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5/7/98 FINAL

ADMINISTRATION RESPONSE TO REPORT ON CHINA SATELLITE LAUNCH

The Administration has reviewed the report of the Senate Select Committee on Intelligence (SSCI), entitled the "Affect on U.S. National Security of Advanced Satellite Technology Exports to the People's Republic of China (PRC) and the PRC's Efforts to Influence U.S. Policy".

We agree with the Committee that the United States should not assist China's ballistic missile program in connection with Chinese launches of U.S. commercial communications satellites. This has been U.S. policy since 1988, when President Reagan first authorized the use of Chinese launch services.

This Administration, like previous Administrations, has not authorized the transfer of any technology to assist China's ballistic missile program. However, we share the Committee's concern that unauthorized assistance and transfers of technology relevant to space launch vehicles and ballistic missiles may have occurred during certain space launch failure analyses. The Department of Justice is investigating these allegations to determine if any violations of U.S. export control regulations have occurred. We also agree with the Committee's finding that there is no evidence that these unauthorized technology transfers have been incorporated into China's currently deployed ICBM force, which was developed and deployed before U.S. satellites were approved for export to China.

We are concerned, as is the Committee, that unauthorized assistance and transfers of space launch vehicle and satellite technology could assist China in the development of future ballistic missiles. We agree with the Committee that China's indigenous work and improvements derived from non-U.S. foreign sources make it difficult to detect with precision to what extent technology transfers from U.S. sources may have helped China. The Committee believes that assistance from non-U.S. foreign sources probably is more important for the Chinese ballistic missile development program than the technical knowledge gained during U.S. satellite launch campaigns.

We concur with the majority of the Committee's recommendations, and note that the Administration is already implementing many of these actions. In particular, we support the actions suggested to improve the monitoring of foreign launches of U.S. satellites, to better inform U.S. industry of its obligations regarding U.S. export control laws and regulations, to improve the timeliness and transparency of the satellite licensing process, and to report to Congress. We also agree with the need for a strong Intelligence Community role in the export licensing process.

The Administration believes that the longstanding policy of permitting the launch of U.S. commercial satellites by China, with strong technology controls, serves our overall national interest. We will continue to work with Congress on this important issue.

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The Committee report raises a number of issues related to intelligence and "Chinese Efforts to Influence U.S. Policy." We defer to the Director of Central Intelligence and the Director, FBI to respond to the Committee on these very specific matters concerning collection, analysis and dissemination of intelligence.

SSCI RECOMMENDATIONS

1. The Secretary of Defense should authorize DTRA monitors to suspend launch campaign activities at any time to address security concerns.

Response: The Administration agrees with this recommendation. When security concerns are identified in connection with any foreign satellite launch campaign, the USG officials must have the appropriate tools at their disposal to ensure that technology safeguards are applied effectively. Under current practice, DoD monitors have authority under the export licenses issued for the launch campaign to ensure that security concerns are addressed, including suspending launch activities if necessary.

2. The Defense Threat Reduction Agency (DTRA) should:

a) Establish appropriate professional and technical qualification requirements for satellite monitors

Response: The Administration agrees with this recommendation. DTRA has created a permanent, professional staff that is dedicated to all aspects of satellite export monitoring and is currently hiring personnel.

b) Allocated sufficient resources to prevent any shortfalls in the numbers of monitoring personnel.

Response: The Administration agrees with this recommendation. The Department of Defense has established a sufficient permanent staff dedicated to monitoring and is hiring personnel.

c) Pursuant to Section 1514 of P.L. 105-736 (1998), DTRA should be advanced the estimated cost of monitoring and, promptly after the conclusion of a launch campaign, be fully reimbursed for monitoring costs.

Response: The Administration agrees that the full costs of monitoring should be reimbursed to DoD. DoD has established procedures to ensure that all costs are reimbursed by exporters to DoD in accordance with the FY 1999 National Defense Authorization Act.

d) Create a formal technology training program that included a structured framework for training and fielding monitors educated in areas of export control law and regulations.

Response: The Administration agrees with this recommendation. The DTRA monitoring program is establishing a formal and rigorous training program for monitors.

e) Review and refine existing guidelines on the technologies and technical information suitable for discussion with foreign engineers, including technologies and technical information not to be shared under any circumstances with foreign personnel.

Response: The Administration agrees with the need to ensure that U.S. monitors, U.S. companies and foreign launch providers understand and comply with technology transfer guidelines. The Department of State will work with the Department of Defense to ensure that existing guidelines are incorporated into the DoD monitor training program.

f) Provide at least annual briefings to commercial satellite company personnel involved in space launch campaigns on the relevant export licensing standards, guidelines and restrictions. Participation in these briefings should be a mandatory requirement for commercial satellites company personnel involved in space launch campaigns.

Response: The Administration agrees with the need to ensure that commercial satellite companies are complying with all aspects of U.S. export control law and regulation. The Department of State's Office of Defense Trade Controls (ODTC) offers a series of seminars throughout the year to keep U.S. companies informed about regulatory changes. Companies also regularly consult on an individual basis with ODTC and DoD staff. We will examine the existing seminar structure view the intent of incorporating briefings specifically tailored to the satellite industry into the ongoing schedule. DoD is also structuring the monitor training program to include participation by exporters on a fee-for-service basis.

g) Offer attractive financial and career incentives in the monitoring program.

Response: The Administration agrees with this recommendation. DoD has created a permanent, professional satellite launch monitoring staff and currently is hiring personnel. DoD is ensuring that the program provides sufficient incentives to attract and retain high quality personnel.

h) Establish a counterintelligence office with DTRA as part of the monitoring program.

Response: The Administration agrees with the intent of this recommendation, which is to ensure that counterintelligence (CI) resources are focused on what is an important target area for foreign governments interested in obtaining U.S. technology. The Administration will ensure that sufficient CI resources are used to address this recommendation.

3. For the purpose of creating greater accountability within the satellite monitoring program, required by Section 1514 of P.L. 105-736(1998), DTRA should include in the report to Congress: a summary account of all satellite launch campaigns and related technical discussions and activities, any license infractions or violations that may have occurred during those launch campaigns, resources and personnel dedicated to the satellite monitoring program and the record of American satellite makers in cooperating with DTRA monitors and complying with export control laws and regulations.

Response: The Administration agrees with the need to ensure adequate Congressional oversight in this important area. DTRA will incorporate the information outlined in this recommendation into its annual report to Congress.

4. The Secretary of State should establish strict timetables for reviewing license requests involving the overseas launch of commercial satellites. The State Department should

complete its review of such license applications within 90 days. The State Department should advise American satellite producers the specific reasons for denying the license or conditioning it with certain provisos.

Response: The Administration agrees with this recommendation. The Department of State is implementing a process with a target goal of 90 working days to complete its review of a satellite license application.

5. The Director of Central Intelligence or designee should be consulted at all stages within the satellite export licensing process with respect to end user and the national security impact of exports. The Committee recommends the creating of a technically proficient Intelligence Community group to provide the advice and disseminate it to all participating licensing agencies and relevant congressional committees.

Response: The Administration agrees that it is crucial for the licensing agencies to have timely access to the best quality intelligence information available that bears on a pending export license application. The DCI will be asked to examine existing processes for providing intelligence input to the State and Commerce export license processes.

6. The Intelligence Community should complete an annual analysis of export license applications to determine which technologies are of interest to different nations, and what their pursuit of specific technologies indicates. This assessment should be provided both to the Executive branch officials involved in export policymaking and Congress.

Response: The Administration agrees with this recommendation. The Intelligence Community will be asked to provide such analyses annually for specific technology areas of deemed to be of high interest.

7. The Committee recommends that the Administration promptly notify appropriate committees of Congress when satellite exporters are under investigation for alleged violations in connection with satellite exports, and provide a statement of the security justification when a waiver or license is provided to such exporter. In addition, export license applicants should be required to indicate whether they are under investigation as part of the application process.

Response: The Administration agrees that Congress should be kept informed of investigations of U.S. satellite exporting companies that may have a serious affect on U.S. national security. The Administration will keep the relevant export licensing oversight committees appropriately informed of such investigations.

8. The Administration should use all available means to obtain PRC adherence to, and compliance with, the Missile Technology Control Regime (MTCR) and annexes. In light of the PRC's record as a persistent proliferator, the PRC should not be permitted to join the MTCR without having demonstrated a sustained and verified commitment to non-proliferation of missiles and missile technology and has an effective export control system implementing the MTCR guidelines and annexes.

Response: The Administration agrees that gaining PRC adherence to the MTCR is one of the most important goals of U.S. nonproliferation efforts. We have worked diligently to achieve this goal since 1993, and will continue our efforts. Our efforts thus far have produced concrete results: China has stopped export of cruise missiles to Iran, and has agreed to adhere to the MTCR guidelines. However, we continue to be concerned that Chinese entities may be providing assistance to ballistic missile programs, especially in Pakistan and Iran. To address these concerns, we are seeking Chinese agreement to incorporate the MTCR annex into its national export control system and to implement the full requirements for MTCR membership. In June 1998, President Jiang agreed that China would actively study MTCR membership. We will continue our efforts to achieve Chinese adherence to the MTCR.

9. The Committee recommends that Congress and the Administration work together to stimulate and encourage expansion of U.S. commercial launch capability. To this end, the Committee recommends steps to remove government barriers to long-term competitiveness in the space launch industry.

Response: The Administration agrees with this recommendation, and has taken numerous steps to strengthen the U.S. satellite manufacturing industry and the commercial launch industry. U.S. companies dominate global markets by selling satellites and related components to customers around the world who rely on both U.S. and foreign launchers for a variety of reasons. The Administration has fostered the international competitiveness of the U.S. commercial space launch industry by pursuing policies aimed at developing new, lower cost U.S. space launch capabilities to meet both government and commercial needs.

10. The Committee believes that its findings justify a reappraisal of the policy permitting the export of U.S. commercial satellites to the PRC for launch. The Committee recommends that the appropriate committees of Congress review the advantages and disadvantages of phasing out the practice of launching of U.S. satellites in the PRC. Such review should consider the finding of this Committee, the Administration views, the U.S. satellite industry, U.S. space launch industry, the U.S. telecommunications industry, and other interested parties. The Committee recommends that, if a phase-out policy is adopted, such policy explicitly authorize the export to the PRC for launch of all satellites previously licensed and should be designed to minimize the risk of additional technology transfer to the PRC during these remaining launches.

Response: The Administration believes that the longstanding policy of permitting U.S. commercial satellite launches by China, with strong technology transfer controls, serves overall U.S. national interests. This policy supports our engagement strategy with China, advances our nonproliferation interests, and enhances the economic competitiveness of a vital U.S. industry. We continually review our launch policy, and we do not believe that a phase out of launches by China would serve the national interest. We believe that the steps being taken to improve the satellite monitoring program and to ensure that U.S. industry is fully informed about U.S. export control laws and regulations, will address the concerns raised by Congress with regard to unapproved transfers of satellite technology.

CHRONOLOGY OF EVENTS LEADING TO TRANSFER OF COMMERCIAL SATELLITES FROM THE DEPARTMENT OF STATE TO THE DEPARTMENT OF COMMERCE

November, 1990 — Upon vetoing a reauthorization bill of the Export Administration Act, President Bush issues Presidential Memorandum of November 16, 1990 (copy attached), stating that by June 1, 1991, the United States would remove from the U.S. Munitions List (USML) all items contained on the CoCom dual-use list (i.e., CoCom International Industrial List) unless significant U.S. national security interests would be jeopardized. Satellites and 'hot section' technology are two items pending for consideration.

> At that time the United States was the only producer of commercial communications satellites (Comsats) to treat them as munitions items for export purposes.

1991 — To implement the November 16 Presidential directive, the State Department-chaired Space Technical Working Group, comprised of representatives of the Departments of State, Commerce, Defense, and other executive agencies, begins work to identify and recommend the transfer of Comsats from the USML to the Commerce Control List (CCL).

October 23, 1992 — The State and Commerce Departments publish regulations implementing the transfer of licensing jurisdiction for a limited set of Comsats possessing specific technical parameters. Licensing jurisdiction is also moved to the Commerce Department for specially designed components and other associated equipment necessary for launching the transferred Comsats.

All Commerce Department Comsat licenses receive full interagency review by State, Defense, and the Arms Control Disarmament Agency, as required by statutory and presidential directives.

September, 1993 — First Annual Report to the Congress of the Trade Promotion Coordinating Committee (TPCC) addresses commodity jurisdiction stating that the Clinton Administration will review immediately those CoCom International Industrial List items that are currently contained on the USML (e.g., commercial satellites still remaining on the USML) in order to expedite moving these items to the CCL.

September, 1994 — Second Annual TPCC Report to Congress addresses commodity jurisdiction stating that progress had been made on transferring nonmilitary items, such as the space station, and further stating that ..... progress on resolving the outstanding issues of commercial satellites is

expected in the near future.

April, 1995 — An interagency Communications Satellite Working Group is formed by the State Department to review and modify the 1992 technical parameters on Comsat licensing jurisdiction to ensure that the parameters were up-to-date given the advances in technology over that three year period. A State Department industry advisory group participates in the review process.

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December 5, 1995 — President Clinton issues Executive Order 12981 revising the procedures for processing Commerce licenses, formalizing the interagency review process, and creating a dispute resolution period so that licensing decisions are reached in a timely and orderly fashion.

March, 1996 — President Clinton directs that all Comsats be removed from the USML and transferred to the CCL.

September 20, 1996 — The State Department submits a 30-day notification letter informing Congress that the President has approved a proposal developed by the Departments of State, Commerce, and Defense to remove all Comsats from the USML to the Commerce Department's CCL.

October 12, 1996 — President Clinton issues an amendment to Executive Order 12981 requiring enhanced interagency Comsat license review.

October 21, 1996
November 5, 1996 — The Commerce and State Departments issue regulations implementing the transfer of Comsats from the USML to the CCL. The regulations provide that Comsats are subject to Commerce licensing even if they include in a commercial Comsat launch certain defined individual munitions list systems, components, and parts. In all other cases, these systems, components, and parts remain subject to USML licensing.

September 29, 1997
April 9, 1998 — The Commerce and State Departments issue regulations clarifying that satellite fuel and certain additional USML items may be included with a commercial Comsat launch licensed by the Commerce Department.

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Ten Year Time Line

The following chronology of events provides a historical time line of U.S. Government actions and policy decisions with respect to launching U.S. commercial satellites on Chinese rockets.

Sept. 1988

Reagan Administration announces its intention to allow U.S.-built satellites to be launched on Chinese rockets. Conditional approval is granted for the launch of Aussat and Asiasat in China. U.S. Government interagency group headed by the Office of the U.S. Trade Representative begins negotiating a launch agreement with China.

Jan. 1989

Bush Administration signs an agreement allowing China to launch up to nine commercial geostationary satellites over the next six years.

June 1989

In the wake of the Tiananmen Square massacre, the U.S. Congress imposes economic sanctions against China including a provision requiring Presidential waivers for the launch of U.S.-built satellites on Chinese rockets.

Dec. 1989

President Bush approves waivers for two launch campaigns AsiaSat (AsiaSat 1) and Aussat (Optus B1 & B3). State Department issues export licenses for three satellites.

April 1990

China Great Wall Industry Corporation launches first U.S.-built satellite (AsiaSat 1).

April 1991

President Bush approves waiver for a Swedish scientific satellite (Freja). State Department issues export license.

Sept. 1992

President Bush approves waivers for China for six additional launch campaigns: Apstar (APSAT 1, 2, 1A, 2R) , Dong Fang Hong (DHF 3-1 & 3-2), Asiasat (Asiasat 2), Intelsat (Intelsat VIIA), Starsat, and Afristar. State Department issues export licenses.

Oct. 1992

Federal Regulations published initiating the transfer of selected commercial satellite technology to the Commerce Department's Commodity Control List.

July 1993

President Clinton approves waivers for China for the Iridium satellite launch campaign and Intelsat VIII launch. State Department issues export licenses for the satellites.

July 1994

President Clinton approves waivers for China to launch the Echostar 1 DBS satellite. State Department issues export license.

March 1995

Clinton Administration signs follow-on launch agreement with China allowing up to twenty launches of commercial satellites on Chinese rockets through the year 2001.

Feb. 1996

President Clinton approves waivers for three satellite launch campaigns: Mabuhay (Agila 1), Chinasat, and Chinastar 1. State Department issues export licenses.

Feb. 1996

A Long March rocket carrying Intelsat VIIA is destroyed 22 seconds after liftoff.

June 1996

President Clinton approves waiver for China to launch Asia Pacific Mobile Telecommunications satellite. State Department issues export license.

July 1996

President Clinton approves waiver for China to launch several Globalstar satellites to low earth orbit. State Department issues export license.

Oct. 1996

President Clinton issues executive order completing transfer of export licensing authority for commercial satellites from State Department to Commerce Department.

Nov. 1996

President Clinton approves waiver for China to launch the Fengyun 1 (FY 1) and SinoSat 1 satellites. Commerce Department issues export licenses for both satellites.

Feb. 1998

President Clinton approves waiver for China to launch Chinasat 8. Commerce Department issues export license.

FAQs on U.S. Commercial Satellite Launches in China

Aerospace Industries Association - satellite launch information

SIA Home

Cox Committee Report
Statements and Facts

High Performance Computers

Statement: The Report says that it is possible that China has diverted high-performance computers to military activities and expresses concerns about U.S. policy on computer exports.

Fact: It's important to note that the weapons found in the U.S. arsenal today were built with computers whose performance was below 1,000 MTOPS (MTOPS are a measure of computer speed and performance)-- in some cases, with performance of 500 MTOPS. These were the supercomputers of the 1980s, but today there are more capable machines on office desktops. The level of computational power used to develop the current U.S. nuclear arsenal, for example, is less than that found today in most workstations.

-- High Performance Computers (HPCs) are only one piece of the puzzle to create a strategic weapon. There are many other pieces that are essential, and the Report notes that high performance computers are "not necessary" for nuclear weapons design or that "their precise utility for such applications is unclear."

-- For example, the Committee examined information that the Chinese are using U.S. computers in nuclear weapons labs. There is no evidence, however, that the computers being used are U.S. made HPCs or that they have been diverted to such end uses. In many instances, PCs sold today are more powerful than computers previously licensed to China. Indeed, at least one company will be marketing a laptop over 2,000 MTOPS this year, and any PC with two or more Pentium III microprocessors will also exceed that level.

-- The Report cites a number of hypothetical cases where the Chinese could be using computers for military purposes. Most of these military applications could be performed on commercially available workstations and PCs. They do not require supercomputers.

-- Having access to high performance computers alone will not provide improved military-industrial capabilities. Denying exports, however, to U.S. computer companies will only damage our national security and our economy, by making it more difficult for our producers to stay at the cutting edge and by allowing foreign firms, including indigenous Chinese computer companies, to seize larger and larger shares of the world market. This is not in our national security interest.

-- In addition, as high performance computers become smaller, cheaper and easier to install and maintain, our ability to control them decreases. Computers sold in the thousands from outlets around the globe cannot realistically be controlled.

Statement: The report claims that HPCs in China been diverted to unauthorized military end-users or otherwise exported in violation of U.S. law.

Fact: Examples provided in the Report as evidence of this are taken from Commerce Department Export Enforcement cases. In the Changsha case -- as the Report notes -- the Ministry of Trade and Economic Cooperation (MOFTEC) worked with Commerce to see that the computer was returned. The other cases involve investigations successfully completed, in which the illegal shipments occurred between 1992 and 1994, well before the President's decision to streamline HPC export controls was implemented in January 1996.

-- The Report also hypothesizes that computers used by entities engaged in military as well as civilian functions could be improperly used. There are no specifics to support the hypotheses.

-- BXA collects information on how U.S. HPCs are used in China as required by the National Defense Authorization Act for Fiscal Year 1998 (NDAA). For the most recent NDAA report (exports reported for Nov. 97-Nov. 98), of the 191 HPCs exported to China, 42% (79 HPCs) went to communications/utilities entities and 25% (48 HPCs) went to financial entities. (Note that these are actual exports as distinct from the NDAA required notifications prior to export, some of which never result in sales.) We have no information to indicate that any of the 191 computers have been diverted to military end-uses.

Statement: At the time of the drafting of the report, only one on-site, end-user verification had been conducted in China and the Committee expressed concern that PSVs were not being conducted appropriately.

Fact: Post-shipment visits with China have been a goal of the U.S. since 1983. An End-Use Visit Arrangement was agreed to in June 1998. The process of identifying items for visits and conducting visits began in September 1998. At the time of the first annual NDAA report (mid-November 1998), one visit had occurred. As of April 27, 1999, 5 end-use visits have been conducted in China; 3 of those were on high performance computers. Clearly, we need to do more.

-- The most significant limitation under the End-Use Visit Arrangement has been alleviated through a regulatory change. Visits are limited to items for which the Chinese Ministry of Foreign Trade and Economic Cooperation (MOFTEC) has granted an end-use certificate. In January 1998, BXA revised its regulations to require that more HPCs be covered by end-use certificates. (Through these certificates, MOFTEC verifies the truthfulness of the end-user statements and assures us that the HPC will not be reexported to third countries.) It has taken time for this regulation to affect sales, and we are now beginning to receive reports on computers exported under this new requirement. With more computers covered by certificates, we should now be in a position to conduct more visits.

-- The other limitations cited by the Cox Report are hortatory rather than practical. China can decline a visit, as can any country, but there are consequences attached to that denial, such as

license denials. China reserves the right to "invite" U.S. Government officials to participate in visits, but no visit has occurred without U.S. Government participation. Inspections cannot occur until six months after the item is received, but we have found based on experience that the end-use generally cannot be determined for six months after receipt since it takes time to get the computer to its ultimate destination, installed, working and used. In addition, U.S. companies may require payment in full before releasing the computer to the customer.

The end-use visits are still at a beginning stage. We are continuing discussions with the Chinese on enhancing the process including increases in the number of end-use visits in order to meet NDAA requirements. Chinese export control officials have been told at every opportunity that a strong trade relationship with the U.S. depends on confidence-building measures like the EUVA. Although the process is not perfect, it is a start, and the Chinese have been cooperative, although the accidental bombing of their embassy in Belgrade has clearly been a setback in expanding cooperation.

Statement: The Cox Report states that BXA can verify location but not how a computer is used. Further, the Cox Report cites GAO to the effect that PSVs are not effective with HPCs.

