicate the difference that can be expected between the estimates and comparable complete canvass totals because of sampling fluctuations. The estimates will differ from the complete totals by less than:

(i) The percentage shown: approximately 2 times out of 3.
(ii) Twice the percentage shown: approximately 19 times out of 20.
(iii) Three times the percentage shown: almost always.

e. Average standard error not computed. Standard error of each industry included, however, does not exceed 20 percent.

Source: U.S. Department of Commerce, Industrial Scrap Generation: Iron and Steel, Copper (Washington, D.C.: U.S. Government Printing Office, 1957), p. 5.

The prompt scrap rate for the "other" category as used in this study was obtained by using the weighted-average method as applied to various SIC categories: 19, 251, 252, 339, 346, 349, 358, and 375. Four-digit codes were used for agricultural machinery (3522) and for mining materials (3532).

These estimates resulted in prompt generation rates for all 15 product categories. Such rates are presented in Table IV-2.

These rates were applied to the data concerning iron and steel shipments, which had also been disaggregated by product category, to derive estimates of total annual generation of prompt scrap. Once such estimates had been obtained, they were subtracted from the data concerning iron and steel shipments to obtain annual estimates of the ferrous content of the products manufactured in the United States.

The computer printouts in Part 2 show the iron and steel in use, prompt scrap generated, and iron and steel in products manufactured for each of the 15 end-use groups.

Export and Import Adjustments

As with the trade of finished steel, the net exports (exports minus imports) of iron and steel in product form could have a significant effect on the reservoir of scrap available for recycling in the United States. Although value figures, on a commodity-by-commodity basis, are readily available for U.S. exports and imports from the U.S. Depart-

Table IV-2. Prompt Generation Rates, by Product Category

Product category	Prompt generation rate (percent)
Automotive	30.3
Railroad rails	5.6
Railroad equipment	14.8
Ships and marine equipment	25.6
Aircraft	30.1
Construction materials	8.0
Industrial machinery	19.9
Electrical machinery	20.7
Mining materials	17.1
Oil and gas materials	26.3
Agricultural machinery	16.4
Other agricultural materials	16.4
Containers	11.6
Consumer durables	26.5
All other	24.0

ment of Commerce, the corresponding quantities or weights of these exports and imports are not so neatly compiled. An examination of several years' data, as published by the U.S. Department of Commerce, Bureau of the Census, in its publications concerning U.S. foreign trade,[1] revealed that commodity groups as shown in these publications could be matched closely with the 15 product classes used in this study. Since shipping-weight data are presented for vessel and air-

1. For exports: Series FT 455 or FT 450, table 1; for imports: FT 150 or FT 155, table 1.

transportation methods only, total tonnages of exports and imports were estimated on the basis of the relationship between dollar values and shipping weights for vessel and air transportation. Trade data for three years (1967, 1971, and 1974) were analyzed in detail for the 15 categories. The data indicate that, whereas net exports of motor vehicles and of industrial machinery are of sufficiently large magnitude to affect the iron and steel reservoir of scrap in the United States, the ferrous material involved in the net exports of items in the other 13 categories is not large enough to have a significant effect on potential scrap. Given the above results and the data problems involved, further analysis was restricted to the two above-mentioned categories.

Automotive Trade

Annual exports and imports of passenger cars, trucks, and buses were collected for the period 1935-75 from publications of the Motor Vehicle Manufacturers Association (Facts and Figures). These unit figures were converted to tons of iron and steel, using data published by the Motor Vehicle Manufacturers Association for truck weights and using data on the average weights of ferrous material in cars for various years as developed by U.S. Bureau of Mines and General Motors.[1] The resulting estimates of net move-

1. K. C. Dean and J. W. Steiner, Dismantling a Typical Junk Automobile to Produce Quality Scrap, U.S. Department of the Interior, Bureau of Mines Report of Investigations 7350 (1969), p. 7, as cited in Battelle Memorial Institute, Identification of Opportunity for Increased Recycling of Ferrous Solid Waste (1972), p. 88, and unpublished data provided by U.S. Bureau of Mines, Office of Metallurgy, Solid Waste Division.

ments of iron and steel in motor vehicles range from a net export of 766 thousand tons in 1935 to a net import of about 1,560 thousand tons in 1975. These data correlate fairly well with the rough estimates based on Bureau of Census shipping-weight data (mentioned above) and were used to adjust the figures of iron and steel in products in the automotive category.

Industrial Machinery Trade

The category of industrial machinery is both much broader and more complicated than the automotive category, since the data are not so well compiled. The Army Corps of Engineers publishes data on tons of U.S. waterborne exports and imports of "machinery, except electrical" back to 1953.[1] These tonnage figures were then increased by 50 percent to account for air, train, and truck transport of exports and imports. This factor was developed from an analysis of data appearing in the U.S. Department of Commerce, Bureau of the Census, foreign trade publications (described above); on the average, the ratio of weights of total exports and imports of industrial machinery to the waterborne portion of these exports and imports was 1.5. When thus adjusted, net exports were found to range from about 1.8 million tons of iron and steel in industrial machinery in 1947 (or about 30 percent of the iron and steel in total manufactured industrial machinery) to about 700 thousand tons in 1973 (or about 6

1. U.S. Department of the Army, Corps of Engineers, Waterborne Commerce of the United States, Part 5, National Summaries (annual editions from 1953 to 1973).

percent of iron and steel in total manufactured industrial machinery). This decrease in net exports has taken place at a fairly consistent rate over the period 1947 to the present.

Results

The adjustments for automotive and industrial machinery trade resulted in an estimate of the quantity of iron and steel contained in products being utilized domestically. These products, ultimately, will enter the reservoir of obsolete scrap in this country, although at possibly different rates. Table IV-3 presents a brief summary of these data, for the years 1956 through 1975. It shows the sum of all 15 product categories and the results of using 3-year moving averages, of removing prompt scrap, and of adjusting for foreign trade in manufactured products.

Table IV-3. Iron and Steel Shipments, Prompt Scrap Generated, and Ferrous Metal in Products 1950-75

(Thousands of tons)

Year	Iron and Steel shipments	3-year moving average iron and steel shipments	Prompt scrap generated	Iron and steel in manu-factured products	Iron and steel in domesti-cally consumed products
1956	96,568.0	95,280.0	18,041.6	77,238.4	75,275.9
1957	90,533.0	85,929.3	15,970.3	69,959.0	69,180.9
1958	70,687.0	82,558.0	15,437.9	67,120.1	65,939.5
1959	86,454.0	80,818.7	15,211.8	65,606.8	64,819.8
1960	85,315.0	83,850.0	15,868.9	67,981.1	66,702.9
1961	79,781.0	83,715.3	15,847.9	67,903.4	66,387.3
1962	86,158.0	86,549.0	16,461.6	70,087.4	68,666.4
1963	93,708.0	93,838.7	17,971.9	75,866.8	74,435.5
1964	101,650.0	104,719.3	20,054.6	84,664.8	82,900.0
1965	118,800.0	113,650.0	21,663.2	91.986.8	91,082.2
1966	120,500.0	117,666.7	22,323.2	95,343.4	94,051.4
1967	113,700.0	117,066.7	22,229.2	94,837.5	93,680.8
1968	117,000.0	119,066.7	22,696.5	96,370.2	95.400.5
1969	125,500.0	120,133.3	22,776.4	97,357.0	98,919.3
1970	116,900.0	117,166.7	22,161.7	95,004.9	96,737.4
1971	108,100.0	116,633.3	22,075.6	94,557.8	97,362.1
1972	124,900.0	125,166.7	23,982.5	101,184.2	103,990.7
1973	142,500.0	135,266.7	25,788.1	109,478.6	111,434.6
1974	138,400.0	128,341.7	24,429.9	103,911.8	105,664.1
1975	104,125.0	104,125.0	19,862.4	84,262.6	85,580.7

V. RATES OF PRODUCT DISCARD

Basis for Analysis

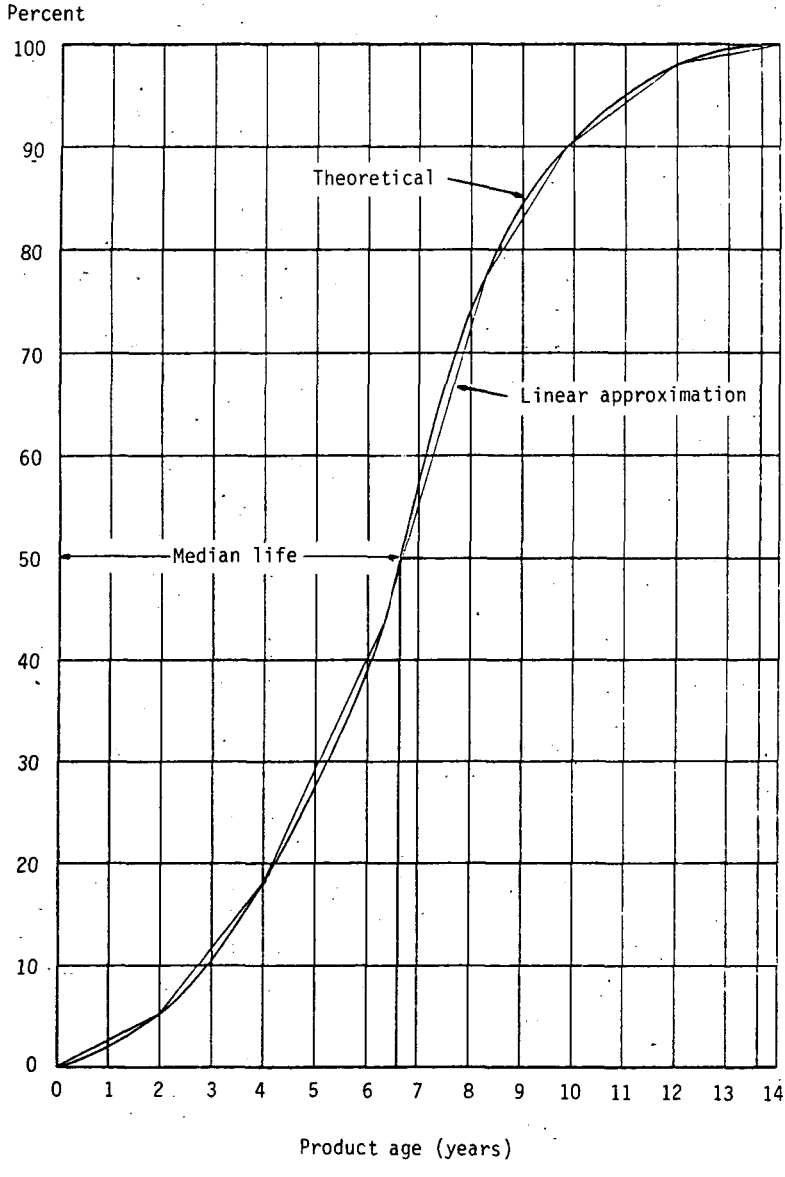
Products are taken out of service typically when they are no longer capable of performing a "useful" function either physically, economically, or both. The rate at which they are discarded is a function of a number of factors, the principal ones being premature destruction, economic obsolescence, and physical deterioration. Discard rates, when applied to the set of product categories, provide an estimate of the transfers over time of iron and steel from the in-use inventory to the potential scrap inventory.

Product discard rates indicate the percentage of a given year's production of a particular product which will theoretically be discarded as a function of time from the year of manufacture. In developing individual product discard rates the fact that in the early years a small percentage is discarded as a result of premature destruction must be taken into account. As the life of a product moves forward the rate of discard increases, largely because of economic obsolescence. At the point when 50 percent of a given year's product has been discarded, the median life of the product is said to have been reached. Ultimately the cumulative percentage discarded approaches 100, at which time the total or physical life of the product is considered to have been reached.

The discard rates, when displayed graphically, take on the shape of logistic curves (Figure V-1), where the y axis represents the percent discarded and the x axis, the age from manufacture. Thus, for the hypothetical curve 3 years after manufacture, 10 percent of the product will have been discarded. Conversely one can also use the curve to indicate the quantity of a product from all previous years which will be available as potential scrap in a given year. As an example, also using the typical curve, the discarded product in 1975 will consist of approximately 2 percent of the total tonnage of 1974, 3 percent of that of 1973, 5 percent of that of 1972, 8 percent of that of 1971, and so on. Theoretically, to estimate the amount of discarded product which will become available in a given year it is necessary to multiply the tonnage of each earlier year by the appropriate discard factor. As can be seen from the typical curve, however, it is possible to approximate the curve accurately as a series of linear segments. For any linear segment, the difference in the discard percentage between the end points of the segment (expressed as years) represents the percentage to be discarded over the period in question. To facilitate calculations, the midpoint of each segment can be used as a point estimate of the segment and an average tonnage can be used as the tonnage value of the segment.

Data for establishing discard rates were of varying quality. They were most precise for motor vehicles because of legal requirements that vehicles be registered. In the cases of agricultural and industrial machinery and railroad equipment, statistics were available presenting the percentage of products in service as a function of age. For the remaining product categories, data were extremely sparse,

FIGURE V-1. HYPOTHETICAL CUMULATIVE DISCARD-RATE CURVE



and the analysis was confined to estimates of the median and total age of each product (table V-1). In the case of each product category, the available data were plotted and a curve drawn through the points. The curves were then divided into linear segments which were used in equation form to compute the amount of iron and steel theoretically discarded in each of the years 1956 through 1975 (table V-2). Finally, to take corrosion, abrasion and wear during the life of the product into account the total amount discarded was adjusted for a 1 percent total loss. The net result provides an estimate of the annual theoretical additions to the potential scrap inventory before taking recoverability or later corrosion into account.

Product Discard Rates

Presented here are the justification and supporting documentation for the individual product discard rates.

Automotive

The automotive discard rates were developed from data on automobile and truck registrations; thus the median life of automotive products was estimated to be 10 years and the total life 18 years.[1] These data gave, for each calendar year, the number of registered vehicles by model year. By taking the differences between registrations in successive years and dividing these differences by the number of vehicles in the year of maximum registration, one obtains a measure of the rate of deregistration over time. The deregistration rates were then used in deriving the discard rates.

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1. Motor Vehicle Facts and Figures '76 (Detroit: Motor Vehicle Manufacturers Association, 1976).

Table V-1. Product Category Median and Total Life Data (Years)

Product category	Median life	Total life
Automotive	10	18
Railroad rails	40	55
Railroad equipment	19	38
Ships and marine equipment	25	32
Aircraft	10	22
Construction materials	40	50
Industrial machinery	24	35
Electrical machinery	24	35
Mining materials	16	30
Oil and gas materials	16	30
Agricultural machinery	20	30
Other agricultural materials	20	30
Containers	Not applicable	
Consumer durables	14	20
All other[a]	20	30

a. Weighted average of all the other product categories.

Table V-2. Data Used in Calculating Product Discard Values
(Discard rates)

Product category	Line	Segment				
1. Automotive	a	0-4	4-7	7-13	13-16	16-18
	b	2	6	10	15	17
	c	2	14	64	16	4
	d	2	16	80	96	100
2. Railroad rails	a	0-30	30-50	50-55		
	b	15	40	53		
	c	10	70	20		
	d	10	80	100		
3. Railroad equipment	a	0-10	10-14	14-25	25-32	32-38
	b	5	12	20	29	35
	c	16	10	52	16	6
	d	16	26	78	94	100
4. Ships and marine equipment	a	0-10	10-20	20-32		
	b	5	15	26		
	c	8	18	74		
	d	8	26	100		
5. Aircraft	a	0-2	2-16	16-22		
	b	1	9	19		
	c	4	90	6		
	d	4	94	100		
6. Construction materials	a	0-10	10-25	25-35	35-48	48-50
	b	5	18	30	42	49
	c	2	10	20	66	2
	d	2	12	32	98	100
7. Industrial and electrical machinery	a	0-18	18-30	30-35		
	b	9	24	33		
	c	16	70	14		
	d	16	86	100		
8. Oil and gas and mining materials	a	0-6	6-10	10-22	22-26	26-30
	b	3	8	16	24	28
	c	4	8	72	12	4
	d	4	12	84	96	100
9. Agricultural machinery and other agricultural materials	a	0-10	10-14	14-27	27-30	
	b	5	12	21	29	
	c	8	12	70	10	
	d	8	20	90	100	
10. Consumer durables	a	0-4	4-6	6-14	14-20	
	b	2	5	10	17	
	c	4	4	84	8	
	d	4	8	92	100	
11. Other	a	0-5	5-12	12-20	20-26	26-30
	b	3	9	16	23	28
	c	4	16	30	40	10
	d	4	20	50	90	100

Line a: Discard interval (years)
Line b: Discard interval midpoint (rounded to nearest year)
Line c: Percent discarded during interval
Line d: Cumulative percent discarded

Railroad Rails

A median life of 40 years and a total life of 55 years were estimated for all railroad rails. Testimony based on the formulas of the Association of American Railroads and the experience of 25 railroads, presented before the Subcommittee on Surface Transportation of the U.S. Senate Commerce Committee, September 1975, indicates that 55 years is the two-location life of railroad rail and that 40 years is the one-location life.

Railroad Equipment

A median life of 19 years and a total life of 38 years was estimated for all railroad equipment. These values were based on statistics in Railroad Car Facts, 1954, which gave the age of freight cars used in the interchange service.[1] These data showed that the average age of cars still in use was 19 years. This was taken as the median age by assuming that the number of cars in use has remained virtually constant over time. Discussions with well-informed persons in the Association of American Railroads indicated that the total life of a freight car was roughly twice the average age, or about 38 years. The Association indicated that locomotives had a slightly shorter life than freight cars.

Ships and Marine Equipment

The median life of ships was estimated to be 25 years, total life was estimated to be 32 years. These numbers were based on discussions with the Division of Reserve Fleet,

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1. Railroad Car Facts, 1954 (New York: American Railway Car Institute, 1955).

U.S. Maritime Administration; the Shipbuilders Council of America; and Midland Marine Brokers.

Aircraft

Aircraft were estimated to have a median life of 10 years and total life of 22 years. These numbers are consistent with previous studies involved with estimating potential scrap.

Construction Materials

A median life of 40 years and a total life of 50 years was estimated for construction. An IIT study on demolition debris indicated that the average age of demolished buildings varied considerably, from 35 to 65 years, for the cities surveyed.[1] Given the differences in construction practices throughout the United States it is not possible to generate a precise discard rate for construction materials. Rather, a realistic median and total life were assumed, on the basis of the relatively long life of construction and on the availability of data on iron and steel shipments to construction projects.

Oil, Gas, and Mining

The median life of oil and gas materials was estimated to be 16 years and the total life 30 years. Discussions with the American Petroleum Institute and the Petroleum

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1. David Gordon Wilson and others, "Demolition Debris: Quantitites, Composition and Possibilities for Recycling," in Proceedings of the Fifth Mineral Waste Utilization Symposium, ed. by Eugene Aleshin, cosponsored by the U.S. Bureau of Mines and the IIT Research Institute, Chicago, 13-14 April 1976, pp. 8-15.

Equipment Suppliers Association indicated that drilling derricks had an average life of about 20 years, drawworks around 10 to 15 years, tanks about 20 years, castings and tubing about 5 to 10 years, and production pumps between 6 months and 3 years. These sources also indicated that equipment used in abandoned fields was not generally discarded but rather was maintained as a backup for periods of great expansion such as are now being experienced. This factor accounts for the relatively long total life assumed by RRNA.

As is the case with oil and gas, there are few data on the life of mining materials. Because of this situation, the oil and gas discard rate values were used as a realistic proxy for mining materials.

Industrial and Electrical Machinery

Industrial and electrical machines were estimated to have a median life of 24 years and a total life of 35 years. These numbers were based on two studies. The first study, done by the U.S. Department of Agriculture,[1] dealt with the discard rates for farm tractors and indicated a median life of 20 years and a total life of 35 years. The second study dealt with industrial machinery and gave the percentage of machines still in use, by age of machine, for selected

1. Duane A. Paul and Herbert A. Robinson III, A Procedure to Estimate Stocks of Tractors and Other Machines, U.S. Department of Agriculture, National Economic Analysis Division, Working Paper (Washington, D.C.: U.S. Government Printing Office, 1977).

years.[1] In the 1973 inventory, 33 percent of machines were less than 10 years old, 39 percent were between 10 and 20 years old; and 28 percent were more than 20 years old. If one assumes that the machines less than 10 years old are discarded when they reach the age of 15 years on the average, the machines 10-20 years old are discarded in their 25th year and the machines more than 20 years old in their 35th year, the resultant weighted average age turns out to be 24.5 years, which is the same as the estimated median age for machinery.

Agricultural Machinery and Other Agricultural Materials

The median age was estimated to be 20 years and the total life to be 30 years. These numbers are supported by the USDA study on the discarding of tractors and combines and on a study by the University of California Agricultural Cooperative Extension which listed the technological life of farm implements and machines.[2]

Containers

Containers do not have a life cycle in the sense that other products do. They are, by and large, produced and discarded within the same year. For purposes of this study, a life cycle of one year, or a discard rate of 100 percent in year one, was used.

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1. "American Machinist Eleventh Inventory of Metalworking Equipment," American Machinist, October 29, 1973, pp. 143-66.
2. A. D. Reed, Farm Machinery Costs, Leaflet 2263 (Berkeley University of California, 1977).

Consumer Durables

RRNA estimated the median age for consumer durables to be 14 years and the total life to be 20 years. These numbers are supported by estimates of the National Industrial Pollution Control Council Subcouncil report, "The Disposal of Major Appliances."

Other

Although the other category is composed of specific products they vary considerably in discard characteristics. For this reason RRNA assumed a life cycle based on the composite median age and total age of all of the above product categories. These realistic composite values were determined to be 20 years for the median age and 30 years for the total life.

VI. SYSTEM LOSSES OF IRON AND STEEL SCRAP

Analytical Basis

While all ferrous metal products are discarded sooner or later, not all the discarded material ends up as potentially available scrap. Some is lost, to all intents and purposes, for all time. (Were this not the case, we would be counting all the iron and steel produced and used since time began.) Thus, system losses must be calculated.

Several types of system losses must be considered. First, during the life of a product, some iron and steel is lost through corrosion and wear. As noted earlier, a nominal loss rate 1 percent through corrosion, abrasion, and wear was used. This adjustment was made, for calculation purposes, in the estimation of iron and steel available in products.

More substantial adjustments were made to account for losses which take place following product discard. As discussed in Chapter II, only very little scrap is beyond recovery from a technological point of view, save that lost through corrosion and wear. In order to establish a realistic rate of recovery consistent with the concept of poten-

tial reserves, certain assumptions had to be made concerning losses from the system. Material was considered lost if it was placed in a dump or landfill, destroyed in secondary usage, or located in remote places.

To obtain numerical values, a comprehensive search of the literature was conducted, including an examination of studies by Battelle,[1] A. T. Kearney,[2] the U.S. Bureau of Mines,[3] and the National Center for Resource Recovery.[4] In each of the relevant studies either assumptions were made concerning recovery rates or the location of deposited scrap material was analyzed:

Battelle -- assumed probable maximum theoretical recovery rates for each commodity group

A. T. Kearney -- assumed probable economic recovery rates, for selected SIC code groups, and projected such rates to 1985

U.S. Bureau of Mines (Adams) -- described location of discarded automobiles

U.S. Bureau of Mines (Automobile Disposal) -- described location of discarded automobiles

National Center for Resource Recovery -- described disposal practices and recovery

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1. Battelle Memorial Institute, Identification of Opportunity for Increased Recycling of Ferrous Solid Waste, 1972.
2. A. T. Kearney, Inc., Scrap Demand versus Newly Available Supply -- 1975-85, prepared for U.S. Bureau of Mines (Chicago, 1976).
3. Robert L. Adams, An Economic Analysis of the Junk Automobile Problem, (Washington, D.C.: U.S. Bureau of Mines, 1973); U.S. Department of the Interior, Bureau of Mines, Automobile Disposal: A National Problem (Washington, D.C.: U.S. Government Printing Office, 1967).
4. "Municipal Waste . . . Its Volume, Composition and Value," in NCRR Bulletin, Vol. 3, No. 2 (Washington, D.C.: National Center for Resource Recovery, 1973?).

