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General Accounting Office

Controlling Exports Of Dual-Use, Nuclear-Related Equipment

A concern is growing about the exporting of nuclear-related equipment consisting of items which have legitimate commercial uses but can also help a country develop nuclear explosives.

This study

--shows the extent of exports, their value and sensitivity, and availability of similar foreign equipment;

--assesses the license review process, considering timeliness, consistency among reviews, and effectiveness of coordination between Commerce and other Government agencies; and

--discusses the extent to which end-use assurances are obtained as well as U.S. efforts to secure international cooperation in controlling dual-use, nuclear-related items.

GAO/NSIAD-83-28
SEPTEMBER 29, 1983

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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

B-204811

The Honorable Don L. Bonker, Chairman
The Honorable Howard Wolpe
Subcommittee on International
Economic Policy and Trade
Committee on Foreign Affairs
House of Representatives

This report is the unclassified version of our classified report dated September 1, 1983, concerning export controls administered by the Department of Commerce for dual-use, nuclear-related equipment (GAO/C-NSIAD-83-3). Certain information in the prior report which was classified for national security reasons by the Departments of State and Energy has been deleted to make this report available to the public.

We are sending copies of this report to the Director, Office of Management and Budget, and the Secretaries of State, Energy, and Commerce.

Frank C Conahan

Frank C. Conahan
Director

REPORT BY THE GENERAL ACCOUNTING OFFICE

CONTROLLING EXPORTS OF DUAL-USE, NUCLEAR-RELATED EQUIPMENT

D I G E S T

The United States controls exports of a wide range of items which have civil nuclear or non-nuclear uses. Such items can also be used in the design, fabrication, testing, or production of nuclear weapons or weapons-grade material. These items are generally referred to as dual-use, nuclear-related equipment.

The Nuclear Referral List contains 64 categories of dual-use, nuclear-related items subject to controls. The Commerce Department, with the assistance of a Department of Energy technical officer, routinely administers the controls over these items. Some cases are referred for more detailed review to the Department of Energy or, in the most sensitive cases, to an interagency group known as the Subgroup on Nuclear Export Coordination.

At the request of the Subcommittee on International Economic Policy and Trade, House Committee on Foreign Affairs, GAO reviewed the (1) sensitivity, extent, and value of dual-use, nuclear-related items, (2) timeliness and consistency in reviewing license applications for such items and coordination between Commerce and other Government agencies, (3) end-use assurances obtained for some of these items, and (4) balancing of foreign availability with nuclear proliferation concerns.

SENSITIVITY OF ITEMS CONTROLLED FOR NUCLEAR NON-PROLIFERATION

There is some debate about the continued sensitivity of individual items subject to the dual-use, nuclear-related export controls, especially those associated with the rapidly changing computer field. There is also a growing challenge to the export control process in identifying an increasing number of recently developed and fairly complex types of equipment that in and of themselves are not associated with the technology needed for nuclear weapons but that can be easily modified for such use.

GAO/NSIAD-83-28
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Tear Sheet

U.S. controls over dual-use, nuclear-related exports are part of a larger effort to curb the further spread or proliferation of nuclear explosive capability.

The United States controls the export of nuclear material, equipment, and sensitive technology, as well as dual-use, nuclear-related items. Although control over dual-use, nuclear-related equipment might not be the first line of defense against nuclear proliferation, it is an important element of overall U.S. non-proliferation strategy.

TIMELINESS AND CONSISTENCY IN APPROVING LICENSE APPLICATIONS

About 10,000 dual-use, nuclear-related items valued at about $1.5 billion were licensed by Commerce between July 1, 1981 and June 30, 1982, to 120 countries. Electronic computers and related equipment represented about 5,840 licenses valued at about $1.3 billion.

Commerce is meeting the statutory requirements for issuing validated licenses within 90 days in about 89 percent of the cases. About 74 percent of the approved export applications for dual-use, nuclear-related items were processed within 30 days. An additional 11 percent were approved within the first 60 days. A few license applications, however, took over a year to process.

Commerce officials generally were following the procedures for controlling the exports of dual-use items and seeking other Federal agencies' views when more than a simple administrative review was required.

During calendar year 1982, Commerce referred about 2,100 applications to Energy because of potential proliferation concerns; Energy made a further technical review of 789 of these applications and recommended that 96 of them be denied.

The Subgroup on Nuclear Export Coordination reviewed 79 applications to export sensitive dual-use, nuclear-related items to potential proliferation countries and denied 27 because of proliferation concerns.

BALANCING FOREIGN AVAILABILITY WITH NUCLEAR PROLIFERATION CONCERNS

Many other nations export dual-use, nuclear-related equipment, some of it to countries that U.S. officials view as posing proliferation concerns. These U.S. officials believe it is better to allow U.S. exporters to sell equipment in countries of proliferation concern with some restriction on end use than to allow foreign competitors to provide the equivalent equipment with no restriction. However, there are instances where maintaining U.S. leadership in the nonproliferation area is sufficient reason to deny an export, foreign availability notwithstanding.

The effectiveness of U.S. export controls for dual-use items depends on cooperation from other supplier countries. The supplier countries have different approaches to export controls, but the U.S. Government is engaged in bilateral consultations with other suppliers to provide technical information which might convince them of the benefits of controlling dual-use, nuclear-related exports.

OBTAINING ASSURANCES FOR DUAL-USE ITEMS

When the foreign availability of an item cannot be limited through international cooperation, the United States will consider issuing an export license if a written assurance is provided that the item will not be misused.

Only 43 of the thousands of approved license applications for dual-use items in 1981 and 1982 required government-to-government assurances, most of them involving computer exports. According to U.S. officials, obtaining end-use assurances has served to communicate U.S. nuclear proliferation concerns, reinforce the conditions of sale, and provide a vehicle for future discussions with the recipient country about the continued end-use of the items provided.

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AGENCY COMMENTS

In commenting on the draft of this report, the Departments of State, Energy, and Commerce indicated that they generally agreed with its content and overall thrust. Their suggestions to improve clarity and technical accuracy have been incorporated in the report where appropriate.

Contents

ABBREVIATIONS

ACDA	Arms Control and Disarmament Agency
COCOM	Coordinating Committee
GAO	General Accounting Office
OEA	Office of Export Administration
SNEC	Subgroup on Nuclear Export Coordination

CHAPTER 1

INTRODUCTION

There are growing concerns that the export of dual-use, nuclear-related equipment and component parts by certain advanced Western nations have facilitated the efforts of other countries to acquire nuclear weapons.

Dual-use, nuclear-related items consist of equipment which have civil nuclear or non-nuclear uses. Such items can also be used in the design, fabrication, testing, and production of nuclear explosives or production of special nuclear material (e.g., weapons-grade uranium or plutonium). A computer is one example of a dual-use, nuclear-related item; it is nearly indispensable in daily business and scientific activities, but is also essential to designing nuclear weapons. Computers enable nuclear weapons designers to assess the reliability and performance of nuclear explosives without resorting to an actual test. Some dual-use equipment can be used in connection with the production of special nuclear material by means of isotopic separation (enrichment of uranium), reprocessing of spent nuclear fuel, and production of heavy water. Other common examples are oscilloscopes, hot isostatic presses, lasers, and high-speed cameras.

Since several countries manufacture many dual-use, nuclear-related items for export to other countries, there is also concern that U.S. export controls may be ineffective if they are not coordinated with foreign suppliers. An additional concern is that export controls may be burdensome to U.S. exporters and place U.S. industry at a disadvantage with foreign competitors.

Pursuant to sections 3(2)(A) and (B) of the Export Administration Act of 1979 (Public Law 96-72) and section 309(C) of the Nuclear Non-Proliferation Act of 1978 (Public Law 95-242), the export administration regulations define the types of export transactions governed by U.S. policy concerning non-proliferation of nuclear weapons and explosive devices and set forth procedures for dealing with them.

OBJECTIVES, SCOPE, AND METHODOLOGY

On August 9, 1982, the Chairman of the Subcommittee on International Economic Policy and Trade, House Committee on Foreign Affairs, and Representative Howard Wolpe requested that we review Department of Commerce export controls over nuclear-related material. They were concerned about whether controls were being carried out in a manner consistent with U.S. national security while not unnecessarily impeding the competitiveness of U.S. products. (See app. I.)

For dual-use, nuclear-related exports, we were requested to:

(1) Determine the extent of exports, their value and sensitivity, and availability of similar foreign equipment.