Fact: End-use/end-user verification is effective when properly targeted. Export Enforcement at the Department of Commerce has been directing and conducting end-use checks worldwide for over 20 years. The Congress also apparently believes end-use checks on HPCs are effective since they mandated them on all computers over 2000 MTOPS.

-- There is no way to tell with certainty how a HPC is being used. Rather, Export Enforcement relies on the expertise of its agents. Export Enforcement has placed in FCS-Beijing a senior criminal investigator to handle both pre-license and post shipment checks. This special agent (who spent 5 years as an Export Control Attache in our embassy in Stockholm during the cold war) uses his training and skills to examine aspects of the licensed transaction to arrive at an informed judgement as to the bona fides of the end-use and end-user. The knowledge and experience of this agent allows the U.S. government to make informed judgements on license transactions for China, including those where an end-use check is appropriate.

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of Export Administration
Washington, D.C. 20230

June 5, 1998

Dear 60 Minutes:

While I can appreciate the sensationalist appeal of the tale told by former Department of Commerce Export Enforcement agent Marc Reardon in your investigative piece about the transfer of U.S. technology to China, I believe some provision must be made for the truth. In that piece Mr. Reardon says he was given the advice "to investigate but don't find anything." Mr Reardon is flat out wrong.

As the Deputy Assistant Secretary for Export Enforcement and the most senior career investigator at Commerce, I can tell you that Commerce investigators aggressively investigate all allegations of violations of export control laws, including the investigation of the McDonnell Douglas/CATIC matter which I took responsibility for overseeing.

The first actions taken by the Department of Commerce on learning that machine tools were shipped to an unauthorized location in China were to work immediately with the US company (McDonnell Douglas) and the Chinese Government to move the equipment to a safe location, controlled by US interests. We were successful in this effort.

When this investigation began, I participated in a conference call with Marc Reardon and both his first and second line supervisors to discuss how to approach the investigation. Since Reardon was new to Export Enforcement and had little experience investigating these kinds of cases, we suggested several possible lines of approach. Instead of following any of this advice, however, he recommended that Headquarters take actions against McDonnell Douglas. His recommendation was carefully reviewed by HQ and was found to be inappropriate and ineffective because of deficiencies both in terms of evidentiary facts and export enforcement legal options. We sent the recommendation back to the field office for additional investigation for evidentiary facts.

We then assigned a senior agent with more investigative experience to the case to help Reardon gather evidence on the case. Shortly after this assignment was made, Reardon left the Commerce Department after approximately only a year on the job. The senior agent continued the investigation and developed sufficient evidence to refer the case to the Department of Justice for investigation into possible criminal violations. That is where the matter is currently under joint investigation by a team consisting of Commerce, Customs, and Justice Department enforcement agents. When the investigation is completed, action as appropriate based upon the evidence will be taken according to law.

Sincerely,

Frank W. Deliberti

Frank W. Deliberti
Deputy Assistant Secretary

Order Code RL30169

Export Administration Act of 1979 Reauthorization

Updated April 25, 2000

Craig Elwell
Government and Finance Division

Jeanne Grimmett
American Law Division

Robert Shuey
Foreign Affairs, Defense, and Trade Division

ABSTRACT

This report provides an overview of broad issues before Congress regarding the reauthorization of the Export Administration Act of 1979 (EAA) and will describe relevant legislative proposals when they are introduced. The Senate Banking Committee reported the *Export Administration Act of 1999* (S. 1712, S.Rept. 106-180) on October 8, 1999. Key topics discussed in this CRS report are the evolution of the EAA, the attempted reauthorization of the EAA by the 104th Congress, issues concerning the International Emergency Economics Powers Act, the debate over export controls, specific technologies of concern, and options for Congress. It will be updated if there are significant developments in the issues related to export administration. See CRS Report 96-492, *Export Administration Legislation*, for further discussion of action in the 104th Congress on H.R. 361 which would have reauthorized the EAA. See CRS Report RL30015, *Trade Policy Issues in the 106th Congress, First Session*, for a broader discussion of trade issues, and the CRS Home Page for links to legislation and a wide range of related documents.

Export Administration Act of 1979 Reauthorization

Summary

The 106th Congress has expressed renewed interest in revising and reestablishing the Export Administration Act (EAA) which expired in 1994. Both Houses have held hearings and the Senate Banking Committee voted to adopt the Export Administration Act of 1999 (S. 1712, reported on October 8, 1999, S.Rept. 106-180). In enacting export control legislation, Congress delegates to the executive branch its express constitutional authority to regulate commerce. When the legislation lapsed in 1994, the President kept the export administration regulations in force by executive order under emergency authority, as has been done in the past.

The EAA establishes export licensing policy for items detailed on the Commerce Control List (CCL). The CCL currently provides detailed specifications for about 2400 dual-use items including equipment, materials, software, and technology (including data and know-how) likely requiring some type of export license. The CCL is periodically updated to decontrol broadly available items and to focus controls on critical technologies and on key items in which the targeted countries are deficient. Exports of defense articles are governed separately under the Arms Export Control Act.

In debates on export administration legislation, parties often fall into two camps: those who primarily want to liberalize controls in order to promote exports, and those who are apprehensive that further liberalization would compromise national security goals and want to increase certain controls. While it is widely agreed that exports of some goods and technologies can adversely affect U.S. national security and foreign policy, many believe export controls can be detrimental to U.S. business, that the resultant lose of competitiveness, market share, and jobs can harm the U.S. economy, and that the harm to particular U.S. industries and to the economy can have a negative impact on U.S. security. Controversies arise with regard to the cost to the U.S. economy, the licensing system, foreign availability of controlled items, and unilateral controls as opposed to multilateral regimes.

Specific controversies have involved exports to potentially hostile organizations of telecommunications and advanced electronic equipment, precision machine tools (especially computer assisted machines), guidance technology (including Global Positioning System technology), synthetic materials (especially high-strength, light-weight, heat- and corrosion-resistant), specialized manufacturing and testing equipment (including mixers, high temperature ovens, heat and vibration simulators). In the last few years, congressional attention has focused on high-performance computers, encryption, stealth, and satellite technology.

Congress has several options in addressing export administration policy, ranging from approving no new legislation to rewriting the entire Export Administration Act. Among the options presented in this report are: allow the President to continue export controls under emergency authority, restore the EAA 1979 with increased penalties, or, rewrite the Export Administration Act.

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Export Administration Act of 1979 Reauthorization

Introduction

The 106th Congress has expressed renewed interest in revising and reestablishing the Export Administration Act (EAA) which expired in 1994. Such an act delegates from the Congress to the executive branch its express Constitutional authority to regulate foreign commercial exports. This delegation of export controls has traditionally been temporary, and when it has lapsed, the President has declared a national emergency and maintained export control regulations under the authority of an executive order. The EAA, which was written and amended during the Cold War, focuses on the regulation of exports of those civilian goods and technology that have military applications (dual-use items). Export controls were based on strategic relationships, threats to U.S. national security, international business practices, and commercial technologies that have changed dramatically in the last 20 years. Many Members of Congress and most U.S. business representatives see a need to liberalize U.S. export regulations to allow American companies to engage in generally unrestrained international competition for sales of high-technology goods. But, there are also many Members and national security analysts who contend that liberalization of export controls over the last decade has increased foreign threats to U.S. national security, that some controls should be tightened, and that Congress should weigh further liberalization carefully.

While the Export Administration Act has authorized the Department of Commerce to regulate U.S. exports of most commodities, several other U.S. government agencies regulate exports of specified goods and technologies. For example, the Department of State must approve exports of defense articles and defense services that are identified on the U.S. Munitions List, which includes some dual-use items such as commercial communication satellites. See the box below for a list of other government organizations involved in export administration.

The Evolution of the Export Administration Act

1949-1996

Export controls in time of war have been an element of U.S. policy since the earliest days of the republic.[1] The end of WWII, however, ushered in a new era in which export control policy would become an extensive peacetime undertaking. The start of the cold war in 1947, led to a major refocusing of export control policy on the Soviet- Bloc countries. Enactment of the Export Control Act of 1949 was a formal recognition of the new security threat and of the need for an extensive peacetime export control system.

The 1949 Act identified three possible reasons for imposing export controls. Short-supply controls were to be used to prevent the export of scarce goods that would have a deleterious impact on U.S. industry and national economic performance. Foreign policy controls were to be used by the President to promote the foreign policy of the United States. The broad issues of regional stability, human rights, anti-terrorism, missile technology, chemical and biological warfare, and nuclear non-proliferation have come to be served by these controls. National security controls were to be used to restrict the export of goods and technology that would make a significant contribution to the military capability of any country that posed a threat to the national security of the United States.

Coincident with the establishment of the U.S. export control regime was the establishment of a multilateral counterpart involving our NATO allies. With a great deal of critical technology being transferred from the United States to the NATO allies, and with a growing capability for technological development by the allies themselves, clearly a multi-lateral control regime was required. Toward this end, the Coordinating Committee for Multilateral Export Controls (CoCom) was established in 1949. CoCom controls were not a mirror image of U.S. controls but generally did reflect a uniformly high level of controls.

With little change in the perceived threat, the Export Control Act was renewed largely without amendment in 1951, 1953, 1956, 1958, 1960, 1962, and 1965. With the onset of the era of "detente" in the late 1960's there occurred the first serious reexamination and revision of the U.S. export control system. At this time the growing importance of trade to the U.S. economy and those of our allies began to exert significant political pressure for some liberalization of export controls. Congress passed the Export Administration Act of 1969 to replace the near-embargo of the Export Control Act of 1949. It continued to shift the policy toward less restrictive

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[1] In the first half of this century, war or the imminent threat of war led to the Trading With The Enemy Act of 1917 and the Neutrality Act of 1935. In 1940, Congress increased presidential power over the export of militarily significant goods and technology with the passage of Public Law 703, "An Act to Expedite and Strengthen the National Defense." In each of these instances the rationale for control was the clear wartime necessity of not giving aid and comfort to the nation's enemies.

export controls in the renewal of the Act in 1974, 1977, 1979, 1985, and some moderate further liberalization occurred in the following years.

The collapse of the Soviet Union in 1989, an event partially attributable to the success of U.S. cold war export control policy, marked a dramatic change in the nature of the external threat the United States now faces. The export control regime, however, has not changed as dramatically. Over the course of the Bush and Clinton Administrations, the export control system has been reduced in scope and streamlined, but the basic policy remains intact. There are many who see a need to revamp the Act, whether to enhance exports or to shift the focus to current national security threats. A lack of consensus on key issues has meant that attempts to reauthorize and reform the Export Administration Act have failed in the 101st, 102nd, 103rd, and 104th Congresses. The export control process continues under the authority of Executive Order No. 12924 of August 19, 1994, invoked under the International Emergency Economic Powers Act (IEEPA). Many of those who favor reforming the Act, whether to liberalize or tighten controls, contend that operating under IEEPA imposes constraints on the administration of the export control process, undermining its effectiveness. Others think it may be better to continue operating under IEEPA rather than rewriting the Act while there are so many controversies involving export administration.

Other U.S. Government Departments and Agencies with Export Control Responsibilities

Department of Commerce, Patent and Trademark Office for Patent Filing Data

Department of State for Exports of Defense Articles and Defense Services

Department of Energy for Exports of Nuclear Technology and Technical Data for Nuclear Weapons and Special Nuclear Materials; and Natural Gas and Electric Power

Nuclear Regulatory Commission for Exports of Nuclear Materials and Equipment

Department of Treasury for Foreign Assets and Transactions; and Trafficking in Alcohol, Tobacco, Firearms, and Explosives

Department of Justice, DEA for Drugs, Chemicals, Precursors, Controlled Substances

Department of Interior for Fish and Wildlife/Endangered Species

Department of Health and Human Services, PHS, FDA for Drugs, Investigational Drugs, Biologics, and Medical Devices

Department of Transportation for American Carriers Destined to North Korea; and U.S. Vessels over 1,000 Gross Tons

Federal Maritime Commission for Ocean Freight Forwarders

Environmental Protection Agency for Pollutants, Hazardous Materials

Another significant change in the export control environment occurred with the dissolution of CoCom in 1994 and its replacement by the Wassenaar Arrangement.[2]

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[2] For details on Wassenaar, see *Military Technology and Conventional Weapons Export* (continued...)

This new multilateral arrangement is more loosely structured than CoCom, allowing much wider variance between what is controlled by the United States and other members of the arrangement. Generally more liberal control practices abroad raise important questions about the ultimate effectiveness of U.S. export controls (under either the current or a revised EAA) in securing national security objectives and the fairness of those increasingly unilateral controls to American industry.

The Export License Review Process Under the Export Administration Regulations (EAR)

The EAA and the implementing Export Administration Regulations (EAR) establish policies and procedures for the regulation of exports and set out which items need to be licensed for export to which destinations. The Commerce Control List (CCL) currently provides detailed specifications for about 2400 dual-use items including equipment, materials, software, and technology (including data and know-how) likely requiring some type of export license. In many cases items on the CCL will only require a license if going to a particular country. On the other hand, particular products, even if shipped to a friendly nation, will require a license due to the high risk of diversion to an unfriendly destination. The end-use and the end-user can also trigger a restriction. The CCL is periodically updated (with the benefit of significant input from other government agencies) to decontrol broadly available items and to focus controls on critical technologies and on key items in which the targeted countries are deficient.

The task of the Bureau of Export Administration (BXA) of the Department of Commerce is to provide a complete analysis of each of the 10 to 12 thousand license applications received each year, reviewing not just the item in question but also its stated end use, as well as the reliability of *each* party to the transaction. Within 9 days of receipt of the license application BXA must notify the applicant as to whether the application is accepted, denied, in need of more information, or is being referred to other agencies for review. In practice, about 85% of all applications for a license are referred to other government agencies for evaluation, extending the length of the review process.

The current regulations give the Departments of Defense, Energy, and State a direct and equal role in the review of all license application submitted to the BXA. The interagency review process is facilitated by the use of several established interagency groups that provide broad expertise and help give a timely interagency consultation.

When review of a license application by another agency is requested by BXA, regulations give a set time table and procedure for that process. Within 10 days of such referral the receiving agency must advise BXA of any information deficiencies in the application. (Time taken to find such information does not count against the total allowed processing time). Within 30 days of the initial referral the reviewing agency will give BXA a recommendation to grant or deny the license application. If

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[1] (...continued)
Controls: The Wassenaar Arrangement, by Richard F. Grimmett, CRS Report 95-1196.

no recommendation is made within the 30-day period the reviewing agency will be deemed to have no objection to the license decision of BXA. If there is interagency disagreement the EAR contains a three tiered dispute resolution process set with explicit time limits for each stage of that process.[3] About 93% of all such disputes are resolved by consensus at the first tier.

BXA's goal is to make a decision on all license applications no latter than 90 days from the date of registration with the BXA. The goal of recent policy action on the BXA review process has been to use strict time limits mixed with extensive inter-agency review to assure an expedited, but thorough review process. BXA reports that 96% of all license applications are processed and resolved within the 90-day time limit.[4] Interagency review typically takes less time than allowed in the regulations. But, if an agency needs more time for a thorough review it has the option of "stopping the clock".

BXA's denial of an export license must be explicitly supported by the statutory and regulatory basis for the denial, giving specific considerations and what modifications would allow BXA to reconsider an application. An explicit appeal procedure is specified in the EAR. One possible basis for appeal is an "assessment of foreign availability." If the item in question can be shown to be readily available from a non-U.S. source in sufficient quantity and of comparable quality then a license denial may, in some cases, be reversed.

A major revision of the EAR was completed in 1996. It further streamlined the licensing process and provided that exporters could follow a step-by-step process to determine whether a license was needed.

Attempted Reauthorization by the 104th Congress[5]

On July 16, 1996, the House passed the Omnibus Export Administration Act of 1996 (EAA-1996, H.R. 361) after hearings and consideration by the Committee on International Relations, the Committee on Ways and Means, and Members of the Committee on National Security. On July 17, 1996, the bill was received at the Senate and referred to the Senate Committee on Banking, Housing and Urban Affairs, which held a hearing but took no further action. The main elements of H.R. 361 were:

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[3] The first tier is the Operating Committee (OC) chaired by BXA. Appeals from this committee's decision must be made in five days by a Presidential appointee. The next level of appeal is to the Advisory Committee on Export Policy. That committee will make a decision within 11 days of the receipt of the appeal. Appeals from the ACEP decision must be made in 5 days by a presidential appointee to the Secretary of Commerce who also serves as the chair of the Export Administration Review Board (EARB). The EARB will render a decision in 11 days of receipt of the appeal. After this point the dissenting agency can, within 5 days, appeal the decision to the President.

[4] See testimony of R. Roger Majak, Assistant Secretary for Export Administration, DOC. Before the Subcommittee on International Affairs, U.S. Senate, April 14, 1999.

[5] For detailed discussion, see *Export Administration Legislation*, by Glennon E. Harrison, Robert D. Shuey, Jeanne J. Grimmett & Zachary S. Davis, CRS Report 96-492.

- A distinction between unilateral controls and multilateral controls rather than the EAA- based distinction between national security controls and other foreign policy controls.

- A preference for export controls that are in compliance with multilateral regimes. Such regimes include the Wassenaar Arrangement, the Missile Technology Control Regime, the Australia Group, and the Nuclear Suppliers Group.[6]

- An increase in discipline on the use of unilateral export controls. Section 106 specified a list of conditions that must be satisfied before the imposition of unilateral export controls, including: the determination that the controls are likely to make *substantial* progress towards achieving the intended purpose, that reasonable alternative means are not available, and that the reaction of other countries will not render the controls ineffective.

Reauthorization Legislation by the 106th Congress

On September 23, 1999 the Senate Banking Committee voted unanimously (20-0) to adopt the Export Administration Act of 1999 (EAA99). This bill (S. 1712, S.Rept. 106-180) authored by Senator Mike Enzi, Chairman of the Banking subcommittee on International Trade and Finance, attempts to strike a new balance in the U.S. export control regime between national security and economic concerns. Floor action on S 1712 has been held up over concerns about the bills impact on national security. The major provisions of the bill are:

- **National Security Export Controls.** The bill authorizes the President to prohibit, curtail, or require a license for the export of any item for national security purposes (sec. 201) and directs the Secretary of Commerce, with the concurrence of the Secretary of Defense, to establish a National Security Control List within the Commerce Control List (sec. 202). EAA99 would focus controls on the current threats to national security, such as terrorism and proliferation of weapons of mass destruction, rather than communism. The President is directed to establish a country tier system and assign each country to a tier for each item controlled for national security purposes (sec. 203). The bill also requires the imposition of sanctions against persons who violate regulations issued pursuant to a multilateral export control regime, and other sanctions against persons who engage in the proliferation of missiles, chemical weapons, or biological weapons. It would limit the items that could be controlled for national security purposes; items that incorporate controlled goods valued at 25% or less of the total value of the items, and items that are available from foreign sources or have a mass-market status would generally not be controlled.

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[6] See *Proliferation Control Regimes*, by Robert Shuey, Steven Bowman, and Zachary Davis, CRS Report 97-343, for detailed descriptions of these regimes.

- **Foreign Policy Export Controls.** EAA99 would authorize the President to control exports for the purpose of promoting foreign policy objectives (such as peace, stability, and human rights) and deterring and punishing terrorism. The bill would place several requirements, limitations, and prohibitions on the use of such controls, such as: it would prohibit controlling reexports for foreign policy purposes; it would generally prohibit controlling items subject to a binding contract; it would require 45 days notice and consultation before imposing a control; it would require clearly stated objectives and criteria for controls which would be reported to Congress; it would require the President to review all such controls every two years. EAA99 would also allow the President to impose controls prior to notifying Congress in particular situations; would allow him to terminate any such control not required by law; would allow him to impose controls to comply with international obligations; and would require a license for the export of certain items to countries that support international terrorism.

- **Mass Market and Foreign Availability.** The bill charges the Secretary of Commerce to determine on a continuing basis wether any item currently subject to export control meets specified criteria for mass market or foreign availability status. If it does the item would be removed from the national security control list. Such a determination can also be requested by any interested party. The President is given the power to set aside a foreign availability determination for reasons of national security and when there is a high probability that foreign availability can be eliminated through negotiations. If those negotiations fail or agreement can not be reached within 18 months the set aside would end. This provision is essentially the same as those now in the EAA.

- **Licence Review Process.** EAA99 would establish a license review process that is generally similar to the current process, but with some notable differences. The current regulations (created by Executive Order 12981) specify that the Departments of Defense, State, and Energy will have a direct and equal role in the licence review process. EAA99, in contrast, specifies referral by the Secretary of Commerce to the Department of Defense and other departments and agencies as the Secretary considers appropriate. The bill would, like current rules, keep application review subject to a strict time schedule, but also shorten from 30 to 25 days the time allowed for interagency review. This time schedule can be interrupted if agencies need additional information on an application, but such delays also have specified time limits. Like the current process, if there is no agreement by the reviewing agencies the license is referred to an interagency dispute resolution process. EAA99 specifies that the initial level of this process be a committee chaired by a designee of the Secretary of Commerce with the authority to make a decision on the license application after consideration of the positions of the

agencies. This decision can be appealed to a higher level of review. EAA99 does not specify the form of higher levels of the dispute resolution process, but does stipulate that decisions at this higher level be made by majority vote and that the whole appeals process be completed or referred to the President within 90 days of the initial referral by the Department of Commerce.

- **Penalties and Enforcement.** EAA99 would authorize substantially higher criminal penalties than those contained in the expired EAA and IEEPA. Knowing violations by individuals would be punishable by a fine of up to 10 times the value of the exports involved or $1 million (whichever is greater), imprisonment of up to 10 years, or both, for each violation. Life imprisonment could be imposed, however, for multiple violations or aggravated circumstances. Knowing violations by firms would be punishable, for each violation, by up to 10 times the value of the exports involved or $10 million, whichever is greater. Individuals and firms convicted of an offense would also be required to forfeit to the United States property interests and proceeds involving the violative exports, subject to procedures set out in the forfeiture chapter of Title 18 of the U.S. Code. EAA99 would significantly raise civil penalties as well, allowing the Secretary to impose a fine of up to $1 million for each violation, in addition to, or instead of, any other liability or penalty. As under current law and regulations, the Secretary could also deny the export privileges of a violator and exclude any person acting in a representative capacity from practicing before the Commerce Department in an export matter. Persons convicted under other named statutes (*e.g.*, IEEPA) could also be denied export privileges by the Secretary for up to 10 years, as could persons related to the violator. Civil penalties could only be imposed after notice and a hearing and would be subject to judicial review in accordance with provisions of the Administrative Procedure Act. EAA99 would authorize the Secretary to impose temporary orders denying a person's export privileges in a broader range of circumstances than permitted under the prior EAA, allowing the Secretary to act where there was reasonable cause to believe that a person was engaging in or about to engage in activity violating the EAA99, or a criminal indictment had been returned alleging a violation of the new EAA or one of the other statutes referred to above. While temporary denial orders could be imposed without a hearing, affected persons would have a limited right of administrative appeal and judicial review.