The general nature of these studies provided a basis for establishing recovery rates that are consistent with the potential reserves concept.

Recovery Rates

Recovery rates, or the amount of scrap which either is used or goes into potential reserves, were established on the basis of data available in the studies cited above. For the critical automotive category, which commanded 23.6 percent of iron and steel shipments, independent data were obtained from the U.S. Bureau of Mines. Similarly, independent data on recovery rates were obtained from the National Center for Resource Recovery for consumer durables and containers which, together, consumed 13.0 percent of steel shipments during the 20-year period 1956-75. For most other categories, agreement appeared between the Battelle and A. T. Kearney estimates. Substantial disagreements (±20 percent) occurred in the following categories: ships and marine equipment, electrical machinery, oil and gas materials, agricultural machinery, and other agricultural materials. These categories, when taken together, utilized 13.5 percent of the steel shipped between 1956 and 1975. Thus, either independent data or value agreement on recovery rates exists for 86.5 percent of the ferrous metal which entered the supply system during the life of the study.

The rates presented below are historical. They reflect traditional disposal practices rather than present or projected practices. For example, such rates do not include

the growing number of municipal resource recovery plants now coming on line which reclaim iron and steel (principally containers) from municipal solid waste. They reflect the older landfill and open dump disposal practices. The historical bent is essential as this study documents past and present accumulations of scrap, but makes no projections of future rates of inventory buildup. In making such a historical assessment, conservative rates were established consistent with the development of estimates of potential reserves, rather than resources.

Automotive

Battelle assumed that 100 percent of the ferrous metal contained in automobiles is recoverable. A. T. Kearney assumed an economic recovery rate of 80 percent. The U.S. Bureau of Mines stated that between 15 and 18 percent of all automobiles discarded are in rural areas, on private lands, and in accumulations of 10 or fewer vehicles.

It was judged that half the vehicles abandoned in situations described by the Bureau of Mines cannot fit the concept of potential reserves. Remote location, some detitling laws and other legal restrictions, and attitudes of owners make such recovery prohibitive in cost. Thus, a recovery rate of 92 percent has been used, with a complementary loss rate of 8 percent.

Railroad Rails

The Battelle study considered that 86 percent of the rails were recoverable. A. T. Kearney used a rate of 98

percent. An analysis of data from physical counts (presented in Chapter VIII, Verification of National Inventory) of rails supports the 98 percent rate, which was used.

Railroad Equipment

The situation with respect to railroad equipment was identical to that of rails. Accordingly, a rate of 98 percent was used.

Ships and Marine Equipment

In the Battelle study it was stated that all ship and marine scrap is potentially recoverable. In the study by A. T. Kearney it was stated that only 22 percent is economically recoverable. The potential-reserves concept implies a recovery rate between those two extremes. In the absence of precise data from an independent source, and in the interest of maintaining a conservative position, the midpoint -- 61 percent -- was used as the recovery rate.

Aircraft

The aircraft industry uses relatively little iron and steel. Both Battelle and A. T. Kearney assumed recovery rates of 100 percent; a rate of 99 percent was used.

Construction Materials

In the case of ferrous metals used for construction, Battelle estimated a recovery rate of 85 percent while A. T.

Kearney assumed a rate of 87 percent. The difference of 2 percent can only be ascribed to different time perspectives: Battelle is historical while A. T. Kearney is oriented toward the future. In the absence of additional data, the historical rate of 85 percent was used, with the remaining 15 percent lost from the system (for example, as demolition rubble containing reinforcing rods committed to landfill).

Industrial Machinery

Because industrial machinery is highly accessible, Battelle established a recovery rate of 94 percent, and A. T. Kearney established an economic recovery rate of 82 percent. As in the case of ship and marine scrap, the midpoint of 88 percent was used as a conservative estimate of recovery rates.

Electrical Machinery

In electrical machinery, Battelle stated a recovery rate of 75 percent and Kearney calculated a rate of 98 percent. Again, a midpoint, 87 percent, was used.

Mining Materials

The situation in this category was similar to the oil and gas category, with Battelle stating a rate of 91 percent and A. T. Kearney stating 75 percent. The conservative recovery rate of 75 percent was adopted, on account of the loss of roof bolts, some electric cable and supports, and some other equipment in the retreat from a mine.

Oil and
Material

The rate of recovery assumed by Battelle for this category was 100 percent; the rate considered by A. T. Kearney was 50 percent. Considering the problems in removing well casing and the location of many drill rigs in remote frontier areas (for example, Prudhoe Bay, Alaska), the recovery rate of 50 percent was applied.

Agricultural Machinery

There is wide disagreement on agricultural machinery recovery rates between Battelle (99 percent) and Kearney (40 percent). The conceptual differences between resources and reserves were assumed to account for the divergence, and a potential-reserves recovery rate of 70 percent was judged appropriate and conservative for this study.

Other Agricultural
Materials

The situation with respect to other agricultural materials was identical to the agricultural machinery situation. Thus, a recovery rate of 70 percent was used.

Containers

Battelle estimated a recovery rate of 13 percent and A. T. Kearney assumed 7.5 percent. The National Center for Resource Recovery input-output study, however, demonstrated that 97 percent of the discarded containers have ended up in dumps and landfills historically. Since such scrap is lost,

according to the potential-reserves concept, a recovery rate of 3 percent and a loss rate of 97 percent was used.

Consumer Durables

While Battelle estimated a potential recovery rate of 76 percent, A. T. Kearney estimated an economic recovery rate of only 20 percent. For historical purposes, both were considered high. The National Center for Resource Recovery study estimates that traditional disposal practices have caused the loss of 91 percent of this potential scrap. Thus a recovery rate of 9 percent was established and was used in this study.

All Other and Miscellaneous Ferrous Metal

A composite recovery rate of 60 percent was developed for all other categories, including ordnance. An independent assessment of ordnance showed a recovery rate, for that subset of "other," to be 50 percent. An average of ordnance plus all other categories provides the 60 percent recovery rate, and it was used.

Summary

Table IV-1 summarizes the recovery and loss rates used for purposes of calculating the amount of iron and steel available for processing as scrap.

The weighted average recovery rate, based on the rate designated for each product category, of course varies from

Table VI-1. Recovery and Loss Rates by Product Category

(Percent)

Product category	Recovery rate	Loss rate
Automotive	92	8
Railroad rails	98	2
Railroad equipment	98	2
Ships and marine equipment	61	39
Aircraft	99	1
Construction materials	85	15
Industrial machinery	88	12
Electrical machinery	87	13
Mining materials	75	25
Oil and gas materials	50	50
Agricultural machinery	70	30
Other agricultural materials	70	30
Containers	3	97
Consumer durables	9	91
All other / miscellaneous	60	40

year to year according to the changing weights. Both the amounts of potentially recoverable and potentially lost scrap generated, and the composition of the total scrap comprising these categories are presented in table VI-2 for selected years. As may be seen from that table, shifting product values have only a slight effect on the overall system loss rate. For the years shown, system losses vary only from 30.4 percent to 32.4 percent of total potential scrap generated.

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Table VI-2. Total Potential Scrap

Year	Recoverable		System losses		Total potential scrap
	Thousands of tons	Percent of total	Thousands of tons	Percent of total	
1960	31,108.2	67.6	14,918.2	32.4	46,026.4
1965	37,349.0	69.0	16,741.2	31.0	54,090.2
1970	44,127.4	68.0	20,743.9	32.0	64,871.3
1975	44,213.3	69.6	19,319.9	30.4	63,533.1

VII. THE NATIONAL INVENTORY

What, then, is the net national potential reserve inventory of iron and steel scrap? To answer that question one must first answer two specific, sequential questions:

1. What gross and net changes in inventory occurred between 1956 and 1975?

2. What was the base inventory in 1955 to which such inventory changes should be applied?

Analysis of the Period 1956-75

In order to calculate changes in potential reserves from 1956 through 1975, a number of mechanical operations had to be made. Basically, additions to potential reserve estimates were calculated annually, by the following method:

$$PS - OSW = PRS,$$

where:

PS = potentially available scrap after removal of nonrecoverable system losses;

OSW = obsolete scrap withdrawals, or the sales of obsolete scrap to domestic and export markets; and

PRS = potential reserves of scrap.

Obsolete scrap withdrawals were calculated using the U.S. Bureau of Mines data plus prompt scrap generation calculations (discussed in Chapter IV) as follows:

$$TSS - (.9)PSG = OSW,$$ [1]

where:

TSS = total scrap sales (of "purchased scrap") to domestic and foreign markets; and

PSG = prompt scrap generated in the year for which calculations of additions to inventory are being made.

Tables VII-1 and VII-2 present the annual additions to potential reserves based upon the above procedure, for the periods 1956-69 and 1970-75, respectively. They reveal that between 1956 and 1969 nearly 185 million tons of scrap were added to the national inventory of potential reserves. Scrap was thus added to the inventory at an average annual rate of 13.2 million tons. During 1970-75 additions to inventory were just over 85 million tons. The average annual additions were thus 14.2 million tons. In the aggregate, additions to potential reserves for the 20-year period 1956-75 thus amounted to 270 million tons, or an average annual increment of 13.5 million tons.

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1. The 90 percent prompt scrap recycle rate was based upon "Recycling as an Industry," in Solid Wastes -- II, edited by Stanton S. Miller (Washington, D.C.: American Chemical Society, 1973).

Table VII-1. Additions to Potential Scrap Reserves, 1956-69

(Thousands of tons)

Year	Potentially available scrap (after loss removal)	Total scrap sales	Obsolete scrap withdrawal	Net additions to inventory
1956	24,933.7	43,036.0	26,798.5	-1,864.8
1957	27,133.8	37,613.0	23,239.7	3,894.1
1958	28,798.0	25,886.0	11,991.9	16,806.1
1959	30,463.0	33,673.0	19,982.4	10,480.7
1960	31,108.2	33,956.0	19,674.0	11,434.2
1961	30,525.3	34,751.0	20,487.9	10,037.4
1962	29,858.6	30,186.0	15,370.6	14,488.0
1963	30,306.5	35,579.0	19,404.3	10,902.2
1964	34,347.2	39,447.0	21,397.9	12,949.3
1965	37,349.0	41,762.0	22,265.1	15,083.8
1966	39,849.3	42,122.0	22,031.1	17,818.2
1967	40,833.9	40,059.0	20,052.7	20,781.1
1968	42,315.1	39,864.0	19,437.2	22,877.9
1969	44,497.5	45,771.0	25,272.3	19,225.2

Table VII-2. Additions to Potential Scrap Reserves, 1970-75

(Thousands of tons)

Year	Potentially available scrap (after loss removal)	Total scrap sales	Obsolete scrap withdrawal	Net additions to inventory
1970	44,127.4	44,209.0	24,263.4	19,864.0
1971	43,192.9	40,182.0	20,314.0	22,878.9
1972	41,701.3	48,743.0	27,158.8	14,542.5
1973	40,306.4	55,618.0	32,408.7	7,897.7
1974	41,775.8	59,829.0	37,842.1	3,933.7
1975	44,213.3	46,050.0	28,173.8	16,039.4

Determination of the 1955 Base

After net additions to the ferrous scrap potential reserve inventory since 1955 had been developed, the final task of the study was to develop a figure for the total inventory in 1975. This, of course, involves adding the annual additions to inventory to a base inventory in 1955. In fact, this was done using a 1955 scrap inventory figure developed by the Battelle Memorial Institute in a study completed in 1957.[1]

A careful assessment of the Battelle figures for 1955 reveals that the underlying assumptions were based on a concept of resources, whereas this study developed the concept of potential reserves. The conceptual differences between the two definitions are explained in Chapter II, above. Operationally, the differences center around the percentage of potential obsolete scrap which is deemed lost to the system by virtue of its physical inaccessibility. The potential-reserves concept treats system losses as a function of both technology and economics, while the Battelle methodology regards as nonrecoverable only the scrap which is technologically beyond reach. As a consequence of these differences, the Battelle loss rates are, for most product categories, smaller than those employed in this study. These differences have been examined earlier, in Chapter VI, and must be reconciled if the two systems are to be made additive.

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1. Battelle Memorial Institute, Final Report on a Survey and Analysis of the Supply and Availability of Obsolete Iron and Steel Scrap, prepared for U.S. Department of Commerce, B.D.S.A., January 15, 1957.

Adjustment of the 1955 Base

The reconciliation of the two series may be achieved by either shifting the potential reserves to a resources base or the other way around, and it was decided to do the latter -- that is, to adjust the Battelle 1955 inventory figure from its original resources basis to the potential-reserves concept employed in this study. To effect this adjustment it was necessary to reduce the Battelle 1955 inventory (537 million tons) by 13.2 percent, which is the percentage differential between the estimates in the two studies of the net change in inventory between 1956 and 1969: Battelle reckoned a net addition of 213 million tons, while this study estimated 184.9 million tons. Such an adjustment reflects different assumptions underlying the potential reserves or resource estimates. The result was an adjusted 1955 inventory on a potential reserves basis, of 466.1 million tons.

The adjustment of the entire inventory calculation to a potential-reserves basis resulted in the creation of a more conservative total number. It provides a total estimate of what may be available under foreseeable circumstances. It should be noted that, consistently, the difference results from more conservative estimates of what is lost from the economic system by disposal practices and procedures. The differential between resources and potential reserves caused by system loss is estimated at 13.2 percent. The total differential is 25 percent for corrosion, which as discussed below, also removes metal from potential reserves.

Corrosion Adjustments

Having put both the 1955 base inventory and the 1956-75 additions to that inventory on the same conceptual plane, one further adjustment must be made in the data before a final set of 1975 inventory estimates is arrived at. The final adjustment is designed to compensate for the corrosion through rust which diminishes the physical quantity of ferrous material which is available for recovery.

The corrosion adjustment was made on the basis of studies undertaken by U.S. Steel Corporation.[1] The data indicated that, on balance (that is, averaging over varying geographic locations to compensate for different moisture conditions, and over varying rural/urban distributive patterns to compensate for differing environmental conditions) corrosion penetration rates for exposed surfaces of carbon steel approximate 1.225 mils (0.001225 inches) of surface thickness a year.

It was necessary to express this uniform rate in such a way that it might be functionally related to the ferrous scrap inventory and the net additions to that inventory. The conversion was made by relating the corrosion rate to the estimated average thickness of ferrous scrap metal. The thickness estimate was based on the thickness of the weighted average of all types of steel mill shipments. That estimate, developed in consultation with Bureau of Mines

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1. Unpublished data provided by U.S. Steel, Research Laboratory, Pittsburgh, Pennsylvania.

personnel, was 340 mils (0.34 inches). Thus, surface corrosion was estimated to occur to any given quantity of newly available ferrous scrap at the uniform rate through time of 1.225/340 or 0.36 percent a year. It should be noted that this is a uniform percentage of any year's newly created inventory. Since corrosion or rusting attacks the surface of a piece of ferrous metal, and since research by the U.S. Steel Corporation has demonstrated that the loss of metal from the exposed surface is the same thickness (0.10 inch a year, for example) each year, corrosion losses were considered as a linear function.

Effect on the 1955 Base Inventory

In order to apply the corrosion-adjustment factor to the 1955 inventory of ferrous scrap, it was necessary to make some assumptions about the age composition of that inventory. The 1955 inventory was defined by Battelle as the accumulation of ferrous scrap during the period 1881-1955. For the purposes of this present study it was assumed that the 1955 inventory was the sum of linear additions to inventory. That is, it is assumed that, during the 75-year span covered by the Battelle study, the 1955 inventory was built up annually by constant (or constantly increasing) increments, conforming to the equation $y = a + bx$. Accordingly, the average annual addition to inventory during the 75 years is estimated at 466.1 ÷ 75, or 6.2 million tons. The average corrosion factor is 6.2 million tons times 0.0036 a year times 37.5 years, or 0.837 million tons a year. When this factor is summed over the 75 years, the total corrosion loss amounts to 62.8 million tons. This calculated loss must be deducted from the previous figure to yield a net 1955 inven-

tory, on a potential-reserves basis, adjusted for corrosion, of 403.3 million tons.

Inasmuch as the focal point of the present study is 1975, a further adjustment in the 1955 inventory must be made to advance the net quantity in time from 1955 to 1975. In keeping with the calculations discussed above, the required adjustment is 403.3 million tons times 0.0036 a year times 20 years, or a reduction of 29.0 million tons. Thus, in 1975 there remained 374.3 million tons from the 1955 inventory of ferrous scrap as defined in terms of potential reserves. The derivation of this quantity is summarized in table VII-3.

The general approach to establishing final numbers, like the rest of the study, is conservative. Thus, the annual increments to scrap before 1955 are thought to be modest. Further, considerable care has been given to the corrosion losses insuring continuing calculations over the life of material in inventory. Like the development of numbers for the period 1956-75, the adjustments made in the pre-1956 inventory were designed to establish an estimate of what amount of ferrous scrap might reasonably be obtained under forseeable economic conditions.

Effect on Net Additions to the 1955 Inventory

In order to determine the size of the ferrous scrap inventory in 1975 it is necessary finally to adjust the annual net changes in the inventory since 1955, to account for the corrosive loss from those additions during the

Table VII-3. Amount of 1955 Ferrous Scrap Inventory Remaining in 1975

(Millions of tons, potential-reserves basis)

	Item	Amount
1955 inventory as originally calculated[a]		537.0
Less:	Adjustment necessary to shift from resources basis to potential-reserves basis: (537)(0.132)	70.9
Net:	1955 inventory on potential-reserves basis	466.1
Less:	Adjustment for loss on account of corrosion: (6.2)(0.0036)(37.5)(75)	62.8
Net:	1955 inventory, potential-reserves basis, net of corrosion	403.3
Less:	Losses on account of corrosion between 1956 and 1975: (403.3)(0.0036)(20)	29.0
Balance:	1955 inventory remaining in 1975	374.3

a. Battelle Memorial Institute, Identification of Opportunities for Increased Recycling of Ferrous Solid Waste (Washington, D.C.: U.S. Environmental Protection Agency, 1972).

period 1956-75. The calculation is analogous to that made for the 1955 inventory. The assumption as to the linearity of the additions to inventory need not be made in the present situation, however, inasmuch as the net change in each individual year is known.[1] Accordingly, it is possible to reduce the contribution in each year to account for corrosion, thus arriving at a 1975 figure which represents the sum of the net generations in that year. The computations are made in table VII-4, which yields a net volume in 1975 of 261.9 million tons. By difference, an estimated 8.2 million tons, or around 3.0 percent of the net obsolete scrap additions which were generated during the period 1956-75, were lost through corrosion during that period.

Final Inventory Estimates

Inasmuch as both the 1955 base inventory and the subsequent net additions to that inventory have been adjusted to account for losses from corrosion, and inasmuch as they are both on a "potential reserves" basis, it becomes possible to add them, thus arriving at a single national 1975 inventory:[2]

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1. Had the actual situation for years earlier than 1956 been known and had the general methodology been used, the result could have been a higher net inventory number.
2. A detailed numeric reconciliation of the 1975 inventory based on the "potential reserves" concept and on the "resources" concept is provided in Annex B to this report.

Table VII-4. Amount Remaining in 1975 of Net Additions to Ferrous Scrap Inventory between 1956 and 1975

(Thousands of tons)

Year	Net additions to inventory[a]	Annual corrosion loss factor[b]	Years to 1975	Net amount remaining in 1975
1956	-1,864.8	-6.7	19	-1,737.5[c]
1957	3,894.1	14.0	18	3,641.8
1958	16,806.1	60.5	17	15,777.6
1959	10,480.7	37.7	16	9,877.0
1960	11,434.2	41.2	15	10,816.7
1961	10,037.4	36.1	14	9,531.5
1962	14,488.0	52.2	13	13,810.0
1963	10,902.2	39.2	12	10,431.2
1964	12,949.3	46.6	11	12,436.5
1965	15,083.8	54.3	10	14,540.8
1966	17,818.2	64.1	9	17,240.9
1967	20,781.1	74.8	8	20,182.6
1968	22,877.9	82.4	7	22,301.4
1969	19,225.2	69.2	6	18,809.9
1970	19,864.0	71.5	5	19,506.4
1971	22,878.9	82.4	4	22,549.4
1972	14,542.5	52.4	3	14,385.4
1973	7,897.7	28.4	2	7,840.8
1974	2,933.7	14.2	1	3,919.5
1975	16,039.4	57.7	0	16,039.4
Total	270,069.8			261,901.3

a. Sources: Tables VII-1 and VII-2.
b. Annual net additions times annual corrosion loss rate of 0.36 percent.
c. A net subtraction from inventory, as is the case in 1956, means a decrease in corrosion loss in the 1955 inventory remaining in 1975 (table VIII-3).

1975 Obsolete Ferrous Scrap Inventory
(Millions of tons)

Remaining from the 1955 inventory	374.3
Remaining from additions to inventory since 1955	261.9
Total	636.2

This volume of 636.2 million tons represents the amount of obsolete ferrous scrap which is estimated to exist as a potential reserve in the United States at the end of 1975.

VIII. VERIFICATION OF THE NATIONAL INVENTORY

Introduction

Verification of the national inventory involved two separate activities: corroboration of the product discard rate analysis by using physical counts, where these were available, and sensitivity analysis to determine the importance of the most critical factors in the study.

Statistical Counts

An analysis of statistical counts of discarded ferrous scrap from automobiles was made for the period 1965-75. (Comprehensive and up-to-date data are available from the Motor Vehicle Manufacturers Association for this period.) Cars represent 77.8 percent of the motor vehicles registered in the United States. The methodology employed was to gather data on deregistration of automobiles, by model year, for the calendar years 1965-75 and to convert these unit figures into tons of iron and steel scrap, on the basis of the assumption that total deregistrations represent the number of motor vehicles available for scrapping. These tonnage figures were then summed over the period 1965-75, adjusted to represent ferrous scrap from the entire automotive

category, and compared to the corresponding estimate on the basis of the discard rate analysis, as shown in Chapter V.

Statistical Counts of Automobile Scrap

The statistical count analysis of the generation of ferrous scrap from automobiles began with data available from the Motor Vehicle Manufacturers Association[1] on the number of deregistrations of automobiles by model year, for the calendar years 1965-75.

The next step was to develop estimates, by model year, of the average amount of ferrous material in automobiles. For model years preceding 1968, the ferrous content in the "circa 1960 automobile," as determined by the U.S. Bureau of Mines, was employed as a means for measuring the total ferrous scrap generated in any given calendar year by cars of that model year. Table VIII-1 presents the composition of the "circa 1960 automobile."

The ferrous metal content of automobiles changed significantly between "circa 1960" and 1975, however, and new ferrous contents were developed for cars of later model years. The ferrous composition and total weight of five selected automobiles are presented in Table VIII-2.

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1. Motor Vehicle Facts and Figures '76 (1976).

Table VIII-1. Material Composition of an Automobile, circa 1960[a]

Component	Pounds	Percent of total
Light steel	1,309.5	36.6
Heavy steel	1,222.4	34.2
No. 2 Bundle steel	2,531.4	70.8
Cast iron	511.4	14.3
Stainless steel	--	--
Aluminum	50.6[b]	1.4
Copper and brass	31.9[c]	0.9
Zinc	54.2[d]	1.5
Lead (including battery)	20.4	0.6
Glass	87.2	2.4
Rubber	145.0	4.1
Plastics	32.7	0.9
Other combustibles	94.5[e]	2.7
Other noncombustibles	14.8	0.4
Total	3,574.6	100.0

a. Composite automobile composed of 15 automobiles from model years 1954-65.
b. As scrap sheet and cast aluminum.
c. Including copper in brass but not copper in solid solution in steel.
d. As zinc-base die cast exclusively.
e. Includes gasoline and oils. (Mercury contained 58.5 and 29.5 lb. gasoline and oil, respectively.)
Source: K. C. Dean and L. W. Steiner, Dismantling a Typical Junk Automobile to Produce Quality Scrap, U.S. Department of the Interior, Bureau of Mines, Report of Investigations 7350 (1969), p. 7.