(2) Assess the licensing review process, considering timeliness, consistency of the review process, and effectiveness of coordination between Commerce and other Government agencies.

(3) Determine the extent to which end-use assurances are required and U.S. ability to ensure that such assurances are maintained.

We made our review in accordance with generally accepted Government auditing standards. We reviewed records and interviewed officials at the Departments of Commerce, Energy, State, and Defense and at the Arms Control and Disarmament Agency and the Nuclear Regulatory Commission. In addition, we reviewed the minutes of the Subgroup on Nuclear Export Coordination, which is composed of the aforementioned agencies. The Subgroup reviews nuclear-related export cases which present the most sensitive nuclear proliferation concerns.

To assess the extent and timeliness of U.S. dual-use, nuclear-related exports, we obtained computer tapes from Commerce's Office of Export Administration containing license information from July 1, 1981 to June 30, 1982. When Commerce officials provided us with computer tapes containing over 10,000 approved applications from their management information system, they informed us that approximately 1,200 additional cases were not included because of a backlog in updating their computer files. Information on the tapes therefore represents about 90 percent of all cases for this period and is the best readily available information on the timeliness of issuing validated export licenses for dual-use, nuclear-related items.

We did not verify all the data in Commerce's management information system but did check a few specific cases back to the original documents and found that the information in the system for these cases generally was accurate. We also reviewed several cases not in the computerized system to ascertain their disposition (most of them had been approved) and to assure ourselves that they were not significantly different than the cases which were already in Commerce's information system.

The Department of Energy also gave us information concerning the number of cases reviewed by it and the national laboratories. We interviewed officials at the Lawrence Livermore National Laboratory, who technically analyze the nuclear proliferation risk associated with U.S. exports, and an official of

the Fermi National Accelerator Laboratory, who assessed the value of an end-use assurance furnished by a foreign government.

Representatives of the Central Intelligence Agency and the Federal Bureau of Investigation were contacted about their roles in controlling dual-use, nuclear-related exports, but they told us they lacked direct involvement in this area.

We met with representatives of Hewlett Packard, Amdahl, National Advanced Systems, and Spectra-Physics to get some private sector views about the export controls over dual-use, nuclear-related items.

To assess U.S. efforts to coordinate export controls with other nations which export dual-use, nuclear-related items and to ascertain the role and ability of U.S. Embassy officials to ensure that end-use assurances are maintained, we visited U.S. Embassies in Canada, the United Kingdom, France, Belgium, Switzerland, South Africa, India, and Pakistan. We also talked to Canadian and Belgian officials about their efforts to control these items.

CHAPTER 2

DETERRING NUCLEAR PROLIFERATION THROUGH EXPORT CONTROLS

U.S. controls over dual-use, nuclear-related exports are only a part of a larger effort to curb the further spread or proliferation of nuclear explosive capability. The United States and other nuclear weapons nations, in accord with the Nuclear Non-Proliferation Treaty, have agreed not to assist other nations in acquiring nuclear explosives. Under the Treaty, all non-nuclear weapons parties are obligated not to acquire nuclear explosives and all parties are obligated not to export specially designed or prepared nuclear items without safeguards. Most nuclear material in non-nuclear weapons nations is subject to International Atomic Energy Agency safeguards.

In the United States, the Nuclear Regulatory Commission, after consultation with other Federal agencies, licenses nuclear material and equipment for nuclear production and utilization facilities. The Department of Energy is responsible for controlling the participation of U.S. citizens in unclassified activities in foreign atomic energy programs. Thus, although control over dual-use, nuclear-related technology might not be considered the first line of defense against nuclear proliferation, it is an important element in an overall non-proliferation strategy.

WHAT IS PROLIFERATION?

Whether a nation turns to nuclear weapons development depends upon (1) its political self-interest or motivation, (2) its access to special nuclear material, and (3) its capability for producing such weapons. The United States is concerned with the uncontrolled dissemination of nuclear technology to countries which pose proliferation risks and which do not accept international nuclear safeguards on all their nuclear facilities. This report defines nuclear proliferation as the acquisition of nuclear weapons or the capability to make them by non-nuclear weapons countries. Thus far, the United States, United Kingdom, France, Soviet Union, People's Republic of China, and India have acknowledged that they have exploded nuclear devices. In April 1977, the Energy Research and Development Administration (now part of the Department of Energy) estimated that at least 30 nations appeared to be technically capable of producing a nuclear device within 10 years of deciding to do so.

Certain processes, materials, and technologies provide potential links between nuclear power and nuclear weapons. The linkage is strongest at those points in the nuclear fuel cycle where weapons-usable materials--highly enriched uranium or plutonium--are easily accessible. Neither of these materials is

commonly used commercially as fuel in the current generation of nuclear power reactors, which generally use natural or slightly enriched uranium.

Some nations claim that uncertainties regarding the availability of natural uranium and uranium enrichment services, plus the risks of foreign government intervention in nuclear trade, have led them to seek independent capabilities to produce plutonium and enriched uranium.

Intense rivalries exist among some nations which appear to be interested in obtaining nuclear weapons. Proliferation would immediately threaten the traditional enemies of any new nuclear weapons nation and would complicate attempts to reduce tensions between the major powers. The United States finds it increasingly difficult to convince supplier nations of some facets of its own non-proliferation strategy. A number of nations have criticized this strategy because they believe that, among other things, it infringes on their sovereign rights by trying to impose unilateral controls over technologies they believe should be available to all nations. It is within this environment that the United States imposes export controls for dual-use, nuclear-related items.

COMMODITIES CONTROLLED FOR NUCLEAR REASONS

Section 309(c) of the Nuclear Non-Proliferation Act of 1978 requires the President to establish procedures for the Department of Commerce to control export items under its jurisdiction that, if used for purposes other than intended, could be of significance for nuclear explosive purposes.

Commerce publishes a Commodity Control List of 200 items under its regulations which, because of their significance for national security, non-proliferation, foreign policy, or short supply reasons, require validated export licenses to most countries. Of these items, 64 are controlled for non-proliferation reasons and make up what is known as the "Nuclear Referral List" (see app. II for complete list.)

The export control process for dual-use, nuclear-related items is designed to examine license export applications to determine the:

--Potential significance of the export items to the production of special nuclear material, nuclear weapons applications, and nuclear weapons programs in countries receiving the exports.
--Reasonableness of the end-use stated on the applications for items at a given level of technical capability.
--Potential of the item's being diverted to nuclear weapons programs.

The Commodity Control List also indicates the countries for which validated export licenses are required. Some commodities are controlled for nuclear reasons to most countries, others are controlled for only a small number of countries.

Validated licenses are also required for exports to all destinations, including Canada, of any commodity or of technical data if the exporter knows, or has reason to know, that the commodity or data will be used in:

1. Designing, developing, fabricating, or testing nuclear weapons or nuclear explosive devices

or

2. Designing, constructing, fabricating, or operating facilities, or components for facilities, for

   --chemical processing of irradiated special nuclear or source material;
   --producing heavy water;
   --separating isotopes of source and special nuclear material; or
   --fabricating nuclear reactor fuel containing plutonium.

   These facilities, which can be a legitimate part of a civilian nuclear power program, are especially important because they can assist in the production of special nuclear material. According to Department of Energy officials, possessing such facilities is a step toward acquiring the capability for producing nuclear weapons.

FACTORS CONSIDERED FOR VALIDATED LICENSES

In deciding whether to issue a validated license for a commodity to an applicant, Commerce considers the

--stated end-use;
--significance for nuclear purposes;
--availability from non-U.S. sources;
--type of assurances or guarantees given against use for nuclear explosive purposes or proliferation; and
--non-proliferation credentials of the importing country.

DUAL-USE ITEMS THAT ARE EXPORTED

Commerce's management information records show that license applications were approved for items in 46 of the 64 categories

of items on the Nuclear Referral List during July 1, 1981 to June 30, 1982. Electronic computers and related equipment accounted for about 57 percent of the items and comprised the largest single category for which licenses were approved. This category includes exports ranging from large "main frame" computers to spare parts or components. Measuring and calibrating test equipment accounted for about 16 percent of the issued licenses and lasers and laser systems for about 6 percent. Table 1 shows the breakdown for 22 categories of the items which account for about 98 percent of approved applications reviewed.