Issues Concerning IEEPA

When the EAA-1979 expired in September 1990, President Bush extended existing export regulations by executive order, invoking emergency authority contained in the International Emergency Economic Powers Act (IEEPA) to control

financial and property transactions.[7] As required by IEEPA, the President first declared a national emergency "with respect to the unusual and extraordinary threat to the national security, foreign policy and economy of the United States" posed by the expiration of the Act. IEEPA-based controls were later terminated during two temporary EAA extensions enacted in 1993 and 1994 as Congress attempted to craft new export control legislation.[8] After the second extension expired in August of 1994, President Clinton reimposed controls under IEEPA.[9] These controls continue in effect to date.[10] A major restructuring and reorganization of export control regulations was published as an interim rule in the March 23, 1996 *Federal Register*.

The executive branch has informed Congress that its authority to regulate exports under the IEEPA is insufficient in a few areas and requested the passage of legislation to meet those needs. The following deficiencies were outlined in recent testimony:

- Penalty authorities under IEEPA are substantially lower than under the EAA and thus have less of a deterrent effect. IEEPA limits civil penalties to $10,000, willful violation to $50,000, and 10 years imprisonment if the violator is an individual or corporate officer who has knowingly participated in a violation. Equivalent penalties under the EAA limit civil penalties to $10,000, or $100,000 for violations involving national security controls, and willful violation to $250,000 and 10 years imprisonment for individuals and $1 million or 5 times the value of exports for firms. Even the higher EAA penalties had lost some of their deterrent effect due to erosion by inflation.

- The police power of enforcement agents has lapsed with the EAA. These agents must now obtain Special Deputy U.S. Marshal status in order to function as law enforcement officers, a complication that consumes limited resources better used on enforcement.

- IEEPA does not authorize the President to limit the jurisdiction of federal courts and thus does not permit him to extend the EAA's general denial of judicial review. In addition, IEEPA does not have

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[7] 50 U.S.C. §§ 1701 *et seq.* *See* Exec. Order No. 12730, 55 Fed. Reg. 40373 (1990). Presidents Nixon and Ford had earlier extended lapsed export regulations by executive order, invoking emergency authorities in the Trading with the Enemy Act. Exec. Order No. 11677, 37 Fed. Reg. 15483 (1972); Exec. Order No. 11796, 39 Fed. Reg. 27891 (1974); Exec. Order No. 11810, 39 Fed. Reg. 35567 (1974); Exec. Order No. 11940, 41 Fed. Reg. 43707 (1976). President Reagan did the same in 1983, invoking IEEPA. Exec. Order No. 12444, 48 Fed. Reg. 48215 (1983).

[8] P.L. 103-10; P.L. 103-277.

[9] "Continuation of Export Controls," Exec. Order No. 12924, 59 Fed. Reg. 43437 (1994); Message from the President, Sept. 11, 1998, "Continuation of National Emergency Regarding the Lapse of the Export Administration Act of 1979," Ex. Com. 10845, H. Doc. 105-303.

[10] "Continuation of Emergency Regarding Export Control Regulations," Notice of August 15, 1994, 60 Fed Reg. 42767 (1995).

an explicit confidentiality provision to authorize protection from public disclosure of information pertaining to the export license applications and enforcement.

- The IEEPA does not explicitly authorize the executive to implement provisions to discourage compliance with foreign boycotts against friendly countries and does not provide a private right of action for those in the U.S. who have suffered from the effects of a boycott.

- The United States is sending the wrong message to other countries by not enacting appropriate legislation. Although the United States has been urging countries such as Russia, Kazakhstan, Ukraine, and China to strengthen their export control laws and implementing regulations, this country's basic law has expired and U.S. credibility is diminished by its lack of a statute.[11]

The Debate Over Export Controls

Competing Perspectives In Export Control Legislation

In debates on export administration legislation, parties often fall into two camps: those who primarily want to liberalize controls in order to promote exports, and those who are apprehensive that further liberalization would compromise national security goals and want to increase certain controls. Controversies arise regarding which items should be regulated for national security and foreign policy purposes, which items can realistically be regulated, which destinations warrant close scrutiny, and which regulating mechanisms are most effective.

In deciding which exports of goods and technologies, to which destinations, should be restricted, current policy calls for consideration of several factors: a) the potential contribution of the export to the ability of the recipient to threaten U.S. security interests,[12] b) the importance of the goods or technology to U.S. military forces and the extent to which they "would permit a significant advance in a military system" of a threatening country,[13] c) the likelihood that the recipient will divert the

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[11] Testimony of William A. Reinsch the Under Secretary for Export Administration, Department of Commerce on the Reauthorization of the Export Administration Act of 1979 (EAA), before the Senate Committee of Banking, Housing and Urban Affairs, Subcommittee on Trade and International Finance, on January 20, 1999.

[12] Under the "catchall provision," the export of any item controlled by the Export Administration Regulations (EAR), whether it is on the CCL or not, that is destined for an end-use or end-user engaged in the development or production of weapons of mass destruction or missiles, must be licensed. See 15 C.F.R. 744 regarding the licensing of EAR 99 items, not included on the CCL.

[13] Section 5(d) EAA requires the Secretaries of Defense and Commerce to list and regulate exports of "Militarily Critical Technologies." The law requires emphasis be given to a) arrays

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export to another party who poses a threat to U.S. security, and d) the ability of the United States, in conjunction with other countries or multilateral regimes, to prevent the proposed recipient from obtaining identical or similar goods.

Based on the evaluation of these and other criteria, the U.S. government regulates exports using a range of approaches:

- Embargo or regulation of exports of certain commodities to all countries,
- Embargo or regulation of exports of most commodities to certain countries,
- Prohibition of exports of few sensitive commodities to particular countries,
- Requirement for a license to export particular commodities to particular countries,
- Requirement to name and verify the end use and end user of certain exports,
- Unrestricted exports of most commodities to most countries,
- Facilitation of certain exports to certain destinations.

Major Issues and Arguments

Foreign Availability and the Effectiveness of Multilateral Regimes. Industry groups believe that when technologies are available from foreign suppliers, due to non-existent or weak multilateral controls, unilateral controls force U.S. firms to cede the market to overseas competitors, while doing little to promote national security. Thus, they argue, legislation should authorize only those export controls that will be effective, and should concentrate on controls that coincide with the multilateral regimes of which the United States is a member.

Others contend the United States should strictly control any export that is likely to damage U.S. security or foreign policy, and that foreign availability should not be a primary consideration in determining the need for unilateral controls. While acknowledging the weaknesses of current regimes, opponents of further liberalization believe that rather than acquiescing to the international availability of sensitive technologies, the U.S. should actively promote more effective regimes and should not validate proliferation of sensitive technologies by taking part in that sales market.

The Licensing Process and Organization of the Export Control System. Industry leaders identify several problems with the existing licensing system: First, overlapping jurisdiction between the Commerce and State Departments with regards

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[13] (...continued)
of design and manufacturing know-how, b) keystone manufacturing, inspection, and test equipment, c) goods accompanied by sophisticated operation, application, or maintenance know-how, and d) keystone equipment which would reveal or give insight into the design and manufacturing of a U.S. military system, which are not available to threatening countries. The list can be seen at [http://www.dtic.mil/metl/].

to dual-use exports makes it unclear where the exporters need to apply for licenses. Second, extended time periods required for license approval compromise the reliability of U.S. suppliers and make it hard for manufacturers and customers to plan ahead. Third, the licensing system does not reflect advances in technology, foreign availability of dual-use items, and the economic impact of export controls on the industrial base. Finally, there is no opportunity for judicial review of licensing decisions.[14]

Others consider foreign availability and economic impact to be important considerations, yet secondary to national security. Export administration officials claim that they conduct thorough, fair, and expeditious license reviews. Time is required to check proposed export items against lists of controlled items, check end users and end uses against lists of suspect recipients, and coordinate with several government agencies. Officials say they must be able to "stop the clock" to obtain additional information and investigate certain issues on a case-by-case basis to insure that sensitive technologies do not find their way into the wrong hands. Some analysts who see national security as the primary purpose of the export control regime would question whether BXA belongs in the Department of Commerce. That Department's mission is mostly one of promoting exports and generally serving commercial interests. This, in some eyes, may create an institutional bias towards the granting of export licenses and skew the process against national defense goals. Other analysts point to the full and equal participation of other agencies in the current structure in arguing that such bias is unlikely to prevail.

China. Much of the debate over export controls has focused on the potentially vast Chinese market vs. the risks to U.S. security interests of exporting sensitive dual-use technologies and defense technologies to China. Representatives of the business community have argued that the United States has repeatedly taken a negative approach towards technology transfers to China in the past few years while its allies have not. They reported that Chinese companies will not ask U.S. companies to bid on sales because of the negative experience with the U.S. licensing process. As one foreign trade expert testified: "The result has been that the Chinese are denied nothing in terms of high technology, but U.S. firms have lost out in a crucial market. This serves neither our commercial nor our strategic interests".[15]

However, other analysts and several Members of Congress have expressed grave concerns about China's dual use technology and defense technology acquisitions. Defense Department analysts claim that lax U.S. export controls have enabled China's military to develop a "nationwide integrated command, control, communications,

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[14] For a further discussion, see CRS Report 94-492 E.

[15] Dr. Paul Freedenberg's testimony before the House Committee on International Relations, Subcommittee on International Economic Policy and Trade, March 3, 1999. Dr. Freedenberg is the Government Relations Director of the Association for Manufacturing Technology, and was an Under Secretary for Export Administration in the Reagan Administration.

computers, and intelligence (C^4I) system...which it could not have developed on its own".[16]

Since April 1998, the transfers of commercial communications satellites and the apparent transfer of associated rocket technology to China have been especially controversial. Although exports of such satellites were licensed by the Department of Commerce from late 1996 till March 1999, they were considered Munitions List items and licensed by the Department of State under the Arms Export Control Act in 1995 and early 1996 when the controversial incidents occurred. Since mid-March 1999, Congress has required that the authority to license exports of commercial communications satellites be exercised by the Department of State.[17] The export of commercial communications satellites for launch in China and alleged leaks by U.S. firms of associated missile technology to that country have proven controversial since April 1998. It was reported that U.S. firms may have engaged in transfers of sensitive technology to the PRC in the spring of 1996 during a study of a satellite launch accident in February of that year. Commercial communication satellites and related technology were considered Munitions List items and regulated by the State Department when the original export license was granted. In addition, licensing of missile technology exports has always been regulated by the State Department. The President had transferred jurisdiction over the export of commercial communication satellites to the Commerce Department in 1996, an action that was legislatively reversed in October 1998 when Congress required that jurisdiction over these items be returned to the State Department by March 15, 1999.[18] According to Rep. Cox (chair) and Dicks (ranking democrat) of the House Select Committee on technology transfers to China, several technology acquisitions by China, in addition to the satellite related transfers, have harmed U.S. national security.[19]

Impact on the U.S. Economy and U.S. Businesses. The argument is often heard that the U.S. economy is being damaged by export controls that cause U.S. high-tech companies, farmers, and others to lose overseas sales, thereby suffering a loss of global competitiveness, decreased ability to develop new products and services, and loss of profits and jobs. While export controls probably do have some impact on the economy, the effect may be overstated by the claims of adversely affected firms and sectors.

Static Losses. International trade benefits the economy by enabling the nation to acquire desirable imports and helping the nation to exploit the benefits of specialization, economies of scale, and comparative advantage; and, in some circumstances, to realize improved prospects for investment and technological advance. These forces increase national income over what would be possible without trade. Therefore, one would expect export controls, by impeding exports, to reduce

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[16] Halper, Stefan, "China Syndrome Manifestations," *Washington Times*, March 19, 1999.

[17] Required by the National Defense Authorization Act for FY 1999, P.L. 105-261.

[18] Storm Thurmond National Defense Authorization Act for FY 1999, P.L. 105-261, 1513. New regulations were issued at 64 Fed. Reg. 13679 (1999).

[19] See *China: Possible Missile Technology Transfers from U.S. Satellite Export Policy - Background and Chronology,"* by Shirley A. Kan, CRS Report 98-485.

U.S. economic welfare. The economic cost of export controls is often expressed as lost export sales, which may be a good indicator of the cost to a particular industry or sector, but very likely overstates the cost to the overall economy.

The economic cost of export controls is often expressed as the value of lost export sales. Such a measure may be a good indicator of the cost to a particular industry or sector. By itself it is a measure that, while being an element entering into a calculation of economy- wide cost, likely overstates the true economic cost of this trade impediment.[20] Standard economic analysis indicates that the total economic loss associated with imposing export controls would be the *net* outcome of several opposite effects. These effects can be positive or negative, depending on whether one is a producer or consumer and whether one's economic circumstances are linked to exports or imports.

Consider first the direct effects of reducing exports. One obvious effect is an unfavorable impact on domestic producers who export. This occurs because producers are unable to sell as much of the controlled good as an export at the more favorable world price and must settle for the lower domestic price. Lower product prices reduce the economic welfare of domestic producers. There is, however, a favorable economic effect on domestic consumers. This arises because the formerly exported goods, and the resources that produce them, are not lost to the economy, but are absorbed into the domestic economy via a fall in prices. Lower product prices improve the economic welfare of domestic consumers of the exported product. In most circumstances the strong expectation is that the loss to domestic producers of exports will exceed the gain to domestic consumers of the exported good, leading to a "net" economic loss for the whole economy directly attributable to diminished export sales.

This is only half the story, however. The nature of trade is the exchange of exports for imports. If exports are reduced, then, ultimately, so must the imports that they are traded for. This induced reduction of imports will also have positive and negative impacts on economic welfare. Domestic producers, who compete against imports, will see their sales and economic well-being rise. Consumers of imports, on the other hand, are made worse off as their opportunities to buy the preferred lower-price foreign goods are reduced. In this case, the strong expectation is that the economic loss to domestic consumers of imports will exceed the economic gain of producers of import-competing goods, leading to a net loss to the economy directly attributable to reduced imports.

The combined effect of a net loss from diminished exports and a net loss from diminished imports must be an unambiguous economic loss to the overall economy. This is a logical outcome, for if trade is reduced, the "gains from trade" are also reduced and national economic welfare will be smaller than it would be without export controls. This total loss, however, is likely to be a *fraction* of the initial reduction of export sales, because the resources that produced those exports are not

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[20] For a fuller discussion of the economic case for and against free trade, see: U.S. Library of Congress. Congressional Research Service. *Trade, Trade Barriers, and Trade Deficits: Implications for Economic Well-Being*. CRS Report RL30226 by Craig Elwell.

lost to the economy. They are used less efficiently, but can still be used to produce other exports or other import-competing goods that improve economic well-being.

This less efficient allocation of economic resources and associated reduction of the gains from trade, induced by an impediment to exporting, leads to a onetime reduction of national income. This lowering of national income is called a *static loss* and is the standard measure of the economic costs to the economy of a trade barrier.

Estimating the Economic Costs of the EAA. The analytical framework outlined above suggests, however, that while reduced export sales are the initial effect of export controls, the ultimate cost (*i.e.*, static loss) to the U.S. economy from export controls is likely to be a *fraction* of the value of lost export sales. The size of this fraction will be a function of the relative changes in producer and consumer gains and losses which, in turn, will be determined by the underlying characteristics of demand and supply in the markets affected.

Evidence from other trade liberalization or trade restriction initiatives can suggest the probable range within which the EAA's impact lies.[21] Studies show that multilateral policies that have affected many economic sectors and many trading partners have typically had the largest welfare impact with the national income rising as much as 35% for a given dollar rise in exports. A smaller effect is found for unilateral polices that work across a narrower spectrum of trading partners, typically generating welfare changes of between 10% to 20% of the associated change in export sales. At the low end, one recent study of a variety of unilateral economic sanctions against a few small economies found that the U.S. welfare loss was only about 5% of lost export sales.

It seems unlikely that the impact of export controls is most similar to that of a large multilateral trade policy, but neither is it clear that they would be more like unilateral export sanctions. Absent more direct evidence, a reasonable conjecture about the static welfare losses to export controls would be a loss to the economy of between 5% to 35% of the value of lost export sales, with the more probable effect in the middle of that range rather than at the extremes.

The actual welfare loss will, of course, also depend on the magnitude of lost export sales associated with the policy. A study done in 1995 judged that export controls could have caused as little as $10 billion or as much as $40 billion in forgone export sales, but the greatest probability was attached to a central range of $21 to $27 billion.[22] (Total U.S. exports in 1995 were valued at $806 billion.)

Combining these two sets of data gives an estimated range for the static economic welfare loss would go from a low of $500 million (0.05 x $10 billion) to a high of $14 billion (0.35 x $40 billion), but with the greatest probability attached to

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[21] The welfare effects of selected trade policies are summarized in: U.S. Congress, Congressional Budget Office. *The Domestic Costs of Sanctions on Foreign Commerce.* Washington DC. 1999. Pp. 77-83.

[22] See: Richardson, J. David. *Sizing Up U.S. Export Disincentives.* Washington DC: Institute for International Economics. pp. 127-131.

a central range of about $2 billion (0.10 x.$20 billion) to $4 billion (0.15 x $27 billion). It may help to put these loss estimates into perspective if one considers that in 1995 U.S. GDP was valued at about $7.3 trillion, putting the estimated economic losses in a range from 0.007% to 0.2% of GDP. Liberalization of export controls since the early 1990s suggests that this burden would have become even smaller today.

Dynamic Losses.Some would argue that, in addition to the loss of static gains from trade, one should add in the loss of *dynamic* gains from trade caused by export controls. In general, dynamic losses could result from a trade barrier causing a *sustained reduction* of the economy's *long-run rate* of economic growth. Because a change in the growth rate has a *cumulative effect* on national income (in contrast to the one-time impact of a static loss), dynamic effects could, with only a small annual decrement to the long-run growth rate, add up to a very large long-run loss. If present, dynamic losses, perhaps many fold the size of associated static losses, could raise substantially the total domestic economic costs of U.S. export controls.

In general, proponents of the existence of dynamic impacts argue that impediments to trade cause a degrading of the environment for investment and innovation in exporting industries. This eroding of economic incentives would likely be particularly important for firms at the technological forefront, whose success may be tied to capturing large global markets to help spread the costs of enormous R&D budgets and to generate more opportunities for realizing productivity gains through "learning by doing." More specifically, these are the types of firms whose products carry a significant "dual-use" potential, and would likely be significantly affected by U.S. export control policies.

The existence and size of such dynamic effects, however, is more *uncertain* than the existence static efficiency effects. Mainstream models of economic growth suggest that the engine of long-run economic growth is the pace of improvement in technical knowledge and that such improvement moves at a speed and with a caprice that is substantially unrelated to economic policies. Despite changes in a variety of economic policies, including trade policies, the trend growth rate for the U.S. economy has shown little variation over the last 125 years, with GDP per capita rising at a very steady trend of 1.8% per year. Trade restrictions and other policies can lower the level of income, but, according to mainstream economic models, they do not permanently change the rate of long-run growth.

The empirical literature on the trade and growth linkage should be interpreted cautiously. Many studies have found there to be a relation. But, others have offered good reasons to think that the relationship may not be particularly robust. In light of all of this, reliance on projected economic losses derived from a trade barrier's possible *dynamic* effects may risk overstatement.[23]

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[23] For a fuller discussion of the possible linkage between trade and growth see: U.S. Library of Congress. Congressional Research Service. *Does Trade Liberalization Affect the U.S. Long-run Rate of Growth?*. CRS Report RL30377 by Craig K. Elwell

Sectoral Costs. As suggested above, the direct cost of export controls to particular firms, industries, and sectors is larger than the net cost to the overall economy. The open and flexible nature of the U.S. economy helps to minimize such costs, although, significant burdens may still remain. Estimates of lost export sales are relevant to an evaluation of the U.S. export control regime. Lost sales provide some insight into possible adjustment costs and other social costs associated with export controls. They may also become useful in any discussion of equity of burden and possible policies to compensate those harmed by export controls. In theory, the federal government can provide compensation to ameliorate the domestic burden of export controls.

Economic Sanctions and Export Controls. In addition to the laws and regulations that restrict certain exports in order to protect U.S. national security or foreign policy, other laws and regulations restrict certain types of exports to punish individuals, companies, or countries that have violated international norms in such areas as proliferation, regional stability, terrorism, drug trafficking, and human rights. These sanctions are intended to punish the violators, persuade them to cease violating the norms, deter others from such violations, and prevent them from using the exports in ways that threaten U.S. security or foreign policy goals. There has been a great deal of debate in recent years on the need for sanctions to support national security and foreign policy goals, their effectiveness and appropriateness, and the cost of sanctions to U.S. exporters and the U.S. economy.[24]

Specific Technologies of Concern

Controversial exports have included telecommunications and advanced electronic equipment, precision machine tools (especially computer assisted machines), guidance technology (including Global Positioning System technology), synthetic materials (especially high-strength, light-weight, heat- and corrosion-resistant), specialized manufacturing and testing equipment (including mixers, high temperature ovens, heat and vibration simulators). In the last few years, congressional attention has focused on the following goods and technologies.

High Performance Computers. High performance computers (HPCs) are computers that can perform multiple, complex digital operations within seconds.

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[24] See *Economic Sanctions to Achieve U.S. Foreign Policy Goals: Discussion and Guide to Current Law*, by Dianne E. Rennack and Robert D. Shuey, CRS Report 97-949, for further discussion of U.S. sanctions. Two proposals before the 106th Congress could, if enacted, have a substantial impact on sanctions imposed for foreign policy purposes, including those imposed under the authority of the EAA. The "Enhancement of Trade, Security, and Human Rights through Sanctions Reform Act," H.R. 1244 and its companion in the Senate, S. 757, seek to "establish an effective framework for consideration by the legislative and executive branches of unilateral economic sanctions...." Passage of the measure would, in part, require the executive branch to research any proposed sanctions and document the impact of imposing sanctions. Such research would include public hearings, impact studies on particular sectors of the American economy, consulting with and reporting to Congress. An earlier iteration of the "Sanctions Reform Act" was introduced in the 105th Congress but was not enacted. The "Sanctions Rationalization Act," S. 927, would authorize the President to delay, suspend, or terminate economic sanctions if he found it to be in the "important national interest," to do so.