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Table VIII-2. Ferrous Content of Selected Late Model Automobiles

(Pounds)

Component	1972 Mercury Montego[a]	1973 Mustang[a]	1974 Chevrolet sedan[b]	1975 Chevrolet station wagon[a]	1975 Pinto station wagon[b]
Light steel	1,417.8	1,411.8		1,804.2	1,170.8
Heavy steel	1,277.2	916.5		1,555.6	694.7
Total steel	2,695.0	2,328.3	2,708.0	3,359.8	1,865.5
Cast iron and malleable iron	425.3	510.0	690.0	776.1	290.0
Total ferrous metal	3,120.2	2,838.3	3,398.0	4,135.9	2,155.5
Total weight	3,889.2	3,536.6	4,338.0	5,014.98	2,956.5
			(Percent)		
Steel	69.3	65.8	62.4	66.9	63.1
Iron	10.9	14.4	15.9	15.5	9.8
Ferrous metal	80.2	80.2	78.3	82.4	72.9

a. Source: E. G. Valdez, "Separation of Plastics from Automobile Scrap," in Proceedings of the Fifth Mineral Waste Utilization Symposium, ed. by Eugene Aleshin, cosponsored by the U.S. Bureau of Mines and the IIT Research Institute, Chicago, April 13-14, 1976, p. 388.

b. Source: Unpublished data from U.S. Bureau of Mines, Division of Solid Waste.

The five automobiles were then used to represent sales categories of vehicles as follows:

Sales category	Representative vehicle
Subcompacts	Pinto (1975)
Compacts/Sport	Mustang (1973)
Intermediate	Mercury (1972)
Regular	Chevrolet sedan (1974)
Large	Chevrolet wagon (1975)

By multiplying the ferrous content of the representative cars by the percentage share of the market held by that type of car for any year, the average ferrous content of cars for each year from 1968 to 1975 was estimated. Table VIII-3 presents these average iron and steel contents and shows the declining trend from 1968 to 1974, together with a modest increase in 1975.

Table VIII-3. Estimated Average Ferrous Metal Content in Cars Sold between 1968 and 1975

(Pounds)

	Year							
Ferrous material	1968	1969	1970	1971	1972	1973	1974	1975
Steel	2,406.4	2,379.3	2,240.4	2,221.1	2,235.9	2,177.3	2,139.3	2,200.9
Iron	526.7	523.6	495.7	479.9	478.0	459.6	442.5	426.8
Total ferrous material	2,933.1	2,902.9	2,736.1	2,701.0	2,713.9	2,636.9	2,581.8	2,627.6

The iron and steel content for typical cars of a model year was then multiplied by the number of deregistrations by corresponding model year, for each of the calendar years 1965-75. In this manner, a physical count of the ferrous content in deregistered cars was obtained as a proxy for ferrous scrap generated by automobiles; these estimates are presented in table VIII-4.

Table VIII-4. Estimated Ferrous Scrap Generated from Automobiles, 1965-75
(Thousands of tons)

Year	Scrap generated
1965	8,332.6
1966	10,070.0
1967	10,164.2
1968	9,261.4
1969	9,215.8
1970	10,851.0
1971	10,007.1
1972	10,292.6
1973	12,258.3
1974	10,848.2
1975	8,779.3
Total	111,080.5

Comparison of Statistical Counts With Discard Rate Estimates

The comparison between these approaches, for verification purposes, was made by holding the statistical-count value constant and adjusting the discard-rate value to achieve a comparable status. The results are shown in Table VIII-5.

In brief, the discard-rate automotive category included iron and steel in trucks, buses, and recreational vehicles as well as in automobiles. A two-stage adjustment was made to isolate the iron and steel in passenger car discards only. The first state multiplied the total discard value (165.8 million tons) by 77.8 percent -- the percentage of all registered vehicles which are passenger cars. Then, because cars and trucks represent 96 percent of all registered vehicles, the initially adjusted number (129.04 million tons) was reduced by 7 percent to reflect the weighted average of the difference between the ferrous content of automobiles and the ferrous content of "average vehicles" (180 pounds). Finally, the discard-rate value was reduced by the iron and steel content of spare parts -- since additional discards of spare parts are not included in the statistical-count estimates.

This series of calculations resulted in an estimate for discarded automobiles, based upon the study's general methodology, of 115,168.5 thousand tons. This is 3.7 percent higher than the estimate of 111,080.5 thousand tons achieved by the statistical-count method, but it is close enough to verify the overall methodology.

Table VIII-5. Comparison of Statistical-Count and Discard-Rate Estimates for Automobiles, 1965-75

(Thousands of tons)

Method and adjustments	Thousands of net tons
Statistical-count method	
Result	111,080.5
Discard-rate method	
Potential scrap generated (automotive category)	165,857.5
Adjustment value to reflect the fact that automobiles represent 77.8 percent of registered vehicles	36,820.4
Adjustment value for weighted average of ferrous content of automobiles[a]	8,441.8
Adjustment value of spare parts sold at 4.6 percent[b]	5,426.8
Net comparable estimate of ferrous content of discarded passenger cars	115,168.5
Difference between estimates	4,088.0 (3.7 percent)

a. The average ferrous content of automobiles is 2,500 pounds, while that of trucks is 3,600 pounds. The weighted average of these two classes of vehicles, which compose 96 percent of all vehicles registered, gives rise to a further adjustment of the expected value by 7 percent, or 180 pounds per vehicle. See U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 1971 (Washington, D.C.: U.S. Government Printing Office, 1971).

b. The 4.6 percent value for parts was arrived at as follows: In Motor Vehicle Facts and Figures '76 it is estimated that 9.1 percent of all sales by automobile dealers are repair parts (not including labor). This sales value was halved to represent ferrous content in the absence of better data and in recognition of the fact that not all parts are iron and steel and that the profit margins on parts are higher than profit margins on the vehicles themselves.

Sensitivity Analysis

Introduction

The sensitivity analysis was performed by varying the values of one parameter in the model while holding all other values constant and measuring the impact of that variation on: (1) generation of recoverable scrap for selected product categories, and (2) total net inventory of ferrous scrap.

The following factors were varied, individually, in the sensitivity analysis: (1) prompt industrial scrap generation rates, (2) life cycles (discard rates), and (3) recovery rates. Each parameter was first increased by 25 percent and then decreased by 25 percent. Table VIII-6 shows the impact of this analysis on potentially recoverable scrap for selected individual product categories and on net inventory buildup for aggregate estimates. All results are expressed as percentage changes from initially determined values.

Analysis of the Sensitivity Results

The results of the sensitivity analysis are given in table VIII-6. As can be seen from the table, a positive change in the prompt rate has a negative effect on both potential recoverable scrap and the net inventory. This is because the iron and steel in manufactured products is proportional to 1 minus the prompt generation rate (1 - PGR).

Table VIII-6. Influence of Sensitivity Analysis, 1970-75

(Expressed as percent change from initially determined values)

Selected product categories	Parameter variations					
	Prompt generation (percent)		Life cycle (percent)		Recovery rate (percent)	
	+25	-25	+25	-25	+25	-25
	Net change in potential recoverable scrap (percent)					
Automotive	-10.8	+10.8	-12.3	+9.5	n.a.	-25.1
Industrial machinery	-6.0	+6.4	-23.9	+45.4	n.a.	-24.7
Oil and gas materials	-7.9	+9.2	-3.9	-7.9	+25.0	-25.0
Agricultural machinery	-5.3	+4.3	-1.1	-14.8	+24.5	-25.6
Consumer durables	-13.0	+8.7	-13.1	+4.3	+21.7	-26.1
	Net change in net inventory (percent)					
Total product categories	-13.6	+13.6	-31.1	+19.4	+63.7	-63.7

A positive change in the iron and steel product life cycle (lengthening the life) results in a negative effect on potential recoverable scrap and net inventory while a negative change (decreasing the life) generally has the opposite effect, for a given period of time. This is because steel shipments have generally been increasing over time. There are, however, periods, such as depression years, which go counter to this trend, making it difficult to anticipate the exact direction of any impact.

As far as changes in scrap recovery rate are concerned, the impact on both the potential recoverable and the net inventory is always in the same direction as the change in the recovery rate.

Of the three parameters, the recovery rate has the most significant impact because it, unlike the other two, affects the potential recoverable scrap in approximately the same proportion as the change in the rate. A change of 1 percent in the recovery rate will change the potential recoverable also by about 1 percent. Given the purchased obsolete scrap in any period of time, when the potential recoverable changes it will affect the net inventory significantly more than the change in recoverable.

The life cycle would seem, from the results of table VIII-6, to have the second most significant impact on both the potential recoverable and the net inventory. As indicated earlier, the real controlling influence behind

varying life cycles is variations of steel shipments over time through high and low economic periods. That is, since changes in life cycles result in changes in the year when potential scrap is retired, variations in steel shipments from year to year can have a strong influence on the amount of scrap available over a relatively short period of time. Thus, changes in life cycles affect the rate of change in the inventory of scrap, although they do not affect the total amount available.

The prompt generation rate has, in general, the least impact on the potential recoverable and the net inventory. In regard to the potential recoverable, the impact of the prompt rate is small precisely because the amount of prompt is relatively small compared to the fraction of iron and steel mill production that enters manufactured products. Insofar as the net inventory is concerned, there are two opposing effects taking place. A decrease in the prompt rate increases the potential recoverable. On the other side, if the prompt rate increases the prompt scrap purchases will be higher, resulting in lower obsolete purchases, which yields a higher net inventory.

The most influential parameter tested, on both an individual product-category basis and an aggregate basis, is the recovery rate. Fortunately, there is a good agreement in the literature on most recovery rates, and there is sound evidence behind these rates for most of the principal product categories. As noted in Chapter VI, for some product categories (such as ships and marine equipment) there is wide disagreement. On balance, however, there is sufficient agreement between the several available sources of data to provide reasonable confidence in the recovery rates employed in this study.

SECTION 2
REGIONAL DISAGGREGATIONS

Methodology

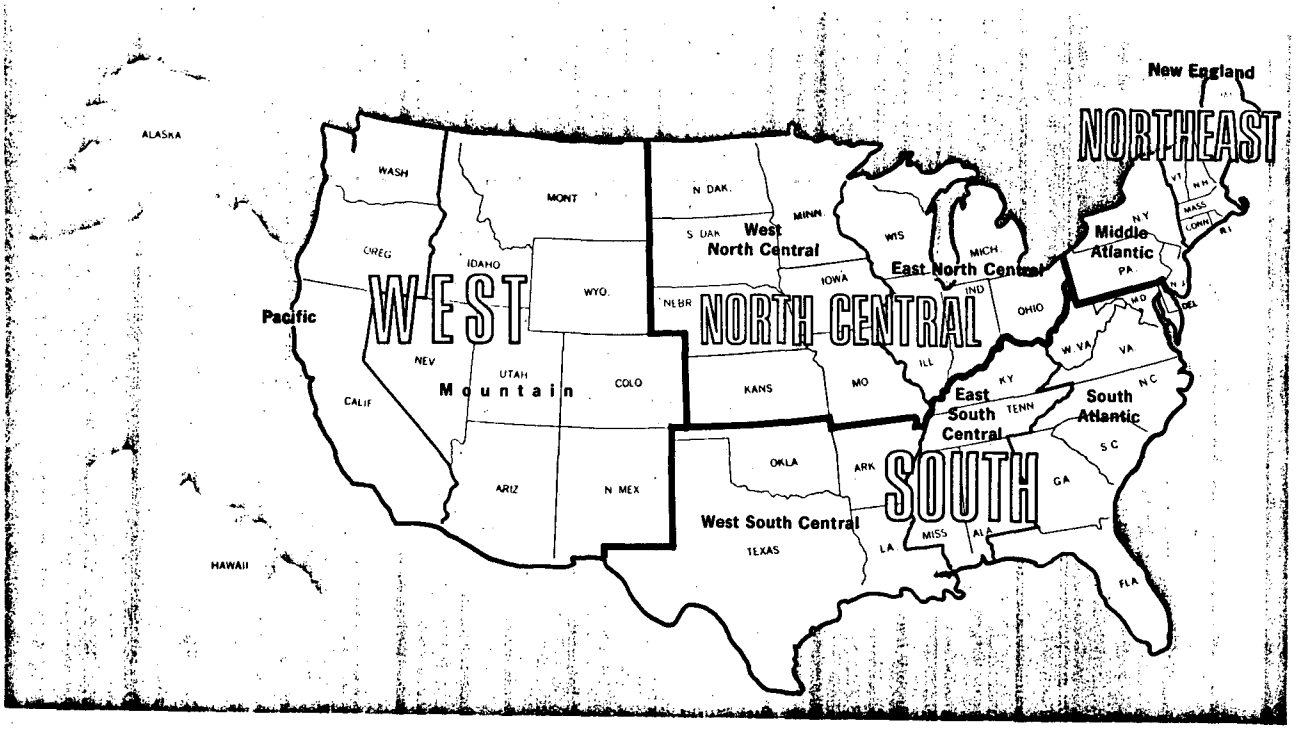
Overview

Conceptually, net changes in the inventory of scrap may be thought of as occurring in the form of a flow of obsolete scrap through time. Withdrawals occur as the result of both recycling and net exports of scrap. The net inflow or outflow of obsolete scrap is the difference between the gross total obsolete scrap generated and the total obsolete scrap withdrawn.

The regional disaggregation problem, then, was to estimate the flow of scrap within nine segments of the United States -- the U.S. Census Regions. The approach had to be more theoretical in nature because of sizable gaps in the availability of data by census region. Verifications of statistical counts were impossible.

National levels of additions to obsolete scrap, as well as withdrawals, have been disaggregated regionally to the level of the nine U.S. regions defined by the U.S. Bureau of the Census. The regions are defined as follows and are shown on a map in Figure IX-1:

Figure IX-1. Map of the United States, Showing the Nine Census Regions



1. New England (NE): Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
2. Middle Atlantic (MA): New York, New Jersey, Pennsylvania
3. East North Central (ENC): Ohio, Indiana, Illinois, Michigan, Wisconsin
4. West North Central (WNC): Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas
5. South Atlantic (SA): Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
6. East South Central (ESC): Kentucky, Tennessee, Alabama, Mississippi
7. West South Central (WSC): Arkansas, Louisiana, Oklahoma, Texas
8. Mountain (MT): Montana, Idaho, Wyoming, Colorado, New Mexico, Arixona, Utah, Nevada
9. Pacific (PAC): Washington, Oregon, California, Alaska, Hawaii

Regional Distribution of Additions to Recoverable Scrap

To estimate the regional distribution of additions to the inventory of recoverable scrap, the utilization of items containing iron and steel has been regionalized on the basis of factors that appear, a priori, to influence the physical location of the items. The basis for the regionalization is presented in table IX-1. For example, the amounts of obsolete scrap generated by automotive products in each of the nine census regions are assumed to be proportional to the regional locations of the stock of motor vehicles as determined from their registration data. That is, since approxi-

Table IX-1. Regionalization Relationships

	Product category	Regionalization variable	Time lag/ date of variable
1.	Automotive	Automobile, truck, and bus registrations	None
2.	Railroads	Rails in place	As of 1920
3.	Railroad equipment	Value added in mining and manufacturing	None
4.	Ships and marine equipment	Port activity, volume of traffic	None
5.	Aircraft	Value added in mining and manufacturing	None
6.	Construction materials	Population	Lagged 40 years
7.	Industrial machinery	Value added in manufacturing	As of 1947
8.	Electrical machinery	Value added in manufacturing	As of 1947
9.	Mining materials	Value added in mining and lumbering (excluding extraction of oil and gas)	As of 1947
10.	Oil and gas materials	Value added in extraction of oil and gas	None
11.	Agricultural machinery	Receipts for agricultural marketing	None
12.	Other agricultural materials	Receipts for agricultural marketing	None
13.	Containers	Population	None
14.	Consumer durables	Disposable income	None
15.	Other	Population	None

mately 16 percent of U.S. motor vehicle registrations (that is, car, truck, and bus registrations) in 1956 were in the Middle Atlantic Census Region, 16 percent of the additions to the national level of automotive scrap in 1956 were attributed to this region.

By following the same procedure for each year from 1956 through 1975 and summing the results, estimates of the gross additions to the total automotive scrap generated by this region over the period 1956-75 were made. A similar regional calculation was made for each of the other product classifications, and analogous aggregates were estimated.

The accumulation by region of scrap from all product classifications provides an estimate of the amount and proportion of gross scrap generated since 1955 by region. It will be noted, however, that this is a gross estimate that has not yet been adjusted for withdrawals attributable to domestic recycling and exports of scrap.

Table IX-1 warrants some further explanation. The variables used to regionalize the recoverable scrap for several products have been lagged by the time period as closely related to the median life cycle of the products as the data permit. For example, since automobiles generally remain within the region where they were last registered, the scrap from this category has been regionalized on the basis of automobile registrations, by state. Industrial and electrical machinery were considered stationary products as a rule, the locations of which would be highly correlated with regional manufacturing activity at the time of purchase of the machinery. Therefore, scrap from machinery has been distributed regionally, on the basis of the regional distri-

bution of value added in manufacturing in 1947, since machinery is estimated to have a median life of 24 years and data for 1947 are readily available and seem representative. In some cases, precise proxies for regionalizing product categories are unavailable and the most reasonable data available have been used. For example, railroad equipment was assumed to be highly clustered in areas of high industrial production and the resulting scrap was therefore regionalized on the basis of value added in mining and manufacturing in each of the regions.

Obsolete Scrap Withdrawals

Estimates of the national total obsolete scrap withdrawals were presented earlier in this report and are discussed in Chapter VII. The method for allocation of the total among the nine census regions is discussed here. The regional obsolete withdrawals are shown in table IX-2.

Two principal sources of data were used to estimate the obsolete scrap withdrawn from inventories (recycled) by region during the period 1956-75: Iron and Steel Scrap,[1] and Industrial Scrap Generation.[2] Using Industrial Scrap Generation, a report of the 1954 generation of prompt scrap by region for manufacturing establishments employing more than 250 persons, an estimate of the proportion of the total national prompt scrap which is generated in each of the nine census regions was obtained. These proportions were then

1. Iron and Steel Scrap, (Bureau of Mines Minerals Yearbook), U.S. Department of the Interior, selected years.
2. Industrial Scrap Generation: Iron and Steel, Copper and Aluminum, U.S. Department of Commerce, BDSA, 1957.

applied to the national prompt generation estimates to give regional estimates of prompt generation. Iron and Steel Scrap provided regional data on total purchase of scrap supplies. The difference between total regional supplies and regional prompt generation provided the estimates of the proportion of the total obsolete withdrawals, less exports, occurring in each region. These proportions were calculated for four years -- 1956, 1960, 1965, and 1972 -- because the data for these years were most readily available. Since the regional relationships over the entire period are on the whole stable, data for these four years seem sufficient. The proportion of each of these years was then used to estimate regional annual obsolete withdrawals for the intervening years.

Net Scrap Exports

In addition to estimates of regional obsolete scrap withdrawals for domestic recycling, estimates were required of the proportion of scrap exports originating in each region. Data listing the value of scrap exports by customs district were found in selected issues of U.S. Department of Commerce Report FT 970. It was assumed that the scrap exported from a customs district in a census region originated in the region. Also, since the data were in value terms, in the absence of more precise tonnage data it was necessary to assume that the proportion of the total value of scrap exported from a region was the same as the proportion of total weight.

The first assumption was then modified to allow the three regions without customs district scrap exports (West

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North Central, East South Central, and Mountain) to contribute to total scrap exports. The procedure used was to estimate regional scrap exports on the basis of the recoverable scrap generated in the region. To illustrate the procedure, the Mountain Region was assumed to export by way of the Pacific Region. Total Pacific Region exports are 32,156 thousand short tons over the period 1956-75. The recoverable scrap generated by the Mountain Region was 29.8 percent of the total recoverable scrap coming out of the two regions combined. In the absence of differential transport costs, it would be expected that 29.8 percent of the scrap exports from the Pacific Region originated in the Mountain Region. This figure was subsequently reduced by 50 percent to reflect higher transport costs which reduce the interior region's contribution to the adjacent region's exports of scrap. The result is that 14.9 percent or 4,792 thousand of the 32,156 thousand short tons exported by the Pacific Region is assumed to originate in the Mountain Region. The exports of the Pacific Region were correspondingly adjusted downward to 27,364 thousand tons. Similar procedures were used for the East South Central and West North Central regions.

Combining the estimates of the regional obsolete scrap withdrawals for recycling purposes with the regional export estimates provides an estimate of the total withdrawals of obsolete scrap by region. As noted, the proportions for each of four particular years were applied to the estimates of total obsolete withdrawals for the intervening years (that is, for the period up to the next selected year). The annual estimates of obsolete withdrawals by region were then summed to give a total 1956-75 withdrawal estimate for each of the nine census regions. These are the totals which appear in table IX-2.

Table IX-2. Estimated Total U.S. Regional Obsolete Scrap Withdrawals, 1956-75

(Thousands of short tons)

Census region	Estimated domestic recycling (1)	Estimated net exports (2)	Estimated total obsolete withdrawals (1)+(2)=(3)	Percent of total obsolete withdrawals (percent) (4)	1970 percent of U.S. population (percent) (5)
New England	310	14,166	14,476	3.2	5.8
Middle Atlantic	85,397	22,807	108,204	23.6	18.3
East North Central	85,463	25,046	110,509	24.1	19.8
West North Central	17,090	4,842	21,932	4.8	8.0
South Atlantic	30,741	22,664	53,405	11.7	15.1
East South Central	37,656	3,556	41,212	9.0	6.3
West South Central	21,443	16,419	37,862	8.3	9.5
Mountain	10,128	4,792	14,920	3.3	4.1
Pacific	27,682	27,364	55,046	12.0	13.1
Total	315,910	141,656	457,566	100.0	100.0

Estimates of Regional Scrap Inventories

The final estimates of obsolete scrap withdrawals and exports by region were subtracted from the regional estimates of gross obsolete scrap generation to give an estimate by region of net additions to the obsolete scrap inventory since 1955. To adjust for loss from corrosion, the regional distribution has been multiplied by a factor of 0.970, the ratio of the national levels of net inventory change before and after adjustment for corrosion. These estimates appear in table IX-3. Data as to the regional distribution of the inventory that existed in 1955 are not available. The regional distribution of the entire inventory of scrap, however, has been estimated in this study by taking the regional proportions applicable to the change in inventory since 1955 and applying them to the entire inventory. The rationale for this procedure is that the inventory which has accumulated since 1955 constitutes 41 percent -- a substantial part -- of the total 1975 inventory. Also, although there have been structural changes in the American economy that can be expected to bring about changes in the regional distribution of obsolete scrap, these have taken place slowly and have been relatively minor; it can be expected that the impact on regional distribution will have been minor also.