Table 1

Dual-Use, Nuclear-Related Items Licensed By Commerce
July 1, 1981 to June 30, 1982 (note a)

Item	Licenses Issued		Amount
	Number	Percent	(millions)
Electronic computers and related equipment	5,842	57.1	$1,258.8
Measuring and calibrating test equipment	1,602	15.7	70.9
Lasers and laser systems	621	6.1	55.0
Communication/detection/ tracking equipment	323	3.2	10.1
Oscilloscopes	232	2.3	2.5
Filamentary materials	187	1.8	23.3
Electric/electronic equipment	167	1.6	1.8
Boron metal compounds	155	1.5	2.3
Image processers	112	1.1	25.5
Photographic equipment (specified)	104	1.0	.9
Zirconium alloys	102	1.0	8.2
Photographic equipment-- high-speed cameras	94	0.9	.7
Triggered spark gaps (specified)	90	0.9	.4
Lithium compounds	84	0.8	4.4
Numerical control equipment	77	0.8	14.1
Photomultiplier tubes	48	0.5	.2
Inverters	38	0.4	.9
Cryogenic equipment/materials	38	0.4	.4
Beryllium compounds	34	0.3	4.0
Hafnium compounds	34	0.3	1.4
Hydrogen thyratrons	33	0.3	.2
Vibration test equipment	30	0.3	1.5
Total	10,047	98.3	$1,487.5

[a]Developed by GAO from data in Commerce's computerized information system.

These dual-use items were sold to over 120 countries. Over 90 percent of the licenses were issued to 36 countries, as shown in table 2. The People's Republic of China had the largest number of approved applications (over 10 percent) valued at about $103 million. India and South Africa had 8 percent and 6 percent valued at about $64 million and about $164 million, respectively. Saudi Arabia had the largest dollar value for approved applications ($179.3 million) due to several large purchases of computers.

Table 2

36 Top Buyers of Dual-Use, Nuclear-Related Equipment
July 1, 1981 to June 30, 1982

Country	Licenses issued		Amount
	Number	Percent	(millions)
People's Republic of China (note a)	1,080	10.56	$ 103.3
India (note a)	776	7.59	64.3
South Africa (note a)	619	6.06	164.1
Israel (note a)	618	6.05	102.3
Taiwan	537	5.25	69.3
Japan	507	4.96	25.8
Argentina (note a)	496	4.85	66.1
Czechoslovakia	406	3.97	29.6
Brazil (note a)	392	3.84	111.1
Spain (note a)	351	3.43	63.1
Federal Republic of Germany	343	3.36	21.5
France (note a)	339	3.32	54.3
United Kingdom	325	3.18	22.9
Saudi Arabia (note a)	288	2.82	179.3
Hungary	227	2.22	24.0
Chile (note a)	221	2.16	49.3
Italy	125	1.22	8.9
Soviet Union	116	1.14	8.6
Switzerland	107	1.05	1.7
Romania	106	1.03	21.0
Bulgaria	104	1.02	8.3
Iraq	102	1.00	31.0
Australia	100	0.98	6.0
Kuwait (note b)	92	0.90	52.5
Netherlands	91	0.89	4.8
Egypt	86	0.84	9.4
Pakistan (note a)	82	0.80	12.3
United Arab Emirates (note a)	81	0.79	34.8
German Democratic Republic	78	0.76	5.1
Poland	72	0.70	7.7
Yugoslavia	69	0.68	2.4
Sweden	66	0.65	3.5
Republic of Korea	57	0.56	11.1
Oman (note a)	52	0.51	6.3
Mexico	52	0.51	2.7
Libya	48	0.47	6.4
Total	9,211	90.1	$1,394.8

[a]Not a party to Nuclear Non-Proliferation Treaty as of Dec. 1982.
[b]Has signed, but has not ratified the Nuclear Non-Proliferation Treaty.

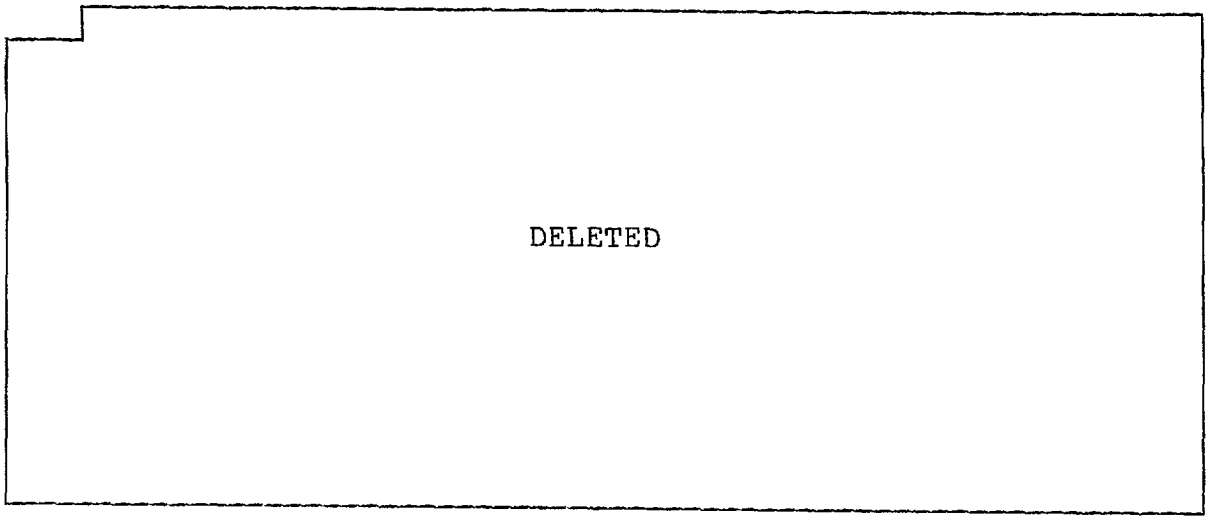
An analysis of the kinds of exports to Argentina, Brazil, Iraq, Israel, South Korea, Pakistan, South Africa, and Taiwan showed that all but South Korea have purchased more computers and related equipment than any other dual-use type of equipment on the Nuclear Referral List.

Computer exports--can they be effectively controlled?

As shown in table 1, the computer category on the Nuclear Referral List accounts for over 57 percent of the approved license applications, valued at about $1.3 billion. Computers represented the largest single category being exported to the five countries which have the greatest number of approved licenses.

Computers are an excellent example of a sensitive dual-use, nuclear-related item. They can handle simultaneously a variety of numerical computations which are useful in designing nuclear weapons or assisting in any number of business or scientific applications. They can also shorten the time needed for testing the design of a nuclear device and greatly contribute to more reliable performance. Computers are also one of the most difficult items to control worldwide, because they are generally available and potential foreign suppliers do not agree they should be controlled. Representatives of U.S. private firms indicated that they did not always understand why the U.S. Government was trying to control computer exports and pointed out that, for most foreign suppliers, computers are a highly profitable export item whose sales are government-supported.

U.S. computers compete in the world market with Japanese and Western European equipment, which is sometimes offered to foreign customers at attractive prices to gain a market foothold in a country. Most other countries do not have the strict export controls for computers that exist in the United States. The United States looks at the proliferation risk in terms of end use and end user, even when there is no ostensible nuclear weapons facility involved.



Most computer license applications to free world countries are approved outright by Commerce because they do not present a proliferation concern. A small number of proposed computer exports are referred to the Department of Energy and/or the Subgroup on Nuclear Export Coordination for further consideration because of end-use or end-user questions. Only a few computer-related license applications are denied because of proliferation concern. However, in some cases, computer exports have been approved only upon written assurances of a "no nuclear explosives use" provided by the recipient government. These assurances are discussed in more detail in chapter 4.

GROWING CHALLENGE TO THE EXPORT CONTROL PROCESS

Technical developments since the conclusion of the Nuclear Non-Proliferation Treaty in March 1970 have significantly affected the scope of control required to maintain the Treaty's effectiveness. When the Treaty was negotiated, the bulk of the items of concern involved the specialized and sophisticated materials and equipment needed to produce, use, or process nuclear material. Since that time, however, new technologies have been developed that require few, if any, items which do not have other non-nuclear-related uses. To compound the problem, certain previously specialized items, such as nuclear-grade graphite, now have new or vastly expanded non-nuclear commercial uses. The net result has been that the line between highly specialized materials and equipment used to produce and process special nuclear material and those having broader industrial applications has become increasingly blurred.