Sometimes also called supercomputers, HPCs are actually a wide range of technologies that also include bundled workstations, mainframe computers, advanced microprocessors and software.[25] The benchmark used for gauging HPC computing performance is to count the millions of theoretical operations per second, or MTOPS, that the computer can perform. The actual MTOPs a computer can perform over time can vary, based on the operations are performed (some can take longer than others or can be performed while other operations take place) and the real cycle of the computer.

HPC technologies have removed many of the technological restraints in advanced computing by reducing long computing times and complex functions that hindered solving mathematical, scientific, and engineering problems.[26] The executive branch has recognized that HPCs are critical in a variety of defense and security-related areas, including nuclear and conventional weapons programs, encryption, and military operations.[27] Continual increases in the computing power of HPCs, the extent of foreign availability of models comparable to some of those produced in the United States, the adequacy of relying on high computing power alone as a basis for determining the potential ability of HPCs to fulfill specific user goals, and the degree to which foreign use of HPCs in ways that adversely affect U.S. interests can be accurately predicted and successfully monitored, are among the factors in the export control debate.

Due to swift and sustained technological advances in the commercial computer field, export policy regarding HPCs was revised in early 1996 to remove license requirements for most HPC exports of up to 2,000 MTOPs.[28] To deal with military

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[25] A supercomputer is usually defined as a single, complex, mainframe computer that can undertake a series of specific computer functions. Michael S. Malone, ed., "Big Iron; Supercomputers are Back and Changing Business, Science, and Even You," Forbes ASAP, February 22, 1999. 96 pages.

[26] For further discussion, see GAO Report GAO/NSIAD-98-196, *Export Controls: Information on the Decision to Revise High Performance Computer Controls* (September 1998), and GAO Report GAO/NSIAD-98-200, *Export Controls: National Security Issues and Foreign Availability of High Performance Computers* (September 1998).

[27] While the potential use of HPCs by countries such as China, Pakistan, and India, to improve their nuclear programs was reported upon by the Department of Energy in 1998, studies of possible foreign government use of HPCs in other areas were still in progress at the time. GAO Report GAO/NSIAD-98-200, pp. 2-4; GAO Report GAO/NSIAD-98-196, at 7-8. As noted by GAO, the DOE study "concluded that 'the acquisition and application of HPCs for nuclear development would have the greatest potential impact on the Chinese nuclear program — particularly in the event of a ban on all nuclear weapons testing.'" *Id.* p. 8.

[28] 61 Fed. Reg. 2099 (1996). An important factor in the Administration's review of existing controls was a Stanford University study commissioned by the Departments of Commerce and Defense concluding, in summary, that the existing control regime would become increasingly ineffective because of rapid technological development and diffusion in the HPC field, the changing usage of HPCs for U.S. national security purposes, and the increasing difficulty of using MTOPSs as a basis for determining which items should be controlled. The study

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and proliferation concerns, the Commerce Department organized countries of destination into 4 tiers with increasing levels of export control. These range from a no-license policy for HPC exports to Tier 1 countries (Western Europe, Australia, Mexico, Japan, and New Zealand) to the strictest controls for exports to Tier 4 countries (Cuba, Iran, Iraq, Libya, North Korea, Sudan, and Syria). Tier 3 countries, including China, Russia and other countries of the Commonwealth of Independent States (CIS), India, and Pakistan, were made subject to a dual control system distinguishing between civilian and military end-users and end-uses. Export licenses would be required for HPCs above 2,000 MTOPs for military and weapons end-users and end-uses; and above 7,000 MTOPS for any recipient or use. Licenses for items in the former category would be considered on a case-by-case basis; licenses for those in the latter would generally be approved.[29]

Under the policy change, civilian consumers in Russia, other CIS countries, and China could buy high-performance computers without going through the rigorous U.S. export licensing process if, for example, the computers were not to be used at a nuclear weapons facility. After several refusals by the United States to approve exports to Russia of computers for nuclear-related purposes, Russia reportedly obtained 16 IBM computers through evasion of U.S. export license requirements and installed the computers in the closed city of Arzamaz-16 (now known as Sarov), where the Soviet Union had designed its hydrogen bomb and Russia has continued to engage in nuclear weapons research.[30] The United States originally insisted that the computers be returned, but instead, after two years of negotiations, Russia agreed to remove the computers from the nuclear weapons facility and transfer them to a new commercial computing center which opened in Sarov in October 1999.[31] End-

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[28] (...continued)
recommended that in the short-term new upper and lower export control thresholds be set based on "militarily important applications and uncontrollablity," respectively. *Building on the Basics: An Examination of High-Performance Computing Export Control Policy in the 1990's*, Seymour Goodman, Peter Wolcott, and Grey Burkhart (November 1995).

[29] 15 C.F.R. § 742.12(b)(3). HPC exports not requiring a license may be shipped under a special license exception. *See* 15 C.F.R. § 740.7, "Computers (CTP) [composite theoretical performance]."

[30] "Testing the Limits – A Special Report; Despite U.S. Ban, Russia Buys I.B.M. Computers for Atom Lab," *N.Y. Times*, Oct. 27, 1997, p. A1. Russia had reportedly indicated that the computers were to be used for the computer simulations that would take the place of actual nuclear testing in the event the Comprehensive Nuclear Test Ban Treaty went into force. The United States undertook a criminal investigation of the computer exports, but Moscow reportedly would not allow interviews with Russian witnesses, citing national security grounds. *Id.* A Russian subsidiary of IBM eventually pled guilty to engaging in the unlawful export of HPCs to the Russian nuclear weapons laboratory and was sentenced to pay a $8.5 million criminal fine. Civil penalties were also imposed on the subsidiary as a result of a concurrent administrative proceeding. Bureau of Export Administration, *Annual Report for Fiscal Year 1998*, at 115-16; "I.B.M. Guilty of Illegal Sales to Russian Lab," *N.Y. Times*, Aug.1, 1998, at A1.

[31] "U.S. Resolves a Dispute with Russia on Computers," *N.Y. Times*, Oct. 1, 1999, at A9. The Sarov Open Computing Center, a joint project of the Department of Energy (DOE) and
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user and verification problems have also arisen with regard to China. For example, an executive branch review reportedly discovered an HPC built by Sun Microsystems in the possession of the Changsha Institute of Science and Technology, a weapons research facility run by China's People's Liberation Army, the computer allegedly having been sold to the Institute in 1997 by one of Sun's Hong Kong distributors without an export license. The computer was returned to the United States in November of that year.[32] In addition, until 1998 China had not allowed the United States to conduct post-shipment checks to establish end-use control, which made it very difficult to identify where HPCs were located and in what capacity they were being used.

Congress tightened Tier 3 controls on HPC exports in the National Defense Authorization Act for FY1998 (NDAA FY98), where it enacted new requirements for advance notification and post-shipment verification of these items. The statute requires exporters to notify the Commerce Department in advance of a proposed export or reexport of an HPC greater than 2,000 MTOPs to a Tier 3 country and prohibits the export or reexport of any such HPC without a license if the Secretary of Commerce, Defense, State, or Energy objects.[33] Objections must be raised within 10 days after the agency receives the notification. The President is authorized to raise the MTOP level for notification purposes, but the new threshold may not go into effect until 6 months after the President justifies it in a written report to Congress. Similarly, the President may remove countries from Tier 3 (with some exceptions) but must notify Congress 120 days in advance.

The NDAA FY98 also requires post-shipment verification (PSV) of exports of computers of more than 2,000 MTOPS to Tier 3 countries, though the provision will not apply to a country moved out of Tier 3 under the authority described above.[34] To facilitate PSV of sensitive items, the United States signed an agreement with China in 1998 setting forth terms for post-shipment visits to verify end-use of high technology exports generally. While acknowledging the limited nature of current U.S. visits to that country, Under Secretary of Commerce Reinsch expressed hope in 1999

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[31] (...continued)
the Russian Ministry of Atomic Energy (Minatom), is intended to provide technology positions in the competitive software area for former Russian nuclear researchers and is supported in part by DOE's Nuclear Cities Initiative (NCI). "Richardson, Adamov Advance Nuclear Cities Initiative," DOE News Release, October 1, 1999 [http://www.doe.gov/news/releases99]. A number of legislative restrictions have since been placed on the NCI, including a prohibition on the use of authorized funds until the Secretary of Energy certifies to Congress "that Russia has agreed to close some of its facilities engaged in work on weapons of mass destruction" and requirements that the Administration report to Congress on various aspects of the program's implementation. National Defense Authorization Act for Fiscal Year 2000 (NDAA, FY2000), P.L. 106-65, § 3136(b).

[32] "China: the one that almost got away," *EIU Business China*, Dec. 8, 1997; "Report: Hong Kong firm charged for exporting computer to China," *AP Worldstream*, April 18,1999; available in LEXIS, News Library, Curnws File.

[33] National Defense Authorization Act, FY1998 (NDAA, FY 98), P.L. 105-85, § 1211.

[34] NDAA, FY98, § 1213.

congressional testimony for future expansion of these activities.[35] Congress recently directed the President to seek an agreement with the PRC to revise the existing verification system as it applies to NDAA-covered HPCs "so as to provide for an open and transparent system providing for effective end-use verification for such computers."[36] It also relaxed the NDAA's PSV requirement somewhat by making any increased MTOP level established for purposes of advanced notification applicable to the former requirement as well.[37]

In July 1999, the Administration announced that it was notifying Congress of its intent to relax some controls on HPC exports, including raising the export license threshold for Tier 3 countries from 7,000 to 12,300 MTOPS for civilian end-users and from 2,000 to 6,500 MTOPS for military end-users.[38] In addition, the President notified Congress July 26 that the NDAA FY98 advance notification level would be raised from 2,000 to 6,500 MTOPS, a change that under the terms of the NDAA FY98 will go into effect six months after this date.[39] On February 1, 2000, six months after the notification to Congress, the Clinton Administration announced that these changes, the fourth since 1993, would now be enforced.[40]

Some have argued that a strategic analysis of the potential foreign use of HPCs is now needed and that the strategic importance of an HPC should not be tied merely to its MTOP level;[41] others have argued that the current NDAA system has successfully restrained the export of problematic items without significantly burdening

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[35] Testimony of William A. Reinsch, Under Secretary for Export Administration, Department of Commerce, Before the Senate Comm. on Banking, Housing and Urban Affairs Committee, Subcomm. on Trade and International Finance, January 20, 1999. The United States and China also agreed in 1998 on expanding Chinese end-use certificates for items controlled for nonproliferation reasons. BXA Annual Report, FY 1998, *supra* note 27, p. 27. As of January 1999, the Commerce Department has required that an exporter obtain a PRC End-User Certificate issued by the Ministry of Foreign Trade and Economic Cooperation before exporting a HPC of any value to the PRC. 64 Fed. Reg. 2429 (1999).

[36] NDAA, FY2000, P.L. 106-65, § 1407(a)-(b).

[37] NDAA, FY98, § 1213(e), *as added by* NDAA, FY2000, P.L. 106-65, § 1407(c).

[38] Revised regulations were published August 3, 1999. 64 Fed. Reg. 42009 (1999).

[39] Text of a Letter from the President to the Chairmen of the House and Senate Committees on Armed Services, the Senate Committee on Banking, Housing, and Urban Affairs, and the House Committee on International Relations, released July 26, 1999 [http://www.pub.whitehouse.gov/uri-res/I2...:pdi://oma.eop.gov.us/1999/7/27/5/text.1].

[40] Additional changes were also made to Tier 2 classifications and MTOP levels, as well as changes in microprocessor control levels. See: [http://www.pub.whitehouse.gov/factsheet/exportcontrolsoncomputers].

[41] Testimony of Dr. Stephen Bryen on U.S. Policy on High Performance Computer Exports to the House Armed Services Committee, Oct. 28, 1999. However, Dr. Bryen's testimony is based on his contention that "high performance computers" and "supercomputers" are one and the same; see: Congressional Research Service, *Technology Transfer to China: An Overview of the Cox Committee Investigation Regarding Satellites, Computers, and DOE Laboratory Management*, by Marcia S. Smith, Glenn J.-McLoughlin, and William C. Boesman, CRS Report RL30231, June 11, 1999, pp. 8-11.

domestic industry.[42] The Administration has maintained that the 2,000 MTOP level mandated in the NDAA FY98 is outdated and has prevented the Administration from focusing its limited resources on HPC exports of particular concern.[43] It has also requested that Congress shorten the congressional review period for raised MTOP levels from 180 to 30 days.[44] A legislative initiative at the end of the 106th Congress, 1st Session, to make this change was unsuccessful.[45] Congress did, however, address the strategic capabilities of HPCs, by directing the President, in consultation with the Secretaries of Defense and Energy, to undertake a "comprehensive review" of the national security implications of exporting HPCs to the PRC, including "empirical testing of the extent to which national security-related operations can be performed using clustered, massively-parallel processing or other combinations of computers."[46] The initial report is to be provided to the House and Senate Armed Services Committees by April 5, 2000, and is to be updated annually until 2004.

The Export Administration Act of 1999, S. 1712, as reported (S.Rept. 106-180), would make changes to NDAA FY98 requirements for both advance notification and post-shipment verification, as well as provide for the possible decontrol of specific HPCs. Section 211(c)(2) of the bill would shorten the congressional review period for increased MTOP levels from 180 to 60 days. Section 607(f) would repeal the NDAA post-shipment verification requirement altogether, while generally directing the Commerce Department to target post-shipment verifications to "exports involving

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[42] Testimony of Gary Milhollin, Before the Committee on Armed Services, U.S. House of Representatives, October 28, 1999.

[43] Testimony of Under Secretary William A. Reinsch on High Performance Computer Export Policy, House Committee on Armed Services, October 28, 1999. In his testimony, Under Secretary Reinsch reported the following statistics for activity under the NDAA notification requirement: "To date we have received a little more than 2500 notifications under the NDAA. Of this amount, 205, or 8% were converted to licenses. Of those 205 licenses, nine, or less than one half of 1%, have been denied. A number of other cases were returned to exporters to allow them to assemble the documents needed for the lengthy process of license review, and roughly one hundred and twenty notifications are pending at this time."

A GAO report released by Armed Services Committee Floyd Spence at the above-cited hearing states that between February 3, 1998 and March 19, 1999, 938 proposed exports were notified to the Commerce Department, 828 of which did not require a license. Of the remaining applications, 16 licenses were approved, 6 denied, and the remainder returned to the exporters without action. GAO reported that the majority of these applications involved China, India, and Israel; in 9 cases, licenses were required for end-users who had, prior to implementation of the NDAA requirements, obtained computers without them. GAO Testimony GAO/T-NSIAD-00-53, *Export Controls: Implementation of the 1998 Legislative Mandate for High Performance Computers* (October 1999); GAO Report GAO/NSIAD-00-45, *Export Controls: Statutory Reporting Requirements for Computers Not Fully Addressed* (November 1999).

[44] Testimony of Under Secretary William A. Reinsch on High Performance Computer Export Policy, House Committee on Armed Services, October 28, 1999.

[45] "Budget Bill Clears Senate, House - Update," Newsbytes, November 19,1999, *available in* LEXIS, News Library, Curnws File. H.R. 2623 (Lofgren) and S. 1483 (Reid) would each shorten the period to 30 days. See also S. 1712, § 211(c)(2), as reported, discussed *infra*.

[46] NDAA, FY2000, P.L. 106-65, § 1406.

the greatest risk to national security including, but not limited to, exports of high performance computers" and providing enforcement authorities in the event an end-user or country refuses to allow verification of a controlled item.[47] In addition, §§ 211-213 of the bill would allow the decontrol of a specific item regulated for national security reasons if the Secretary of Commerce determined its foreign availability or mass-market status; any HPC license requirement under § 1211 of the NDAA FY98 would no longer apply unless the President subsequently used his authority under the bill to set aside the Secretary's determination.

Encryption.[48] Encryption is a means of scrambling data so parties may send and receive private messages, authenticate the identity of the sender, or ensure that transmitted data has not been tampered with. Contemporary encryption is generally based on the pairing of an algorithm and a "key" — usually a string of 40-128 bits-which protect messages from computer-based unscrambling.[49]

Encryption considered to have military significance is classified as a defense article or defense service and controlled by the State Department under § 38 of the Arms Export Control Act (AECA) [22 U.S.C. § 2778]. While all encryption exports were originally regulated under the AECA, in 1991 the Executive Branch formally began to move some jurisdiction over commercial encryption to the Commerce Department for regulation under the now-expired Export Administration Act.[50] The President transferred jurisdiction over all nonmilitary encryption items to the Department of Commerce (DOC) in late 1996.[51]

The Administration has promoted the use of strong commercial encryption (*i.e.*, 56-bit and higher) domestically as well as overseas, but had required that products of any key length could be exported only if designed with a "key recovery" feature, under which third-parties have access to encryption keys. It also allowed 56-bit encryption to be exported without such a feature if a company committed itself to the development of a key recovery product. While the national security and law enforcement communities have supported this feature, industry, consumer, and privacy groups have objected to a governmental role in determining who holds "spare keys." Opponents have also argued that terrorists and criminals will not entrust keys to third parties, that easily-exportable encryption may be invaded relatively easily and thus does not meet businesses' privacy needs, and that the worldwide availability of restricted products undermines U.S. unilateral control efforts.

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[47] Section 607(j) of the bill would authorize $4.5 million and other funds as necessary for the Commerce Department to hire 10 additional inspectors to be posted in the PRC, Russia, and Hong Kong and other locations to verify the end use of "high-risk dual-use technology."

[48] For further discussion, see *Encryption Technology: Congressional Issues*, by Richard M. Nunno, CRS Issue Brief IB96039, and *The Encryption Debate: Intelligence Aspects*, by Keith G. Tidball and Richard A. Best, Jr., CRS Report 98-905. Also, *Encryption Export Controls*, by Jeanne J. Grimmett, CRS Report RL30273.

[49] See generally CRS Report RL30273, *ibid.*

[50] 56 Fed. Reg. 42285 (1991).

[51] Exec. Order 12036 of November 15, 1996, 61 Fed. Reg. 58767 (1996).

In 1998, the Administration changed its key recovery policy, allowing the export of 56-bit encryption to all destinations except embargoed countries under a license exception after a one-time agency review and without a commitment to produce a key recovery product.[52] In addition, the favorable export treatment previously granted to financial institutions was extended to insurance companies, health and medical end-users, and, with some end-use restrictions, on-line merchants. Using a licensing exception and following a one-time agency review, U.S. companies could also export encryption of any key length for internal company proprietary use to their subsidiaries in all but embargoed destinations. The Administration also announced plans to establish a technical support center run by the FBI to provide federal, state, and local law enforcement with the funds and expertise needed to deal with developments in encryption technology.[53]

Congressional testimony in early 1999 again illustrated differing industry and Administration views on export controls in this area. In his March 4, 1999 testimony before the Subcommittee on Courts and Intellectual Property of the House Judiciary Committee, Electronic Industries Association President Dave McCurdy stated that "[n]o amount of government subsidies could do more to develop the European encryption industry than U.S. export controls have." McCurdy added that the effect of the current policy is to compromise the security of millions of people who are operating internationally, while damaging the competitiveness of the U.S. high-tech industry.[54] In the same hearing, Undersecretary William A. Reinsch told the Subcommittee that the Administration had already loosened encryption export controls last year at the request of business leaders, but believed that the current controls are vital to national security. As an example of national security concerns over encryption, export control proponents point to China and claim that the PLA can now coordinate its army, air force, and navy movements through encrypted messages that are difficult if not impossible for the National Security Agency to decipher.[55]

In September 1999, the Administration announced a further relaxation of export controls, allowing encryption items of any key length to be exported under a license exception, after a one-time technical review, to individuals, firms, and other non-government end-users in any country except for seven terrorist countries.[56] After a

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[52] For further details of the new policy, see 63 Fed. Reg. 72156 (1998), and Department of Commerce, Bureau of Export Administration, "Summary of Encryption Policy Update," [http://www.bxa.doc.gov]. See generally, Baker & Banker, "The New Encryption Export Policy: The U.S. Government Rethinks Key Recovery," *in Coping with U.S. Export Controls* (Practicing Law Institute 1998), available in *Westlaw, JLR File.*

[53] White House press briefing on new encryption policy, September 16, 1998 [http://www.whitehouse.gov].

[54] PR Newswire, NY, March 4, 1999.

[55] Halper, *ibid.*

[56] "Administration Updates Encryption Export Policy; Fact Sheet," September 16, 1999 [http://library.whitehouse.gov]. Along with its revised export policy, the Administration has proposed the Cyberspace Electronic Security Act of 1999, which would set forth limitations on the government's use and disclosure of encryption keys obtained under court order, address

(continued...)

technical review, retail encryption commodities and software of any key length would be exportable under a license exception to any recipient in any country except for the same seven terrorist destinations. Post-export reporting would be required, however, for certain encryption items. Following criticism by companies, privacy groups, and Internet proponents, the Administration postponed publication of the implementing regulations and expanded certain aspects of the earlier proposal in the new rules that were eventually issued January 14, 2000.[57]

In related judicial action, the U.S. Court of Appeals for the Ninth Circuit, in a 2-1 decision issued in May 1999, affirmed a lower court ruling holding encryption source code to be protected speech for purposes of the First Amendment and striking down DOC encryption regulations as an unconstitutional prior restraint on such speech.[58] The Ninth Circuit granted the Government's motion for a rehearing September 30, 1999, and later rescheduled oral argument from December 16 to March 21, 2000. The Government had moved to reschedule, arguing that the new encryption rules could possibly alter the treatment of encryption source code in a way that might affect the constitutional issues involved in this case. On January 26, 2000, the Ninth Circuit remanded the decision to the earlier three-judge panel for reconsideration in view of the January regulations.[59] In a separate case, the U.S. Court of Appeals for the Sixth Circuit has since ruled that encryption source code merits First Amendment protection.[60]

Bills introduced in prior Congresses to relax or revise export controls on commercial encryption received some committee action but were not voted upon in

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[56] (...continued)
the disclosure and use of stored recovery information by recovery agents for governmental purposes, and authorize appropriations for the FBI's Technical Support Center. 145 Cong. Rec. H8390-91 (daily ed. Sept. 21, 1999). The proposed legislation is contained in H.Doc. 106-123.