It should be noted that it is not possible to estimate the composition of the total obsolete scrap inventory, either by region or in the aggregate. The reason for this apparent deficiency is the lack of data identifying the

Table IX-3. Estimated Regional Inventory Changes, 1956-75

(Thousands of short tons)

Census region	Estimated recoverable obsolete scrap generated		Estimated obsolete scrap withdrawals		Estimated net inventory change		
	(1) (000-short tons)	(2) Percent of total	(3) (000-short tons)	(4) Percent of total	(5) (1) - (3)	(6) Adjusted for corrosion loss	
New England	43,979	6.0	14,476	3.2	29,503	28,611	10.9
Middle Atlantic	126,037	17.3	108,204	23.6	17,833	17,293	6.6
East North Central	152,726	21.0	110,509	24.1	42,217	40,940	15.6
West North Central	73,574	10.1	21,932	4.8	51,642	50,080	19.1
South Atlantic	96,739	13.3	53,405	11.7	43,334	42,023	16.0
East South Central	45,752	6.3	41,212	9.0	4,540	4,403	1.7
West South Central	82,867	11.4	37,862	8.3	45,005	43,644	16.7
Mountain	31,548	4.4	14,920	3.3	16,628	16,125	6.2
Pacific	74,414	10.2	55,046	12.0	19,368	18,782	7.2
Total	727,636	100.0	457,566	100.0	270,070	261,901	100.0

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composition of withdrawals from the inventory. Although it is suspected that the share of recoverable automotive scrap which is actually withdrawn and recycled is much greater than the recycled fraction of recoverable construction scrap, no data are available to provide reliable estimates of the product composition of withdrawals. Thus, it is impossible to determine the composition of the obsolete inventory, leaving a residual which is identified simply as the net addition to regional inventory since 1955.

The regional proportions of the 1956-75 inventory have been imputed to the 1955 inventory base, providing an estimate of the net inventory in 1975, as shown in Table IX-5.

Regional Results

Table IX-2 presents the estimates of the obsolete scrap withdrawals by region for the period 1956 through 1975. Two components of obsolete scrap withdrawals are estimated separately and appear in that table. It will be noted that the component proportions vary greatly among regions. Some of the regions have only small identifiable exports of scrap while other regions have the majority of their scrap withdrawals in the form of exports. This follows from the assumption that scrap accumulations for export largely originate in the same region from which they are exported. The low level of scrap for domestic recycling in New England reflects the substantial distance of the Region from domestic scrap markets, as well as the consistently low relative level of scrap generation in that area for the 20-year period examined.

Columns (4) and (5) of Table IX-2 present the percentage of total obsolete withdrawals attributable to each region and the 1970 percentage of the total population residing in each region. These data show that, while the corresponding regional percentages vary considerably, the regional rankings of withdrawals and population are quite close.

Table IX-3 presents the regional allocation of the total national recoverable scrap generated (column 1) during the 1956 to 1975 period. Column (2) gives the regional percentage of the total. Columns (3) and (4) present again the obsolete withdrawals and corresponding percentages. Here, also, it may be noted that the regional rankings are very similar for both recoverable and withdrawals although the percentages exhibit substantial differences. Column (5) shows net inventory changes by region, simply column (1) minus column (3). Column (6) shows these net changes in inventory adjusted for loss from corrosion, while column (7) shows the regional percentage composition of the national net inventory change over the period 1956-75.

It will be noted that although the data for recoverable scrap generation and withdrawals were generally correlated and reflected the regional population, net changes in inventory, a residual, have a structure that is quite different. This result is not surprising, however, in view of the data which reveal that levels of withdrawals do vary among the regions. Thus, for example, while the West North Central Region is estimated to generate only 10 percent of the recoverable scrap, it is estimated to account for 19 percent

of the total additions to inventory since 1955. This result reflects the low levels of scrap withdrawals from the region in relation to the regional scrap generated. A similar situation exists for the New England, South Atlantic, West South Central and Mountain regions. Conversely, relatively low levels of inventory are found in the Middle Atlantic, East North Central, East South Central, and Pacific Regions when compared to the recoverable scrap generated in those regions, because of the high levels of withdrawal experienced.

Given the relatively high unit value of transportation costs of scrap, as well as the high costs of collection, particularly when the scrap is widely diffused as in non-urban regions, it would be expected that the withdrawals would occur disproportionately in urbanized regions near scrap-consuming facilities or ports from which scrap can be economically exported.

Thus, the more isolated regions with limited regional capacity to utilize scrap have been ascertained to be the regions in which the scrap inventory is accumulating most rapidly -- the West North Central Region, for example. Conversely, the regions that have either large regional capacity to utilize scrap, or which have ports from which scrap can be exported, are found to have relatively low inventory levels -- the Middle Atlantic Region, for example.

As noted in the methodology section of this chapter, the 1955 net inventory is expected to be regionally distributed in a manner generally similar to that of the post-

1955 inventory, since the fundamental economic and technical forces generating the scrap, while changing through time, have probably not altered their basic direction radically. Table IX-4 presents the regional inventory estimates based on these considerations. It might be expected, however, that more rapidly growing regions will typically generate less scrap in relation to their current size than stagnant or declining regions, since the legacy of potential scrap will differ systematically among such regions. Thus, for example, the northeast regions would be expected to have somewhat greater inventories than suggested in table IX-4, while the western and perhaps the southern regions may have somewhat smaller inventories than the figures suggest.

Table IX-4. Total Inventory (Adjusted for Corrosion Loss) Regionalized

(Thousands of short tons)

Census region	(1) 1955 inventory	(2) 1956-1975 additions to inventory	(3) Total inventory through 1975 (1) + (2)
New England	40,800	28,611	69.411
Middle Atlantic	24,705	17,293	41,998
East North Central	58,393	40,940	99,333
West North Central	71,494	50,080	121,574
South Atlantic	59,891	42,023	101,914
East South Central	6,363	4,403	10,766
West Sotuh Central	62,511	43,644	106,155
Mountain	23,208	16,125	39,333
Pacific	26,951	18,782	45,733
Total	374,316	261,901	636,217

ANNEX A

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ANNEX B. OBSOLETE FERROUS SCRAP INVENTORY, 1975

Reconciliation between Potential Reserves Base and Resource Base

(Thousands of tons)

	Potential reserve base		Resource base	
A. 1955 Inventory:				
1. As originally published	537,000.0		537,000.0	
2. Adjustment to shift to potential reserve base[a]	-70,884.0			
3. Adjustments to account for corrosion[b]				
a. Prior to 1955	-62,800			
b. 1956-75	-29,000			
4. Total as adjusted		374,316.0		537,000.0
B. Net additions to inventory, 1956-75:				
1. As originally calculated	270,069.8		270,069.8	
2. Adjustment to shift to resources base[c]			+41,050.6	
3. Adjustment to account for corrosion[d]	-8,168.5			
4. Total as adjusted		261,901.3		311,120.4
C. Inventory in 1975		636,217.3		848,120.4

a. RRNA 1956-69 ÷ Battelle 1956-69 = 184.9 ÷ 213 = -13.2 percent.
b. See table VII-3.
c. Battelle 1956-69 ÷ RRNA 1956-69 = 213 ÷ 184.9 = +15.2 percent.
d. See table VII-4.

IRON AND STEEL SCRAP

Its Accumulation and Availability as of December 31, 1975

Part 2: Technical Data

INTRODUCTION

Part 2 presents the detailed computer printouts used to calculate the 636.2 million tons of potential reserves of iron and steel scrap. These calculations are based upon the research presented in Part 1, Chapters II-VI, and are presented in support of the conclusions set forth in Chapter VII.

The computer printouts present separate data series for each of the 15 product categories which were analyzed separately. For each category, the following information is provided:

1. Iron and steel shipments
2. Iron and steel shipments, 3-year moving average
3. Prompt scrap generated
4. Iron and steel in manufactured products
5. Iron and steel in domestically consumed products (column (4) plus imports and minus exports)
6. The quantities of potential scrap generated as a result of discard rates
7. System losses
8. Recoverable scrap generated

All calculations are presented on an annual basis, with summations for 1956-69, 1970-75, and 1956-75. Each commodity

series commences with the year necessary to yield a potential scrap generation figure for 1956, the earliest year for which annual scrap generations were estimated. Because different product categories have different life cycles (as described in Part 1, Chapter V), they are required to have different commencement years. Railroad rails, for example, have a total life of 53 years, so the series began in 1901; the automotive category has a life of 18 years, so the series starts in 1936. Because total purchased scrap sales, including obsolete scrap withdrawals, are not available on an end-use commodity basis, these cannot be included in the end-use category presentations.

Following the individual product category series, a printout is provided for the aggregate annual series of potential scrap generated, system losses, recoverable scrap generated, total scrap sales, obsolete scrap withdrawals, and net inventory change. These data are shown annually for the years 1956 through 1975, with summations as noted above. For purposes of analyzing these numbers, it should be noted that, for each product category, the first five columns are directly linked to each other mathematically, as are the final three columns. There is, however, only an indirect link between column (5) (iron and steel in domestically consumed products) and column (6) (potential scrap generated). This, of course, is accounted for by the fact that column (6) for any given year is derived from column (5) for previous years, distributed according to the linear life-cycle segments noted in table V-3 in Part 1.

It should also be noted that, in the printout on scrap recovery and inventory change, total scrap recovered represents (mathematically) 90 percent of the prompt scrap genera-

tion, the balance coming from obsolete scrap. The columns headed "Potential scrap generated," "Nonrecoverable scrap," and "Recoverable scrap" really refer only to obsolete scrap, so the last column represents recoverable obsolete scrap minus obsolete scrap recovered. That is, it represents the recoverable but unrecovered obsolete scrap generated during the subject period.

As a final note by way of introduction, it should be observed that no adjustments have been made in this volume to account for corrosion losses. Such adjustments were made subsequent to these fundamental steps in the inventory calculations and are presented in Part 1, Chapter VII.

PRODUCT CATEGORY: AUTOMOTIVE

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1936	10,148.5	9,300.6	2,818.1	6,482.5	5,676.5	NA	NA	NA
1937	9,426.6	8,138.3	2,465.9	5,672.4	4,529.4	NA	NA	NA
1938	4,839.8	7,560.1	2,290.7	5,269.4	4,490.4	NA	NA	NA
1939	8,413.8	7,704.8	2,334.6	5,370.2	4,573.2	NA	NA	NA
1940	9,860.7	9,616.9	2,913.9	6,702.9	6,104.9	NA	NA	NA
1941	10,576.0	8,135.3	2,465.0	5,670.3	4,957.3	NA	NA	NA
1942	3,969.2	6,129.2	1,857.2	4,272.1	4,186.1	NA	NA	NA
1943	3,842.5	3,863.8	1,170.7	2,693.1	2,688.1	NA	NA	NA
1944	3,779.6	4,682.3	1,418.7	3,263.6	3,213.6	NA	NA	NA
1945	6,424.8	6,799.7	2,060.3	4,739.4	4,604.4	NA	NA	NA
1946	10,194.8	10,359.1	3,138.8	7,220.3	6,331.3	NA	NA	NA
1947	14,457.7	13,121.8	3,975.9	9,145.9	7,777.9	NA	NA	NA
1948	14,712.9	14,791.1	4,481.7	10,309.4	9,287.4	NA	NA	NA
1949	15,202.7	16,815.1	5,095.0	11,720.1	11,035.1	NA	NA	NA
1950	20,529.6	18,302.7	5,545.7	12,757.0	12,135.0	NA	NA	NA
1951	19,175.7	18,648.5	5,650.5	12,998.0	11,923.0	NA	NA	NA
1952	16,240.3	18,805.3	5,698.0	13,107.3	12,386.3	NA	NA	NA
1953	20,999.8	18,113.2	5,488.3	12,624.9	11,953.9	NA	NA	NA
1954	17,099.5	21,287.8	6,450.2	14,837.6	13,968.6	NA	NA	NA
1955	25,764.3	21,154.1	6,409.7	14,744.4	13,884.4	NA	NA	NA
1956	20,598.6	22,010.5	6,669.2	15,341.3	14,537.3	6,936.3	554.9	6,381.4
1957	19,668.7	18,471.0	5,596.7	12,874.3	13,362.3	7,760.3	620.8	7,139.5
1958	15,145.7	18,546.8	5,619.7	12,927.1	12,926.1	8,511.2	680.9	7,830.3
1959	20,825.8	18,935.6	5,737.5	13,198.1	13,552.1	9,588.0	767.0	8,821.0
1960	20,835.1	20,031.1	6,069.4	13,961.7	13,803.7	10,716.5	857.3	9,859.2
1961	18,432.2	20,272.7	6,142.6	14,130.1	13,874.1	10,877.3	870.2	10,007.1
1962	21,550.7	21,347.7	6,468.4	14,879.3	14,922.3	11,550.5	924.0	10,626.4
1963	24,060.2	23,752.1	7,196.9	16,555.2	16,577.2	11,422.5	913.8	10,508.7
1964	25,645.5	26,450.1	8,014.4	18,435.7	18,505.7	12,993.5	1,039.5	11,954.0
1965	29,644.6	27,767.5	8,413.6	19,354.0	19,932.0	13,293.7	1,063.5	12,230.2
1966	28,012.4	27,950.3	8,468.9	19,481.4	19,481.4	13,816.1	1,105.3	12,710.8
1967	26,193.9	27,593.7	8,360.9	19,232.8	19,232.9	13,226.5	1,058.1	12,168.4
1968	28,574.7	28,333.7	8,585.1	19,748.6	19,748.7	13,009.6	1,040.8	11,968.8
1969	30,232.4	27,813.2	8,427.4	19,385.8	21,822.8	13,968.1	1,117.5	12,850.7
1970	24,632.3	26,905.5	8,152.4	18,753.1	21,333.1	14,374.6	1,150.0	13,224.6
1971	25,851.7	26,926.2	8,158.6	18,767.6	22,188.6	14,841.1	1,187.3	13,653.9
1972	30,294.7	30,670.9	9,293.3	21,377.6	24,617.6	15,243.7	1,219.5	14,024.2
1973	35,866.4	32,195.3	9,755.2	22,440.1	25,104.1	16,231.5	1,298.5	14,933.0
1974	30,424.7	29,907.3	9,061.9	20,845.4	23,165.4	17,625.6	1,410.0	16,215.6
1975	23,430.9	23,430.9	7,099.6	16,331.3	17,890.3	18,849.0	1,507.9	17,341.0

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	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
TOTAL: 56 TO 69	329,420.7	329,275.9	99,770.6	229,505.3	232,278.5	157,670.1	12,613.6	145,056.5
TOTAL: 70 TO 75	170,500.7	170,036.2	51,521.0	118,515.2	134,299.2	97,165.5	7,773.2	89,392.3
TOTAL: 56 TO 75	499,921.5	499,312.1	151,291.6	348,020.5	366,577.7	254,835.7	20,386.9	234,448.8

PRODUCT CATEGORY: RAILROAD RAILS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1901	3,514.0	3,505.4	196.3	3,309.1	3,309.1	NA	NA	NA
1902	3,547.3	3,502.4	196.1	3,306.2	3,306.2	NA	NA	NA
1903	3,445.8	3,407.7	190.8	3,216.8	3,216.8	NA	NA	NA
1904	3,229.9	3,355.6	187.9	3,167.7	3,167.7	NA	NA	NA
1905	3,391.3	3,358.3	188.1	3,170.2	3,170.2	NA	NA	NA
1906	3,453.6	3,411.1	191.0	3,220.1	3,220.1	NA	NA	NA
1907	3,388.3	3,249.4	182.0	3,067.4	3,067.4	NA	NA	NA
1908	2,906.2	3,159.0	176.9	2,982.1	2,982.1	NA	NA	NA
1909	3,182.4	3,107.6	174.0	2,933.6	2,933.6	NA	NA	NA
1910	3,234.4	3,123.0	174.9	2,948.1	2,948.1	NA	NA	NA
1911	2,952.2	3,139.2	175.8	2,963.4	2,963.4	NA	NA	NA
1912	3,231.0	3,200.7	179.2	3,021.5	3,021.5	NA	NA	NA
1913	3,419.0	2,886.0	161.6	2,724.4	2,724.4	NA	NA	NA
1914	2,008.0	2,515.3	140.9	2,374.5	2,374.5	NA	NA	NA
1915	2,119.0	2,249.0	125.9	2,123.1	2,123.1	NA	NA	NA
1916	2,620.0	2,491.0	139.5	2,351.5	2,351.5	NA	NA	NA
1917	2,734.0	2,567.3	143.8	2,423.6	2,423.6	NA	NA	NA
1918	2,348.0	2,279.3	127.6	2,151.7	2,151.7	NA	NA	NA
1919	1,756.0	2,135.3	119.6	2,015.8	2,015.8	NA	NA	NA
1920	2,302.0	2,054.3	115.0	1,939.3	1,939.3	NA	NA	NA
1921	2,105.0	2,186.3	122.4	2,063.9	2,063.9	NA	NA	NA
1922	2,152.0	2,693.8	150.9	2,542.9	2,542.9	NA	NA	NA
1923	3,824.3	3,110.1	174.2	2,935.9	2,935.9	NA	NA	NA
1924	3,353.9	3,598.4	201.5	3,396.9	3,396.9	NA	NA	NA
1925	3,617.0	3,528.2	197.6	3,330.6	3,330.6	NA	NA	NA
1926	3,613.7	3,310.7	185.4	3,125.3	3,125.3	NA	NA	NA
1927	2,701.3	2,981.3	167.0	2,814.3	2,814.3	NA	NA	NA
1928	2,628.8	2,783.0	155.8	2,627.2	2,627.2	NA	NA	NA
1929	3,019.0	2,549.5	142.8	2,406.7	2,406.7	NA	NA	NA
1930	2,000.7	2,057.5	115.2	1,942.2	1,942.2	NA	NA	NA
1931	1,152.7	1,233.9	69.1	1,164.8	1,164.8	NA	NA	NA
1932	548.2	798.2	44.7	753.5	753.5	NA	NA	NA
1933	693.8	712.5	39.9	672.6	672.6	NA	NA	NA
1934	895.6	771.7	43.2	728.5	728.5	NA	NA	NA
1935	725.8	1,082.0	60.6	1,021.4	1,021.4	NA	NA	NA
1936	1,524.5	1,428.4	80.0	1,348.4	1,348.4	NA	NA	NA
1937	1,934.9	1,384.4	77.5	1,306.8	1,306.8	NA	NA	NA
1938	593.7	1,326.4	74.3	1,252.1	1,252.1	NA	NA	NA
1939	1,450.7	1,170.4	65.5	1,104.9	1,104.9	NA	NA	NA
1940	1,466.8	1,676.7	93.9	1,582.8	1,582.8	NA	NA	NA

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1941	2,112.4	1,810.7	101.4	1,709.3	1,709.3	NA	NA	NA
1942	1,852.9	1,916.4	107.3	1,809.1	1,809.1	NA	NA	NA
1943	1,784.0	1,894.1	106.1	1,788.0	1,788.0	NA	NA	NA
1944	2,045.4	1,989.8	111.4	1,878.4	1,878.4	NA	NA	NA
1945	2,140.0	2,016.5	112.9	1,903.6	1,903.6	NA	NA	NA
1946	1,864.2	2,068.6	115.8	1,952.8	1,952.8	NA	NA	NA
1947	2,201.7	2,019.5	113.1	1,906.4	1,906.4	NA	NA	NA
1948	1,992.6	2,005.3	112.3	1,893.0	1,893.0	NA	NA	NA
1949	1,821.6	2,025.9	113.4	1,912.4	1,912.4	NA	NA	NA
1950	2,263.4	2,137.8	119.7	2,018.0	2,018.0	NA	NA	NA
1951	2,328.3	2,108.9	118.1	1,990.8	1,990.8	NA	NA	NA
1952	1,735.1	2,131.0	119.3	2,011.7	2,011.7	NA	NA	NA
1953	2,329.6	1,820.8	102.0	1,718.8	1,718.8	NA	NA	NA
1954	1,397.7	1,775.8	99.4	1,676.3	1,676.3	NA	NA	NA
1955	1,500.0	1,536.8	86.1	1,450.7	1,450.7	NA	NA	NA
1956	1,612.7	1,544.2	86.5	1,457.7	1,457.7	2,435.7	48.7	2,387.0
1957	1,419.9	1,210.5	67.8	1,142.7	1,142.7	2,485.8	49.7	2,436.1
1958	598.8	941.8	52.7	889.0	889.0	2,295.8	45.9	2,249.9
1959	806.5	720.6	40.4	680.3	680.3	2,220.4	44.4	2,176.0
1960	756.5	667.9	37.4	630.5	630.5	2,139.7	42.8	2,096.9
1961	440.8	602.2	33.7	568.4	568.4	2,214.1	44.3	2,169.8
1962	509.2	579.9	32.5	547.4	547.4	2,531.8	50.6	2,481.2
1963	589.8	721.0	40.4	680.6	680.6	2,805.7	56.1	2,749.6
1964	863.9	857.6	48.0	809.6	809.6	3,130.1	62.6	3,067.5
1965	1,019.2	1,070.4	59.9	1,010.5	1,010.5	3,106.2	62.1	3,044.0
1966	1,328.1	1,123.0	62.9	1,060.1	1,060.1	2,902.3	58.0	2,844.3
1967	1,021.6	1,133.9	63.5	1,070.4	1,070.4	2,619.6	52.4	2,567.2
1968	1,052.0	1,099.0	61.5	1,037.5	1,037.5	2,411.2	48.2	2,362.9
1969	1,223.5	1,182.2	66.2	1,116.0	1,116.0	2,299.4	46.0	2,253.4
1970	1,271.0	1,243.7	69.6	1,174.1	1,174.1	1,969.5	39.4	1,930.1
1971	1,236.6	1,311.8	73.5	1,238.4	1,238.4	1,377.5	27.6	1,350.0
1972	1,427.9	1,346.3	75.4	1,270.9	1,270.9	1,034.4	20.7	1,013.8
1973	1,374.5	1,414.0	79.2	1,334.8	1,334.8	938.1	18.8	919.4
1974	1,439.5	1,429.3	80.0	1,349.3	1,349.3	980.9	19.6	961.2
1975	1,473.8	1,473.8	82.5	1,391.3	1,391.3	1,273.7	25.5	1,248.3
TOTAL: 56 TO 69	13,442.5	13,454.1	753.4	12,700.7	12,700.7	35,598.0	712.0	34,886.1
TOTAL: 70 TO 75	8,223.3	8,219.0	460.3	7,758.7	7,758.7	7,574.2	151.5	7,422.7
TOTAL: 56 TO 75	21,365.9	21,673.1	1,213.7	20,459.4	20,459.4	43,172.2	863.4	42,308.7