In addition, the Department of Energy has identified an area of growing concern in exporting complex equipment items. An increasing number of recently developed and fairly complex types of equipment, in and of themselves not associated with the technology needed for nuclear weapons, can be easily modified for such use. For example, DELETED The difficult technical problem now appears to be in identifying inverters which, although not precisely suited for producing nuclear weapons-grade uranium, can be easily modified for such use. Inverters used in making synthetic fibers, for example, are quite similar to those used in the gas centrifuge process, except that the frequency modulation is invariably lower for inverters used in making synthetic fibers.

Another example of the growing challenge to the export control process involves components used in connection with two heavy water production processes--the monothermal, water-fed ammonia process and the hydrogen distillation process. Export controls may be straightforward in the case of a properly stated

heavy water production end use. The problem arises when the intended end use is not stated or is artfully misstated or the final destination is misstated.

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Partly in recognition of the problem, the Commerce regulations were revised to require a validated license for any end use where the exporter "knows or has reason to believe" that the end use will be to produce heavy water, no matter how minor or incidental the assistance is. With the revised regulation, Commerce is shifting more of the burden of detecting misstatements of purpose or destination to the exporters.

CHAPTER 3

HOW THE LICENSING SYSTEM WORKS FOR DUAL-USE, NUCLEAR-RELATED EQUIPMENT

Our review of Commerce's management information system data for about 10,000 validated license applications approved between July 1, 1981 and June 30, 1982, for dual-use, nuclear-related items showed that 73.7 percent of these applications were approved outright within 30 days. An additional 10.8 percent were approved within 60 days. A number of application approvals were delayed, however, because of technical questions about the item, the stated end-use, and/or the country destination. For the most part, these delays occurred because the applications were referred to the Department of Energy and/or the Subgroup on Nuclear Export Coordination (SNEC) for further review.

A detailed review of a limited number of dual-use license cases indicated that Commerce officials generally followed the procedures for controlling the exports of these items and sought other Federal agencies' views when more than a simple administrative review was required.

MANAGING THE FLOW OF CASES-- A SHARED RESPONSIBILITY

Commerce's function, as it pertains to dual use exports, is to make sure that in reviewing license applications it does not approve the export of items which can contribute significantly to nuclear explosives development. In this respect, Commerce serves as a conduit for the views of other agencies more directly responsible for various technical aspects and foreign policy considerations and brings these diverse views together for a final decision. Commerce licensing officers generally are not experts in nuclear technology, U.S. foreign policy, or national security areas; rather they rely on the Nuclear Referral List and on knowledge of the regulations and areas of interest and expertise of other U.S. agencies and seek counsel from them in deciding on an application.

Commerce obtains the counsel of other agencies by referring individual license applications to them. Applications which pose controversial or sensitive nuclear-related export issues are referred to the SNEC.

Export license applications undergo up to three types of reviews to (1) screen cases which may be licensed promptly because the destination and the stated end use of the items present no proliferation concern, (2) identify applications to which nuclear export controls apply, and (3) select cases which may pose proliferation concern for more detailed technical and policy review. However, most dual-use, nuclear-related applications do not receive indepth technical or policy reviews because

they fall within the first category, such as the export of computers to banks with legitimate end uses.

At any stage in the review process, a decision can be made to deny or approve the application, approve it subject to an assurance against nuclear explosive end use, or approve it substituting an item of lesser technical capability than the item requested.

Commerce's Office of Export Administration performs the initial administrative review of export applications. Pursuant to its responsibility in administering national security and foreign policy controls under the Export Administration Act of 1979, it selects cases to which nuclear export controls may apply and screens exporters listed on the applications for violations of export control laws.

At Commerce's request, about once a week the Department of Energy's Office of International Security Affairs sends a technical officer to review applications that Commerce has identified through initial screening as posing potential nuclear proliferation concerns. A certain number of these applications are sent to Energy for more detailed study, but the majority are approved on the spot. Detailed study may include referral to a national laboratory, such as Lawrence Livermore in California, and to other Energy facilities throughout the country. Most of these cases are returned by Energy to Commerce for license issuance,because the identified country, end use, and end user do not represent proliferation concerns.

Based on information supplied by the Department of Energy, table 3 shows Energy's workload for free world cases in calendar years 1980-82.

Table 3

Dual-use, nuclear-related applications	Number reviewed in calendar year 1980	1981	1982
Reviewed by technical officer	2,565	2,893	2,102
Retained for further study	[a]963	[a]1,086	789
Referred to national laboratories	156	154	328
Denied based on Energy recommendations	18	33	96
Referred to SNEC for further evaluation	50	62	79

[a]Estimated by Energy officials

Subgroup on Nuclear Export Coordination

The SNEC, which meets approximately every 3 weeks, is a forum for review and discussion of nuclear export policy issues and specific license applications. Although SNEC is responsible for coordinating the Executive branch position on nuclear export applications licensed by the Nuclear Regulatory Commission and reviewing requests covering unclassified activities by U.S. persons in foreign atomic energy programs approved by the Department of Energy, most of the cases reviewed by SNEC concern Commerce export license applications. Commerce is responsible for controlling a wider range of nuclear-related commodities than either Energy or the Nuclear Regulatory Commission, which control items and technology with solely nuclear applications.

The number of dual-use cases reviewed by SNEC and their disposition for calendar years 1980-82 is shown in table 4.

Table 4

Calendar year	Approved	Denied	Pending or withdrawn	Total
1980	[a]34	13	3	50
1981	[b]40	21	1	62
1982	[c]51	27	1	79

[a]12 subject to end-use assurances.

[b]17 subject to end-use assurances.

[c]26 subject to end-use assurances.

In reviewing license applications for possible nuclear proliferation implications, SNEC considers several factors, including

--the proliferation credentials of the recipient country;

--past practices of exporters in supplying equipment items;

--equipment already in the foreign country and available to the end user;

--foreign availability;

--available intelligence information regarding proliferation activities in the country;

--technical capabilities and significance of the commodity to be exported; and

--foreign policy issues.

Based on a review of these factors and any other relevant considerations, if SNEC determines that a proposed export involves significant proliferation risk, it recommends denial of the export. SNEC acts on an advisory basis and its recommendations are not binding, but Commerce and other involved agencies have always followed SNEC recommendations.

If agencies participating in SNEC are unable to agree on the disposition of a license application, there are a series of steps outlined in the Procedures Established Pursuant to the Non-Proliferation Act of 1978, published in the Federal Register on June 9, 1978, which can be taken to resolve the disagreement. For example, the matter can be referred to the successor to the National Security Council Ad Hoc Group on Non-Proliferation, a body composed of Assistant and Deputy Assistant Secretaries, charged with oversight of nuclear non-proliferation and export control responsibilities in each of the concerned agencies. If resolution cannot be achieved at that level, the matter can be referred to the cabinet level and even to the President. However, according to State Department officials, no case has gone beyond SNEC because of interagency disagreements and Commerce officials have not acted contrary to a SNEC decision.

From time-to-time, however, some cases have gone beyond SNEC, because of the need for higher level review of foreign policy or other issues. For example, DELETED It is Commerce's responsibility to notify the license applicant of the decision made. Applicants have 15 days to appeal denials.

TIMELINESS OF APPLICATION APPROVAL PROCESS

Section 10 of the Export Administration Act of 1979, as amended, prescribes procedures for processing export license applications, including time limits for certain stages of the process. Commerce is to make licensing decisions within 90 days and, to the extent possible, without referring applications to other agencies.

If an application must be submitted to another agency, that agency is required to give Commerce the requested information or recommendations within 30 days. If the agency is unable to complete its review within 30 days, it may advise Commerce

that it requires an additional 30 days. If no response is received by Commerce at the end of the 30 days, or at the end of 60 days if the extension is used, Commerce will conclude that the agency has no objection to approval.

For nuclear-related applications referred to SNEC, section 17(d) of the Export Administration Act of 1979 provides for completion of processing within 180 days of receipt by Commerce. Beyond 180 days, the applicant is entitled to appeal and to seek court action. These procedures are consistent with section 309(c) of the Nuclear Non-Proliferation Act of 1978.

Our analysis of the 10,220 approved applications for July 1, 1981 through June 30, 1982, showed that 73.7 percent had been approved within 30 days. For free world countries, over 85.4 percent were approved within 30 days. Table 5 shows the breakdown of the approved licenses for free world and Communist bloc countries and for free world countries only.