[57] "Revisions to Encryption Items; Interim final rule; request for comments," 65 Fed. Reg. 2492 (2000); "Administration Updates Encryption Export Policy; Fact Sheet," January 12, 2000 [http://www.bxa.doc.gov/encryption/]; "U.S. Eases Tight Government Restrictions on Exports of Strong Encryption Items," 68 U.S.L.W. 2424 (BNA 2000). Among other things, DOC broadened the encryption license exception as it applies to source code; expanded the meaning of "retail" to include the provision of encryption through mail order, electronic, or telephone call transactions; and made the encryption license exception available for exports to government entities that are telecommunications companies and Internet service providers, so long as the export does not involve a non-retail product that will be used to provide services specific to government end-users. In addition, DOC announced that foreign nationals will no longer need an export license in order to work on encryption for U.S. firms in the United States.

[58] Bernstein v. U.S.Dep't of Justice *et al.*, 176 F.3d 1132 (9th Cir. 1999).

[59] "Ninth Circuit Remands Encryption Case in Light of Recently Revised Encryption Policy," 17 Int'l Trade Rep. 204 (BNA 2000).

[60] Junger v. Daley, No. 98-4045 (6th Cir. April 5, 2000).

either House.[61] H.R. 850 and S. 798, introduced in the 106th Congress, would also significantly loosen export controls on commercial encryption products.[62]

Stealth Technology and Materials.[63] Stealth design incorporates materials, shapes, and structures into a functional system. There are two major stealth technique categories: first, materials can deflect an incoming radar signal to neutral space thus preventing the radar receiver from "seeing" the object. Second, materials may absorb incoming radar signals preventing them from reflecting back to the receiver. Stealth related commodities are sensitive from an export control perspective because some materials and processes involved have civil applications which make it difficult to control dissemination and retain U.S. leadership in this technology.[64]

There have been some concerns over stealth related exports. In 1994, the Department of Commerce approved two applications to export a high-performance, radar absorbing coating. Both applications were approved in less than 10 days, and, in accordance with referral procedures, the Commerce Department did not refer the applications to the State or Defense Departments. Reportedly, 200 gallons of the exported material would be used by a German company for a cruise missile project, and by another country for a commercial satellite. In addition, the radar frequencies this coating seeks to defend against reportedly include those employed by the Patriot anti-missile system. In response to this report and concerns raised by DOD, the State Department performed a commodity jurisdiction review and ruled that radar-absorbing coating was included on the U.S. Munitions List and therefore under State Department's export control jurisdiction. State did not approve the applications.[65]

Options for Congress

Congress has several options in addressing export administration policy, ranging from approving no new legislation to rewriting the entire Export Administration Act. Some of the major legislative approaches and their implications are outlined below.

Do nothing. This approach would require the continuation of export controls under the emergency authority of IEEPA. Thus, limitations of IEEPA would continue

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[61] For discussion of action in the 105th Congress, see CRS Issue Brief IB96039.

[62] H.R. 850, the Security and Freedom Through Encryption (SAFE) Act, has been reported from the House Judiciary Committee, House Commerce Committee (as amended), and House International Relations Committee (as amended); significantly more restrictive versions of the bill have been reported by the House Armed Services Committee and House Permanent Select Committee on Intelligence (H.Rept. 106-117, Pts 1-5). S. 798, the Promote Reliable On-Line Transactions to Encourage Commerce and Trade (PROTECT) Act of 1999, has been reported favorably and without amendment by the Senate Commerce Committee (S.Rept. 106-142). For further discussion, see CRS Report RL30273.

[63] For further discussion, see GAO report GAO/NSIAD 95-140, *Export Controls: Concerns over Stealth Related Exports* (May 1995).

[64] GAO Report GAO/NSIAD 95-140.

[65] *Ibid.*

to apply — including its lower penalties and other deficiencies regarding enforcement. The Executive branch would continue to administer export controls with a considerable amount of discretion, absent new legislative directives.

Restore the authority of the EAA 79 with increased penalties. This approach, as applied in H.R. 973,[66] would address immediate technical issues implicated by the use of IEEPA to extend the expired export control regime, but would postpone consideration of several unresolved policy issues.

Conduct rigorous oversight. This approach can help insure compliance with existing law and policy and could help build the foundation for a new policy.

Legislate U.S. export administration policy for specific commodities. Legislation on encryption (as in H.R. 850 or S. 798), high-performance computers, nuclear weapons, chemical weapons, biological weapons, missiles and other commodities helps to fill gaps in export administration policy but theses separate efforts would fail to provide an overall policy framework and implementing structures and procedures.

Legislate U.S. policy for exports to particular destinations. Legislation that restricts exports to Iran, Iraq, Libya, North Korea, Cuba, China, or Russia may help address particular current problems but may fail to provide a broad policy and implementing structures and procedures and may not provide for changed circumstances in these areas.

Legislate U.S. policy to persuade exporters in other countries to restrict their exports of specific commodities or exports to particular destinations. This approach has usually been used to authorize the use of U.S. sanctions in reaction to foreign exports of weapons-related technology or exports to rogue regimes. However, this approach would also fail to establish new overall policy and procedures.

Rewrite the Export Administration Act to establish a U.S. export administration policy that addresses existing and likely future threats to U.S. security and economic well being. It should be noted that many question the effectiveness of export controls in contributing to national security and some contend that exports controls can harm national security through their deleterious effect on the national economy. Others question the effectiveness of export liberalization in contributing to the U.S. economy and point to the fractional percentage of the U.S. economy that is affected by export administration regulations.

In establishing a balance between security/foreign policy and economic goals, a new bill might emphasize one over the other. A bill more tightly focused on security goals might require the administration to prohibit exports of goods and technology that would contribute to the ability of any nation or subnational group to threaten U.S. national security interests with weapons of mass destruction, missiles,

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[66] H.R. 973, the Security Assistance Act of 1999, would extend the EAA until September 30, 2001, and would increase the criminal and civil penalties for violations of the Act.

destabilizing types or quantities of conventional weapons, terrorists or special operations forces, illegal drugs, organized crime, or information warfare. It might also authorize and encourage the administration to restrict U.S. exports to induce other nations to refrain from activities that threaten U.S. security interests and to cooperate with the United States in the responsible regulation of exports. For example, H.R. 361 (104th Congress) would have authorized, and required in some cases, the executive branch to control exports that would contribute to the proliferation of weapons of mass destruction or to acts of international terrorism, particularly if a multilateral regime had adopted similar export guidelines. However, the bill would have made it much more difficult for the administration to restrict exports for other national security or foreign policy goals, especially if such exports were not addressed by a multilateral regime.

On the other hand, a bill more tightly focused on U.S. economic interests might make it more difficult for the executive branch to restrict exports that are subject to international regimes that address various security issues. This bill could require the same effectiveness and non-foreign-availability tests for these exports that H.R. 361 would have required for unilateral controls. It might also consolidate and rationalize the use of sanctions for the enforcement of U.S. and multilateral export policies.

Outstanding Issues. Other issues that Congress may wish to resolve through the passage of a new EAA include the following:

- How much latitude should the executive be given to interpret the legislation or to change standards without congressional approval? Should the act establish only broad policy guidelines or specific procedures and limitations on the exports of particular commodities and technologies to particular destinations?

- To what extent should foreign availability be a governing factor in export administration policy?

- To what extent can the United States obtain the cooperation of other countries in regulating the exports of sensitive goods and technologies through multilateral and bilateral arrangements? How effective are U.S. programs to assist in establishing foreign export control mechanisms, economic and political incentives, and economic and political sanctions in persuading other countries to adopt common export control guidelines?

- To what extent should end-use controls be depended upon to assure that U.S. exports are not used to increase the capabilities of hostile nations or groups to threaten U.S. security?

- Which U.S. government organizations should have responsibility for administering export controls?

- What measures should be taken to enhance the enforcement of U.S. export administration laws and regulations and multilateral

guidelines? How much effort should be spent on enforcement, and which agencies or private organizations should be responsible?

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Export Controls: Analysis of Economic Costs

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ABSTRACT

This report analyzes the economic costs to the U.S. economy of export controls on products restricted for national security or foreign policy purposes. The report describes a framework within which to judge the economy-wide impact on economic welfare of a given value of lost export sales. Both static and dynamic economic impacts are discussed. It is estimated that the economic costs of recent export control have been small. The report also briefly discusses export control legislation now before the Congress and provides observations on its economic impact. This report will be updated as events warrant.

Export Controls: Analysis of Economic Costs

Summary

The Export Administration Act (EAA) of 1979 governs the licensing for export of "dual-use" items (*i.e.* civilian goods that have a possible military application). That act expired in 1994 and continues to be enforced under national emergency authority. Many argue that a new EAA is needed, but disagree over the form revamping should take. Some see the need for substantial liberalization in the export control process to remove unnecessary burdens from American industry. Others see the need to reinvigorate the control regime to counter new and important national security threats. Unable to reconcile these opposing positions, several previous attempts to reauthorize the EAA have failed.

The national security goals of the EAA come at some economic cost. An open question is whether those costs are consistent with the national security and foreign policy benefits gained by the U.S. export control system. There may be some confusion, however, about what the magnitude of those costs is. While estimates of lost export sales are often cited as an approximation of economic costs, they may be, by themselves, an inaccurate measure of the full economic consequences of this impediment to free international exchange.

The *economic costs* of export controls to the U.S. economy is the value of lost "gains from trade" caused by the controls reducing U.S. export sales and reducing inflows of desired imports. That value will most often be a *fraction* of the value of lost export sales. It is estimated that in recent years this so-called *static loss* has been between $500 million and $14 billion. Some would increase the estimate of the economic cost by including possible negative effects of export controls on the U.S. rate of long-run growth. This so-called *dynamic loss* is far more uncertain, however.

Current legislative initiatives for the most part endeavor to liberalize the export control process, and remove significant impediments to U.S. exports. S. 1712, the Export Administration Act of 1999, is a comprehensive revamping of the export licensing regime. That bill places great stress on the criterion of "foreign availability" in determining what items should need an export license, with the expectation that diligent application of that criterion will greatly reduce the number of dual-use items needing an export license. S. 798 and HR. 850 deal specifically with the licensing requirements for encryption technology.

However, it remains unclear how sizable a change these legislative initiatives would make in current export control processes. Each would likely produce a moderate nudging towards more liberal controls, inducing a moderate increase in U. S. exports and an even more moderate boost to U.S. economic welfare.

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Export Controls: Analysis of Economic Costs

Introduction

The 106th Congress has shown interest in reforming and reestablishing the Export Administration Act (EAA) of 1979. That act expired in 1994, but continues to be implemented by executive order under national emergency authority.[1] Both houses have held hearings. The Senate Banking, Housing, and Urban Affairs Committee on October 8, 1999 reported a bill, S. 1712, the Export Administration Act of 1999.

In addition, legislation specifically aimed at the export of encryption technology has been reported from both the House and Senate. H.R. 850, the Security and Freedom Through Encryption (SAFE) Act, was reported by the House Judiciary committee on April 27, 1999(H.Rept. 106-117, pt. I); Commerce on July 2 (pt. II); International Relations on July 19 (pt. III); Armed Services on July 23 (pt. IV); and Intelligence on July 25 (pt. V). S. 798, the Promote Reliable Online Transactions to Encourage Commerce and Trade (PROTECT) Act, was reported by the Senate Committee on Commerce , Science, and Transportation on Aug. 5, 1999 (S.Rept. 106-142).

Several previous attempts to reauthorize the EAA have come to naught, due, in part, to the competing interests of the two principal groups of stakeholders in the export control process. On one side are those who want to reduce the burden of the EAA on American exporting industries. On the other side are those who support more rigorous export controls on certain products to protect national security.

There is no doubt that the national security goals of the EAA come at some U.S. economic welfare loss. An open question is whether those costs are more or less than the national security and foreign policy benefits gained by the U.S. export control system. There may be some confusion, however, about what the magnitude of those costs is. Lost export sales are often cited as an approximation of economic costs. Estimates of lost sales by themselves are likely to be an inaccurate measure of the economic burden of export controls on free international exchange. There are other economic effects, both positive and negative, that must also be tallied into any estimate of economic costs.

This report provides a general framework within which to evaluate the economic costs of export controls. This framework builds on the concept of "gains from trade" and encompasses effects on both producers and consumers of changed levels of both exports and imports. In addition, an estimate of the range of probable

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[1] See: "Continuation of Export Controls," Executive Order 12924, 59 Fed. Reg. 43437 (Aug. 19, 1994).

economic costs of current U.S. export controls is given. The report also attempts to judge whether current legislation would raise or lower the economic cost of export controls.

Background

The EAA authorized the Department of Commerce to regulate the export of "dual use" items, that is, civilian goods and technology that also have the potential for military application. Currently the list of controlled items, called the commerce control list (CCL), numbers about 2,500 entries. Moreover, in recent years the Bureau of Export Administration (BXA) has processed 10,000-12,000 export license applications annually. The processing time for an export license may take several weeks, but it is often a period of several months. The time spent on acquiring an export license can be a impediment to timely marketing of products to international markets, and, therefore, a substantial competitive disadvantage, particularly if foreign producers are not similarly constrained. Of course, export controls create an effective barrier if a license is denied.

Products subject to U.S. export licensing regulations include many high-tech items, such as high-performance computers, encryption software, telecommunications equipment, precision machine tools (especially computer assisted machines), guidance technology, and synthetic materials (especially high strength and light-weight products). These are all items with which the United States likely has significant commercial advantages, but they are also items with clear military applications.•

Evolution of U.S. Export Control Policy. The current EAA has its roots in legislation passed in 1949 at the beginning of the Cold War. The goal at that time was to block nearly all exports to the Soviet Union, but, as the program evolved, a critical emphasis was placed on denying to the Soviets superior western technology, that effectively countered the Soviet's numerical military superiority.

Beginning in the late 1960s, political pressure to liberalize export controls grew in response to the argument that the system needed to accommodate the growing importance of trade to the U.S. economy, including the importance of trade for sustaining the pace of domestic technological advance. Moderate liberalization of the EAA, to assuage commercial interests, continued in subsequent renewals of the act in the 1970s and 1980s.

After the collapse of the Soviet Union and the associated diminishing of its military threat to the United States, pressure grew to reduce further the burden of export controls on American international commerce. Over the course of the Bush and Clinton Administrations, the export control system has been reduced in scope and streamlined, but the basic Cold War structure remains in place. Many argue that the EAA needs to be revamped, but disagreement arises over whether the objective of reform should be to remove impediments to exports or to more effectively address important current national security threats.

The push by commercial interests for further liberalization of U.S. export controls has intensified in recent years as those controls have come to be seen as increasingly *unilateral* in nature and, in turn, increasingly unfair to American industry.

The Cold War export control regime was an effective *multilateral* effort, with U.S. allies imposing a similar high level of restrictions on "dual-use" items. That arrangement, called the Coordinating Committee on Multilateral Export Controls (COCOM), was dissolved in 1996, in part because U.S. allies no longer wanted to carry the economic burden of its trade restriction.

The successor to COCOM, the Wassenaar Arrangement, is relatively loosely structured, allowing a much wider variance between the items the United States controls and the items other members of the Wassenaar Arrangement control. More liberal export controls among U.S. allies raise the probability of "foreign availability" of some items controlled by the United States. This situation can render U.S. export controls ineffective, nullifying any benefit to national security. Also, it imposes significant added costs on affected American industries, which struggle to compete against foreign rivals that are not similarly encumbered.

On the other hand, experts point out that significant national security threats to the United States still exist. There are aggressive countries and sub-national groups that seek weapons of mass destruction to expand their influence, intimidate their neighbors, and destabilize the international environment. These new and more varied threats raise important issues relating to proliferation of items with a potential national security impact. From this viewpoint, the current export control process is already too porous, and further liberalization would only exacerbate the threat to national security. Some believe the system needs to be reformed to make controls more effective, not more liberal. In addition, it is argued that the often unilateral nature of many U.S. controls is a necessary aspect of a process, with the United States assuming a leadership position of moving other countries, by negotiation, toward the multilateral export controls needed to achieve important national security goals.

Failure to agree on how the EAA should be revamped has meant that attempts at reauthorizing the lapsed act have failed repeatedly over the last seven years. In the 104th Congress, H.R. 361, the Omnibus Export Administration Act of 1996 was generally seen to represent a liberalization of U.S. export controls, preferring export controls in compliance with multilateral regimes and establishing strict conditions on the use of unilateral export controls, forcing stricter adherence to true multilateral efforts and mandating stricter rules for imposing unilateral controls. H.R. 361 was passed by the House in July of 1996 and referred to the Senate. The Senate Banking Committee held hearings, but no further action was taken.[2]

The Economic Cost of Export Controls

The argument is made that the U.S. economy is damaged by export controls that cause U.S. high-tech companies, farmers, and others to lose overseas sales. The economy suffers a loss of global competitiveness, decreased ability to develop new products and services, and the loss of profits and jobs.

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[2] For a discussion of the U.S. export control process and legislative efforts to revamp that program see: U.S. Library of Congress, Congressional Research Service. Export Administration Act of 1979 Reauthorization. CRS Report RL30169 by Helit Barel, Robert Shuey, Craig Elwell, and Jeanne Grimmett.

While export controls have some impact on the economy, the effect may be somewhat overstated by affected groups. This section of the report outlines a framework for evaluating the economic costs of export controls.

Static Losses. Trade occurs because it is mutually enriching, raising economic efficiency and allowing trading economies to reach a higher level of output and consumption from an unchanged endowment of scarce productive resources. This benefit is called the "gains from trade." These gains arise from trade giving an economy increased scope for specialization in the production of goods for which the economy has a relative efficiency advantage, and from improved ability to trade for those goods for which an economy has a relative efficiency disadvantage. Exports are the vehicle for acquiring desired imports and are central to the enriching process of trade. Therefore, one would expect that export controls, by impeding exporting, to reduce trade, result in a less efficient allocation of a nation's productive resources, and cause a decrease in a nation's gains from trade.

The economic cost of export controls is often expressed as the estimated value of lost export sales. Such a measure may be a good indicator of the cost to a particular industry or sector. By itself it is a measure that, while being an element entering into a calculation of economy- wide cost, likely overstates the true economic cost of this trade impediment.[3] Standard economic analysis indicates that the total economic loss associated with imposing export controls would be the *net* outcome of several opposite effects. These effects can be positive or negative, depending on whether one is a producer or consumer and whether one's economic circumstances are linked to exports or imports.

Consider first the direct effects of reducing exports. One obvious effect is an unfavorable impact on domestic producers who export. This occurs because producers are unable to sell as much of the controlled good as an export at the more favorable world price and must settle for the lower domestic price. Lower product prices reduce the economic welfare of domestic producers. There is, however, a favorable economic effect on domestic consumers. This arises because the formerly exported goods, and the resources that produce them, are not lost to the economy, but are absorbed into the domestic economy via a fall in prices. Lower product prices improve the economic welfare of domestic consumers of the exported product. In most circumstances the strong expectation is that the loss to domestic producers of exports will exceed the gain to domestic consumers of the exported good, leading to a "net" economic loss for the whole economy directly attributable to diminished export sales.

This is only half the story, however. The nature of trade is the exchange of exports for imports. If exports are reduced, then, ultimately, so must the imports that they are traded for. This induced reduction of imports will also have positive and negative impacts on economic welfare. Domestic producers, who compete against imports, will see their sales and economic well-being rise. Consumers of imports, on

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[3] For a fuller discussion of the economic case for and against free trade, see: U.S. Library of Congress. Congressional Research Service. Trade, Trade Barriers, and Trade Deficits: Implications for Economic Well-Being. CRS Report RL30226 by Craig Elwell.

the other hand, are made worse off as their opportunities to buy the preferred lower-price foreign goods are reduced. In this case, the strong expectation is that the economic loss to domestic consumers of imports will exceed the economic gain of producers of import-competing goods, leading to a net loss to the economy directly attributable to reduced imports.

The combined effect of a net loss from diminished exports and a net loss from diminished imports must be an unambiguous economic loss to the overall economy. This is a logical outcome, for if trade is reduced, the "gains from trade" are also reduced and national economic welfare will be smaller than it would be without export controls. This total loss, however, is likely to be a *fraction* of the initial reduction of export sales, because the resources that produced those exports are not lost to the economy. They are used less efficiently, but can still be used to produce other exports or other import-competing goods that improve economic well-being.

This less efficient allocation of economic resources and associated reduction of the gains from trade, induced by an impediment to exporting, leads to a onetime reduction of national income. This lowering of national income is called a *static loss* and is the standard measure of the economic costs to the economy of a trade barrier.

Estimating the Economic Costs of the EAA. The analytical framework outlined above suggests, however, that while reduced export sales are the initial effect of export controls, the ultimate cost (*i.e*, static loss) to the U.S. economy from export controls is likely to be a *fraction* of the value of lost export sales. The size of this fraction is a function of the relative changes in producer and consumer gains and losses which, in turn, are determined by the underlying characteristics of demand and supply in the markets affected.

Evidence from other trade liberalization or trade restriction initiatives can suggest the probable range within which the EAA's impact lies.[4] These studies show that multilateral policies, which affect many economic sectors and many trading partners have typically had the largest impact on economic well-being, with the national income changing as much as 35% of a given dollar change in the value of exports. A smaller welfare effect on economic well-being is found for unilateral policies that work across a narrower spectrum of trading partners, typically generating welfare changes of between 10% to 20% of the associated change in export sales. At the low end, one recent study of a variety of unilateral economic sanctions against a few small economies found that the U.S. welfare loss was only about 5% of lost export sales.

It seems unlikely that the affect of export controls on U.S. economic well-being is most similar to that of a large multilateral trade policy, but neither is it clear that they would be more like unilateral export sanctions. Absent more direct evidence, a reasonable conjecture about the static welfare loss to the U.S. economy caused by U.

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[4] The welfare effects of selected trade policies are summarized in: U.S. Congress. Congressional Budget Office. The Domestic Costs of Sanctions on Foreign Commerce. Washington DC. 1999. Pp. 77-83.

S. export controls would be a loss of 5% - 35% of the value of lost export sales, with the more probable effect in the middle of that range rather than at the extremes.

To estimate the dollar value of the welfare loss associated with export controls would also require an estimate of the magnitude of lost export sales caused by that policy. A study done in 1995 judged that export controls could have caused as little as $10 billion or as much as $40 billion in forgone export sales, but the greatest probability was attached to a central range of $21 to $27 billion.[5] (To help judge the relative magnitude of this estimated effect, in 1995 total U.S. exports were valued at $819 billion.)