PRODUCT CATEGORY: RAILROAD EQUIPMENT

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1916	2,520.0	2,491.0	368.7	2,122.3	2,122.3	NA	NA	NA
1917	2,734.0	2,567.3	380.0	2,187.4	2,187.4	NA	NA	NA
1918	2,348.0	2,279.3	337.3	1,942.0	1,942.0	NA	NA	NA
1919	1,756.0	2,135.3	316.0	1,819.3	1,819.3	NA	NA	NA
1920	2,302.0	2,054.3	304.0	1,750.3	1,750.3	NA	NA	NA
1921	2,105.0	2,186.3	323.6	1,862.8	1,862.8	NA	NA	NA
1922	2,152.0	4,005.5	592.8	3,412.7	3,412.7	NA	NA	NA
1923	7,759.5	5,525.7	817.8	4,707.9	4,707.9	NA	NA	NA
1924	6,565.5	7,163.8	1,060.2	6,103.5	6,103.5	NA	NA	NA
1925	7,066.3	6,874.9	1,017.5	5,857.4	5,857.4	NA	NA	NA
1926	6,893.0	6,407.3	948.3	5,459.0	5,459.0	NA	NA	NA
1927	5,262.7	5,723.2	847.0	4,876.2	4,876.2	NA	NA	NA
1928	5,013.9	5,368.9	794.6	4,574.3	4,574.3	NA	NA	NA
1929	5,830.2	4,930.5	729.7	4,200.8	4,200.8	NA	NA	NA
1930	3,947.4	3,992.2	590.9	3,401.4	3,401.4	NA	NA	NA
1931	2,199.1	2,389.7	353.7	2,036.0	2,036.0	NA	NA	NA
1932	1,022.5	1,511.5	223.7	1,287.8	1,287.8	NA	NA	NA
1933	1,312.8	1,328.2	196.6	1,131.6	1,131.6	NA	NA	NA
1934	1,649.3	1,423.9	210.7	1,213.1	1,213.1	NA	NA	NA
1935	1,309.4	2,016.1	298.4	1,717.7	1,717.7	NA	NA	NA
1936	3,089.6	2,766.6	409.5	2,357.1	2,357.1	NA	NA	NA
1937	3,900.7	2,742.2	405.9	2,336.4	2,336.4	NA	NA	NA
1938	1,236.5	2,669.7	395.1	2,274.5	2,274.5	NA	NA	NA
1939	2,871.8	2,401.8	355.5	2,046.4	2,046.4	NA	NA	NA
1940	3,097.2	3,351.0	495.9	2,855.0	2,855.0	NA	NA	NA
1941	4,084.0	3,563.2	527.4	3,035.9	3,035.9	NA	NA	NA
1942	3,508.5	3,649.1	540.1	3,109.1	3,109.1	NA	NA	NA
1943	3,354.9	3,607.5	533.9	3,073.5	3,073.5	NA	NA	NA
1944	3,959.0	4,054.3	600.0	3,454.3	3,454.3	NA	NA	NA
1945	4,849.1	3,925.4	581.0	3,344.4	3,344.4	NA	NA	NA
1946	2,968.1	4,051.0	599.6	3,451.5	3,451.5	NA	NA	NA
1947	4,335.9	3,983.5	589.6	3,394.0	3,394.0	NA	NA	NA
1948	4,646.6	3,838.2	568.1	3,270.2	3,270.2	NA	NA	NA
1949	2,532.2	3,375.1	499.5	2,875.5	2,875.5	NA	NA	NA
1950	2,946.4	3,561.6	527.1	3,034.5	3,034.5	NA	NA	NA
1951	5,206.4	3,852.7	570.2	3,282.5	3,282.5	NA	NA	NA
1952	3,405.2	4,068.7	602.2	3,466.5	3,466.5	NA	NA	NA
1953	3,594.5	2,854.3	422.4	2,431.8	2,431.8	NA	NA	NA
1954	1,563.1	2,609.5	386.2	2,223.3	2,223.3	NA	NA	NA
1955	2,571.1	2,691.7	398.4	2,293.3	2,293.3	NA	NA	NA

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1956	3,840.9	3,434.7	508.3	2,926.4	2,926.4	2,958.4	59.2	2,899.2
1957	3,792.2	2,987.1	442.1	2,545.0	2,545.0	3,010.3	60.2	2,950.1
1958	1,328.3	2,485.3	367.8	2,117.5	2,117.5	2,842.9	56.9	2,786.0
1959	2,335.5	2,077.9	307.5	1,770.3	1,770.3	2,643.0	52.9	2,590.1
1960	2,569.8	2,206.9	326.6	1,880.2	1,880.2	2,827.2	56.5	2,770.7
1961	1,715.3	2,114.5	312.9	1,801.6	1,801.6	2,839.3	56.8	2,782.6
1962	2,058.4	2,167.3	320.8	1,846.5	1,846.5	2,773.0	55.5	2,717.5
1963	2,728.1	2,819.6	417.3	2,402.3	2,402.3	2,706.5	54.1	2,652.4
1964	3,372.4	3,545.3	524.7	3,020.6	3,020.6	2,923.5	58.5	2,865.0
1965	4,235.4	4,276.1	632.9	3,643.2	3,643.2	2,835.7	56.7	2,779.0
1966	4,920.6	4,289.5	634.9	3,654.7	3,654.7	2,773.3	55.5	2,717.9
1967	3,712.7	3,909.9	578.7	3,331.2	3,331.2	2,703.5	54.1	2,649.5
1968	3,096.4	3,542.9	524.3	3,018.5	3,018.5	2,745.1	54.9	2,690.2
1969	3,819.6	3,442.6	509.5	2,933.1	2,933.1	2,735.1	54.7	2,680.4
1970	3,411.9	3,324.8	492.1	2,832.7	2,832.7	2,931.8	58.6	2,873.2
1971	2,742.9	2,889.2	427.6	2,461.6	2,461.6	3,076.5	61.5	3,014.9
1972	2,512.8	2,780.3	411.5	2,368.8	2,368.8	3,124.0	62.5	3,061.5
1973	3,085.0	3,008.3	445.2	2,563.0	2,563.0	2,590.7	51.8	2,538.8
1974	3,427.0	3,113.2	460.8	2,652.4	2,652.4	2,443.3	48.9	2,394.4
1975	2,827.6	2,827.6	418.5	2,409.1	2,409.1	2,583.5	51.7	2,531.8
TOTAL: 56 TO 69	43,825.5	43,299.7	6,408.4	36,891.4	36,891.4	39,316.8	786.3	38,530.4
TOTAL: 70 TO 75	18,007.3	17,943.3	2,655.6	15,287.7	15,287.7	16,749.7	335.0	16,414.7
TOTAL: 56 TO 75	61,832.8	61,243.1	9,064.0	52,179.1	52,179.1	56,066.5	1,121.3	54,945.1

PRODUCT CATEGORY: SHIPS AND MARINE EQUIPMENT

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1931	0.0	47.3	12.1	35.2	35.2	NA	NA	NA
1932	142.0	128.4	32.9	95.5	95.5	NA	NA	NA
1933	243.1	214.8	55.0	159.8	159.8	NA	NA	NA
1934	259.3	279.4	71.5	207.9	207.9	NA	NA	NA
1935	335.8	365.0	93.4	271.6	271.6	NA	NA	NA
1936	499.9	459.1	117.5	341.6	341.6	NA	NA	NA
1937	541.8	451.3	115.5	335.8	335.8	NA	NA	NA
1938	312.2	452.6	115.9	336.7	336.7	NA	NA	NA
1939	503.8	492.6	126.1	366.5	366.5	NA	NA	NA
1940	561.8	1,468.9	376.0	1,092.8	1,092.8	NA	NA	NA
1941	3,241.0	5,562.2	1,423.9	4,138.3	4,138.3	NA	NA	NA
1942	12,783.9	10,059.4	2,575.2	7,484.2	7,484.2	NA	NA	NA
1943	14,153.4	13,150.5	3,366.5	9,783.9	9,783.9	NA	NA	NA
1944	12,514.1	10,319.5	2,641.8	7,677.7	7,677.7	NA	NA	NA
1945	4,291.1	5,748.9	1,471.7	4,277.2	4,277.2	NA	NA	NA
1946	441.6	1,753.2	448.8	1,304.4	1,304.4	NA	NA	NA
1947	527.0	634.7	162.5	472.2	472.2	NA	NA	NA
1948	935.7	796.8	204.0	592.8	592.8	NA	NA	NA
1949	927.7	775.8	198.6	577.2	577.2	NA	NA	NA
1950	463.9	899.1	230.2	668.9	668.9	NA	NA	NA
1951	1,305.7	1,103.2	282.4	820.8	820.8	NA	NA	NA
1952	1,540.2	1,364.9	349.4	1,015.5	1,015.5	NA	NA	NA
1953	1,248.8	1,171.8	300.0	871.8	871.8	NA	NA	NA
1954	726.4	934.1	239.1	695.0	695.0	NA	NA	NA
1955	827.1	886.8	227.0	659.8	659.8	NA	NA	NA
1956	1,107.0	1,233.6	315.8	917.8	917.8	802.5	313.0	489.5
1957	1,766.8	1,355.3	347.0	1,008.4	1,008.4	1,439.9	561.6	878.3
1958	1,192.2	1,299.9	332.8	967.1	967.1	1,882.5	734.2	1,148.3
1959	940.6	1,006.6	257.7	748.9	748.9	1,540.3	600.7	939.6
1960	887.0	941.0	240.9	700.1	700.1	966.7	377.0	589.7
1961	995.2	948.7	242.9	705.8	705.8	504.1	196.6	307.5
1962	963.9	991.1	253.7	737.4	737.4	414.3	161.6	252.7
1963	1,014.3	1,033.7	264.6	769.0	769.0	428.2	167.0	261.2
1964	1,122.8	1,228.5	314.5	914.0	914.0	408.9	159.5	249.4
1965	1,548.3	1,418.4	363.1	1,055.3	1,055.3	443.2	172.8	270.3
1966	1,584.1	1,543.5	395.1	1,148.4	1,148.4	1,002.8	391.1	611.7
1967	1,498.1	1,524.7	390.3	1,134.4	1,134.4	3,271.1	1,275.7	1,995.4
1968	1,491.8	1,496.8	383.2	1,113.6	1,113.6	5,699.2	2,222.7	3,476.5
1969	1,500.4	1,484.7	380.1	1,104.6	1,104.6	7,363.9	2,871.9	4,492.0
1970	1,461.8	1,559.6	399.3	1,160.4	1,160.4	5,825.9	2,272.1	3,553.8

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1971	1,716.7	1,542.9	395.0	1,147.9	1,147.9	3,388.0	1,321.3	2,066.7
1972	1,450.1	1,580.4	404.6	1,175.8	1,175.8	1,225.1	477.8	747.3
1973	1,574.2	1,725.5	441.7	1,283.8	1,283.8	606.5	236.5	370.0
1974	2,152.3	1,967.5	503.7	1,463.9	1,463.9	655.2	255.5	399.7
1975	2,176.1	2,176.1	557.1	1,619.1	1,619.1	639.5	249.4	390.1
TOTAL: 56 TO 69	17,512.6	17,506.5	4,481.7	13,024.8	13,024.8	26,167.5	10,205.3	15,962.2
TOTAL: 70 TO 75	10,531.3	10,552.1	2,701.3	7,850.8	7,850.8	12,340.2	4,812.7	7,527.5
TOTAL: 56 TO 75	28,143.9	28,058.6	7,183.0	20,875.6	20,875.6	38,507.7	15,018.0	23,489.7

PRODUCT CATEGORY: AIRCRAFT

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1936	0.0	0.0	0.0	0.0	0.0	NA	NA	NA
1937	0.0	0.0	0.0	0.0	0.0	NA	NA	NA
1938	0.0	0.0	0.0	0.0	0.0	NA	NA	NA
1939	0.0	0.0	0.0	0.0	0.0	NA	NA	NA
1940	0.0	63.9	19.2	44.7	44.7	NA	NA	NA
1941	191.7	299.1	90.0	209.1	209.1	NA	NA	NA
1942	705.6	663.9	199.8	464.0	464.0	NA	NA	NA
1943	1,094.3	815.7	245.5	570.2	570.2	NA	NA	NA
1944	647.2	738.8	222.4	516.5	516.5	NA	NA	NA
1945	475.0	388.6	117.0	271.6	271.6	NA	NA	NA
1946	43.5	193.1	58.1	135.0	135.0	NA	NA	NA
1947	60.8	52.1	15.7	36.4	36.4	NA	NA	NA
1948	51.8	56.5	17.0	39.5	39.5	NA	NA	NA
1949	56.9	60.8	18.3	42.5	42.5	NA	NA	NA
1950	73.8	117.9	35.5	82.4	82.4	NA	NA	NA
1951	223.0	166.8	50.2	116.6	116.6	NA	NA	NA
1952	203.6	219.1	65.9	153.1	153.1	NA	NA	NA
1953	230.6	187.7	56.5	131.2	131.2	NA	NA	NA
1954	129.0	164.4	49.5	114.9	114.9	NA	NA	NA
1955	133.5	153.1	46.1	107.0	107.0	NA	NA	NA
1956	196.6	156.1	47.0	109.1	109.1	36.7	0.4	36.3
1957	138.2	142.5	42.9	99.6	99.6	39.5	0.4	39.1
1958	92.7	111.7	33.6	78.1	78.1	41.8	0.4	41.4
1959	104.0	102.7	30.9	71.8	71.8	79.2	0.8	78.4
1960	111.2	113.2	34.1	79.1	79.1	119.1	1.2	117.9
1961	124.4	119.2	35.9	83.3	83.3	167.1	1.7	165.5
1962	122.1	118.7	35.7	83.0	83.0	154.1	1.5	152.5
1963	109.7	110.7	33.3	77.4	77.4	136.3	1.4	135.0
1964	100.4	116.2	35.0	81.2	81.2	114.5	1.1	113.4
1965	138.5	146.6	44.1	102.5	102.5	108.5	1.1	107.4
1966	200.9	167.2	50.3	116.8	116.8	95.0	0.9	94.0
1967	162.0	165.5	49.8	115.7	115.7	76.5	0.8	75.8
1968	133.5	144.8	43.6	101.2	101.2	71.0	0.7	70.3
1969	139.0	122.6	36.9	85.7	85.7	79.4	0.8	78.6
1970	95.3	104.2	31.4	72.8	72.8	84.6	0.8	83.7
1971	78.4	92.8	27.9	64.9	64.9	85.9	0.9	85.1
1972	104.8	96.6	29.1	67.5	67.5	79.3	0.8	78.5
1973	106.6	112.8	33.9	78.8	78.8	81.9	0.8	81.0
1974	127.0	113.3	34.1	79.2	79.2	100.8	1.0	99.8
1975	106.3	106.3	32.0	74.3	74.3	113.7	1.1	112.6

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
TOTAL: 56 TO 69	1,873.4	1,837.8	553.2	1,284.6	1,284.6	1,318.8	13.2	1,305.6
TOTAL: 70 TO 75	618.3	625.9	188.4	437.5	437.5	546.2	5.5	540.8
TOTAL: 56 TO 75	2,491.6	2,463.7	741.6	1,722.1	1,722.1	1,865.0	18.7	1,846.4

PRODUCT CATEGORY: CONSTRUCTION MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1901	3,622.0	3,563.2	285.1	3,278.1	3,278.1	NA	NA	NA
1902	4,438.7	4,132.9	330.6	3,802.3	3,802.3	NA	NA	NA
1903	4,338.0	4,078.9	326.3	3,752.6	3,752.6	NA	NA	NA
1904	3,460.0	4,315.2	345.2	3,970.0	3,970.0	NA	NA	NA
1905	5,147.7	4,923.2	393.9	4,529.4	4,529.4	NA	NA	NA
1906	6,162.0	5,872.6	469.8	5,402.8	5,402.8	NA	NA	NA
1907	6,308.2	5,363.1	429.1	4,934.1	4,934.1	NA	NA	NA
1908	3,619.3	5,338.4	427.1	4,911.3	4,911.3	NA	NA	NA
1909	6,087.7	5,579.5	446.4	5,133.2	5,133.2	NA	NA	NA
1910	7,031.7	6,274.0	501.9	5,772.1	5,772.1	NA	NA	NA
1911	5,702.7	6,740.7	539.3	6,201.5	6,201.5	NA	NA	NA
1912	7,487.7	6,954.9	556.4	6,398.5	6,398.5	NA	NA	NA
1913	7,674.3	7,002.6	560.2	6,442.4	6,442.4	NA	NA	NA
1914	5,845.8	6,898.9	551.9	6,347.0	6,347.0	NA	NA	NA
1915	7,176.6	7,457.3	596.6	6,860.7	6,860.7	NA	NA	NA
1916	9,349.4	8,676.5	694.1	7,982.3	7,982.3	NA	NA	NA
1917	9,503.4	9,371.1	749.7	8,621.4	8,621.4	NA	NA	NA
1918	9,260.5	8,700.0	696.0	8,004.0	8,004.0	NA	NA	NA
1919	7,336.1	8,485.5	678.8	7,806.7	7,806.7	NA	NA	NA
1920	8,860.0	6,926.7	554.1	6,372.6	6,372.6	NA	NA	NA
1921	4,584.1	7,356.1	588.5	6,767.6	6,767.6	NA	NA	NA
1922	8,624.1	7,905.4	632.4	7,273.0	7,273.0	NA	NA	NA
1923	10,507.9	9,477.3	758.2	8,719.1	8,719.1	NA	NA	NA
1924	9,299.7	10,300.1	824.0	9,476.1	9,476.1	NA	NA	NA
1925	11,092.5	10,773.6	861.9	9,911.7	9,911.7	NA	NA	NA
1926	11,928.6	11,652.8	932.2	10,720.5	10,720.5	NA	NA	NA
1927	11,937.2	11,835.7	946.9	10,888.9	10,888.9	NA	NA	NA
1928	11,641.4	12,161.8	972.9	11,188.8	11,188.8	NA	NA	NA
1929	12,906.6	11,688.7	935.1	10,753.6	10,753.6	NA	NA	NA
1930	10,518.1	9,933.6	794.7	9,138.9	9,138.9	NA	NA	NA
1931	6,376.1	6,809.8	544.8	6,265.0	6,265.0	NA	NA	NA
1932	3,535.1	5,086.6	406.9	4,679.6	4,679.6	NA	NA	NA
1933	5,348.5	4,906.8	392.5	4,514.2	4,514.2	NA	NA	NA
1934	5,836.7	6,039.2	483.1	5,556.0	5,556.0	NA	NA	NA
1935	6,932.3	8,031.7	642.5	7,389.2	7,389.2	NA	NA	NA
1936	11,326.1	9,460.7	756.9	8,703.8	8,703.8	NA	NA	NA
1937	10,123.6	9,503.5	760.3	8,743.2	8,743.2	NA	NA	NA
1938	7,060.6	9,489.0	759.1	8,729.9	8,729.9	NA	NA	NA
1939	11,282.8	10,324.0	825.9	9,498.1	9,498.1	NA	NA	NA
1940	12,628.7	13,044.7	1,043.6	12,001.2	12,001.2	NA	NA	NA

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1941	15,222.8	15,033.2	1,202.7	13,830.6	13,830.6	NA	NA	NA
1942	17,248.2	15,490.7	1,239.3	14,251.4	14,251.4	NA	NA	NA
1943	14,001.1	15,283.2	1,222.7	14,060.6	14,060.6	NA	NA	NA
1944	14,600.3	15,111.5	1,208.9	13,902.6	13,902.6	NA	NA	NA
1945	16,733.1	15,529.2	1,242.3	14,286.9	14,286.9	NA	NA	NA
1946	15,254.3	17,706.1	1,416.5	16,289.6	16,289.6	NA	NA	NA
1947	21,130.9	19,119.9	1,529.6	17,590.3	17,590.3	NA	NA	NA
1948	20,974.6	19,990.0	1,599.2	18,390.8	18,390.8	NA	NA	NA
1949	17,864.5	20,551.8	1,644.1	18,907.6	18,907.6	NA	NA	NA
1950	22,816.2	21,996.5	1,759.7	20,236.8	20,236.8	NA	NA	NA
1951	25,308.8	22,907.4	1,832.6	21,074.9	21,074.9	NA	NA	NA
1952	20,597.4	23,505.6	1,880.4	21,625.1	21,625.1	NA	NA	NA
1953	24,610.6	21,788.2	1,743.1	20,045.1	20,045.1	NA	NA	NA
1954	20,156.6	23,383.6	1,870.7	21,512.9	21,512.9	NA	NA	NA
1955	25,383.8	23,968.8	1,917.5	22,051.3	22,051.3	NA	NA	NA
1956	26,366.1	26,010.0	2,080.8	23,929.2	23,929.2	7,649.0	1,147.4	6,501.7
1957	26,280.2	24,526.1	1,962.1	22,564.0	22,564.0	8,104.5	1,215.7	6,888.8
1958	20,931.9	23,594.9	1,887.6	21,707.3	21,707.3	9,117.7	1,367.7	7,750.0
1959	23,572.7	22,930.9	1,834.5	21,096.4	21,096.4	9,671.9	1,450.8	8,221.1
1960	24,288.1	23,683.0	1,894.6	21,788.3	21,788.3	9,009.6	1,351.4	7,658.2
1961	23,188.1	23,822.9	1,905.8	21,917.1	21,917.1	8,333.8	1,250.1	7,083.8
1962	23,992.4	24,415.4	1,953.2	22,462.2	22,462.2	7,041.1	1,056.2	5,984.9
1963	26,065.7	25,959.1	2,076.7	23,882.4	23,882.4	7,285.6	1,092.8	6,192.8
1964	27,819.3	28,955.0	2,316.4	26,638.6	26,638.6	8,018.5	1,202.8	6,815.7
1965	32,980.0	31,456.1	2,516.5	28,939.6	28,939.6	9,491.0	1,423.7	8,067.4
1966	33,568.9	32,782.0	2,622.6	30,159.4	30,159.4	10,340.4	1,551.1	8,789.3
1967	31,797.0	32,485.7	2,598.9	29,886.8	29,886.8	10,682.6	1,602.4	9,080.2
1968	32,091.1	32,928.7	2,634.3	30,294.4	30,294.4	11,364.2	1,704.6	9,659.6
1969	34,897.9	33,643.1	2,691.5	30,951.7	30,951.7	11,735.4	1,760.3	9,975.1
1970	33,940.4	33,107.3	2,648.6	30,458.7	30,458.7	12,534.9	1,880.2	10,654.7
1971	30,483.5	33,212.4	2,657.0	30,555.4	30,555.4	12,490.5	1,873.6	10,616.9
1972	35,213.4	35,324.0	2,825.9	32,498.0	32,498.0	11,687.3	1,753.1	9,934.2
1973	40,274.9	38,668.8	3,093.5	35,575.3	35,575.3	9,848.1	1,477.2	8,370.9
1974	40,518.0	36,479.8	2,918.4	33,561.4	33,561.4	8,988.5	1,348.3	7,640.2
1975	28,646.4	28,646.4	2,291.7	26,354.7	26,354.7	8,827.6	1,324.1	7,503.4
TOTAL: 56 TO 69	387,839.4	387,192.8	30,975.4	356,217.4	356,217.4	127,845.4	19,176.8	108,668.6
TOTAL: 70 TO 75	209,076.7	205,438.6	16,435.1	189,003.5	189,003.5	64,376.8	9,656.5	54,720.3
TOTAL: 56 TO 75	596,916.1	592,631.5	47,410.5	545,220.9	545,220.9	192,222.2	28,833.3	163,388.9