Table 5

Licenses Approved

Number of days	Free World and Communist Bloc			Free World		
	Number	Percent	Cumulative percent	Number	Percent	Cumulative percent
30 or less	7,532	73.7	73.7	6,720	85.4	85.4
31 to 60	1,106	10.8	84.5	747	9.5	94.9
61 to 90	446	4.4	88.9	207	2.6	97.5
91 to 120	263	2.6	91.5	81	1.0	98.5
121 to 180	315	3.1	94.5	53	0.7	99.2
Over 180	558	5.5	100.0	60	0.8	100.0
Total	10,220			7,868		

During calendar year 1982, the Department of Energy reviewed 2,102 license applications, 789 of which were retained for further study. Under the Export Administration Act of 1979, Energy has 30 days to complete its study or 60 days if an extension is needed. In March 1983, to find out if it was in compliance with the Act, Energy analyzed its timeliness in processing applications, which showed that during September 1981 to November 1982 it processed about 91 percent in 30 days or less, about 7 percent in 31 to 60 days, and about 2 percent in more than 60 days. Energy concluded from the analysis that it was in general compliance with the Act's time requirements and that processing times had improved over those measured in the past.

CHAPTER 4

OBTAINING ASSURANCES FOR DUAL-USE ITEMS

When the foreign availability of an item cannot be limited through international cooperation, the United States will consider issuing an export license if a written end-use assurance is provided that the item will not be misused. According to the State Department, nuclear-related, dual-use exports are approved on the basis of end-use assurances only when the items are not of major significance (i.e., greater in size, power and sophistication) than equipment previously available to the recipient country. Of the thousands of dual-use, nuclear-related export cases processed in 1981 and 1982, only 43 licenses were approved with government-to-government end-use assurances. Over 85 percent of the assurances requested have been for advanced computer exports. In these cases, obtaining end-use assurances has served to communicate U.S. nuclear proliferation concerns, reinforce the conditions of sale, and provide a vehicle for future discussions with the recipient country about the continued end use of the items.

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WHAT ARE ASSURANCES?

An assurance is a written promise by a purchaser or foreign ministry from a country of proliferation concern that a U.S. export will not be used for nuclear explosive purposes and will not be retransferred without prior U.S. consent. According to State Department officials, assurances provide a deterrent to unintended use by providing a basis to deny further exports of equipment and spare parts to purchasers who do not abide by their agreements.

Obtaining end-use assurances represents a compromise between U.S. concerns about nuclear non-proliferation and protecting U.S. firms from competitive disadvantages. State Department officials said that the U.S. Government requests assurances from countries of proliferation concern when

--the same equipment is available from foreign sources;

--the equipment itself is not of sufficient size, power, or sophistication than is presently available to a country to make a significant contribution to weapons development or other sensitive nuclear activities;

--it appears that the item will be used for a legitimate purpose; and

--the technical capability of the equipment does not exceed legitimate end uses.

The State Department will ask foreign ministries for assurances if the export is intended for use by a government agency, laboratory, or private contractor involved in sensitive government work. Government-to-government assurances are requested on the presumption that it is easier for a government to divert an item from one of its own agencies than from a private entity. For a private organization, U.S. exporters may be required to obtain an assurance from the ultimate end user and submit it to the Commerce Department as a part of the supporting documentation for the export application.

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The U.S. Government usually requests "no nuclear explosive use" language in assurances. Arms Control and Disarmament Agency (ACDA) officials said that this is strong assurance language because it covers the development of both peaceful nuclear explosives and nuclear weapons. In addition, the United States also attempts to prohibit the use of U.S. equipment in enriching uranium, reprocessing plutonium, and producing heavy water. Assurances also require U.S. consent if the equipment is to be retransferred.

ACDA officials informed us that, regardless of the end-use assurances a country may be willing to provide, the U.S. Government will not issue an export license if the proposed export involves an item critical to nuclear weapons development. For example, after a technical review at the Lawrence Livermore National Laboratories, SNEC determined that hot isostatic presses with internal chambers greater than a certain size could be used to fabricate components for nuclear weapons. As a result, it is now SNEC policy to deny larger presses to all countries of proliferation concern even if the foreign government is willing to provide an assurance. Review of the minutes of SNEC meetings indicates that SNEC has consistently recommended denial of export applications for larger hot isostatic presses to countries with nuclear facilities not subject to

international safeguards and approval of smaller presses upon receipt of government-to-government assurances.

According to Department of Energy officials, SNEC recently reaffirmed this policy by recommending denial of a license for a large hot isostatic press to a private end user in South Africa, even though the stated end use appeared reasonable and the likelihood of diversion small.

MOST ASSURANCES OBTAINED FOR COMPUTER EXPORTS

Most assurances are obtained for exports involving computers--items for which most foreign suppliers are unwilling to deny permission to export for non-proliferation reasons. During calendar years 1981 and 1982, 43 licenses were approved with assurances. Table 6 shows the number of government-to-government assurances requested and the types of items involved.

Table 6

Government-to-Government End-Use Assurances Requested During 1981 and 1982

Country	For computers	For other items (note a)
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	37	6

[a]Includes small hot isostatic presses, array processors, multichannel analyzers, and helium-3.

[b]An application for helium-3 was recommended for approval by SNEC based on its review for non-proliferation concerns. However, an export license has not been issued because of foreign policy considerations.

U.S. ABILITY TO VERIFY COMPLIANCE WITH ASSURANCES

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CHAPTER 5

BALANCING FOREIGN AVAILABILITY WITH NUCLEAR PROLIFERATION CONCERNS

The effectiveness of U.S. export controls for dual-use, nuclear-related items depends on the degree of cooperation the United States receives from other supplier countries. Cooperation can reduce the ability of potential proliferators to amass the various needed items from different supplier countries and can help to offset the competitive advantages to suppliers in countries which have less stringent export controls. Although many supplier countries control some of the most sensitive dual-use, nuclear-related items, these controls cover much fewer items than those on the U.S. Nuclear Referral List. Several countries have limited authority for exercising controls over some dual-use, nuclear-related items.

The United States consults with other supplier countries in an attempt to strengthen international export controls.

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However, international agreement on controls for even a limited number of items is difficult to achieve because of the different approaches and export philosophies of the various supplier countries. In the interim, the United States has been conducting a series of bilateral consultations with these countries to provide technical information which could convince them of the benefits in controlling more nuclear-related exports.

State Department officials told us that the United States will often seek to persuade other supplier countries not to export certain sensitive dual-use items, particularly when there is clear nuclear proliferation risk. According to the Department of Energy, the United States uses "export alerts" to advise other supplier countries of denials of export of items to certain countries and to seek their cooperation in denying the same items to these countries.

Other countries have been more reluctant to cooperate when an export involves equipment that they believe is marginally sensitive or does not present a clear risk of misuse. As a result, U.S. officials believe it is better to allow U.S. exporters to sell equipment in countries of proliferation concern with some restriction on end use than to allow foreign competitors to provide the equivalent equipment with no restrictions.

The State Department, for example, commented that little can be accomplished by withholding U.S. exports of equipment in cases where foreign suppliers are willing to provide the same

items for the same end users. There are, however, instances where maintaining U.S. leadership in the non-proliferation area is sufficient reason to deny an export, foreign availability notwithstanding.

When the foreign availability of an item cannot be limited through international cooperation, the United States will consider issuing an export license if a written assurance is provided that the item will not be misused.

MANY COUNTRIES CAPABLE OF SUPPLYING DUAL-USE ITEMS

The U.S. Government has not made a systematic item-by-item analysis of foreign availability of dual-use items, but it appears that most European countries and Japan are able to manufacture many of the items on the U.S. Nuclear Referral List. For example, within the last two decades, many European and Japanese firms have become competitors of U.S. firms in microcircuits, computers, and software products at high or state-of-the-art performance levels. According to industry officials, this technology has been incorporated into the manufacture of such items as advanced scientific and business computers, oscilloscopes, and other scientific instruments that are comparable to U.S. products controlled for nuclear proliferation reasons.