Combining these two sets of data gives an estimated range for the static economic welfare loss of U.S. export controls. That range would extend from a low of $500 million (0.05 x $10 billion) to a high of $14 billion (0.35 x $40 billion), but with the greatest probability attached to a central range of about $2 billion (0.10 x $20 billion) to $4 billion (0.15 x $27 billion). It may help to put these loss estimates into perspective if one considers them in relation to GDP. In 1995 U.S. GDP was valued at $7,269 billion, putting the estimated static economic losses(costs) of export controls in a range from 0.007% to 0.2% percent of U.S. GDP.

Dynamic Losses. Some economists argue that, in addition to the loss of static gains from trade, one should add in the loss of *dynamic* gains from trade caused by export controls. In general, dynamic losses could result from a trade barrier causing a *sustained reduction* of the economy's *long-run rate* of economic growth. Because a change in the growth rate has a *cumulative effect* on national income (in contrast to the one-time impact of a static loss), dynamic effects could, with only a small annual decrement to the long-run growth rate, add up to a very large long-run loss. If present, dynamic losses, perhaps many fold the size of associated static losses, could raise substantially the total domestic economic costs of U.S. export controls.

In general, proponents of the existence of dynamic impacts argue that impediments to trade cause a degrading of the environment for investment and innovation in exporting industries. This eroding of economic incentives would likely be particularly important for firms at the technological forefront, whose success may be tied to capturing large global markets to help spread the costs of enormous R&D budgets and to generate more opportunities for realizing productivity gains through "learning by doing." More specifically, these are the types of firms whose products carry a significant "dual-use" potential, and would likely be significantly affected by U.S. export control policies.

The existence and size of such dynamic effects, however, are more *uncertain* than the existence of static efficiency effects. Mainstream models of economic growth suggest that the engine of long-run economic growth is the pace of improvement in technical knowledge and that such improvement moves at a speed and with a caprice that is substantially unrelated to economic policies. Despite changes in a variety of economic policies, including trade policies, the trend growth rate for the U.S.

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[5] See: Richardson, J. David. Sizing Up U.S. Export Disincentives. Washington DC: Institute for International Economics. pp. 127-131.

economy has shown little variation over the last 125 years, with GDP per capita rising at a very steady trend of 1.8% per year. Trade restrictions and other policies can lower the level of income, but, according to mainstream economic models, they do not permanently change the rate of long-run growth.

The empirical literature on the trade and growth linkage should be interpreted cautiously. Many studies have found there to be a relation. But, others have offered good reasons to think that the relationship may not be particularly robust. In light of all of this, reliance on projected economic losses derived from a trade barrier's possible *dynamic* effects may risk overstatement.[5]

Sectoral Costs. As suggested above, the direct cost of export controls to particular firms, industries, and sectors is larger than the net cost to the overall economy. The open and flexible nature of the U.S. economy helps to minimize such costs, although, significant burdens may still remain. Estimates of lost export sales are relevant to an evaluation of the U.S. export control regime. Lost sales provide some insight into possible adjustment costs and other social costs associated with export controls. They may also become useful in any discussion of equity of burden. In theory, the federal government can provide compensation to ameliorate the domestic burden of export controls.

Economic Impact of Pending Export Control Legislation

This section provides a summary of current bills aimed at revamping U.S. export control law as well as an observation about of each bill's likely economic impact.

The Senate.

S. 1712, the Export Administration Act of 1999. As reported by the Senate Banking Committee, this bill attempts to strike a new balance in the U.S. export control regime between national security and commercial concerns. S. 1712 would focus controls on current threats to national security, such as terrorism and proliferation of weapons of mass destruction, rather than on the former threat of communism.

This bill would seek to reduce the items that could be controlled for national security purposes; items that are available from foreign sources or have a mass-market status would generally not be controlled. The bill charges the Secretary of Commerce with determining on a continuing basis whether any item currently subject to export control meets specified criteria for foreign availability or mass market status. If it does, the item would be removed from the list of controlled items.

S.1712 would also place several requirements and prohibitions on the use of export controls for foreign policy purposes. These include prohibiting the control of re-exports, prohibiting the control of items subject to a binding contract, requiring

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[5] For a fuller discussion of the possible linkage between trade and growth see: U.S. Library of Congress. Congressional Research Service. Does Trade Liberalization Affect the U.S. Long-run Rate of Growth?. CRS Report RL30377 by Craig K. Elwell

45 days notice and consultation before imposing a control, requiring clearly stated objectives and criteria for controls and reporting them to Congress, and requiring the President to review controls every two years. The bill also streamlines the process by which regulations for the export of super computers are periodically updated.

It is possible that a more vigorous pursuit of "foreign availability" status will reduce the number of items on the CCL. It remains unclear, however, how significantly this bill would upgrade and expand, relative to current provisions, the use of the "foreign availability" criterion for national security purposes. Controls for foreign policy purposes, under *current* regulations, must satisfy explicit criteria, relating to probable impact and prospect for success, before they are imposed. It is unclear how much this appreciably raises the threshold for requiring an export licence.

S.1712 would likely move toward continued liberalization of export controls. If the provisions of the bill have a differential impact relative to current rules, it would likely be to reduce the number of items subject to U.S. export controls, increase U.S. exports, and raise national income (by a fraction of the value of those increased sales). But, the magnitude of these effects is problematic.

S. 798, the Promote Reliable On-line Transactions to Encourage Commerce and Trade(PROTECT) Act. As reported by the Senate Commerce Committee S. 798 authorizes the export without export license of any encryption product that utilizes a key length of 64 bits or less. Provision is also made for a periodic review and update of the 64-bit standard so it can change in step with with technological advances. For encryption products that require a standard license, the bill provides easier conditions for exporting due to a streamlining of the license application process, including, an expanded scope for granting license exceptions (*i.e.*, exporting without a license), one-time technical review, and a short 15-day license processing period.

This bill is a significant liberalization of export controls over a subgroup of controlled items. It would likely expand U.S. export sales and raise national income by a fraction of the export sales increase. From the standpoint of the national economy, the magnitude of these economic effects would likely be modest.

The House.

H.R. 850, the Security and Freedom Through Encryption (SAFE) Act. The five reported versions of H.R. 850 differ in their treatment of export controls on encryption products. As initially reported out of the Judiciary Committee, this bill would have limited greatly the President's authority to control the export of encryption products. In that version of the bill, encryption products with a key length of 64 bits or less would be subject to more liberal treatment by export control authorities. These products would be eligible for an export license exception subject to a one-time technical review, with the whole application process to be completed within 45 days. Export license exceptions would be available for encryption products that exceed the 64-bit standard, subject to national security goals. (Versions of H.R. 850 reported by the Commerce and International Relations Committees are similar to Judiciary's version.) In contrast, the Intelligence and Armed Services Committees'

versions of H.R. 850 would not explicitly move toward more liberal export controls on encryption products. Those versions increase presidential authority by allowing the executive to specify the key length that would be the threshold for waiving export controls. Products at or below that key length would be eligible for a license exception, subject to a one-time technical review. Encryption products above the threshold key length would be subject to normal EAA export license requirements.

The House Judiciary Committee version of H.R. 850 would liberalize U.S. export controls on encryption products, raising exports and national income. From the standpoint of the national economy, the magnitude of these economic effects would likely be small. The economic impact of the Armed Services and Intelligence Committees' versions of H.R. 850, that do not expressly liberalize or tighten encryption export controls, would depend on rule changes implemented at the discretion of the President.

Administration Actions. On Sept. 16, 1999, the Administration announced further liberalization of export controls on encryption products. Encryption products of any length can now be exported under a license exception after a technical review. Export of any product with a key length of more than 64 bits requires post-export reporting, however. The prior policy had been to allow export only of encryption devices with up to 56-bit keys under a license exception after a one-time technical review.

Conclusion

The estimates presented above suggest that the economic costs (*i.e.*, static losses) of current export control regulations are modest in relation to the overall economy. Nevertheless, the full significance of that cost, however small the absolute value, must be accessed relative to the national security and foreign policy benefits derived from those controls. The benefit of U.S. export controls remains a sharply contested issue and must be evaluated on more grounds than economics.

Pending legislation on export controls generally takes the perspective that controls are too restrictive on U.S. international commerce, and aim to liberalize the export control process. That legislation, if enacted, does not seem likely to cause a great deviation from current export control administration, however. That would suggest that the increase in U.S. exports and improvement of domestic economic well-being derived from the legislation would be small in magnitude.

EXPORT ENFORCEMENT Q's and A's on HPCs

1. **Have HPCs in China been diverted to unauthorized military end-users or otherwise exported in violation of U.S. law? [Chapter 4b, Page v] [Chapter 4, pages 49-50]**

Examples provided in the Cox Report as evidence of this are taken from Export Enforcement cases. In the Changsha case -- and as the Cox Report notes -- the Ministry of Trade and Economic Cooperation (MOFTEC) worked with Commerce to see that the computer was returned. The investigation on that case is continuing.

The other cases involve investigations successfully completed, in which the illegal shipments occurred between 1992 and 1994.

BXA collects information on how U.S. HPCs are used in China as required by the FY98 National Defense Authorization Act. Attachment A provides a breakdown of the uses of U.S. HPC exports from the first annual NDAA report (exports reported for Nov. 97-Nov. 98). The Chart shows that of the 191 HPCs actually exported (as distinct from the NDAA required notifications prior to export, some of which never result in sales) to China, 42% (79 HPCs) went to communications/utilities entities and 25% (48 computers) went to financial entities. **We have no information to indicate that any of the 191 computers has been diverted to military end-use.**

2. **Has only one on-site, end-user verification been conducted in China? Are there such substantial limitations on the visits that they are "useless"? [Chapter 4b, pages 47-48]**

Post-shipment visits with China have been a goal of the U.S. since 1983. An End-Use Visit Arrangement was agreed to in June 1998. The process of identifying items for visits and conducting visits began in September 1998. At the time of the first annual NDAA report (mid-November 1998), one visit had occurred. As of April 27, 1998, 5 end-use visits have been conducted in China; 3 of those were on high performance computers. Clearly, we need to do more.

Visits under the Arrangement are limited to items for which the Chinese Ministry of Foreign Trade and Economic Cooperation (MOFTEC) has granted an end-use certificate. In January 1998, BXA revised its regulations to require that more HPCs be covered by end-use certificates. (Through these certificates, MOFTEC verifies the truthfulness of the end-user statements and assures us that the HPC will not be reexported to third countries.) There is a lead-time for this regulation to take effect, and we are just now beginning to receive reports on computers exported under this new requirement. With more computers covered by certificates, we should now be able to conduct more visits.

The other limitations cited by the Cox Report are rhetorical rather than substantive. China can decline a visit, as can any country, but there are consequences attached to that action, such as license denials. China reserves the right to "invite" U.S. Government officials to participate in visits, but no visit has occurred without U.S. Government participation. Inspections cannot occur until six months after the item is received, but we have found based on experience that the end-use generally cannot be determined for six months after receipt since it takes time to get the item to its ultimate destination, installed, working and used. In addition, U.S. companies may require payment in full before releasing the item to the customer.

The end-use visits are still at a beginning stage. We are continuing discussions with the Chinese on enhancing the process including increases in the number of end-use visits in order to meet NDAA requirements. We have told Chinese export control officials at every opportunity and at every level that a strong trade relationship with the U.S. depends on confidence-building measures like the EUVA. Although the process is not perfect, it is a start, and the Chinese have been cooperative.

3. **Is the Cox Report correct in stating that BXA can verify location but not how a computer is used? Further, the Cox Report cites GAO/NSIAD 98-196 to the effect that PSVs are not effective with HPCs. Is this true? [Chapter 4b, pages 47-48]**

End-use/end-user verification is effective when properly targeted. Export Enforcement at the Department of Commerce has been directing and conducting end-use checks worldwide for over 20 years. The Congress also apparently believes end-use checks on HPCs are effective since they mandated them on all computers over 2000 MTOPs.

There is no way to tell with certainty how a HPC is being used. Rather, Export Enforcement relies on the expertise of its agents. Export Enforcement has placed in FCS-Beijing a senior criminal investigator to handle both pre-license and post shipment checks. This special agent (who spent 5 years as an Export Control Attache in AmEmbassy Stockholm during the Cold War) uses his training and skills to examine aspects of the licensed transaction to arrive at an informed judgement as to the *bona fides* of the end-use and end-user. The knowledge and experience of this agent allows the U.S. government to make informed judgements on license transactions for China, including those where an end-use check is appropriate.

4. **The Cox Report notes three methods recommended for enhancing computer verification: tagging (to provide information on location); remote monitoring and technical safeguards such as operating systems that could only run pre-approved programs; and focusing controls on services that provide unique support to the PRC's defense capabilities. Do you plan to implement these recommendations? [Chapter 4b, pages 88-90]**

While we continue to consider these proposals, our initial judgement is that, on the whole, they would not be helpful. Several of the technical verification suggestions would make US machines commercially unattractive and would have the same effect as simply restricting their export. Moreover, they may not work. There is an ongoing debate about whether alterations can be done in a way that can't be easily defeated.

More important, there are many ways to obtain computer capabilities for illicit purposes that do not involve exports. One is to obtain them in the US, set up a research facility here, do the research here and export the data. Exports of controlled data require licenses, but the reality is that it is easier to export the data illegally than it is to export the computer illegally. Another way would be to buy time from a university or other institution and do the work through remote access. We can never be completely certain about how every one of our computers is being used, which is why the Administration has been instrumental in developing a more realistic policy for controlling them.

Export Enforcement believes that its resources are being wasted trying to confirm end-use by visiting all computer exports over 2000 MTOPS (to Tier 3 countries, including China). Resources would be better spent if Enforcement personnel had the authority to use their professional, law enforcement expertise to follow tips and leads rather than conducting checks on low level computers in well known, benign locations.

5. **The Cox Report contains a list of Chinese entities that have acquired U.S. HPCs and states how Chinese military projects might use the computers. [Chapter 4b, Page 5]. The entities listed are:**

Beijing Huasan Computer Co., Ltd.
Chinese Academy of Sciences Computer Network Information Center
Chinese Academy of Sciences, Institute of Atmospheric Physics
Changsha Science and Tech Institute
Huapu Information Technology Company
Qinghua University Computer Center
204 Institute of China Aerospace Corporation
Nantian Electric Information Group

Are these entities using U.S. HPCs for Chinese military projects?

All of the above except the Institute of Atmospheric Physics were in the BXA report mandated by the National Defense Authorization Act of 1997. (Our report also lists the State Key Lab Atmospheric Science and Geophysical Fluid Dynamics Inst. of Atmospheric Physics, which may be the entity the Cox Report refers to as the Institute of Atmospheric Physics.) The BXA report was provided to Congress in installments in 1997 and early 1998.

There is no evidence that the computers are being used by these entities for military

projects. BXA was concerned about the computer for Changsha Science and Tech Institute. The computer has been returned with MOFTEC's cooperation. That matter is under investigation.

THE FACTS ABOUT THE ADMINISTRATION'S COMMERCIAL SATELLITE LICENSING POLICY

The globalization of the commercial satellite industry is a positive and powerful development at the dawn of a new century. Satellites launched from the United States, Europe, Russia and China allow people everywhere -- through television, telephones, paging and many other electronic means -- to share ideas, information and aspirations. They are powerful multipliers of free speech and thought. The United States is the world leader in satellite technology. But we lack the launch capacity to meet the demand for our satellites. And other nations can launch them more inexpensively. In 1988, President Reagan approved the export of U.S. satellites for launch by Chinese rockets -- a policy that has enjoyed broad bipartisan support. Since 1989, approval of license applications for commercial satellite launches on Chinese rockets has required a Presidential waiver of the Tiananmen Square sanctions. The Bush Administration issued three waivers in three years for nine satellites. The Clinton Administration has issued ten waivers over five years for eleven satellite programs. Each of these waivers was scrutinized to ensure consistency with our nonproliferation goals and each was reported to Congress.

The benefits of licensing commercial satellite launches by China are clear. This program enhances American competitiveness by increasing our launch capacity and lowering the cost of launches while bringing tremendous benefits to consumers (greater cell phone, pager and satellite television capacity.) It furthers our efforts to stop the transfer of missile technology to third countries by providing incentives for China to observe non-proliferation norms. It can beam objective sources of information and democratic values into China -- some of the very satellites China sends into space send back CNN and other western television programming. And more broadly, it serves our policy of engagement with China, which is expanding our cooperation in areas important to the national interest (such as stability in Asia; preventing the spread of weapons of mass destruction; combating international crime and drug trafficking; protecting the environment; promoting trade and creating jobs) while giving us opportunities to deal forthrightly with our differences (such as human rights.)

Misleading news reports and misinformation now surround the policy of licensing the launch of U.S. commercial satellites on Chinese rockets. To set the record straight, here are the facts:

THE LICENSING PROGRAM

1. **Allegation:** *Licensing the launch of U.S. commercial satellites by China results in a transfer of technology that threatens U.S. security.*

> **The Facts:** None of the satellite licenses or waivers authorizes the transfer of sensitive missile technology to China. All are for commercial satellites, subject to careful inter-agency scrutiny by the Department of Defense, the Department of State, the Arms Control and Disarmament Agency (ACDA) and the Department of Commerce and are subject to strict controls and safeguards. The current safeguards include a detailed plan for shipping the satellite, a detailed operational security plan for the satellite while in China awaiting launch, and approved procedures for the supervised mating of the satellite to the launch vehicle. In addition, the plan includes Defense Department monitoring of technical meetings between the U.S. company and Chinese launch officials, and of the launch itself. The conditions imposed on companies that use Chinese rockets for satellite launches require that there be no improvement in China's missile capabilities.

2. **Allegation:** *U.S. policy regarding the export of satellites to China has put U.S. cities at risk from Chinese ICBMs.*

The Facts: China's Inter Continental Ballistic Missiles (ICBMs) have had the range and accuracy to reach U.S. cities since they were first deployed in the early 1980s. Thus, this capability existed before President Reagan approved the first exports of satellites to China in 1988.

THE LORAL LICENSE

3. **Allegation**: *The waiver granted to Loral subsequent to the start of a Justice Department investigation into whether Loral illegally transferred technology to China was granted over the opposition of Justice and compromised U.S. national security.*

The Facts: The Clinton Administration did not "overrule" or "ignore" Justice Department views, nor has granting the license compromised U.S. national security.

In 1992, President Bush granted a waiver which permitted the Loral Corporation to launch a commercial communications satellite on a Chinese rocket. The launch took place in February 1996, but the rocket exploded and destroyed the satellite. Loral and another U.S. company allegedly worked with the Chinese to determine why the explosion occurred and how to prevent such accidents in the future. Any analysis of a launch failure would have to be separately authorized by State and is not authorized in State or Commerce licenses for the launch of commercial communications satellites. The Justice Department is investigating whether, in any such review technology or know-how may have been illegally given to the Chinese.

When the State Department recommended a waiver for another Loral satellite in 1998, it noted that an investigation of Loral was under way. The White House therefore took the added step of asking Justice for its views on the request. The Justice Department raised concerns about the potential impact of the waiver on its ability to persuade a jury to convict Loral in the event that the incident warrants prosecution.

The Justice Department views were weighed carefully by the President against factors which supported a waiver: (i) the State Department recommended that the waiver would be in the national interest, and State and the Department of Defense found that the license referenced in the waiver contained the safeguards necessary to protect the national security; (ii) the licensing request was for a commercial satellite export, not for the kind of activity (launch-failure analysis) for which Loral was being investigated; (iii) the State Department has a long-standing practice of considering license applications on a case-by-case basis in accordance with normal procedures for individuals who may be subject to criminal investigations but have not been indicted; and (iv) if an investigation leads to indictment license revocation and other serious penalties may be imposed. In balancing all these factors, the President decided to approve the waiver.

This is how decisions in government are made -- balancing the views of all relevant agencies and then making a broader judgment based on overall national interests. The process was transparent and open. Agencies responsible for our national security reviewed the request, the White House took the additional step of asking Justice for its views and agency considerations were reflected in a memorandum for the President.

TRANSFER FROM STATE TO COMMERCE

4. **Allegation**: *The State Department opposed the 1996 transfer of licensing jurisdiction for commercial satellites to the Commerce Department.*

The Facts: President Clinton's decision to transfer licensing jurisdiction over commercial satellites to Commerce came at the end of a 6-month process. It ultimately enjoyed the consensus of Commerce, State and Defense because it provided for continued State licensing of technical data and assistance related to launch vehicles, and because of additional procedural protections added to the Commerce licensing process.

Under the approach adopted in 1996, Defense, State and ACDA still review all proposed commercial satellite exports to ensure that they are consistent with U.S. national security. If any of these agencies disagrees with a proposed export, it can block the license and put the issue into a dispute resolution process that can ultimately rise to the President.

The decision to transfer jurisdiction was part of a broader, bipartisan effort supported by the Reagan and Bush Administrations to move primary authority for licensing essentially commercial items to Commerce in order both to streamline the process and make it more transparent to exporters, and where such transfers could be made in a manner fully consistent with national security interests. Commerce applies stricter deadlines that are better suited for commercial products.

The shift of jurisdiction from State to Commerce was also supported by majorities in both Houses of Congress. Beginning in 1990, both Houses repeatedly passed bills specifically mandating the shift of jurisdiction over commercial satellites to Commerce (although none of those bills became law.) Indeed, at the time of the President's decision in 1996, this same provision was being prepared by Republican Congressman Toby Roth for introduction in new legislation. The President's 1996 decision followed the intent of such legislation, while adding national security safeguards -- such as a strengthened role for Defense and State -- that were not included in the legislative proposals.

Prior to and independent of the shifting of commercial satellite jurisdiction to Commerce, the President in December 1995 issued an Executive Order expanding the right of the Departments of State, Defense, Energy and ACDA to review all dual-use export license applications, including commercial satellites. Previously, these agencies reviewed only certain dual-use applications. The President took this action to ensure that all agencies would have the opportunity to review all license applications.

It is also worth noting that in the case of the 1998 Loral waiver, as in the case of most commercial satellite exports to China, a separate State Department license was still required because the exporter proposed to transfer technology controlled by State regarding the integration of the satellite to the rocket.

5. **Allegation**: *The 1996 transfer of licensing jurisdiction from State to Commerce created a national security sieve because the Commerce Department has inadequate safeguards to prevent the diversion of dual-use technology.*

The Facts: The President's decision in March, 1996 to give the Commerce Department jurisdiction over commercial satellite exports did not decontrol the export of satellites nor allow the transfer of sensitive satellite technology to anyone.