PRODUCT CATEGORY: INDUSTRIAL MACHINERY

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1921	569.2	944.4	187.9	756.5	643.0	NA	NA	NA
1922	1,116.1	980.6	195.1	785.5	667.6	NA	NA	NA
1923	1,256.5	1,217.1	242.2	974.9	828.6	NA	NA	NA
1924	1,278.6	1,332.1	265.1	1,067.0	907.0	NA	NA	NA
1925	1,461.3	1,429.0	284.4	1,144.6	972.9	NA	NA	NA
1926	1,547.1	1,430.6	284.7	1,145.9	974.0	NA	NA	NA
1927	1,283.4	1,351.9	269.0	1,082.9	920.5	NA	NA	NA
1928	1,225.3	1,258.1	250.4	1,007.7	856.6	NA	NA	NA
1929	1,265.6	1,172.2	233.3	938.9	798.1	NA	NA	NA
1930	1,025.7	956.9	190.4	766.5	651.5	NA	NA	NA
1931	579.4	646.1	128.6	517.6	439.9	NA	NA	NA
1932	333.4	497.7	99.0	398.6	338.8	NA	NA	NA
1933	580.3	559.2	111.3	447.9	380.7	NA	NA	NA
1934	764.0	718.2	142.9	575.3	489.0	NA	NA	NA
1935	810.3	1,200.9	239.0	961.9	817.6	NA	NA	NA
1936	2,028.3	1,571.6	312.8	1,258.9	1,070.0	NA	NA	NA
1937	1,876.2	1,617.4	321.9	1,295.6	1,101.2	NA	NA	NA
1938	947.8	1,522.1	302.9	1,219.2	1,036.3	NA	NA	NA
1939	1,742.4	1,821.3	362.4	1,458.8	1,240.0	NA	NA	NA
1940	2,773.7	2,784.6	554.1	2,230.4	1,895.9	NA	NA	NA
1941	3,837.7	3,948.0	785.7	3,162.4	2,688.0	NA	NA	NA
1942	5,232.7	4,863.3	967.8	3,895.5	3,895.5	NA	NA	NA
1943	5,519.6	5,341.8	1,063.0	4,278.8	4,278.8	NA	NA	NA
1944	5,273.2	5,420.4	1,078.7	4,341.8	4,341.8	NA	NA	NA
1945	5,468.6	5,630.7	1,120.5	4,510.2	4,510.2	NA	NA	NA
1946	6,150.3	6,500.1	1,293.5	5,206.6	3,644.6	NA	NA	NA
1947	7,881.3	7,286.5	1,450.0	5,836.5	4,085.5	NA	NA	NA
1948	7,827.8	7,389.3	1,470.5	5,918.8	4,320.7	NA	NA	NA
1949	6,458.7	7,605.8	1,513.6	6,092.3	4,630.1	NA	NA	NA
1950	8,531.1	8,548.2	1,701.1	6,847.1	5,409.2	NA	NA	NA
1951	10,655.0	9,574.0	1,905.2	7,668.8	6,288.4	NA	NA	NA
1952	9,536.0	10,285.9	2,046.9	8,239.0	7,003.1	NA	NA	NA
1953	10,666.7	9,484.7	1,887.5	7,597.2	6,609.6	NA	NA	NA
1954	8,251.4	10,041.4	1,998.2	8,043.2	7,078.0	NA	NA	NA
1955	11,206.1	10,445.7	2,078.7	8,367.0	7,446.6	NA	NA	NA
1956	11,879.5	11,124.8	2,213.8	8,911.0	7,752.6	996.8	119.6	877.2
1957	10,288.9	9,879.0	1,965.9	7,913.1	6,647.0	1,074.0	128.9	945.1
1958	7,468.6	9,204.9	1,831.8	7,373.1	6,193.4	1,207.1	144.9	1,062.3
1959	9,857.1	8,903.3	1,771.8	7,131.5	5,990.5	1,558.4	187.0	1,371.4
1960	9,384.2	9,322.9	1,855.3	7,467.6	6,347.5	1,865.2	223.8	1,641.4

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1961	8,727.4	9,253.7	1,841.5	7,412.2	6,152.1	1,991.2	238.9	1,752.2
1962	9,649.5	9,619.8	1,914.3	7,705.5	6,241.4	1,875.8	225.1	1,650.7
1963	10,482.6	10,672.4	2,123.8	8,548.6	7,095.4	2,070.8	248.5	1,822.3
1964	11,885.2	12,056.0	2,399.2	9,656.9	7,822.1	2,554.4	306.5	2,247.8
1965	13,800.3	13,221.4	2,631.1	10,590.3	9,107.7	3,137.8	376.5	2,761.2
1966	13,978.7	13,442.9	2,675.1	10,767.7	9,475.6	3,805.2	456.6	3,348.6
1967	12,549.6	13,127.9	2,612.5	10,515.4	9,358.7	4,014.0	481.7	3,532.3
1968	12,855.4	13,453.3	2,677.2	10,776.1	9,806.3	4,071.1	488.5	3,582.5
1969	14,954.9	13,649.4	2,716.2	10,933.2	10,058.5	4,279.3	513.5	3,765.8
1970	13,137.9	13,226.0	2,632.0	10,594.0	9,746.5	3,652.8	438.3	3,214.5
1971	11,585.1	12,831.2	2,553.4	10,277.8	9,661.2	3,963.6	475.6	3,487.9
1972	13,770.7	13,531.5	2,692.8	10,838.7	10,405.2	4,290.0	514.8	3,775.2
1973	15,238.7	14,731.1	2,931.5	11,799.6	11,091.6	4,710.5	565.3	4,145.2
1974	15,184.0	14,118.0	2,809.5	11,308.5	10,630.0	5,563.8	667.7	4,896.2
1975	11,931.2	11,931.2	2,374.3	9,556.9	8,983.5	6,398.7	767.8	5,630.9
TOTAL: 56 TO 69	157,761.9	156,931.7	31,229.4	125,702.3	108,048.8	34,501.0	4,140.1	30,360.9
TOTAL: 70 TO 75	80,847.6	80,369.0	15,993.4	64,375.6	60,517.9	28,579.4	3,429.5	25,149.9
TOTAL: 56 TO 75	238,609.5	237,300.7	47,222.8	190,077.9	168,566.7	63,080.4	7,569.7	55,510.8

PRODUCT CATEGORY: ELECTRICAL MACHINERY

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1921	267.8	444.4	92.0	352.4	352.4	NA	NA	NA
1922	525.2	463.3	95.9	367.4	367.4	NA	NA	NA
1923	596.8	576.5	119.3	457.1	457.1	NA	NA	NA
1924	607.3	632.8	131.0	501.8	501.8	NA	NA	NA
1925	694.1	678.8	140.5	538.3	538.3	NA	NA	NA
1926	734.9	679.5	140.7	538.9	538.9	NA	NA	NA
1927	609.6	642.2	132.9	509.2	509.2	NA	NA	NA
1928	582.0	597.6	123.7	473.9	473.9	NA	NA	NA
1929	601.2	556.8	115.3	441.5	441.5	NA	NA	NA
1930	487.2	454.5	94.1	360.4	360.4	NA	NA	NA
1931	275.2	306.9	63.5	243.4	243.4	NA	NA	NA
1932	158.3	236.4	48.9	187.5	187.5	NA	NA	NA
1933	275.6	265.6	55.0	210.6	210.6	NA	NA	NA
1934	362.9	341.1	70.6	270.5	270.5	NA	NA	NA
1935	384.9	570.4	118.1	452.3	452.3	NA	NA	NA
1936	963.5	746.5	154.5	592.0	592.0	NA	NA	NA
1937	891.2	768.3	159.0	609.3	609.3	NA	NA	NA
1938	450.2	723.0	149.7	573.3	573.3	NA	NA	NA
1939	827.6	865.1	179.1	686.0	686.0	NA	NA	NA
1940	1,317.5	1,802.0	373.0	1,429.0	1,429.0	NA	NA	NA
1941	3,260.9	2,510.6	519.7	1,990.9	1,990.9	NA	NA	NA
1942	2,953.3	2,901.0	600.5	2,300.5	2,300.5	NA	NA	NA
1943	2,488.7	2,641.9	546.9	2,095.0	2,095.0	NA	NA	NA
1944	2,483.7	2,586.5	535.4	2,051.1	2,051.1	NA	NA	NA
1945	2,787.0	2,737.0	566.6	2,170.4	2,170.4	NA	NA	NA
1946	2,940.2	3,291.1	681.3	2,609.8	2,609.8	NA	NA	NA
1947	4,146.0	3,667.5	759.2	2,908.4	2,908.4	NA	NA	NA
1948	3,916.3	3,648.3	755.2	2,893.1	2,893.1	NA	NA	NA
1949	2,882.4	3,770.0	780.4	2,989.6	2,989.6	NA	NA	NA
1950	4,511.1	4,155.4	860.2	3,295.3	3,295.3	NA	NA	NA
1951	5,072.7	4,541.9	940.2	3,601.8	3,601.8	NA	NA	NA
1952	4,042.0	4,773.3	988.1	3,785.2	3,785.2	NA	NA	NA
1953	5,205.2	4,442.4	919.6	3,522.8	3,522.8	NA	NA	NA
1954	4,080.0	4,917.0	1,017.8	3,899.2	3,899.2	NA	NA	NA
1955	5,465.9	5,100.5	1,055.8	4,044.7	4,044.7	NA	NA	NA
1956	5,755.6	5,326.1	1,102.5	4,223.6	4,223.6	654.0	85.0	568.9
1957	4,756.8	4,891.0	1,012.4	3,878.5	3,878.5	673.8	87.6	586.2
1958	4,160.4	4,593.9	950.9	3,643.0	3,643.0	735.6	95.6	640.0
1959	4,864.5	4,650.6	962.7	3,687.9	3,687.9	910.1	118.3	791.8
1960	4,926.8	4,791.2	991.8	3,799.4	3,799.4	1,051.4	136.7	914.7

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1961	4,582.1	4,824.3	998.6	3,825.7	3,825.7	1,087.5	141.4	946.1
1962	4,964.0	4,956.3	1,026.0	3,930.4	3,930.4	1,016.5	132.2	884.4
1963	5,322.9	5,398.7	1,117.5	4,281.2	4,281.2	1,143.0	148.6	994.4
1964	5,909.2	6,082.1	1,259.0	4,823.1	4,823.1	1,664.7	216.4	1,448.3
1965	7,014.1	6,757.1	1,398.7	5,358.4	5,358.4	2,074.7	269.7	1,805.0
1966	7,348.1	7,139.5	1,477.9	5,661.6	5,661.6	2,237.8	290.9	1,946.9
1967	7,056.3	7,071.4	1,463.8	5,607.6	5,607.6	2,066.4	268.6	1,797.8
1968	6,809.7	7,086.5	1,466.9	5,619.6	5,619.6	2,068.3	268.9	1,799.4
1969	7,393.4	7,016.8	1,452.5	5,564.3	5,564.3	2,188.0	284.4	1,903.5
1970	6,847.3	6,789.2	1,405.4	5,383.8	5,383.8	2,499.1	324.9	2,174.2
1971	6,126.9	6,727.0	1,392.5	5,334.5	5,334.5	2,717.5	353.3	2,364.2
1972	7,206.9	7,122.3	1,474.3	5,648.0	5,648.0	2,778.1	361.2	2,417.0
1973	8,033.2	7,628.0	1,579.0	6,049.0	6,049.0	3,033.8	394.4	2,639.4
1974	7,643.9	6,896.4	1,427.6	5,468.9	5,468.9	3,408.3	443.1	2,965.2
1975	5,012.2	5,012.2	1,037.5	3,974.7	3,974.7	3,711.7	482.5	3,229.2
TOTAL: 56 TO 69	80,863.9	80,585.3	16,681.2	63,904.2	63,904.2	19,571.7	2,544.3	17,027.3
TOTAL: 70 TO 75	40,870.4	40,175.2	8,316.3	31,858.9	31,858.9	18,148.5	2,359.3	15,789.2
TOTAL: 56 TO 75	121,734.3	120,760.5	24,997.4	95,763.1	95,763.1	37,720.2	4,903.6	32,816.5

PRODUCT CATEGORY: MINING MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1926	1,194.2	1,055.3	180.5	874.9	874.9	NA	NA	NA
1927	886.3	1,053.8	180.2	873.6	873.6	NA	NA	NA
1928	1,080.9	1,135.6	194.2	941.4	941.4	NA	NA	NA
1929	1,439.7	1,266.1	216.5	1,049.6	1,049.6	NA	NA	NA
1930	1,277.9	1,136.0	194.3	941.7	941.7	NA	NA	NA
1931	590.4	758.4	129.7	628.7	628.7	NA	NA	NA
1932	307.0	458.2	78.4	379.8	379.8	NA	NA	NA
1933	377.2	352.2	60.2	292.0	292.0	NA	NA	NA
1934	372.4	369.0	63.1	305.9	305.9	NA	NA	NA
1935	357.4	438.1	74.9	363.2	363.2	NA	NA	NA
1936	584.6	597.5	102.2	495.3	495.3	NA	NA	NA
1937	850.5	609.0	104.1	504.9	504.9	NA	NA	NA
1938	392.0	684.6	117.1	567.5	567.5	NA	NA	NA
1939	811.1	578.3	98.9	479.4	479.4	NA	NA	NA
1940	531.6	647.4	110.7	536.7	536.7	NA	NA	NA
1941	599.6	632.8	108.2	524.6	524.6	NA	NA	NA
1942	767.3	670.2	114.6	555.6	555.6	NA	NA	NA
1943	643.6	691.8	118.3	573.5	573.5	NA	NA	NA
1944	664.6	674.3	115.3	559.0	559.0	NA	NA	NA
1945	714.6	637.9	109.1	528.9	528.9	NA	NA	NA
1946	534.6	665.9	113.9	552.1	552.1	NA	NA	NA
1947	748.6	697.0	119.2	577.8	577.8	NA	NA	NA
1948	807.8	735.0	125.7	609.3	609.3	NA	NA	NA
1949	648.5	722.0	123.5	598.5	598.5	NA	NA	NA
1950	709.7	766.5	131.1	635.4	635.4	NA	NA	NA
1951	941.3	809.9	138.5	671.4	671.4	NA	NA	NA
1952	778.8	839.5	143.6	696.0	696.0	NA	NA	NA
1953	798.5	683.7	116.9	566.8	566.8	NA	NA	NA
1954	473.9	638.0	109.1	528.9	528.9	NA	NA	NA
1955	641.5	646.4	110.5	535.9	535.9	NA	NA	NA
1956	823.9	738.6	126.3	612.3	612.3	535.7	133.9	401.8
1957	750.2	664.8	113.7	551.1	551.1	518.6	129.6	388.9
1958	420.3	575.9	98.5	477.4	477.4	541.2	135.3	405.9
1959	557.1	553.4	94.6	458.8	458.8	554.3	138.6	415.7
1960	582.8	626.3	107.1	519.2	519.2	549.3	137.3	411.9
1961	639.0	642.4	109.8	532.5	532.5	512.3	128.1	384.2
1962	605.3	635.4	108.6	526.7	526.7	533.1	133.3	399.8
1963	561.9	695.5	118.9	576.6	576.6	546.2	136.6	409.7
1964	819.4	800.8	136.9	663.8	663.8	587.3	146.8	440.4
1965	921.1	898.0	153.6	744.4	744.4	573.5	143.4	430.1

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	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1966	953.5	913.9	156.3	757.6	757.6	602.0	150.5	451.5
1967	867.0	964.9	165.0	799.9	799.9	628.3	157.1	471.2
1968	1,074.2	1,045.7	178.8	866.9	866.9	654.3	163.6	490.8
1969	1,195.9	1,177.8	201.4	976.4	976.4	559.8	140.0	419.9
1970	1,263.2	1,196.2	204.5	991.6	991.6	538.0	134.5	403.5
1971	1,129.4	1,224.6	209.4	1,015.2	1,015.2	553.3	138.3	415.0
1972	1,281.1	1,230.6	210.4	1,020.2	1,020.2	622.2	155.5	466.6
1973	1,281.3	1,360.3	232.6	1,127.7	1,127.7	583.1	145.8	437.3
1974	1,518.4	1,391.5	237.9	1,153.5	1,153.5	537.8	134.5	403.4
1975	1,374.7	1,374.7	235.1	1,139.6	1,139.6	533.4	133.4	400.1
TOTAL: 56 TO 69	10,971.5	10,933.1	1,869.6	9,063.5	9,063.5	7,895.8	1,974.0	5,921.9
TOTAL: 70 TO 75	7,848.2	7,777.8	1,330.0	6,447.8	6,447.8	3,367.9	842.0	2,525.9
TOTAL: 56 TO 75	18,819.6	18,710.9	3,199.6	15,511.4	15,511.4	11,263.7	2,815.9	8,447.8

PRODUCT CATEGORY: OIL AND GAS MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1926	3,716.3	3,296.0	866.9	2,429.2	2,429.2	NA	NA	NA
1927	3,110.6	3,588.4	943.7	2,644.6	2,644.6	NA	NA	NA
1928	3,938.3	3,914.7	1,029.6	2,885.2	2,885.2	NA	NA	NA
1929	4,695.3	4,140.0	1,088.8	3,051.2	3,051.2	NA	NA	NA
1930	3,786.5	3,587.6	943.5	2,644.0	2,644.0	NA	NA	NA
1931	2,281.0	2,343.3	616.3	1,727.0	1,727.0	NA	NA	NA
1932	962.5	1,486.0	390.8	1,095.2	1,095.2	NA	NA	NA
1933	1,214.4	1,247.7	328.2	919.6	919.6	NA	NA	NA
1934	1,566.3	1,483.4	390.1	1,093.3	1,093.3	NA	NA	NA
1935	1,569.6	1,777.4	467.4	1,309.9	1,309.9	NA	NA	NA
1936	2,096.2	2,071.8	544.9	1,526.9	1,526.9	NA	NA	NA
1937	2,449.5	1,883.3	495.3	1,388.0	1,388.0	NA	NA	NA
1938	1,104.2	1,923.3	505.8	1,417.5	1,417.5	NA	NA	NA
1939	2,216.2	1,630.9	428.9	1,202.0	1,202.0	NA	NA	NA
1940	1,572.4	1,929.7	507.5	1,422.2	1,422.2	NA	NA	NA
1941	2,000.6	1,653.8	435.0	1,218.9	1,218.9	NA	NA	NA
1942	1,388.5	1,621.5	426.5	1,195.1	1,195.1	NA	NA	NA
1943	1,475.4	1,502.0	395.0	1,107.0	1,107.0	NA	NA	NA
1944	1,642.0	1,693.6	445.4	1,248.2	1,248.2	NA	NA	NA
1945	1,963.4	1,850.5	486.7	1,363.8	1,363.8	NA	NA	NA
1946	1,946.2	2,309.5	607.4	1,702.1	1,702.1	NA	NA	NA
1947	3,019.0	2,721.2	715.7	2,005.6	2,005.6	NA	NA	NA
1948	3,198.5	3,002.9	789.8	2,213.1	2,213.1	NA	NA	NA
1949	2,791.2	3,164.4	832.2	2,332.2	2,332.2	NA	NA	NA
1950	3,503.5	3,410.0	896.8	2,513.1	2,513.1	NA	NA	NA
1951	3,935.1	3,579.0	941.3	2,637.7	2,637.7	NA	NA	NA
1952	3,298.3	3,661.1	962.9	2,698.2	2,698.2	NA	NA	NA
1953	3,749.8	3,546.8	932.8	2,614.0	2,614.0	NA	NA	NA
1954	3,592.1	3,871.7	1,018.3	2,853.4	2,853.4	NA	NA	NA
1955	4,273.1	4,048.4	1,064.7	2,983.7	2,983.7	NA	NA	NA
1956	4,280.1	4,234.4	1,113.6	3,120.7	3,120.7	1,536.9	768.5	768.5
1957	4,150.0	3,558.6	935.9	2,622.7	2,622.7	1,396.6	698.3	698.3
1958	2,245.6	3,351.7	881.5	2,470.2	2,470.2	1,403.6	701.8	701.8
1959	3,559.6	2,839.0	746.7	2,092.3	2,092.3	1,345.5	672.8	672.8
1960	2,611.8	3,049.5	802.0	2,247.5	2,247.5	1,432.0	716.0	716.0
1961	2,877.1	2,795.8	735.3	2,060.5	2,060.5	1,478.3	739.2	739.2
1962	2,898.5	2,926.7	769.7	2,157.0	2,157.0	1,733.8	866.9	866.9
1963	3,004.6	3,084.4	811.2	2,273.2	2,273.2	1,949.5	974.8	974.8
1964	3,350.1	3,305.8	869.4	2,436.4	2,436.4	2,135.7	1,067.9	1,067.9
1965	3,562.7	3,496.8	919.7	2,577.2	2,577.2	2,155.3	1,077.6	1,077.6

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1966	3,577.7	3,506.4	922.2	2,584.2	2,584.2	2,275.1	1,137.6	1,137.6
1967	3,378.9	3,615.2	950.8	2,664.4	2,664.4	2,321.5	1,160.7	1,160.7
1968	3,888.8	3,754.0	987.3	2,766.7	2,766.7	2,408.0	1,204.0	1,204.0
1969	3,994.1	3,811.2	1,002.3	2,808.8	2,808.8	2,339.1	1,169.5	1,169.5
1970	3,550.5	3,660.0	962.6	2,697.4	2,697.4	2,559.8	1,279.9	1,279.9
1971	3,435.4	3,653.7	960.9	2,692.8	2,692.8	2,698.5	1,349.2	1,349.2
1972	3,975.1	4,033.7	1,060.9	2,972.8	2,972.8	2,841.0	1,420.5	1,420.5
1973	4,690.6	4,637.5	1,219.7	3,417.8	3,417.8	2,511.4	1,255.7	1,255.7
1974	5,246.7	5,031.2	1,323.2	3,708.0	3,708.0	2,438.1	1,219.0	1,219.0
1975	5,156.2	5,156.2	1,356.1	3,800.1	3,800.1	2,212.9	1,106.5	1,106.5
TOTAL: 56 TO 69	47,479.7	47,329.5	12,447.7	34,881.8	34,881.8	25,910.9	12,955.5	12,955.5
TOTAL: 70 TO 75	26,054.5	26,172.2	6,883.3	19,288.9	19,288.9	15,261.7	7,630.9	7,630.9
TOTAL: 56 TO 75	73,534.1	73,501.6	19,330.9	54,170.7	54,170.7	41,172.7	20,586.3	20,586.3

PRODUCT CATEGORY: AGRICULTURAL MACHINERY

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1926	3,248.9	3,341.1	547.9	2,793.2	2,793.2	NA	NA	NA
1927	3,705.7	3,911.1	641.4	3,269.6	3,269.6	NA	NA	NA
1928	4,778.5	4,452.3	730.2	3,722.1	3,722.1	NA	NA	NA
1929	4,872.7	4,174.4	684.6	3,489.8	3,489.8	NA	NA	NA
1930	2,872.0	3,189.9	523.1	2,666.8	2,666.8	NA	NA	NA
1931	1,825.0	1,837.9	301.4	1,536.5	1,536.5	NA	NA	NA
1932	816.7	1,422.2	233.2	1,189.0	1,189.0	NA	NA	NA
1933	1,624.9	1,638.3	268.7	1,369.6	1,369.6	NA	NA	NA
1934	2,473.3	2,622.1	430.0	2,192.1	2,192.1	NA	NA	NA
1935	3,768.1	3,178.8	521.3	2,657.5	2,657.5	NA	NA	NA
1936	3,295.1	3,529.5	578.8	2,950.7	2,950.7	NA	NA	NA
1937	3,525.4	2,856.5	468.5	2,388.0	2,388.0	NA	NA	NA
1938	1,749.1	2,582.2	423.5	2,158.8	2,158.8	NA	NA	NA
1939	2,472.3	2,353.0	385.9	1,967.1	1,967.1	NA	NA	NA
1940	2,837.7	2,574.7	422.2	2,152.4	2,152.4	NA	NA	NA
1941	2,414.0	2,266.0	371.6	1,894.4	1,894.4	NA	NA	NA
1942	1,546.4	1,953.1	320.3	1,632.8	1,632.8	NA	NA	NA
1943	1,898.8	2,102.4	344.8	1,757.6	1,757.6	NA	NA	NA
1944	2,862.1	2,654.1	435.3	2,218.9	2,218.9	NA	NA	NA
1945	3,201.5	2,746.7	450.5	2,296.3	2,296.3	NA	NA	NA
1946	2,176.5	2,691.2	441.4	2,249.9	2,249.9	NA	NA	NA
1947	2,595.6	2,633.2	431.8	2,201.4	2,201.4	NA	NA	NA
1948	3,027.5	2,876.4	471.7	2,404.7	2,404.7	NA	NA	NA
1949	2,906.3	3,040.4	498.6	2,541.8	2,541.8	NA	NA	NA
1950	3,187.5	3,194.2	523.9	2,670.4	2,670.4	NA	NA	NA
1951	3,488.9	3,185.1	522.4	2,662.7	2,662.7	NA	NA	NA
1952	2,878.9	2,948.2	483.5	2,464.7	2,464.7	NA	NA	NA
1953	2,476.9	2,463.3	404.0	2,059.3	2,059.3	NA	NA	NA
1954	2,034.1	2,387.6	391.6	1,996.1	1,996.1	NA	NA	NA
1955	2,551.9	2,206.5	361.9	1,844.6	1,844.6	NA	NA	NA
1956	1,933.5	2,224.0	364.7	1,859.2	1,859.2	2,639.8	792.0	1,847.9
1957	2,086.5	2,046.7	335.7	1,711.1	1,711.1	2,881.3	864.4	2,016.9
1958	2,120.1	2,164.0	354.9	1,809.1	1,809.1	2,430.8	729.2	1,701.5
1959	2,285.3	2,073.1	340.0	1,733.1	1,733.1	2,179.6	653.9	1,525.7
1960	1,813.8	1,921.7	315.2	1,606.5	1,606.5	1,947.1	584.1	1,363.0
1961	1,566.0	1,818.9	298.3	1,520.6	1,520.6	2,058.5	617.6	1,441.0
1962	1,976.8	1,953.8	320.4	1,633.4	1,633.4	1,901.2	570.4	1,330.8
1963	2,218.6	2,214.9	363.2	1,851.6	1,851.6	1,808.1	542.4	1,265.7
1964	2,449.2	2,471.6	405.3	2,066.2	2,066.2	1,911.2	573.4	1,337.8
1965	2,746.9	2,799.8	459.2	2,340.7	2,340.7	2,201.7	660.5	1,541.2