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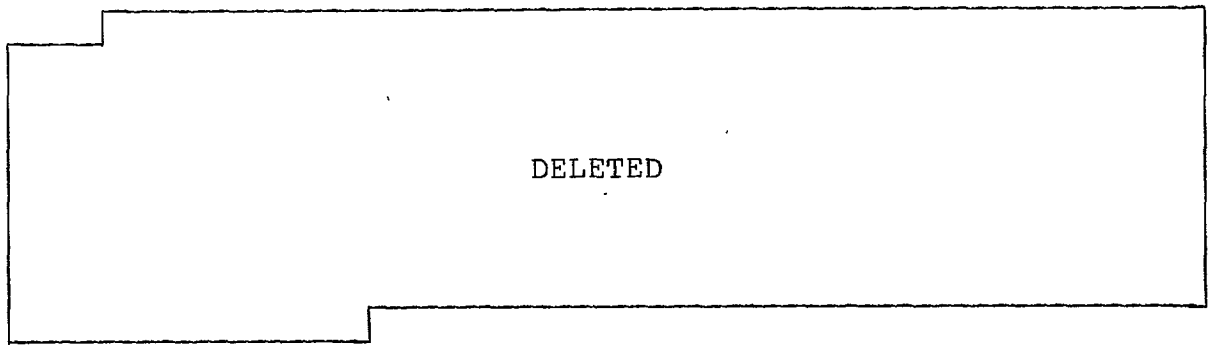
Our review of State Department files indicated that competition from foreign firms was a consideration in several proposed exports of advanced computers and hot isostatic presses to countries of proliferation concern.

Several countries have been striving for independence for their domestic nuclear power-generating industries. As a result, they possess or are seeking an industrial infrastructure capable of manufacturing items used in the nuclear fuel cycle, including uranium enrichment, plutonium reprocessing, and heavy water production. While the export of entire facilities for any of these processes is controlled by supplier countries in accordance with the Trigger List,[1] the export of most component parts is not.

[1]The Trigger List was developed by the Nuclear Non-Proliferation Treaty Exporters Committee (often referred to as the Zangger Committee) and published as an International Atomic Energy Agency Information Circular. Participating nations agree to ensure that international safeguards and pledges of no nuclear explosive use are applied to certain specified nuclear exports.



DIFFERING EXPORT CONTROLS ABROAD

Most supplier countries are exercising export controls over dual-use, nuclear-related items used in the design, fabrication, and testing of nuclear explosives. Some supplier countries have export control procedures similar to the U.S. system and are able to exercise a great deal of flexibility in controlling dual-use items. These countries maintain national export control lists which include dual-use items, conduct interagency reviews of sensitive exports, and police their systems with their customs services. There are, however, several governments which have limited ability to control dual-use exports.

About two-thirds of the items on the U.S. Nuclear Referral List also appear on the Coordinating Committee (COCOM)[2] control lists and are, therefore, controlled by COCOM member countries for mutual security reasons. COCOM members have established a control list of civilian items which also have military potential. This common list serves as the basis for the national control lists of many supplier countries and provides a framework for controlling items that may enhance the military potential of possible adversaries.

Approximately 20 items on the U.S. Nuclear Referral List are not controlled by COCOM. State Department officials said that if an item does not appear on the COCOM list, it will not be on many of the national control lists of supplier countries. Over half of the Nuclear Referral List items not controlled by COCOM have applications in the nuclear fuel cycle. Most of these items can be used in the gas centrifuge process for enriching uranium but have legitimate non-nuclear end uses and are widely available in the United States, Western Europe, and Japan.

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[2]Recognizing that effective export control for Communist country destinations requires international cooperation, the United States carries out these controls in conjunction with its NATO partners (except Iceland) and Japan. An informal organization, referred to as COCOM, establishes a common list of items which participating governments attempt to control for mutual security reasons.

In European countries, such as France, Belgium, and the United Kingdom, according to U.S. Embassy officials, the governments have more direct control over the activities of both nationalized and private industry and can curb the export of an item regardless of whether it is on their control lists. For this reason, their export control systems are able to respond more flexibly to specific export cases.

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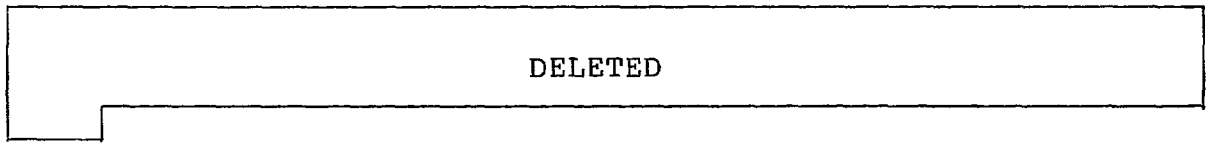
The U.S. Government recognizes the concerns of non-weapons nation suppliers and has sent delegations of officials from

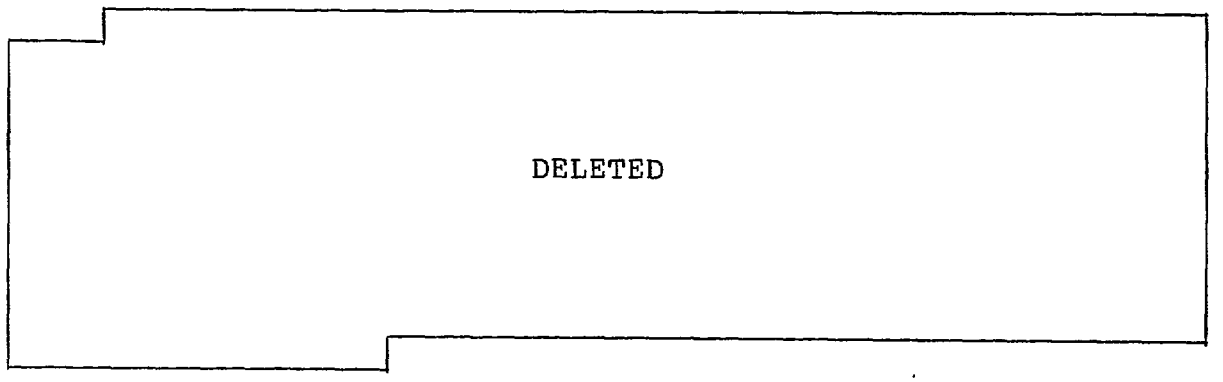
State, Energy, and ACDA to provide some technical information and to offer assistance in upgrading the national control lists.



OBSTACLES TO FORMAL INTERNATIONAL CONTROLS PERSIST

U.S. officials believe that stronger international controls over dual-use, nuclear-related exports are needed, especially for items used in the nuclear fuel cycle which are not covered on the COCOM list. Agreement on a more formal international export control regime for dual-use items would provide more uniform controls, so that a nation which denies a sale would not be at a commercial disadvantage. It would also provide a legal basis for countries, such as DELETED and DELETED, to control a greater number of dual-use items. Although State Department officials believe that major supplier countries generally are now willing to expand nuclear export controls to cover more items, supplier countries disagree over the mechanisms to be used and the degree of specificity needed in the control lists.

Negotiations of more formal agreements have focused on a DELETED - DELETED initiative to expand the Trigger List to include items involved in the sensitive nuclear processes, particularly gas centrifuge enrichment of uranium. This approach has the advantage of allowing all countries that are parties to the Non-Proliferation Treaty (which include non-COCOM supplier countries) to control items not now controlled by COCOM. This effort has progressed slowly, complicated by the disagreement as to what can and should be controlled on the Trigger List and the needed level of specificity of the controls.



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has argued that more precise lists with narrow specifications could result in the export of dual-use items not subject to control yet still useful to a nuclear proliferator. However, broad generic controls could cover a whole spectrum of specifications, ensuring that a wider range of items would be subject to review and allowing a government to decide which items to deny.

INFORMAL CONSULTATIONS USED TO PREVENT SENSITIVE EXPORTS

In the absence of a formal agreement controlling dual-use, nuclear-related exports, the United States has been consulting informally with other suppliers to prevent sensitive exports on a case-by-case basis. This is usually done by explaining the applicability of an item to a nuclear explosives program and sharing evidence of intended end use. On occasion, the U.S. officials also are able to obtain informal agreement with a supplier country that a particular item will not be made available to countries of proliferation concern.

State Department officials say they have initiated over 300 contacts with other supplier governments asking for cooperation in controlling specific equipment items in the last 2 years.

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U.S. officials believe that cooperation among supplier nations is the key to effectively controlling the transfers of dual-use, nuclear-related items. They have indicated that they will continue to urge other countries to impose export controls on certain dual-use items that currently do not appear on the Trigger List and to work, with the support of other countries, on an ad hoc basis to prevent sensitive dual-use, nuclear-related items from being exported to countries of proliferation concern.

APPENDIX I

Congress of the United States
Committee on Foreign Affairs
House of Representatives
Washington, D.C. 20515

August 9, 1982

Mr. Charles Bowsher
Comptroller General of the
United States
United States General Accounting
Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Bowsher:

In the course of reviewing nuclear non-proliferation policy during the past several months, the Subcommittee on International Economic Policy and Trade has become concerned about nuclear-related export controls administered by the Department of Commerce. This letter is to ask the GAO to determine whether or not controls over "dual-use" nuclear-related equipment (i.e. equipment with both nuclear and non-nuclear uses) are carried out in a manner consistent with our national security interests while not unnecessarily impeding the competitiveness of U.S. products.