The Department of Defense, the State Department and ACDA still review proposed exports to ensure they are consistent with U.S. national security and foreign policy interests. The same strict safeguards are now required for Commerce-licensed commercial satellites as were required for satellites licensed by the State Department. The safeguards include a detailed plan for shipping the satellite, a detailed operational security plan for the satellite while in China awaiting launch, and approved procedures for the supervised mating of the satellite to the launch vehicle. In addition, the plan includes Defense Department monitoring of technical meetings between the U.S. company and Chinese launch officials, and of the launch itself. The conditions imposed on companies that use Chinese rockets for satellite launches require that there be no improvement in China's missile capabilities.

As previously noted, the President's decision was the culmination of a long inter-agency process in which national security concerns of all agencies were addressed, leading to their concurrence in the final decision. The impetus for the jurisdiction change dated to the Bush Administration and was reflected in repeated votes by Congress to mandate such a change. President Clinton's decision effectuated the change only after procedures were agreed upon to ensure consistency with national security interests.

CAMPAIGN CONTRIBUTIONS

6. **Allegation**: *Loral's campaign contributions influenced the President's decision to grant it export waivers, including the waiver subsequent to the start of the Justice Department investigation, and also influenced the President's decision to transfer licensing jurisdiction from State to Commerce.*

The Facts: No campaign contributions affected decision-making on U.S. foreign policy or national security.

The policy of licensing U.S. commercial satellites to be launched by Chinese rockets is bipartisan and pre-dates the Clinton Administration. It was instituted by President Reagan and further implemented by the Bush Administration. The Bush Administration approved three waivers over three years for nine U.S. satellites to be launched from China; the Clinton administration has approved ten waivers over five years covering eleven satellite programs.

Each waiver approved by President Clinton was based on a recommendation from the State Department or the Commerce Department. Each license under these waivers was approved after careful interagency review that including State, Defense and ACDA. The decision-making process flows from the bottom up -- a request for a license is made by the company to the relevant government agency (State or Commerce), which then solicits the views of the other relevant agencies on the pending license application. Once the interagency review process is completed and the license is ready for approval, a recommendation is made to the White House concerning whether a waiver of Tiananmen sanctions is in the "national interest."

Similarly, as detailed above, the decision to transfer jurisdiction over commercial satellites from State to Commerce was the product of an intensive six month inter-agency review process and was preceded by similar efforts in the Bush Administration and in Congress. During the decision-making process, the satellite industry strongly supported the change in jurisdiction, as it had done for a number of years.

There is absolutely no connection between any campaign contributions and U.S. policy. There is no evidence of such a nexus, nor has it been alleged on the basis of any facts. It simply did not occur.

7. **Allegation**: *Intra-government e-mails and memoranda regarding the 1998 Loral licensing request convey a sense of urgency that was based on Loral's pleas for a quick decision and suggest political pressure.*

- **The Facts**: Loral's interest in prompt action on its 1998 licensing request had no effect on the substance of the Administration's licensing process or any effect on national security.

American companies that need U.S. government approvals for business transactions should be able to expect an expeditious response, especially if they are operating under a specific deadline. They are not entitled to a positive response, but to a timely one.

In the case of the 1998 Loral request, the Administration was aware of a deadline with important commercial implications and so tried to be responsive. But the decision whether or not to grant the waiver was based on the judgments of the agencies involved in reviewing the license and recommending the waiver. In fact, the Administration's decision occurred after the commercial deadlines identified by the company had passed, as government officials continued to gather the information needed to make an informed, judicious decision.

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The Export Administration Act: Controversy and Prospects

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The Export Administration Act: Controversy and Prospects

Summary

The Export Administration Act (EAA) awaits Senate consideration as the 106th Congress draws to a close. Since the expiration of the Act in 1994, provisions of the EAA have been continued and modified by executive order and congressional action. The difficulty in passing the reauthorization of the EAA has resulted, in part, from the continuing tension between national security and commercial concerns. Industry groups, proponents of heightened export controls, the Administration, and Congress have all participated in the reauthorization debate.

Export control legislation gives rise to difficult questions that are integral to the working and efficacy of the export control system. The first question is the extent to which technology can be controlled. Industry groups contend that information age high-technology is virtually uncontrollable. For this reason, industry supports mass market and foreign availability criteria in the EAA reauthorization legislation to restrict controls on widely available products. Others contend that these criteria would gut current export control laws. Industry officials also state that exports of high technology enhance national security by providing funds for R&D with military applications. Opponents of this position claim that if additional funds for military R&D are necessary, Congress should appropriate funds. Industry uses the exponential growth in computing power to illustrate the necessity for an updated export control system.

A second question concerns the target countries on which export controls are imposed. This question involves two sections of the EAA. Foreign policy controls impose sanctions on countries for behavior the United States considers unacceptable. Debate over this provision echoes debate on the efficacy of economic sanctions. Discussion of multilateral controls reflects the belief that the current regime (the Wassenaar arrangement) is an ineffective tool to control dual-use exports. Policy differences over multilateral arrangements arise over whether the U.S. should impose unilateral controls as an example for other countries to follow or only impose controls in conjunction with other major exporting countries.

A third question is whether the current bifurcated export control system is the optimal administrative arrangement in the post Cold War world. Critics of the current process contend that national security interests are harmed by the current procedures. Industry spokesmen approve of the Commerce Department's role in dual-use exports, but want further streamlining of the process. Other policy prescriptions have been aired such as merging all export control functions into one agency or de-emphasizing the licensing process.

Congress has numerous options concerning export control. It can maintain the status quo, resurrect the expired EAA, consider pending legislation (S.1712), legislate piecemeal revisions or policy prescriptions, work to erect stronger multilateral controls, or engage in a more comprehensive review of export control laws, or some combination of the above.

Contents

The Export Administration Act: Controversy and Prospects

The export of dual-use commodities, items that have both civilian and military applications, is regulated by the Export Administration Act (EAA) of 1979, now expired but continued by executive order.[1] The Act authorizes the President to control exports for national security and foreign policy considerations, to negotiate multilateral control arrangements and to issue anti-boycott regulations to prevent U.S. companies from adhering to foreign boycotts. The Act provides for classification and licensing of dual-use exports by the Commerce Department's Bureau of Export Administration (BXA). The EAA only controls dual-use items; munitions and non dual-use nuclear proliferation articles are controlled by the Department of State and Department of Energy, respectively.

The EAA is the statutory authority for the Export Administration Regulations (EAR). These regulations establish the framework for regulating exports of dual-use, potentially sensitive commodities, software, computers, and technology. Exports are restricted by item, country, and entity. There are approximately 2400 items on the Commerce Control List for which an export license may be required.[2] Since the most recent expiration of the Act in 1994, implementation of the EAR and provisions of the Act have been continued by a presidential declaration of a national emergency under the National Emergency Act[3] and by the authority of the International Emergency Economic Powers Act (IEEPA).[4]

The House of Representatives in the 104th Congress attempted to reauthorize the EAA. H.R. 361 was passed by the House, and hearings were held by the Senate Banking, Housing and Urban Affairs Committee, but no further action took place. During the 106th Congress, S. 1712 was crafted by the Senate Banking Committee. Hearing were held and the legislation was reported out of the Senate Banking Committee unanimously on September 23, 1999. It was placed on the calendar, yet holds have been placed on the legislation pending resolution of concerns expressed by four committee chairmen.[5] On September 25, 2000, the House of Representatives passed by voice vote H.R. 5239, a measure to restore the penalty and confidentiality

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[1] P.L.96-52, 93 Stat.503(1979), 50 U.S.C.2401, *et seq.*

[2] The Export Administration Regulations are located in the *Code of Federal Regulations* at 15 *CFR* 730-774; the Commodity Control List is located at 15 *CFR* 774.

[3] P.L. 94-412, 90 Stat. 1255(1976), 50 U.S.C.1601, *et seq.*

[4] P.L. 95-223, 91 Stat. 1626 (1977), 50 U.S.C.1701, *et seq.*

[5] For details on this legislative activity and specific provisions of S.1712, see Elwell, Craig, Jeanne Grimmett and Robert Shuey, *Export Administration Act Reauthorization*, CRS Report RL30169, April 25, 2000.

provisions of the expired EAA. The measure was referred to the Senate Banking Committee and it was discharged to the Senate floor by unanimous consent on October 11. On the Senate floor, an amendment to reauthorize EAA for one year was introduced by Senator Gramm and cosponsored by Senator Enzi. This amendment, passed by unanimous consent, removes all provisions of the House legislation. The engrossed legislation now will be considered in Conference.

The difficulty in passing the reauthorization of the EAA has, in part, resulted from the continuing tension between national security and commercial concerns. In addition, the 1979 Act, itself descended from the Export Control Act of 1949, reflects the strategic priorities of the Cold War: the desire to restrict exports of sensitive goods and technology to the Soviet Bloc. The Act is widely perceived to need revision to account for changing economic and international security concerns. In addition, the enforceability of the Act has come into question. The manner in which the Export Administration Act is revised may have far-reaching consequences for America's security. The resulting controls may also affect domestic high-tech and defense industries and employment.

The Administration, non-governmental organizations (NGO) promoting non-proliferation, national security experts and industry lobbyists all look to Congress to adopt an export control strategy through reauthorization of the EAA. This paper is designed to identify the various stakeholders in this debate and to contrast their principal thematic arguments and claims. It also discusses alternatives and options for Congress.

Status of Export Administration Regulations

Since the last expiration of the EAA in 1994, the Export Administration Regulations have been kept in force by the declaration of an economic emergency under the National Emergency Act and by the International Emergency Economic Powers Act (IEEPA). This declaration, first announced on August 19, 1994 by Executive Order 12924, must be renewed every six months. While the EAR remain in force, certain penalty, enforcement, and procedural provisions now are under the controlling authority of IEEPA. For example, Commerce Department officials must now be deputized as Special Deputy U.S. Marshals in order to conduct enforcement action. Penalties under the EAA, themselves atrophied by inflation, have been replaced with even weaker penalties under the IEEPA. Also, the IEEPA does not preclude judicial review of application decisions[6], nor, according to a recent Florida district court decision, does it protect the confidentiality of license applications and enforcement actions.[7] This decision may prove to be a harbinger of further legal challenges to the administration of EAA through IEEPA.

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[6] *Spawr Optical Research, Inc. v. Baldrige*, 649 F. Supp.1366 (D.D.C. 1986).

[7] "Reinsch Says Court Ruling on License Data Shows Need for EAA," 18 *Inside U.S. Trade* 9, July 14, 2000; *Times Publishing Co. v. U.S. Department of Commerce*, U.S. District Court for the Middle District of Florida, Case no. 8:99-cv-2100-T-26B, June 28, 2000.

Other discrepancies between EAA79 guidelines and IEEPA activity have reflected the increased operating authority undertaken by the Administration over time. In addition, the Administration has been able to exercise greater latitude in the application and enforcement of the export regulations than would be the case under a reauthorized Act. For example, Executive Order 12981, issued December 6, 1995, implemented an expedited time-line for applications under consideration,[8] thus altering the consultative review process among the departments in cases of disputed applications. The Administration also completed a rewrite of the Export Administration Regulations in 1996 that was designed to simplify and streamline the export control process.[9]

Congress has also modified export regulations and procedures. In response to revelations of improper transfer of space and satellite technology to the Chinese, Congress moved the authority to issue licenses for satellite exports from the Department of Commerce back to the State Department.[10] Subsequent complaints from the satellite industry about the slowdown in the regulatory approval process led in May 2000 to the introduction of legislation in the House of Representatives (H.R. 4417) to move authority to license satellites back to the Commerce Department.[11]

In addition, Congress has acted to tighten exports of computers in the 1998 National Defense Authorization Act. The Act established performance levels above which no computers could be sold to certain high risk countries without a license or the concurrence of the Secretaries of Commerce, Defense, Energy and State. The President, in consultation with these agencies, may raise theoretical performance levels to account for advances in technology.[12] These changes take effect 180 days after the President has submitted a report to Congress justifying the new levels.[13] This year, the House and Senate have passed amendments to the 2001 National Defense Authorization Act to reduce the review period for MTOPS adjustments from 6 months to 60 days.[14]

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[8] "Administration of Export Controls," Executive Order 12981, December 6, 1995.

[9] 61 *Federal Register* 12714, March 25, 1996.

[10] 1999 National Defense Authorization Act, P.L. 105-261, 22 U.S.C. 2778, note.

[11] This legislation has been referred to the House International Relations Committee and the House Armed Services Committee. No action has been taken on the bill by either committee.

[12] The Act mandated license thresholds for MTOPS (millions of technical operations per second) levels above 2,000 for military and 7,000 for civilian use. President Clinton's latest determination has ended the distinction between civilian and military users and raised the MTOPS level threshold to 28,000 for tier III countries. MTOPS is a measurement used to assess computer power. See, The White House, "Letter to Congress on Notification Procedure for Computers," August 30, 2000.

[13] 50 U.S.C. app. 2404 note. The EAR divide countries into tiers for the purpose of assessing the risk of computer exports. Countries affected by this Act are Tier III countries. They include states that are former or potential adversaries, or are located in world troublespots: Russia, China, Israel, India, Pakistan, South Korea, etc.

[14] 146 *Congressional Record* H3317, May 18, 2000; 146 *Congressional Record* S6497, July 12, 2000.

The Stakeholders

There are four principal participants in the export control debate: industries whose products are subject to control, certain national security and non-proliferation experts, various federal agencies assigned an export control function, committees of Congress with jurisdiction over export controls and other committees with oversight of national security agencies. Agricultural and union interests have taken an interest in previous EAA reauthorization attempts. These groups, however, have not been active in the deliberations over S. 1712 in the 106th Congress.

Industry

The EAA reauthorization legislation in the 106th Congress has been of major interest to six high technology and export-intensive industries most affected by current export controls. The computer, software, telecommunications, satellite, machine tools, and aerospace industries, individually and through such associations as the Computer Coalition for Responsible Exports, the Satellite Industry Association and the Association for Manufacturing Technology, have testified and lobbied Congress on the need for new export control legislation. They claim to represent some of the most dynamic and competitive sectors of American industry, and they petition Congress for more venues to compete with what they consider cutting-edge products.

The value of total goods exported to controlled destinations was approximately $20.0 billion representing less than 3% of U.S. exports in 1998. Exports to China represented over 70% of the total with a value of more than $14.0 billion.
While the overall value of U.S. exports to controlled countries remains low, these exports are becoming increasingly important in certain economic sectors. Capital goods, including machinery and transportation equipment represented over 50% of the value of licenses approved in 1998.[15] Industries such as computers and aerospace report that they export large percentages of their production, but their exposure to controlled markets remains unclear.

Heightened Control Advocates

This group is primarily comprised of certain national security experts who advocate strict controls on technologies and dual-use items that can aid potential adversaries to construct nuclear, biological or chemical weapons and missiles. They also advocate the restriction of exports to countries that support international terrorists. They would like these materials kept away from the 'countries of concern': Cuba, Iran, Iraq, Libya, North Korea and Sudan. They are especially concerned with the potential uses of this technology in China, as well as for the possibility of diversion from China to other nations. These advocates range from those who view trade as a means to voice dissatisfaction with another country's policies to those who could support export control legislation with added consultation or safeguards.

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[15] BXA Annual Report-1999, [http://www.bxa.doc.gov/press/publications/99annreport/] Chapter 2 and appendix.

The Administration

The Department of Commerce is responsible for regulating dual-use exports under provisions of EAA79. DOC consults with other members of the national security community on license applications and commodity classifications. The Defense Threat Reduction Agency in the Department of Defense conducts national security reviews for license applications referred from Commerce and State. The Department of Energy also reviews dual-use license applications referred by Commerce for nuclear uses and nuclear end-users, and it and the Nuclear Regulatory Commission license exportation of nuclear materials. In addition, the Office of Defense Trade Controls at the State Department administers the International Traffic in Arms Regulations. Through the Munitions List, this agency regulates the traffic in weapons.

The Bureau of Export Administration (BXA) is charged with administering the export control regulations within the Department of Commerce. In FY1999, 12,650 licenses applications were submitted to BXA. Of these applications, 86% were referred to other agencies for review. BXA acted on 12,598 application in FY1999; approved 9,311(73%), denied 1,160 (9%), and returned 2,124(16%) licenses.[16] The average processing time for license applications was 40 days, a length of time that has gradually increased since FY1996 when the average duration was 26 days.

There have been subtle policy differences within the Administration on EAA reauthorization. The Defense Department has supported the 'carve-out' of critical technologies from certain provisions of the legislation.[17] The Commerce Department has expressed satisfaction with the current system of license referrals and commodity classifications, a system implemented by executive order after EAA79 expired.[18] Some observers have noted the Administration's greater latitude in administering export controls through IEEPA and claim that the Administration prefers this operating model to new statutory constraints imposed by new legislation.

Congress

Under the Senate Rules, the Banking, Housing and Urban Affairs Committee has jurisdiction over export control.[19] In the House of Representatives, the International Relations Committee has jurisdiction over export controls, but the committee did not consider legislation in the 106th Congress.[20] Several other Senate committees have also expressed an interest in export controls. The Armed Services, Commerce, Foreign Relations, Governmental Affairs and Intelligence Committees have all held

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[16] BXA Annual Report-1999, [http://www.bxa.doc.gov/press/publications/99annreport/ann99chap2.html]. Applications are often returned without action if no license is required.

[17] See below, p. 7.

[18] "Administration of Export Controls," Executive Order 12981, December 6, 1995.

[19] Standing Rules of the Senate, 25.1d(6).

[20] Rules of the House of Representatives, Rule X, clause (1)(j)(4).

hearings, or conducted oversight over executive departments that are considered stakeholders in the legislation.

S.1712 provides reporting mechanisms and standards to evaluate multilateral export control regimes and the adherents of these regimes. These criteria are designed to strengthen and provide uniformity to the export control process. They may also implicate issues relating to defense and foreign relations. The Chairmen of the Armed Services, Foreign Relations, Governmental Affairs and Intelligence Committees have placed holds on S. 1712, preventing its consideration on the Senate floor.[21]

Vexing Questions

The debate over the reauthorization of EAA has raised difficult questions that underlie important aspects of export control policy. Some questions that merit consideration in context of the debate include whether technology can be meaningfully controlled, to which nations should controls apply, and whether the current diffuse export control licensing system is optimal for the 21st century.

Controllability of Technology

Underlying one of the major debates concerning the reauthorization of the EAA is the question of the controllability of technology. Both EAA79 and S.1712 attempt to qualify the circumstances in which items can be controlled for national security purposes. Items controlled for national security purposes are placed on the Commodity Control List (CCL) [the National Security Control List (NSCL) in S. 1712]. The Foreign Availability provision in both EAA and S.1712 and the Mass Market provision in S.1712 attempt to balance the sensitivity of an item to U.S. national security interests with the ability to obtain these items from other sources.

The EAA defines an item as having foreign availability if that item or a substantially identical article can be purchased outside the United States by a controlled country in sufficient quantity or quality such that it would render controls on the item ineffective. S. 1712 also adds price competitiveness as a criterion for determining foreign availability.[22] Determinations of foreign availability are made by Technical Advisory Committees consisting of officials from the Commerce, Defense and State Departments as well as industry representatives. S. 1712 replaces these committees with an Office of Technology Evaluation..[23]

In addition to foreign availability criteria, S.1712 also provides a new criterion to test items for mass market characteristics. S. 1712 defines an item as having mass

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[21] "Export Controls: Sen. Enzi Says Fellow Republicans Seeking To Shut Down High-Tech Exports," 17 *International Trade Reporter* 663, April 27, 2000.

[22] P.L. 96-72, 93 *Stat.*503, 509; S. 1712, Sec. 211 (d)(1)(A)-(C); *The Export Administration Act of 1999*, Report 106-180, p. 10.

[23] P.L. 96-72, 93 *Stat.*503, 510, S.1712, Sec. 214.

market characteristics if the good is sold in extensive volume to multiple buyers, if it has a wide distribution network, if it can be shipped by normal means, or if it can be utilized for its intended purpose with little alteration.[24] Articles that are found to have mass market characteristics would not be placed on the NSCL.

The six major industry groups that have taken active positions on legislation to replace EAA79 consider the adoption of these provisions as the key benefit of S.1712. The mass market and foreign availability concepts are integral to their contention that the flow of technology cannot be effectively controlled and that our dominance of cutting-edge technology can no longer be assumed. According to their arguments, unilateral controls will not stop other countries from obtaining cutting-edge technology. Advocates of this viewpoint claim that "countries of concern" will simply obtain this technology from other nations. This view regards current multilateral controls on dual-use articles (the Wassenaar Arrangement)[25] as ineffectual. From this perspective, only American business suffers from the unilateral nature of U.S. export controls. In the process, foreign business wins new markets or gains an incentive to enter new markets.[26]

According to the industry position, unilateral export controls are also becoming increasingly unworkable as the economy undergoes globalization. The current export control system is predicated on goods being manufactured or assembled in one country. In many industries, however, component parts are manufactured worldwide and are considered commodities. If these parts are not available from one source on a timely basis, they can be obtained elsewhere.[27] Purchasing managers at Daimler Chrysler Aerospace, for example, reportedly have been instructed to reduce dependence on American components for defense and space technology products because of delays associated with American licensing procedures.[28]

Other participants in the export control debate are concerned about the mass market and foreign availability arguments advanced by industry proponents. Critics charge that the mass market standard would effectively nullify the whole U.S. control regime by decontrolling any item that met the criteria under the law. They assert that virtually any product, including dual-use items used for proliferation purposes, would qualify for mass market status. Similarly, as one non-proliferation advocate testified,

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[24] S. 1712, Sec. 211 (d)(2)(A)- (D); Report, p.11.

[25] For more on multilateral dual-use controls, see Grimmett, Richard F., *Military Technology and Conventional Weapons Export Controls: The Wassenaar Arrangement*, CRS Report RS20517, March 27, 2000.

[26] For examples of this argument see, Prepared Statement of Dan Hoydosh, co-chairman of Computer Coalition for Responsible Exports, in Senate Banking Committee, *Reauthorization of the Export Administration Act*, S.Hrg. 106-461, March 16, 1999(*Reauthorization*); Hans Luemers, Sun Microsystems, "Position Papers: Export Controls," [http://wwwwswest.sun.com/ corporateoverview/policy/export.html].

[27] Hamre, John, Testimony before the Armed Services Committee, February 28, 2000, transcript, p. 31-33.