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1966	3,203.4	2,896.5	475.0	2,421.4	2,421.4	2,185.3	655.6	1,529.7
1967	2,739.1	2,776.1	455.3	2,320.8	2,320.8	2,121.4	636.4	1,485.0
1968	2,385.9	2,443.4	400.7	2,042.7	2,042.7	2,087.8	626.3	1,461.5
1969	2,205.1	2,215.7	363.4	1,852.4	1,852.4	2,246.5	673.9	1,572.5
1970	2,056.2	2,041.1	334.7	1,706.4	1,706.4	2,349.3	704.8	1,644.5
1971	1,861.9	2,124.4	348.4	1,776.0	1,776.0	2,409.9	723.0	1,686.9
1972	2,455.0	2,362.8	387.5	1,975.3	1,975.3	2,394.0	718.2	1,675.8
1973	2,771.3	2,713.5	445.0	2,268.5	2,268.5	2,270.1	681.0	1,589.1
1974	2,914.2	2,706.3	443.8	2,262.5	2,262.5	1,995.2	598.6	1,396.6
1975	2,433.4	2,433.4	399.1	2,034.3	2,034.3	1,961.1	588.3	1,372.8
TOTAL: 56 TO 69	31,830.2	32,020.1	5,251.3	26,768.8	26,768.8	30,600.3	9,180.1	21,420.2
TOTAL: 70 TO 75	14,492.1	14,381.5	2,358.6	12,022.9	12,022.9	13,379.6	4,013.9	9,365.7
TOTAL: 56 TO 75	46,322.4	46,401.6	7,609.9	38,791.7	38,791.7	43,979.9	13,194.0	30,785.9

PRODUCT CATEGORY: OTHER AGRICULTURAL MATERIALS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1926	618.8	636.4	104.4	532.0	532.0	NA	NA	NA
1927	705.8	745.0	122.2	622.8	622.8	NA	NA	NA
1928	910.2	848.1	139.1	709.0	709.0	NA	NA	NA
1929	928.1	795.1	130.4	664.7	664.7	NA	NA	NA
1930	547.0	607.6	99.6	508.0	508.0	NA	NA	NA
1931	347.6	350.1	57.4	292.7	292.7	NA	NA	NA
1932	155.6	270.9	44.4	226.5	226.5	NA	NA	NA
1933	309.5	312.1	51.2	260.9	260.9	NA	NA	NA
1934	471.1	499.4	81.9	417.5	417.5	NA	NA	NA
1935	717.7	605.5	99.3	506.2	506.2	NA	NA	NA
1936	527.6	672.3	110.3	562.0	562.0	NA	NA	NA
1937	571.5	544.1	89.2	454.9	454.9	NA	NA	NA
1938	333.2	491.9	80.7	411.2	411.2	NA	NA	NA
1939	470.9	448.2	73.5	374.7	374.7	NA	NA	NA
1940	540.5	490.4	80.4	410.0	410.0	NA	NA	NA
1941	459.8	431.6	70.8	360.8	360.8	NA	NA	NA
1942	294.6	372.0	61.0	311.0	311.0	NA	NA	NA
1943	361.7	400.5	65.7	334.8	334.8	NA	NA	NA
1944	545.2	505.6	82.9	422.6	422.6	NA	NA	NA
1945	609.8	533.5	87.5	446.0	446.0	NA	NA	NA
1946	445.5	532.0	87.2	444.7	444.7	NA	NA	NA
1947	540.7	487.5	80.0	407.6	407.6	NA	NA	NA
1948	476.3	555.2	91.0	464.1	464.1	NA	NA	NA
1949	548.5	571.4	93.7	477.7	477.7	NA	NA	NA
1950	589.4	620.1	101.7	518.4	518.4	NA	NA	NA
1951	622.5	572.3	93.9	478.4	478.4	NA	NA	NA
1952	504.9	563.1	92.4	470.8	470.8	NA	NA	NA
1953	561.9	607.4	99.6	507.8	507.8	NA	NA	NA
1954	755.5	618.0	101.3	516.6	516.6	NA	NA	NA
1955	536.6	637.6	104.6	533.1	533.1	NA	NA	NA
1956	520.9	524.9	86.1	438.8	438.8	500.5	150.2	350.4
1957	417.3	573.0	94.0	479.0	479.0	549.9	165.0	385.0
1958	580.9	603.9	99.0	504.9	504.9	474.1	142.2	331.9
1959	713.6	652.9	107.1	545.8	545.8	424.6	127.4	297.2
1960	564.3	683.9	112.2	571.7	571.7	386.0	115.8	270.2
1961	773.8	647.0	106.1	540.9	540.9	398.0	119.4	278.6
1962	603.0	671.0	110.0	560.9	560.9	375.4	112.6	262.8
1963	536.2	612.7	100.5	512.2	512.2	353.7	106.1	247.6
1964	598.9	657.7	107.9	549.8	549.8	381.3	114.4	266.9
1965	737.8	760.2	124.7	635.5	635.5	454.1	136.2	317.9

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1966	943.7	827.7	135.7	692.0	692.0	458.3	137.5	320.8
1967	801.6	883.5	144.9	738.6	738.6	456.7	137.0	319.7
1968	905.0	856.2	140.4	715.8	715.8	412.2	123.7	288.6
1969	862.1	857.6	140.6	716.9	716.9	462.7	138.8	323.9
1970	805.7	825.3	135.3	689.9	689.9	477.1	143.1	334.0
1971	808.1	943.7	154.8	788.9	788.9	509.7	152.9	356.8
1972	1,217.3	1,168.6	191.7	977.0	977.0	491.1	147.3	343.8
1973	1,480.4	1,388.9	227.8	1,161.1	1,161.1	489.0	146.7	342.3
1974	1,468.9	1,270.7	208.4	1,062.3	1,062.3	519.5	155.8	363.6
1975	862.7	862.7	141.5	721.2	721.2	517.6	155.3	362.3
TOTAL: 56 TO 69	9,859.1	9,812.2	1,609.2	8,203.0	8,203.0	6,087.6	1,826.3	4,261.3
TOTAL: 70 TO 75	6,543.1	6,459.8	1,059.4	5,400.4	5,400.4	3,003.9	901.2	2,102.8
TOTAL: 56 TO 75	16,302.1	16,272.0	2,668.6	13,603.4	13,603.4	9,091.6	2,727.5	6,364.1

PRODUCT CATEGORY: CONTAINERS

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1951	6,730.0	6,126.8	710.7	5,416.1	5,416.1	NA	NA	NA
1952	5,629.0	6,181.5	717.1	5,464.4	5,464.4	NA	NA	NA
1953	6,185.4	5,921.7	686.9	5,234.8	5,234.8	NA	NA	NA
1954	5,950.7	6,314.7	732.5	5,582.2	5,582.2	NA	NA	NA
1955	6,808.0	6,558.0	760.7	5,797.3	5,797.3	NA	NA	NA
1956	6,915.2	6,674.3	774.2	5,900.1	5,900.1	5,739.3	5,567.1	172.2
1957	6,299.8	6,650.0	771.4	5,878.6	5,878.6	5,841.1	5,665.9	175.2
1958	6,735.0	6,571.0	762.2	5,808.8	5,808.8	5,819.8	5,645.2	174.6
1959	6,678.2	6,713.4	778.8	5,934.7	5,934.7	5,750.7	5,578.2	172.5
1960	6,727.1	6,774.3	785.8	5,988.5	5,988.5	5,875.3	5,699.1	176.3
1961	6,917.7	6,905.0	801.0	6,104.0	6,104.0	5,928.6	5,750.8	177.9
1962	7,070.2	6,956.2	806.9	6,149.2	6,149.2	6,043.0	5,861.7	181.3
1963	6,880.5	6,907.2	801.2	6,106.0	6,106.0	6,087.7	5,905.1	182.6
1964	6,770.8	7,228.4	838.5	6,389.9	6,389.9	6,044.9	5,863.6	181.3
1965	8,033.9	7,424.8	861.3	6,563.5	6,563.5	6,326.0	6,136.3	189.8
1966	7,469.5	7,949.9	922.2	7,027.7	7,027.7	6,497.9	6,302.9	194.9
1967	8,346.2	8,158.4	946.4	7,212.0	7,212.0	6,957.4	6,748.7	208.7
1968	8,659.4	8,484.0	984.1	7,499.9	7,499.9	7,139.9	6,925.7	214.2
1969	8,446.5	8,715.6	1,011.0	7,704.6	7,704.6	7,424.9	7,202.1	222.7
1970	9,040.9	8,416.5	976.3	7,440.2	7,440.2	7,627.5	7,398.7	228.8
1971	7,762.1	8,184.2	949.4	7,234.8	7,234.8	7,365.8	7,144.8	221.0
1972	7,749.5	8,077.7	937.0	7,140.7	7,140.7	7,162.5	6,947.6	214.9
1973	8,721.5	8,559.1	992.9	7,566.3	7,566.3	7,069.3	6,857.2	212.1
1974	9,206.4	8,235.6	955.3	7,280.3	7,280.3	7,490.6	7,265.9	224.7
1975	6,779.0	6,779.0	786.4	5,992.6	5,992.6	7,207.5	6,991.3	216.2
TOTAL: 56 TO 69	101,950.1	102,112.5	11,845.0	90,267.4	90,267.4	87,476.5	84,852.2	2,624.3
TOTAL: 70 TO 75	49,259.4	48,252.1	5,597.2	42,654.9	42,654.9	43,923.1	42,605.5	1,317.7
TOTAL: 56 TO 75	151,209.5	150,364.6	17,442.3	132,922.3	132,922.3	131,399.6	127,457.6	3,942.0

PRODUCT CATEGORY: CONSUMER DURABLES

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1936	1,713.2	1,491.9	395.4	1,096.6	1,096.6	NA	NA	NA
1937	1,809.4	1,503.1	398.3	1,104.8	1,104.8	NA	NA	NA
1938	986.6	1,470.6	389.7	1,080.9	1,080.9	NA	NA	NA
1939	1,615.8	1,596.4	423.0	1,173.3	1,173.3	NA	NA	NA
1940	2,186.7	2,568.8	680.7	1,888.1	1,888.1	NA	NA	NA
1941	3,904.0	2,857.4	757.2	2,100.2	2,100.2	NA	NA	NA
1942	2,481.4	2,866.8	759.7	2,107.1	2,107.1	NA	NA	NA
1943	2,215.1	2,388.1	632.9	1,755.3	1,755.3	NA	NA	NA
1944	2,467.9	2,667.2	706.8	1,960.4	1,960.4	NA	NA	NA
1945	3,318.6	3,123.9	827.8	2,296.1	2,296.1	NA	NA	NA
1946	3,585.3	3,840.0	1,017.6	2,822.4	2,822.4	NA	NA	NA
1947	4,616.2	4,361.6	1,155.8	3,205.8	3,205.8	NA	NA	NA
1948	4,883.4	4,428.4	1,173.5	3,254.9	3,254.9	NA	NA	NA
1949	3,785.6	4,691.5	1,243.2	3,448.2	3,448.2	NA	NA	NA
1950	5,405.4	4,932.9	1,307.2	3,625.7	3,625.7	NA	NA	NA
1951	5,607.7	5,204.2	1,379.1	3,825.1	3,825.1	NA	NA	NA
1952	4,599.4	5,328.4	1,412.0	3,916.4	3,916.4	NA	NA	NA
1953	5,778.1	4,909.2	1,300.9	3,608.2	3,608.2	NA	NA	NA
1954	4,350.0	5,389.3	1,428.2	3,961.1	3,961.1	NA	NA	NA
1955	6,039.8	5,500.8	1,457.7	4,043.1	4,043.1	NA	NA	NA
1956	6,112.5	5,688.9	1,507.6	4,181.4	4,181.4	2,748.4	2,501.0	247.4
1957	4,914.5	5,164.4	1,368.6	3,795.9	3,795.9	3,130.7	2,848.9	281.8
1958	4,466.3	4,872.4	1,291.2	3,581.2	3,581.2	3,181.6	2,895.2	286.3
1959	5,236.4	4,950.6	1,311.9	3,638.7	3,638.7	3,341.6	3,040.9	300.7
1960	5,149.2	5,106.3	1,353.2	3,753.1	3,753.1	3,456.0	3,145.0	311.0
1961	4,933.3	5,088.6	1,348.5	3,740.1	3,740.1	3,645.9	3,317.7	328.1
1962	5,183.3	5,236.9	1,387.8	3,849.1	3,849.1	3,737.6	3,401.2	336.4
1963	5,594.1	5,624.0	1,490.3	4,133.6	4,133.6	3,514.1	3,197.8	316.3
1964	6,094.5	6,158.9	1,632.1	4,526.8	4,526.8	3,844.5	3,498.5	346.0
1965	6,788.2	6,693.9	1,773.9	4,920.0	4,920.0	3,932.3	3,578.4	353.9
1966	7,199.0	6,873.9	1,821.6	5,052.3	5,052.3	4,077.7	3,710.7	367.0
1967	6,634.3	6,845.6	1,814.1	5,031.5	5,031.5	3,791.0	3,449.9	341.2
1968	6,703.4	6,938.2	1,838.6	5,099.5	5,099.5	3,644.8	3,316.8	328.0
1969	7,476.7	7,085.7	1,877.7	5,208.0	5,208.0	3,714.6	3,380.3	334.3
1970	7,076.9	6,937.5	1,838.4	5,099.0	5,099.0	3,803.7	3,461.3	342.3
1971	6,258.8	6,984.2	1,850.8	5,133.4	5,133.4	3,830.3	3,485.6	344.7
1972	7,616.9	7,453.5	1,975.2	5,478.3	5,478.3	3,922.3	3,569.3	353.0
1973	8,484.7	8,049.6	2,133.1	5,916.4	5,916.4	4,173.9	3,798.2	375.7
1974	8,047.1	7,328.5	1,942.0	5,386.4	5,386.4	4,488.3	4,084.4	403.9
1975	5,453.5	5,453.5	1,445.2	4,008.3	4,008.3	4,811.3	4,378.3	433.0

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
TOTAL: 56 TO 69	82,485.8	82,328.3	21,817.0	60,511.3	60,511.3	49,760.8	45,282.4	4,478.5
TOTAL: 70 TO 75	42,937.9	42,206.6	11,184.8	31,021.9	31,021.9	25,029.8	22,777.1	2,252.7
TOTAL: 56 TO 75	125,423.7	124,535.0	33,001.8	91,533.2	91,533.2	74,790.7	68,059.5	6,731.2

PRODUCT CATEGORY: OTHER

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1926	1,449.2	1,480.0	355.2	1,124.8	1,124.8	NA	NA	NA
1927	1,376.4	1,497.9	359.5	1,138.4	1,138.4	NA	NA	NA
1928	1,668.1	1,644.2	394.6	1,249.6	1,249.6	NA	NA	NA
1929	1,888.1	1,672.7	401.5	1,271.3	1,271.3	NA	NA	NA
1930	1,462.0	1,412.0	338.9	1,073.1	1,073.1	NA	NA	NA
1931	885.8	937.4	225.0	712.4	712.4	NA	NA	NA
1932	464.4	766.7	184.0	582.7	582.7	NA	NA	NA
1933	950.0	721.3	173.1	548.2	548.2	NA	NA	NA
1934	749.6	926.0	222.2	703.8	703.8	NA	NA	NA
1935	1,078.5	1,272.5	305.4	967.1	967.1	NA	NA	NA
1936	1,989.5	1,838.1	441.1	1,396.9	1,396.9	NA	NA	NA
1937	2,446.2	1,962.1	470.9	1,491.2	1,491.2	NA	NA	NA
1938	1,450.7	2,049.9	492.0	1,557.9	1,557.9	NA	NA	NA
1939	2,252.6	2,261.4	542.7	1,718.7	1,718.7	NA	NA	NA
1940	3,080.9	2,980.2	715.3	2,265.0	2,265.0	NA	NA	NA
1941	3,607.1	5,190.5	1,245.7	3,944.8	3,944.8	NA	NA	NA
1942	8,883.6	7,735.2	1,856.5	5,878.8	5,878.8	NA	NA	NA
1943	10,714.9	9,914.6	2,379.5	7,535.1	7,535.1	NA	NA	NA
1944	10,145.4	10,338.5	2,481.2	7,857.3	7,857.3	NA	NA	NA
1945	10,155.3	7,952.1	1,908.5	6,043.6	6,043.6	NA	NA	NA
1946	3,555.7	6,144.1	1,474.6	4,669.5	4,669.5	NA	NA	NA
1947	4,721.3	4,168.5	1,000.4	3,168.1	3,168.1	NA	NA	NA
1948	4,228.6	3,989.7	957.5	3,032.2	3,032.2	NA	NA	NA
1949	3,019.2	3,709.2	890.2	2,819.0	2,819.0	NA	NA	NA
1950	3,879.8	4,060.0	974.4	3,085.6	3,085.6	NA	NA	NA
1951	5,281.0	4,889.9	1,173.6	3,716.3	3,716.3	NA	NA	NA
1952	5,509.0	5,765.6	1,383.7	4,381.8	4,381.8	NA	NA	NA
1953	6,506.8	5,274.2	1,265.8	4,008.4	4,008.4	NA	NA	NA
1954	3,806.9	5,016.7	1,204.0	3,812.7	3,812.7	NA	NA	NA
1955	4,736.5	4,356.1	1,045.5	3,310.6	3,310.6	NA	NA	NA
1956	4,524.9	4,354.7	1,045.1	3,309.6	3,309.6	1,674.1	669.6	1,004.4
1957	3,802.8	3,809.3	914.2	2,895.0	2,895.0	2,207.4	883.0	1,324.5
1958	3,100.1	3,640.0	873.6	2,766.4	2,766.4	2,812.8	1,125.1	1,687.7
1959	4,017.0	3,708.1	889.9	2,818.2	2,818.2	3,481.5	1,392.6	2,088.9
1960	4,007.2	3,931.0	943.4	2,987.5	2,987.5	3,685.1	1,474.1	2,211.1
1961	3,768.6	3,895.5	934.9	2,960.6	2,960.6	3,269.8	1,307.9	1,961.9
1962	3,910.7	3,972.7	953.5	3,019.3	3,019.3	2,883.6	1,153.5	1,730.2
1963	4,238.8	4,232.6	1,015.8	3,216.8	3,216.8	2,655.8	1,062.3	1,593.5
1964	4,548.4	4,805.4	1,153.3	3,652.1	3,652.1	3,242.6	1,297.1	1,945.6
1965	5,629.0	5,462.9	1,311.1	4,151.8	4,151.8	3,956.7	1,582.7	2,374.0

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1966	6,211.2	6,260.6	1,502.5	4,758.1	4,758.1	4,640.5	1,856.2	2,784.3
1967	6,941.6	6,810.5	1,634.5	5,176.0	5,176.0	4,968.2	1,987.3	2,980.9
1968	7,278.7	7,459.6	1,790.3	5,669.3	5,669.3	4,529.7	1,811.9	2,717.8
1969	8,158.5	7,915.3	1,899.7	6,015.6	6,015.6	4,091.8	1,636.7	2,455.1
1970	8,308.6	7,829.9	1,879.2	5,950.7	5,950.7	3,642.9	1,457.1	2,185.7
1971	7,022.4	7,985.0	1,916.4	6,068.6	6,068.6	3,632.7	1,453.1	2,179.6
1972	8,623.8	8,387.6	2,013.0	6,374.6	6,374.6	3,624.9	1,450.0	2,174.9
1973	9,516.6	9,074.1	2,177.8	6,896.3	6,896.3	3,494.2	1,397.7	2,096.5
1974	9,081.9	8,353.0	2,004.7	6,348.2	6,348.2	3,653.5	1,461.4	2,192.1
1975	6,460.4	6,460.4	1,550.5	4,909.9	4,909.9	3,892.0	1,556.8	2,335.2
TOTAL: 56 TO 69	70,137.6	70,258.2	16,862.0	53,396.2	53,396.2	48,099.7	19,239.9	28,859.8
TOTAL: 70 TO 75	49,013.7	48,089.9	11,541.6	36,548.3	36,548.3	21,940.1	8,776.1	13,164.1
TOTAL: 56 TO 75	119,151.4	118,348.0	28,403.5	89,944.5	89,944.5	70,039.9	28,016.0	42,023.9

PRODUCT CATEGORY: TOTAL I

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1921	15,740.0	27,777.7	NA	NA	NA	NA	NA	NA
1922	32,827.0	30,823.0	NA	NA	NA	NA	NA	NA
1923	42,902.0	37,041.0	NA	NA	NA	NA	NA	NA
1924	35,394.0	40,249.7	6,525.7	33,724.0	33,067.9	NA	NA	NA
1925	42,453.0	40,926.0	6,684.7	34,241.3	33,514.8	NA	NA	NA
1926	44,931.0	42,763.0	7,069.1	35,693.9	34,886.6	NA	NA	NA
1927	40,905.0	44,061.7	7,486.5	36,575.1	35,671.5	NA	NA	NA
1928	46,349.0	46,251.3	8,027.7	38,223.6	37,227.9	NA	NA	NA
1929	51,500.0	45,244.7	7,960.9	37,283.8	36,287.5	NA	NA	NA
1930	37,885.0	37,652.0	6,587.1	31,064.9	30,257.9	NA	NA	NA
1931	23,571.0	24,663.7	4,269.0	20,394.6	19,879.2	NA	NA	NA
1932	12,535.0	18,981.0	3,315.6	15,665.4	15,238.2	NA	NA	NA
1933	20,837.0	19,037.0	3,389.7	15,647.3	15,174.6	NA	NA	NA
1934	23,739.0	25,061.3	4,591.4	20,469.9	19,787.2	NA	NA	NA
1935	30,608.0	32,680.0	5,994.2	26,685.8	25,775.5	NA	NA	NA
1936	43,693.0	39,566.3	7,243.1	32,323.2	31,328.4	NA	NA	NA
1937	44,398.0	37,183.0	6,705.8	30,477.2	29,139.8	NA	NA	NA
1938	23,458.0	36,011.0	6,452.0	29,559.0	28,597.1	NA	NA	NA
1939	40,177.0	36,368.7	6,517.7	29,851.0	28,835.2	NA	NA	NA
1940	45,471.0	48,371.7	8,777.8	39,593.9	38,661.3	NA	NA	NA
1941	59,467.0	57,495.7	10,522.0	46,973.7	45,786.4	NA	NA	NA
1942	67,549.0	64,694.7	12,066.8	52,627.9	52,541.9	NA	NA	NA
1943	67,068.0	67,243.7	12,614.4	54,629.3	54,624.3	NA	NA	NA
1944	67,114.0	67,280.3	12,530.2	54,750.1	54,700.1	NA	NA	NA
1945	67,659.0	63,684.3	11,613.7	52,070.6	51,935.6	NA	NA	NA
1946	55,280.0	66,782.0	12,037.0	54,745.0	52,294.0	NA	NA	NA
1947	76,407.0	69,886.0	12,670.5	57,215.5	54,096.6	NA	NA	NA
1948	75,971.0	73,187.0	13,406.9	59,780.1	57,160.0	NA	NA	NA
1949	65,183.0	76,195.3	14,161.1	62,034.2	59,887.1	NA	NA	NA
1950	85,432.0	82,499.0	15,386.6	67,112.4	65,052.5	NA	NA	NA
1951	95,882.0	87,270.7	16,308.8	70,961.9	68,506.5	NA	NA	NA
1952	80,498.0	90,441.0	16,945.3	73,495.7	71,538.8	NA	NA	NA
1953	94,943.0	83,269.3	15,726.2	67,543.1	65,884.5	NA	NA	NA
1954	74,367.0	89,349.7	17,096.2	72,253.5	70,419.3	NA	NA	NA
1955	98,739.0	89,891.3	17,124.8	72,766.5	70,986.1	NA	NA	NA
1956	96,568.0	95,280.0	18,041.6	77,238.4	75,275.9	37,844.1	12,910.3	24,933.7
1957	90,533.0	85,929.3	15,970.3	69,959.0	69,180.9	41,113.7	13,979.9	27,133.8
1958	70,687.0	82,558.0	15,437.9	67,120.1	65,939.5	43,298.6	14,500.6	28,798.0
1959	86,454.0	80,818.7	15,211.8	65,606.8	64,819.8	45,289.2	14,826.2	30,463.0
1960	85,315.0	83,850.0	15,868.9	67,981.1	66,702.9	46,026.4	14,918.2	31,108.2