Specifically, we should like the GAO to

-- Determine the extent of nuclear-related exports licensed by the Commerce Department, the value and sensitivity of such exports, and the availability of similar equipment from abroad.

-- Assess the licensing review process for exports of nuclear-related equipment, considering timeliness and consistency of the review process and the effectiveness of coordination between Commerce and other government agencies.

-- Determine the extent to which end-use assurances are required in conjunction with nuclear-related exports licensed by the Commerce Department and the ability of the United States to ensure that such assurances are maintained.

The subcommittee staff has discussed this request with Mr. Joe Murray of your International Division. Any additional questions regarding the study may be addressed to Jack Hamilton at 225-3246.

Sincerely,

Howard Wolpe
Member
Subcommittee on International
Economic Policy and Trade

Jonathan B. Bingham
Chairman
Subcommittee on International
Economic Policy and Trade

APPENDIX II

NUCLEAR REFERRAL LIST OF COMMODITIES

	Commodity Control List Number	Code	Description
1	1075	A	Spin/Flow-Forming Machines
2	1091	A	Numerical Control Equipment
3	1093	A	Numerically-Controlled Machines, Components/ Parts
4	1110	A	Gas Liquefying Equipment
5	1131	A	Pumps (for molten metals)
6	1205	A	Devices for Chemical/Solar/Nuclear to Electric Equipment Conversion
7	1206	A	Electric Arc Devices
8	1312	A	Presses & Specialized Controls/Accessories
9	1357	A	Filament-Winding Machinery
10	1362	A	Vibration Testing Equipment
11	1370	A	Machines for Turning Optical-Quality Surfaces
12	1502	A	Communication/Detection/Tracking Equipment
13	1522	A	Lasers/Laser Systems
14	1529	A	Measuring/Calibrating/Testing Equipment
15	1532	A	Precision Linear/Angular Measuring Equipment
16	1534	A	Flatbed Microdensitometers
17	1541	A	Cathode-Ray Tubes
18	1542	A	Triggered Spark Gaps
19	1549	A	Photomultiplier Tubes
20	1553	A	Flash Discharge X-ray Systems
21	1555	A	Electron Video Tubes/Specialized Components
22	1559	A	Hydrogen Thyratrons
23	1565	A	Electronic Computing Equipment
24	1568	A	Electric/Electronic Equip. (High-Tech)
25	1570	A	Thermoelectric Materials/Devices
26	1584	A	Oscilloscopes & Components
27	1715	A	Boron Metal/Compounds/Mixtures
28	1763	A	Fibrous/Filamentary Materials
29	2120	A	Cryogenic Equipment/Materials
30	3131	A	Valves
31	3261	A	Neutron Generator Systems
32	3336	A	Uranium Hexafluoride Production Plants
33	3362	A	Nuclear Reactor-Related Power Equipment (Military)
34	3363	A	Electrolytic Cells for Fluorine Production
35	3604	A	Zirconium Metal/Alloys
36	3605	A	Nickel Powder/Porous Metal
37	3607	A	Lithium Metal/Compounds/Alloys
38	3608	A	Hafnium Metal/Compounds/Alloys
39	3609	A	Beryllium Metal/Compounds/Alloys

	Commodity Control List Number	Code	Description
40	3709	A	Beryllium Oxide Ceramic/Refractory Production
41	3711	A	Chlorine Trifluoride
42	4094	B	Mandrels & Bellows Forming Dies
43	4127	B	Pipe Valves
44	4128	B	Stainless Steel/Corrosion Resistent Pipe/ Valves/Heat-Exchangers
45	4261	B	Particle Accelerators
46	4337	B	Compressors/Blowers for Hydrogen Sulfide
47	4360	B	Centrifugal Balancing Machines
48	4363	B	Nuclear Reactor/Nuclear Power Plant-Related Equipment
49	4530	B	Uranium Hexafluoride Mass Spectrometers
50	4569	B	Inverters/Converters/Frequency Changes
51	4585	B	Photographic Equipment
52	4590	B	Multispectral/Digital Image Processing/ Display Systems
53	4592	B	Equipment for Measuring Pressures
54	4635	B	Pressure Tubes/Pipe/Fittings
55	4638	B	High-Purity Calcium
56	4654	B	High-Purity Magnesium
57	4674	B	Packings of Phosphor Bronze Mesh,
58	4675	B	Cylindrical Tubing
59	4676	B	Rings/Single-Convolution Bellows
60	4677	B	Cylindrical Disks
61	4678	B	Corrosion-Resistant Sensing Elements
62	4698	B	Depleted Uranium
63	4720	B	Radioisotopes
64	5585	B	Photographic Equipment (High-Tech)

A = Multilaterally controlled
B = Unilaterally controlled

DEPARTMENT OF STATE
Comptroller
Washington, D.C. 20520

AUG 4 1983

Dear Frank:

I am replying to your letter of June 13, 1983, which forwarded copies of the draft report: "Controlling Exports on Dual-Use, Nuclear-Related Equipment."

The enclosed unclassified comments on this report were prepared by the Assistant Secretary in the Bureau of Oceans and International Environmental and Scientific Affairs.

We appreciate having had the opportunity to review and comment on the draft report. If I may be of further assistance, I trust you will let me know.

Sincerely,

Roger B. Feldman

Enclosure:
As stated.

Mr. Frank C. Conahan,
Director,
National Security and
International Affairs Division
U.S. General Accounting Office,
Washington, D.C. 20548

GAO note: Initial State Department comments on the classified report were received on June 30, 1983.

GAO DRAFT REPORT: "CONTROLLING EXPORTS ON DUAL-USE, NUCLEAR-RELATED EQUIPMENT"

The Department of State has reviewed the above-mentioned draft report, and has the following comments. Additional comments of a technical and factual nature were supplied independently to members of your staff.

We agree with the report's conclusion on page vi of the digest and page 47 that the effectiveness of U.S. export controls depends to a large extent on the cooperation from other supplier countries. We believe little can be accomplished by withholding U.S. exports of equipment in cases where foreign suppliers are willing to provide the same items for the same end users. There are, however, instances where withholding an export is sufficiently important to the U.S. Government, because of foreign policy and political reasons and to maintain the U.S. position of leadership in the non-proliferation area, that U.S. exports will be denied notwithstanding foreign availability.

With respect to classification of the report, owing to extreme sensitivity of many supplier countries to publication of information related to bilateral and multilateral discussions of nuclear export controls, all references to discussions with and actions by specific countries should remain classified. We would also make the same recommendation with respect to specific instances of diversion by recipient countries and U.S. efforts to prevent diversion in specific countries.

We have learned from past experience that release of information regarding export control actions of other countries or bilateral or multilateral discussions on enhancement of export controls can be very damaging to U.S. efforts in this area. Further releases could effectively eliminate any possibility of meaningful cooperation from other supplier countries. Restriction of exports is a sensitive domestic issue in a number of supplier countries and a point of contention in supplier relations with recipient developing countries, which take strong exception to attempts by supplier nations to limit transfers of technology and equipment. In view of the foregoing concerns, we strongly recommend that: 1) the portions of the draft report which refer to actions by and negotiations with other countries remain classified; and 2) this material be released only to Committee Chairmen and key members of the concerned Congressional Committees on a strict need-to-know basis.

We also have the following detailed comments on the report. In the last sentence of the second paragraph of page ii of the digest and in the first sentence of the second paragraph on page 1, it should be noted that some dual-use nuclear-related equipment can be used in connection with the production of special nuclear material by means of isotopic separation (enrichment of uranium), reprocessing of spent nuclear fuel and production of heavy water (which can be used to produce special nuclear material).

The number of approved Commerce applications contained in computer tapes referred to in paragraph 2 of page 3 should be 10,000, not 100,000. With regard to sentence 2 of page 6, only nuclear weapons states (NWS) agree under Article I of the Nuclear Non-Proliferation Treaty (NPT) not to assist other nations in the acquisition or manufacture of nuclear explosives. Articles II and III of the NPT obligate all non-nuclear weapon party states not to acquire nuclear explosives and all parties not to export specially designed or prepared nuclear items without safeguards. We note in the first paragraph of page 7 (continued from page 6) a reference to India among nations acknowledged to have exploded nuclear devices. While it is true that India detonated a nuclear device in 1974, India is not treated as a nuclear weapons state and in fact the Indians characterized the event as a "peaceful nuclear explosion." We note that in the last sentence of the first paragraph of page 7 it would be more accurate to state "...capable of producing a nuclear device...", rather than "detonating nuclear devices...".

We note that in paragraph 1 of page 15 a number of countries are listed as capable of producing a nuclear explosive device. It would be more accurate to say that the listed countries have civil nuclear energy programs, some more extensive than others. Some could conceivably develop a nuclear explosive capability. Iraq, the Republic of Korea and Taiwan by adherence to the NPT have renounced acquisition or manufacture of nuclear explosives.

With regard to review of nuclear exports by the Subgroup on Nuclear Export Coordination (SNEC), discussed in paragraph 2 of page 25, we note that cases have gone beyond the SNEC, not necessarily because of interagency disagreements, but from time-to-time because of the need for higher level review of foreign policy or other issues.

With regard to the discussion on assurances in paragraph 1 of page v of the digest and in paragaph 1 of page 29, we note that foreign availability is not the only factor taken into account when the U.S. Government considers approval of an export on the basis of a written end-use assurance from the recipient government or (for less sensitive items) from the end user. Nuclear-related dual-use exports are approved on the basis of end-use assurances only when the item to be supplied is not of major significance (i.e. greater in size, power and sophistication than equipment previously available to the recipient county) and when there is no indication that the item will be diverted to unauthorized use. Ordinarily items exported on the basis of assurances are not sufficiently important for a would be diverter to run the risk of losing access to U.S. parts and equipment.

With regard to footnote b for Table 6 on page 33, we note that it would be more accurate to state: "An export for helium-3 was recommended for approval by SNEC but has not been licensed because of foreign policy considerations."

With regard to verification of assurances discussed in paragraph 2 of page 34, the Department of State would be prepared to make special efforts to verify assurances in any particular case where significant abuses were suspected.

The correct reference to the "Trigger List" in paragraph 2 of page 36 and following (and the supplier nations that have agreed to it) is the NPT Exporters' Committee (often referred to as the Zangger Committee). The only connection this group and the list have with the International Atomic Energy Agency (IAEA) is that the members have deposited letters with the Agency signifying their individual acceptance of the "Trigger List" which has been published as IAEA document INFCIRC 209. The Trigger List (as well as the very similar guidelines of the London Group of Nuclear Suppliers (published as INFCIRC 254) provides guidelines for those participating nations which have adopted it, but not for the total membership of the NPT or the IAEA, most of which are recipient rather than supplier nations.

With regard to the reference to informal consultations in paragraph 1 of page 37, we believe it would be more accurate if described as follows: "the United States has conducted a series of bilateral consultations with the supplier countries..."

With regard to foreign competition discussion in paragraph 2 of page 37, we note in cases where U.S. exports are denied to countries of proliferation concern where there is foreign availability, the U.S. Government will often seek to persuade other suppliers not to export the items in question through "export alerts", as well as bilateral consultations.

With respect to the discussion of European nuclear export controls in last paragraph of page 42, we note that European countries have more rigid systems in which the items to be controlled must be clearly specified and controlled in the same manner to all destinations.

We note with respect to the discussion of international obligations to control dual-use items in the top paragaph of page 44 (continued from page 43), that the Zangger Committee Trigger List, while treated as authoritative, strictly speaking only obligates those who agree to it and not all NPT parties. Similarly, in the discussion in the top paragraph of page 45 (continued from page 44), the Zangger Committee Trigger List does not obligate those who agree to it to deny certain exports, but only to ensure that safeguards and pledges of no nuclear explosive use are applied to certain specified nuclear exports.

GAO note: Page number references may not correspond to the page numbers in this final report.

James L. Malone
Assistant Secretary

UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for International Trade
Washington, D.C. 20230

JUL 12 1983

Mr. J. Dexter Peach
Director
Resources, Community,
and Economic Development Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Thank you for the opportunity to comment on your proposed report "Controlling Exports of Dual-Use Nuclear-Related Equipment."

We agree with the points raised and the overall thrust of the proposed report. Where technical modifications are appropriate, we have made suggested changes on the attachment to this letter. We would appreciate receiving copies of the final report.

Sincerely,

Lionel H. Olmer

Attachment

GAO note: Although not reprinted here, technical comments and proposed editorial changes provided by the Department of Commerce have been incorporated where appropriate throughout the report.

Department of Energy
Washington, D.C. 20585

JUL 1 8 1983

Mr. J. Dexter Peach
Director, Resources, Community and
Economic Development Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Peach:

The Department of Energy has reviewed the draft report by the General Accounting Office on the subject of "Controlling Exports of Dual-Use, Nuclear-Related Equipment." While the department has no basic objections to the draft report, we believe there are certain areas that should be clarified thereby improving the quality and usefulness of the report. Our suggested clarifications are discussed in the following paragraphs and more detailed comments are provided as an attachment to this letter. (U)

In the Digest and to a lesser extent in the body of the report, there is an implication that the Nuclear Referral List controls only dual-use, nuclear related equipment that has civil-nuclear or non-nuclear uses as well as applications to the design, fabrication, testing, or production of nuclear weapons. Actually the Nuclear Referral List also controls nuclear related equipment and material that can be used in the production of special nuclear material; that is, uranium enriched in the isotope U-235, plutonium and uranium-233. Since the acquisition of special nuclear material is an important step in the process of obtaining a nuclear weapon capability, equipment or material that can be used to acquire special nuclear material is also controlled. The acquisition of special nuclear material in the form of slightly enriched U-235 suitable for civil nuclear power plant fuel but not usable in weapons, is also an important and necessary part of the process of producing electricity by the fissioning of uranium. (U)

In discussing nuclear proliferation in Chapter 2, the report mentions two factors that influence a nation's decision to develop or produce nuclear weapons: (1) its perceived self-interest; (2) its capability for producing such weapons. We would suggest that an additional factor that is essential to a nation's decision is the availability of special nuclear material. It is because of this factor that dual-use equipment which is capable of producing special nuclear material is included on the Nuclear Referral List. (U)

The introduction to Chapter 2 discusses the responsibilities of various federal agencies in the export control process. The Department of Energy is said to be responsible for authorizing exports of "sensitive nuclear technology." This is somewhat incomplete for two reasons: (1) "sensitive nuclear technology" is terminology generally identified with the Nuclear Non-Proliferation Act of 1978 in which the definition of that term appears and refers to information which is not available to the public and which is important to the design, construction, operation, and maintenance of facilities for uranium enrichment, nuclear fuel reprocessing and the production of heavy water; and (2) the Department of Energy's authority to control exports is based on Section 57b(2) of the Atomic Energy Act as amended which prohibits any U.S. person from directly or indirectly engaging in the production of any special nuclear material outside of the United States except under an Agreement for Cooperation or upon authorization by the Secretary of Energy after a determination that such activity will not be inimical to the interest of the United States. The Department's regulation 10 CFR Part 810 implements Section 57b(2) which controls unclassified activities in foreign atomic energy programs. Therefore, the Department of Energy's export controls cover a much broader range of activities than the export of "sensitive nuclear technology" in that they cover unclassified activities by U.S. persons in foreign atomic energy programs. (U)

(DOE's paragraph is deleted because it is classified.)

The statement is made on the bottom of page 6 and top of page 7 of the report that "The United States is concerned that the continuing dissemination of civil nuclear technology is providing a growing number of countries with the capability to produce nuclear weapons." It is suggested that a more accurate statement of the U.S. concern would be: (U)

> The United States is concerned that the uncontrolled dissemination of nuclear technology to countries that represent a proliferation risk, where such technology could be used in unsafeguarded facilities, poses a serious threat to international peace and to the security interests of the United States and other countries. (U)

The concern of the United States is not the controlled dissemination of nuclear technology to countries with good proliferation credentials but rather the uncontrolled transfer of this technology to countries posing a proliferation risk and where safeguards are not accepted on all their nuclear facilities. (U)

(DOE's paragraph is deleted because it is classified.)

The Department of Energy appreciates the opportunity to review the draft report and hopes that you will find our comments useful.

Sincerely,

Martha O. Hesse
Assistant Secretary
for Management and Administration

Enclosure:
Detailed comments

GAO note: Although not reprinted here, technical comments and proposed editorial changes provided by the Department of Energy have been incorporated where appropriate throughout the report. Page number references may not correspond to the page numbers in this final report.

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