	IRON & STEEL SHIPMENTS	3-YR MOVING AVG - I&S SHIPMENTS	PROMPT SCRAP GENERATED	I&S IN MANUFACTURED PRODUCTS	I&S IN DOMESTICALLY CONSUMED PRODUCTS	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP
1961	79,781.0	83,751.3	15,847.9	67,903.4	66,387.3	45,305.8	14,780.5	30,525.3
1962	86,158.0	86,549.0	16,461.6	70,087.4	68,666.4	44,564.8	14,706.2	29,858.6
1963	93,708.0	93,838.7	17,971.9	75,866.8	74,435.5	44,913.9	14,607.5	30,306.5
1964	101,650.0	104,719.3	20,054.6	84,664.8	82,900.0	49,955.5	15,608.4	34,347.2
1965	118,800.0	113,650.0	21,663.2	91,986.8	91,082.2	54,090.2	16,741.2	37,349.0
1966	120,500.0	117,666.7	22,323.2	95,343.4	94,051.4	57,709.7	17,860.4	39,849.3
1967	113,700.0	117,066.7	22,229.2	94,837.5	93,680.8	59,904.7	19,070.8	40,833.9
1968	117,000.0	119,066.7	22,696.5	96,370.2	95,400.5	62,316.4	20,001.3	42,315.1
1969	125,500.0	120,133.3	22,776.4	97,357.0	98,919.3	65,488.0	20,990.5	44,497.5
1970	115,900.0	117,166.7	22,161.7	95,004.9	96,737.4	64,871.3	20,743.9	44,127.4
1971	108,100.0	116,633.3	22,075.6	94,557.8	97,362.1	62,940.9	19,748.0	43,192.9
1972	124,900.0	125,166.7	23,982.5	101,184.2	103,990.7	60,520.0	18,818.7	41,701.3
1973	142,500.0	135,266.7	25,788.1	109,478.6	111,434.6	58,632.1	18,325.7	40,306.4
1974	138,400.0	128,341.7	24,429.9	103,911.8	105,664.1	60,889.4	19,113.6	41,775.8
1975	104,125.0	104,125.0	19,862.4	84,262.6	85,580.7	63,533.1	19,319.9	44,213.3
TOTAL: 56 TO 69	1,387,354.0	1,384,877.7	262,554.9	1,122,322.7	1,107,442.4	697,821.0	225,501.9	472,319.1
TOTAL: 70 TO 75	734,925.0	726,700.0	138,300.2	588,399.8	600,769.6	371,386.8	116,069.8	255,317.1
TOTAL: 56 TO 75	2,122,279.0	2,111,577.7	400,855.1	1,710,722.6	1,708,211.9	1,069,207.9	341,571.7	727,636.2

SUMMARY PRINTOUT

	POTENTIAL SCRAP GENERATED	NON-RECOVERABLE SCRAP	RECOVERABLE SCRAP	TOTAL SCRAP RECOVERED	OBSOLETE SCRAP RECOVERED	OBSOLETE SCRAP INVENTORY-NET CHANGE
1956	37,844.1	12,910.3	24,933.7	43,036.0	26,798.5	-1,864.8
1957	41,113.7	13,979.9	27,133.8	37,613.0	23,239.7	3,894.1
1958	43,298.6	14,500.6	28,798.0	25,886.0	11,991.9	16,806.1
1959	45,289.2	14,826.2	30,463.0	33,673.0	19,982.4	10,480.7
1960	46,026.4	14,918.2	31,108.2	33,956.0	19,674.0	11,434.2
1961	45,305.8	14,780.5	30,525.3	34,751.0	20,487.9	10,037.4
1962	44,564.8	14,706.2	29,858.6	30,186.0	15,370.6	14,488.0
1963	44,913.9	14,607.5	30,306.5	35,579.0	19,404.3	10,902.2
1964	49,955.5	15,608.4	34,347.2	39,447.0	21,397.9	12,949.3
1965	54,090.2	16,741.2	37,349.0	41,762.0	22,265.1	15,083.8
1966	57,709.7	17,860.4	39,849.3	42,122.0	22,031.1	17,818.2
1967	59,904.7	19,070.8	40,833.9	40,059.0	20,052.7	20,781.1
1968	62,316.4	20,001.3	42,315.1	39,864.0	19,437.2	22,877.9
1969	65,488.0	20,990.5	44,497.5	45,771.0	25,272.3	19,225.2
1970	64,871.3	20,743.9	44,127.4	44,209.0	24,263.4	19,864.0
1971	62,940.9	19,748.0	43,192.9	40,182.0	20,314.0	22,878.9
1972	60,520.0	18,818.7	41,701.3	48,743.0	27,158.8	14,542.5
1973	58,632.1	18,325.7	40,306.4	55,618.0	32,408.7	7,897.7
1974	60,889.4	19,113.6	41,775.8	59,829.0	37,842.1	3,933.7
1975	63,533.1	19,319.9	44,213.3	46,050.0	28,173.8	16,039.4
TOTAL: 56 TO 69	697,821.0	225,501.9	472,319.1	523,705.0	287,405.6	184,913.6
TOTAL: 70 TO 75	371,386.8	116,069.8	255,317.1	294,631.0	170,160.9	85,156.2
TOTAL: 56 TO 75	1,069,207.9	341,571.7	727,636.2	818,336.0	457,566.4	270,069.8

PHARMACEUTICAL MANUFACTURERS Association

C. JOSEPH STETLER
PRESIDENT

1155 FIFTEENTH STREET, N.W.
WASHINGTON, D.C. 20005
AREA CODE 202-296-2440

April 10, 1979

The Honorable Adlai E. Stevenson III
Chairman
Subcommittee on International Finance
Senate Committee on Banking, Housing
and Urban Affairs
5302 Dirksen Senate Office Building
Washington, D.C. 20510

Re: S. 737 -- Export Administration Act Amendments of 1979

Dear Sir:

The PMA is a non-profit trade association composed of 140 members engaged in the development, manufacture and marketing of prescription and ethically promoted drugs, medical devices and diagnostic products. Most of our member companies significantly engage in the export of pharmaceutical products. Accordingly, we are vitally interested in the subject bill.

The stated purpose of S. 737 is to minimize interference with the right to engage in commerce, to reduce uncertainty in export control policy and to encourage trade as a right and not a privilege. We note that Section 4 (E) provides that the President shall not impose export controls on the export from the United States of goods or technology which he determines is available without restrictions from sources outside the United States in significant quantities and comparable in quality to those produced in the United States unless he determines that the absence of such controls would prove detrimental to the foreign policy or national security of the United States. This provision is a beneficial one. However, we also note that the subject bill does not contain an exemption from export controls for pharmaceuticals as does H.R. 2539, the companion measure in the House. In our view, an exemption for pharmaceuticals and other products intended for medical purposes is a necessary element of any bill regulating exports. The supply of such products serves humanitarian ends which should transcend foreign policy considerations.

In the past the Commerce Department has lumped medicines and medical supplies together with other commodities in the application of their embargo policies under the current Export Administration Act. It

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has been difficult for us to understand why such a policy was formulated as to pharmaceuticals.

In addition to the obvious humanitarian reasons why export controls should not be applied to such products which serve a basic human need, there are other concerns which should be considered by your committee. Any constraints placed on United States pharmaceutical manufacturers by our government places United States industry in a less competitive position vis-a-vis other multinational companies. United States commercial success abroad is an important factor to the strength of the United States economy. We therefore urge your committee to include in your bill an exclusion for pharmaceuticals and other products intended for medical purposes. Exclusionary language similar to that contained in H.R. 2539 would be appropriate.

Very truly yours,

C. Joseph Stetler

C. JOSEPH STETLER

STATEMENT FOR RECORD BY
AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
CONCERNING
S. 737, TO EXTEND EXPORT ADMINISTRATION ACT,
BEFORE THE
SUBCOMMITTEE ON INTERNATIONAL FINANCE
COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
UNITED STATES SENATE

April 12, 1979

The Aerospace Industries Association of America, Inc., representing the nation's major producers of aircraft, aircraft engines, and related components, equipment and services, welcomes the opportunity to support the comprehensive and thoughtful revamping of the Export Administration Act of 1969 set forth in S. 737.

It has become increasingly apparent over the past ten years that the United States no longer enjoys the luxury of total self-sufficiency. Yet, despite an increasing need to import oil and other items, the U. S. exports a relatively small proportion of its Gross National Product (GNP). In 1976, U. S. exports amounted to 7.6 percent of the GNP, compared with almost 22 percent for West Germany and more than 12 percent for Japan. During the same year, the U. S. exported approximately 12 percent of all its manufactured goods while Japan exported about 30 percent and West Germany more than 50 percent. In 1977, the U. S. recorded trade deficits of $8.4 billion with Japan and $1.4 billion with Germany. If exports could be increased by only an additional 1.5 percent of the GNP the U. S. trade deficit could be eliminated.

Of particular interest are the benefits being derived from the export of American-produced aerospace products. The export of commercial jet aircraft, for example, has a significantly positive effect on the U. S.

trade balance. In 1978, the U. S. sold $2.5 billion more in jetliners than it imported. Other civil aircraft, aircraft engines and parts amounted to exports of $4.5 billion, for a total net balance of trade of $6.5 billion. Thus, the net trade balance engendered by civil aircraft sales was greater than that achieved by any other U. S.-manufactured product. Such high levels of aircraft and other aerospace exports must be maintained if the U. S. is to offset, even partially, its deficits in other areas of trade.

Unfortunately, however, the nation's export policies have evolved piecemeal and are clearly not equal to the social and economic complexities of today's trading environment. The proposed bill addresses a range of these concerns and is consistent with the initial steps to treat these concerns announced by the President last September. We support fair and open trade and a reduction in U. S. unilateral barriers.

For this reason, the aerospace industry welcomes the attempt embodied in S. 737 to bring expedited and rational standards to bear on the relationship between U. S. industry and the U. S. government in the trading arena. Obviously this is just a part, though an important part, of what we in industry perceive as a desirable, multi-faceted attack on our fragmented and lagging export policy. Bold, positive steps will be needed in many areas, both public and private, ranging from new approaches to taxation to antitrust relief.

To focus on the legislation at hand, overall we find it strikes a skillful and relatively equitable balance between the vital interests of export promotion and the traditional and reasonable exercise of governmental

restraints for strategic, foreign policy and supply reasons. AIA supports this measure with some enthusiasm. We commend you for your efforts to focus U. S. actions in the area of export controls on positive moves to expand exports rather than to restrict them. Moreover, we applaud the references to the importance of assessing foreign availability in considering export controls. However, we would suggest several changes in thrust and wording.

First, we note that the measure links technology and "goods" in many instances. We suggest the substitution of the word "product" for "goods" for the sake of greater precision. We share the concern that strategic technologies of critical military importance to the nation should be properly controlled. However, products of and by themselves generally should be decontrolled except in extreme cases such as reverse engineerable items. We feel that specifically linking technology and products creates too many opportunities for unwarranted and unnecessary controls.

Further, we feel that uncoupling these two terms should be accompanied by a modified definition of technology under Section 12, "Definitions," to wit: "(4) 'technology' is the specific know-how required for design and manufacture of products". Similarly, the definition of the word "goods" in that same section might be changed to: "(3) 'products' are manufactured items resulting from the application of technology".

In a like manner, we would suggest that the rather broad term "national security" used throughout the bill be changed to "strategic military." This would in no way imperil the nation's security, but it would narrow the focus of this often loosely interpreted category of license actions.

On the subject of consultation with industry, we find S. 737 to be quite generous in mandating such cooperation. However, in Sec. 7(a), line 12, we feel the words "from time to time," in referring to the frequency of Presidential consultation with private industry in making so-called "national security" (strategic military) decisions, should be deleted.

AIA has participated in several government/industry study groups. Should the concept of technology export control become institutionalized, we consider participation by industry in the decisionmaking processes which so directly and critically affect the conduct of our business to be vital. The details of such involvement need to be worked out carefully.

Obviously an important aspect of rules governing control of technology is decontrol of non-strategic technologies. As a corollary, we should also insure decontrol of products derived from critical technologies, as well as other products. Therefore, we strongly support the provisions providing for routine purging of control lists to eliminate obsolete technologies and products from complicated control procedures.

In addition, we applaud the shift we detect in the bill from unilaterally applied export controls and toward an encouragement of multilateral controls, where appropriate. In our view, unilateral controls have rarely, if ever, resulted in the desired response on the part of those on whom they were imposed, while they have definitely impaired the competitiveness of U. S. industry. We feel it is implicit in this bill that unilateral measures are to be the exception rather than the rule and we wholeheartedly support such placement of emphasis.

Similarly, we strongly support the bill's timetable for the granting of export licenses. It has long been our contention that decisions delayed mean sales lost, not to mention confidence lost in American products and services on the part of our trading partners.

In closing, we hope that this measure will only be the beginning of an orchestrated revision of those outdated regulatory, tax, financing, nontariff barrier and procurement requirements which are depriving our nation of its rightful share of world markets. We certainly intend to do all within our power to capitalize on the momentum the Subcommittee will be creating in that respect.

Testimony

of

William Pendleton

Chairman of the Critical Materials Subcommittee

of the

Tool and Stainless Steel Industry Committee

before the

Senate Banking Committee

March 12, 1979

I am William Pendleton, Chairman of the Critical Materials Subcommittee of the Tool and Stainless Steel Industry Committee, a group representing the major specialty steel producers in the United States. I am also Director of General Services, Carpenter Technology Corporation, Reading, Pennsylvania, a major user of industrial raw materials.

The domestic producers of stainless steel, like almost all industries in the United States, are extremely concerned with raw materials. In a very critical way, the vitality of our industry, and the health of American industry at large, depends on having a reliable access, at a fair price, to raw materials. Since the United States, like other major industrial countries, is a "have not" country in raw materials and, as a consequence, must import much of the materials required to produce finished industrial goods, it behooves us to be concerned with the levels and patterns of export of precious raw materials in our possession. For this reason, I am pleased to testify for the Tool and Stainless Steel Industry Committee on the Export Administration Act.

The present Act wisely includes a provision in section 3, "Declaration of Policy", which states that it is the policy of the United States to use export

controls to protect the domestic economy from the excessive drain of scarce materials as well as to reduce the serious inflationary impact created by foreign demand. Likewise, in that same section, the Act acknowledges that it is the policy of the United States to use export controls to the extent necessary to remain vigilant on matters of national security.

This policy declaration makes a great deal of sense if applied. This is particularly true with respect to raw materials policy.

The United States, as a nation without sufficient quantities of most of the critical raw materials required to produce industrial goods, cannot afford, as a general rule, to permit the unrestrained export of raw materials in scarce supply in this country.

Often the materials we need to produce our industrial goods are the materials our industrialized competitors need to produce their products. The needs of the industrialized countries for raw materials creates a constant and strong demand which, along with other circumstances, tends to bid up the price of these non-fuel raw materials. A quick review of the pricing patterns in critical non-fuel raw materials would reveal that world demand for these items is strong. For example, between 1972 and the present, prices of raw materials have increased at a stronger pace than previously experienced in world commerce. Technological advances notwithstanding, there are few observers who would not agree that raw materials will become harder to secure at necessary levels and reasonable prices.

Just as the real global demand for raw materials has created an inflationary climate in the materials market, the absolute importance of industrial goods utilizing these products to our national defense and industrial welfare surely has created a condition whereby the possession of raw materials is itself a matter

of national security. In short, raw materials policy in general, and export of raw materials in particular, affects our national security. Industrialized nations requiring raw materials face a condition of scarcity which has had, as a natural economic consequence, an inflationary effect in the raw materials market. It is a simple fact that the uncontrolled export of critical raw materials can adversely affect our national security, exacerbate the general condition of scarcity and intensify existing inflationary pressure.

Many of us in industry feel, in short, that we must look at the raw materials and their export with an appreciation for these new realities. Currently, it does not appear that the government, including the Commerce Department in its implementation of the Export Administration Act, has adapted to the changed reality faced in raw materials matters. Perhaps a review of the government reaction to the recent cobalt crisis will illustrate this point.

Cobalt is a critical non-fuel raw material used in a host of very important industrial activities, including the production of material of direct use to the Armed Forces of the United States. Cobalt is used in alloys, superalloys, magnetic alloys, magnets and in cutting and wear-resistant applications. It is also used in chemical applications and cemented carbides. Steel, superalloy and alloy applications normally account for the major use of cobalt. Cobalt's principal use is in magnets, aircraft and cutting tool manufacturing. Its broad application and use make cobalt a "key", even "critical" raw material.

The specific application of cobalt to defense production is best illustrated by a review of some military equipment and material containing significant amounts of cobalt. These military items include: jet engines and aircraft parts, helicopter engines and parts, missile cases and hardware, tank parts, ordinance and navigational and communication equipment. In military and commercial

applications cobalt, because of its characteristics, knows no substitute. It has been said, for example, that without cobalt our entire jet engine technology would have to change. Change, I might add, of a thirty-year technology does not occur easily, swiftly or inexpensively.

However, cobalt, like other critical raw materials, is not found in the United States. Zaire accounts for 60-65 percent of the world's production with no other source having more than 6 or 7 percent of the world production or in possession of anywhere near the cobalt reserves assigned to Zaire.

The United States imports about 98 percent of its cobalt requirements and Zairean cobalt accounts for about 70 percent of these imports. The United States holds only half as much cobalt in its national stockpile as it considers necessary to sustain itself in an emergency situation. There are no significant consumer stocks of cobalt in the United States. Nor is there any prospect that new world sources of cobalt will offset what is, in best of times, a very tight market in which demand crowds or exceeds supply.

To make cobalt supply matters worse, the price of cobalt has increased over 300 percent in less than a year. The dealer price of cobalt was $6.25 per pound in June 1978 and is now $25.00 per pound. The price increase is accounted for by a series of factors: the spring 1978 insurrection which interrupted mining production in Zaire's Shaba province; the expulsion by President Mobutu of Zaire of foreign technicians capable of mining their cobalt; the lack of an adequate Zairean transportation network to get the material to market; and the general administrative difficulties within the government.

The upshot of the supply problem has been, in addition to higher prices, the institution of allocations by Zaire's exclusive sales agent, African Metals Corporation. American users of cobalt can purchase under this allocation scheme

only a fixed percentage of the cobalt they purchased from African Metals during 1977. For some users this means only a small percentage of their cobalt needs can be met through purchases from the world's major seller. With commercial and defense demand expanding, American industries producing cobalt-related goods have had to be extremely cautious about accepting new orders or enlarging traditional client relationships. As a result of the supply shortage, it now appears that the Department of Defense will have difficulty securing some of its cobalt containing products.

The Tool and Stainless Steel Industry Committee, recognizing full well what was in store, submitted detailed information to the Department of Defense, the Commerce Department and the President in August of last year. The objective was to secure export controls, export monitoring or a release of cobalt from the national stockpile.

In January of this year, the Commerce Department initiated a cobalt reporting program which requires simply that those individuals exporting certain items with 10 percent or greater cobalt content file copies of their export declarations with the Department. This program is aimed at gathering information on the export of cobalt scrap and waste. Cobalt scrap and waste exports have been increasing at the same time price has risen and supply has been constrained. In 1978, cobalt scrap and waste exports topped 1.6 million pounds, approximately 9 percent of our domestic requirement.

According to the Commerce Department it is too early to tell if the reporting program has curbed the exports of scrap and waste cobalt. Those of us in industries using cobalt doubt that a reporting program will curtail the flow of cobalt material overseas since cobalt's free market prices exceed the dealer price of $25.00 per pound by $15.00 to $20.00.

Stronger and more definitive action on cobalt is surely necessary if exports of this scarce material are to be limited. Insofar as a scarcity exists, and higher prices for cobalt will have an inflationary impact on the economy, and cobalt-containing goods are of a national security interest, it seems reasonable, particularly under the terms of the Export Administration Act's declared policy, to institute controls on cobalt waste and scrap exports.

Perhaps even more important to this Committee are the general issues posed by the cobalt crisis. The cobalt crisis provides a good opportunity to rethink the Export Administration Act's applicability to raw materials problems.

To begin, the Act, with its export control provisions, comes closer than other legislation to recognizing the economic realities of the raw material market. United States' raw materials policy has frequently been guided by a notion that these materials are to be viewed from a defense, not economic, perspective. This principle has governed the management of the national stockpile and the use of export controls. Specifically, unless it can be shown that our defense needs are not being met, there tends not to be an emergency release of material from the stockpile or the imposition of exports controls. Interestingly enough, our industrial competitors seem to have a different view of both stockpile management and export controls. For instance, the West German chief economist for Metallgesellschaft, Dr. Walter Sies, looks to the use of its stocks as "buffers against disruptions in southern Africa" while the French Industry Minister Andre Girard sees stocks as a hedge against "cartelization risks." The use of controls under the Export Administration Act should be viewed with the same enlightenment.

The Commerce Department might well be mandated under this Act to take a lead role in coordinating government policy on raw materials. Currently concern for raw materials issues, like export increases, is diffused.

Various departments and agencies have interest in and authority over these issues. Few standing interagency groups monitor raw materials matters on an ongoing basis. As a result, when domestic industries experience supply constraints or witness excessive growth in exports, they must, by approaching the government with the problem, mobilize the various agencies. Without ongoing and coordinated government monitoring, the government is somewhat reluctant to act boldly for fear that their action may stimulate further price rises that accompany short supply problems.

It may be useful to mandate a monitoring effort that could serve as an "early warning" system to advise of problems as they begin and to mobilize the government for action without first requiring industry action. Such an ongoing effort would make it easier for the government to post limits on export growth or initiate controls without fear of having a harmful effect on prices.

Most importantly, the Act would benefit from the incorporation of a mechanism like that found in section 201 of the Trade Act of 1974. Currently there is no formal process whereby an industry can petition the Commerce Department for the institution of export controls. Obviously there is no time table established for responding to the informal industry submissions for controls. Nor does American industry benefit from public disclosure of the reasons controls have not been imposed when the Commerce Department chooses not to institute controls. Simply stated, the export of critical and scarce raw materials is too important an issue to be treated so informally. A more formal and public process of submissions and determinations is required in this area. I urge most strongly that on this point in particular the Export Administration Act be amended and improved.

I commend the Committee for its diligence in this matter and, on on behalf of the Tool and Stainless Steel Industry Committee, I want to thank you for the opportunity to tesitfy.

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