[28] Douglass, John W., prepared testimony before the Armed Services Committee, February 28, 2000, p.3.

the foreign availability criterion would allow the sale of "anything a controlled country can purchase from a rogue buyer."[29] Proponents of S.1712 counter that other provisions of the legislation would prevent decontrol of items to terrorist nations or in order that the United States remain consistent with international obligations.[30]

The mass market provisions have proved to be one of the most intractable obstacles in negotiations to bring the bill to the Senate floor. One method floated to resolve this issue is to "carve-out" an exemption to the mass market and foreign availability criteria for certain articles. Assistant Secretary of Defense, John Hamre, "insisted" on the inclusion of such a carve-out provision before the Senate Armed Services Committee early this year.[31] Senator Warner reportedly has sought carve-outs for jet engine hot section technology, encryption, and future technologies.[32]

National Security Benefits. A related argument made by industry associated with mass market and foreign availability criteria is that national security is enhanced by robust export industries. This argument is predicated on the changing nature of defense procurement, research and development. During the Cold War, the formative period of the current export control regime, the military drove much technical research and provided funds for research and development. Now that situation is largely reversed. Shrinking defense budgets have reduced funds available for R&D. The military now purchases many items 'off-the-shelf' and relies to a greater extent on commercial applications. Industry argues that it is in the national security to sell current technology to generate funds to develop future technology. If American firms are competitively hindered because of export controls, the argument goes, foreign firms will gain market share, increase profits, invest more in R&D, shrink and possibly surpass our technological lead. Thus, industry argues it needs a streamlined export process, one that will not needlessly impede exports.

Critics of industry's national security position maintain that the United States does not promote its national security by selling advanced technology to potentially hostile states. This technology, if sold to a regime of dubious stability, could be used against the United States or allies in the future. Proponents of this argument point to the case of Iraq, which received U.S. weaponry in the 1980's when Saddam Hussein was considered a useful counterweight to Iran. Subsequently, this technology was used against Kuwait and allied forces in the Persian Gulf War. Reliance on the civilian sector for R&D, they claim, is a policy decision brought about by declining defense budgets. Some further argue that R&D that advances defense capabilities should be funded within the Defense Department if it is necessary to control technology to certain nations.

Computing Power. Industry uses the rapid rise in computing power as an illustration both of the uncontrollable nature of technology and the inability of the

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[29] Milhollin, Gary, prepared testimony before the Senate Governmental Affairs Committee, May 26, 2000, p. 6.

[30] S. 1712, Sec. 309, 310.

[31] Hamre, transcript, p.37.

[32] 17 *International Trade Reporter* 340, March 2, 2000.

export control law to account for such innovation. Due to rapid technological innovation, the level of computing power (measured in millions of technical operations per second or MTOPS) that requires licensing under the commodity control list (CCL) repeatedly has been increased by Presidential determination. Computers with microprocessors such as the Apple G4 or the Intel Pentium III, widely available for home-use today, recently brushed against these limits before MTOPS thresholds were increased in 1999.

The regulatory framework of using MTOPS limits to determine computer power is a related concern of the high-tech industry because it fears such limits will impede the ability of the industry to export commodity level computers. Although the industry would like to see this type of regulation replaced or eliminated,[33] there is no explicit provision for the MTOPS standard in the EAA or S.1712. However, the mass market provisions of S.1712 may decontrol many commodity level computers. The computer industry supports an exemption for commodity information products that would waive license requirements based broadly on mass market criteria.[34]

Some observers outside industry have also concluded that technology, especially computer technology, has become largely uncontrollable. One national security analyst, Richard Perle, former Assistant Secretary of Defense for Security Policy in the Reagan Administration, states that attempting to control computing power is not "feasible or effective." He maintains that the restraint of computer trade is self-defeating because it cedes markets and profits that could be used for R&D.[35]

Increasing computing speeds combined with networking advances have blurred the distinction between super-computers and commodity computers. Microprocessors that individually comply with export regulations can be linked together to create servers with MTOPS capabilities that warrant export controls. If enough processors are linked together, they can create a parallel processing system with capabilities that approach those of a super-computer. The Defense Science Board notes in its final report on Globalization and Security that the ability to cluster commodity computers in order to multiply computing power erodes the ability to restrict access to high-performance computing, even if high-performance stand-alone machines can be controlled.[36]

There is other evidence that loosely coupled, parallel processing systems can be easily and cheaply constructed from parts available world-wide. These systems excel in research applications that rely on computation rather than input/output, the ability

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[33] Testimony of James W. Jarrett, April 14, 1999 [http://www.senate.gov/~banking/99_04hrg/041499/jarrett.htm]

[34] Jarrett, *op cit.*; "GAO Begins to Probe Computer Export Standards Other than MTOPS," *Inside U.S. Trade*, June 2, 2000.

[35] Richard Perle, speaking at the Forum for Technology and Innovation, March 23, 1999, [http://www.tech-forum.org/upcoming/transcripts/CompExportsTrans.htm]

[36] Defense Science Board, *Final Report of Task Force on Globalization and Security*, Washington: Office of the Under Secretary of Defense for Acquisition and Technology, December 1999, p. 27.

to support many users simultaneously, functions. Reportedly, the computers that are most adept at such militarily significant applications as cryptography and simulation, prime targets of current export controls, could be the easiest to obtain.[37]

Other observers believe the United States can restrict access to the highest computer technology by limiting exports. They maintain that American-made computers are perceived as superior, and thus carry greater cachet than products from other nations. They note that the purchase of an American-made computer product also buys superior networking and service, often at a better price. Control advocates maintain that these distinctions are significant; that qualitative differences are important.[38]

In addition, networking a parallel processing system, as those without access to advanced computing technology must do to increase computing capability, presents additional challenges distinct from those faced by engineers of commodity computers. Andrew Grove, CEO of Intel, related how configuring together 9,000 microprocessors into a large scale parallel processing system "took a large group of people and two and one-half years to build." He concluded, "the physical technology, the hardware technology implicit in building these large parallel machines is not the same as the physical technology used in building commodity machines."[39] This account seems to lend credence to the belief that higher power computing is controllable to some degree.

Targets of Control

Another overarching policy question bears on which countries should be subject to export controls. This question encompasses both the use of export controls as a means of sanction as well as the multilateral aspects of export controls. Two parts of the EAA concern specific countries.

Foreign Policy Controls. Unlike national security controls, foreign policy controls are targeted against nations based on their behavior. The EAA directs the President to impose unilateral export controls to punish conduct seen as promoting terrorism or violating human rights and sets criteria for the imposition of controls. The EAA requires that the President consult with foreign allies, Congress and industry before imposing a sanction. S.1712 adds a public notice and comment period that can be waived in an emergency. Controls expire after one year unless they are reauthorized. S.1712 changes the current authority to impose export controls on items related to the proliferation of weapons of mass destruction, chemical and biological weapons and their delivery mechanisms. These items become regulated under national security controls, and hence, become subject to the foreign availability and

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[37] Gartner Group, *High Performance Computer Systems Summary*, February 5, 1999, p. 17-18.

[38] Milhollin, Gary, prepared testimony before the Senate Governmental Affairs Committee, May 26, 2000, p. 6.

[39] Andrew Grove, speaking at the Forum for Technology and Innovation, March 23, 1999, [http://www.tech-forum.org/upcoming/transcripts/CompExportsTrans.htm]

mass market conditions explained above.[40] Critics of this provision assert that the criteria for imposing these sanctions are thereby tightened, and they claim that it will make it harder for the President to impose unilateral controls.

Proponents of heightened controls have made the argument that trade is a privilege based on certain minimal levels of conduct: non-proliferation, respect for human rights, and cooperation in efforts against terrorism, to name a few. Trading with countries that violate these minimum standards of international behavior weakens the moral authority of the U.S. and sends the signal that there is no penalty for such activity. This position was reportedly articulated by Representative Dana Rohrabacher referring to China: "Why do we want the local gangster in the Chamber of Commerce?"

Industry officials who have favored tightening the restrictions placed on unilateral controls by S.1712 cite the seeming inability of unilateral economic sanctions to achieve results. Some industry representatives argue that economic sanctions only should be applied for true national emergencies, and then only for a limited period of time. If controls are imposed, these advocates contend, they should be imposed multilaterally and with specific time-limits.[41] Both the Act and the bill call for international consultation subsequent to the imposition of unilateral controls with the hope of extending their scope.

Multilateralism. The multilateral determination of export control policy by countries sharing U.S. values is seen as a preferable solution by both industry spokesmen and proponents of heightened export restrictions. Many observers contend that the current multilateral system of control of dual-use articles, the Wassenaar Arrangement, is ineffective because it relies on consensus of member states which allows for only the level of control acceptable to all. Its minimal reporting requirements mandate notification that an item has been sold, thus preventing effective pre-export consultation among member states.

Industry stresses the necessity of effective multilateral controls. They argue that export controls are effective only if they are adhered to by all states capable of exporting a given technology. The machine tool industry has been at the forefront in criticizing the unilateral nature of our export policies, especially concerning exports to China. It notes that there is no consensus among Wassenaar Arrangement countries on the proper limits of technology transfer to China. (Indeed, no country is targeted by Wassenaar.) Stringent domestic controls combined with minimal multilateral constraints only damage American companies, according to industry spokesmen. They fault the U.S. for having an overly rigorous licensing policy towards China, without noticeably pursuing a strategy to convince our allies to follow our lead.[42]

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[40] S. 1712, Title III, Sec. 301, Report, p. 12.

[41] For example, see Douglass, John W., Prepared Statement, Aerospace Industry Association, *Reauthorization*, p.113, 115.

[42] See Freedenberg, Paul Testimony before the Subcommittee on International Economic Policy and Trade, House Committee on Economic Relations, March 22, 2000.

Proponents of tighter export restrictions note that America traditionally has taken the lead in export controls and non-proliferation efforts. These efforts included the original EAA, adopted in 1949, and the establishment of CoCom, the multilateral Coordinating Committee of western powers that restricted technology exports to the Soviet bloc during the Cold War. They argue that efforts to strengthen CoCom's successor regime, the Wassenaar arrangement, cannot succeed if Washington itself is loosening export restrictions. Thus, the United States must take the lead in order to convince other nations to follow the U.S. example. Adherents of this viewpoint argue that the successful negotiating strategy in these multilateral fora is to adopt controls first and then persuade other countries to follow suit. Hence in their view, an export control strategy pegged solely on the policies of other nations, negotiated by consensus, would be ineffectual and harmful to national security.[43]

Proponents of stricter technology transfer policies claim that multilateral control efforts are beginning to show results. They cite a recent biennial CIA Report which noted that "increasingly rigorous and effective export controls and cooperation among supplier countries have led foreign weapons of mass destruction (WMD) programs to look elsewhere for many controlled dual-use goods."[44] Meanwhile, according to some experts, the Administration has lost credibility with other nations regarding the American commitment to export control. A senior staffer on the Senate Foreign Relations Committee reportedly opined, "We've applied stringent [export controls] while exhorting other nations to do likewise, and when these countries are finally committed to follow suit, some within the Department of Defense [and the Commerce Department] want to reverse [that position] by pursuing massive liberalization. It makes no sense."[45]

Both industry spokesmen and advocates of heightened export controls agree that the multilateral controls need to be strengthened. Yet, to do this requires consensus on which goods and which countries represent a threat. There does seem to be agreement among western nations to restrict dual-use items to a limited number of "countries of concern,"[46]yet consensus breaks down with regard to other states, notably China.[47] The export control dilemma in this context becomes clear. Without consensus on a particular target country, the question becomes whether the United States should impose controls unilaterally. One then needs to determine either: which non-proliferation or other foreign policy goals are sufficiently important to offset

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[http://www.mfgtech.org/government relations/testimony/freedenberg3_22_00.html]

[43] Milhollin, prepared, p. 7.

[44] Director of Central Intelligence, "Unclassified Report to Congress on the Acquisition of Technology Relating Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January through 30 June 1999," p. 10.

[45] Marshall Billingslea, quoted in Gary G. Yerkey, "Republican Efforts to Work Out Deal on Senate EAA Bill Appear to have Failed," 17 *International Trade Reporter* 698, May 4, 2000.

[46] Cuba, Iran, Iraq, Libya, North Korea, and Sudan.

[47] Grimmett, p. 4-6.

possibly damaging American business, and possibly costing American jobs; or how large an economic benefit would justify risking important national security goals.

Administrative Reforms

The optimal export control system is another key issue for consideration. Under the current system, the Department of Commerce receives applications for licenses of dual-use goods. The Department then refers license applications to other agencies, as it considers appropriate, for review within a specified time period, but these agencies cannot veto a license application. A disputed application is referred to an interagency committee (the operating committee), the chair of which is selected by the Secretary of Commerce. A dissenting member may seek to appeal a decision through a policy official of his or her own department.[48] S.1712 changes this procedure to allow any member of this committee to appeal a committee decision to the next level.[49] Senator Enzi has described this mechanism as a "process that is effective and equivalent to, but not exactly, a veto."[50] The time period allotted for this review has been shortened from the 30 days to 25 days.

Industry testimony emphasizes the delays and inefficiency associated with this application and review process and the competitive pressure it places on them. The satellite industry has complained that delays in the licensing procedures at the Department of State not only may have lost the satellite industry nearly half its business,[51] but imperils national security by threatening the ability to provide future service to the U.S. military.[52] Joe Tasker, government affairs vice-president of Compaq Computer, spoke about delays in licensing computer equipment: "It slows us down. It's a time-to-market issue. Days matter in this business."[53] Resistance to licensing five axis lathes by the Commerce Department, according to the machine tool industry, has ceded this market to the Europeans and Japanese.[54] These anecdotes are used by industry representatives to bolster their demands for streamlined procedures and faster licensing decisions.

Other critics of the current system contend that the interagency dispute procedures regarding commodity classification and license applications do not adequately address national security concerns. They have argued that if the license review process is done for national security purposes, then the national security

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[48] Executive Order, 12981, "Administration of Export Controls," December 6, 1995.

[49] See S. 1712, Title V, Sec. 501; Report 14-15.

[50] Hearings before the Senate Armed Services Committee, February 28, 2000, transcript, p. 12.

[51] Aerospace Industries Association, Press Release, July 5, 2000, [http://www.aia.aerospace.org/aianews/press/stmt_7_5_00.html]

[52] "Supporters Cite National Security in Export Legislation," by Jeremy Singer, *Defense News*, May 29, 2000.

[53] quoted in Hachman, Mark, "EIA backs export-controls overhaul," *Electronic Buyer's News*, April 16, 1999, [http://www.ebnews.com/story/OEG19990416S0027]

[54] Freedenberg, *op cit.*

agencies should command greater respect in those deliberations.[55] Senator Thompson has described the review process as one "designed basically for Commerce to get its way and ... a process designed basically to discourage appeal."[56] Some proponents of tighter export controls claim that the process continues to be slanted towards Commerce because its representatives chair the operating committees, and because the Department, in their view, has shown an institutional bias in promoting exports over national security considerations.

The placement of items on the Commerce Control List has also proved controversial. Under the current system, classification decisions are automatically referred to the DOD and other relevant agencies. The Secretary of Defense does not have the ability to place items on this list, nor to block items from removal by the Secretary of Commerce.[57]

Critics of the classification procedures claim that under the current system the Defense Department has not been adequately consulted. They point to a Defense Inspector General's report which found that in a three-year period only 12 cases had been referred to DOD for input out of thousands processed. The Acting Inspector General testified, "Commerce referred far too few commodity classification reports to the Department of Defense and has made decisions...without having any review discussion with the department."[58] Defense has expressed the concern that if Commerce assesses an item not to be subject to classification, the Defense Department will never know of its consideration.[59]

Some national security experts consider it essential that DOD be consulted on the licensing and classification of items as a way to keep informed about potential threats of technology transfer. The export control process takes on a greater significance in providing this information as the military originates less technological innovation. Without this window on the destination and types of exports, these experts contend, it becomes increasingly difficult to conduct accurate threat assessments.[60] In this context, the creation of a database to monitor trends and destinations of dual-use materials has been suggested as a tool to aid in the detection of troublesome proliferation activity.

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[55] Milhollin, p. 8.

[56] Opening Statement, "The Inspector General's Report on Export Control Processes for Dual-Use and Munitions List Items," Senate Governmental Affairs Committee, June 23, 1999, p. 3.

[57] Milhollin, Gary, Hearings before the Senate Armed Services Committee, March 23, 2000, transcript p.27.

[58] Mancuso, Donald, Acting Inspector General, DOD, testimony before the Senate Armed Services Committee, March 23, 2000, transcript p. 32.

[59] Bodner, James, Deputy Undersecretary of Defense for Policy, testimony before the Senate Armed Services Committee, February 28, 2000, transcript p. 46.

[60] Conversation with Bill Greenwalt, August 17, 2000; See also Marshall Billingslea, quoted in Kutner, Joshua, "State Department Defends Stance on Export Policy," *National Defense*, June 2000.

S.1712, with some exceptions, substantially adopts the current export control framework. It does not disturb the parallel classification system that places munitions and military equipment under the separate control of the State Department. As noted above, many observers have questioned the central role played by the Commerce Department in reviewing the national security implications of exports. However, the division between commercial and military competencies is defended as "appropriate" by industry spokespersons[61] who fear a repeat of the bottlenecks and delays associated with the transfer of satellites licensing from Commerce to State. Commerce officials oppose any further transfer of sensitive dual-use items (such as carve-out items) to the State Department's Munitions List. "It is not practicable or desirable to treat commercial export sales as munitions transfers...You cannot successfully 'tweak' a system that was designed for a fundamentally different purpose."[62]

Some observers advocate the consolidation of export control functions in an existing agency or in a newly established agency; this view is prevalent among industry officials concerned with the expeditious review of licenses[63] or those suspicious of Commerce's commitment to national security review. The placement of the export control portfolio in any of the existing agencies likely would prompt fierce opposition from rival agencies, as well as from stakeholders who perceive a loss of influence from the change.

The creation of a new agency devoted to export control and non-proliferation might avoid some of the rivalries associated with the current situation. Supporters of this idea claim that it would allow for greater integration of export control policies with other foreign policy objectives. A single agency could remove the perception that different agencies have different export control 'agendas'. Yet, such single mindedness would likely be seen as a drawback for adherents to whichever policy 'agenda' is not followed. Diffuse competencies provide venues to air different perspectives. An issue neglected or ignored under a unitary framework may find a champion under the current system.[64]

Another administrative reform proposal is to replace the current emphasis on licensing with intelligence and interdiction efforts. Former Assistant Secretary of Defense John Hamre has stated that if 99.8% of licenses are approved, then there are too many items of a non-critical nature requiring licenses.[65] Richard Perle has suggested diverting resources from what he considers an ineffective licensing scheme

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[61] For example, see McCurdy, Dave, Prepared Testimony in *Hearings on a New Act for a New World Order: Reassessing the Export Administration Act*, House International Relations Committee, Subcommittee on International Trade and Finance, March 3, 1999, p. 85.

[62] William Reinsch, Assistant Secretary for Export Administration, quoted in "Commerce Department's Reinsch on Export-Control Issues Ahead," *USIS Washington File*, July 10, 2000, [www.usinfo.state.gov/cgi-bin/washfile....clt&t=/products/washfile/newsitem.shtml].

[63] Douglass, prepared, p. 6-7.

[64] See, Theodore Galdi, *Proliferation Export Control Regimes: Options for Coordination or Consolidation*, CRS Report 93-429 F, April 20, 1993, p. 5.

[65] in Kutner, *op cit.* This figure refers to the percentage of applications approved with conditions out of the 75% of applications approved in 1998.

to spending those funds on intelligence and interdiction efforts to prevent proliferating states from obtaining sensitive technology.[66] Yet, to the Defense Department, licensing serves an important monitoring function, and for that reason, it is seeking guarantees of consultation in the present debate.

Options for Congress

Congress can address the issue of export controls in several ways. These range from modifying the current structure to a wholesale rewrite of our export control laws. These suggestions are not mutually exclusive.

Retain the Status Quo. Maintaining the current process is always an option. The President can continue to declare an economic emergency under IEEPA every six months, and the EAR can continue. Under this option, the Administration retains greater latitude in the implementation and enforcement of export controls. Yet, IEEPA's relatively weaker penalties and enforcement provisions would continue in force. A recent court's declaration that DOC cannot enforce the confidentiality provision of the expired EAA may prove a harbinger of future difficulties in continuing to apply the act in this manner. Alternately, Congress could retain the status quo by reauthorizing EAA79 for an additional length of time. The engrossed version of H.R. 5239, passed by the Senate on October 11, 2000, would reauthorize EAA79 for one year. This solution addresses the current problems associated with enforcing export controls through IEEPA, but it preserves a system designed for different strategic circumstances than those faced today.

Consider S. 1712. S.1712 remains the only rewrite of the EAA introduced since the 104th Congress. S.1712 modernizes the current export control framework to reflect the end of the Cold War and the changed dynamics of technology, yet it does not fundamentally alter the current structure. Congress may also embark on a more sweeping revision of export controls that may lead to a different organizational structure, to different approaches regarding control or to a new consensus on the role of technology in national security policy.

The Minimalist Approach. Congress can pass legislation to delegate export control authority with certain policy guidelines. The President would create the bureaucratic and enforcement mechanisms deemed necessary. Congress could conduct rigorous oversight to assure compliance with the policies contained in the law.

Piecemeal Revision. Congress can address specific shortcomings of the current framework by amending the IEEPA to increase penalties or to provide greater enforcement powers. H.R. 5239, as originally passed by the House of Representatives, would restore the penalty and confidentiality provisions of the EAA. Congress can also legislate export control policy to certain destinations or on certain commodities. It can restrict items of concern, such as the carve-out items, to

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[66] Forum on Technology and Innovation, *op cit.*

countries of concern, such as China or the 'rogue' states. This approach, however, would not provide a broad-based or predictable export control structure.

Stronger Multilateral Controls. All stakeholders agree on the need for tougher international arrangements. They believe Wassenaar needs to be strengthened into a consultative body, rather than what many participants now consider simply a notification arrangement. It has been claimed that the western allies have tightened restrictions in recent years to the 'countries of concern.' However, there is no consensus on tightening exports to China. A stronger multilateral regime could be consistent with other domestic arrangements Congress may consider.

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ASSESSMENT OF THE "COX COMMITTEE" REPORT

Hicks & Associates, Inc.
30 July 1999

INTRODUCTION

On May 25, 1999, the U.S. House of Representatives Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China (PRC), known as the Cox Committee, released a declassified version of its findings.

Media coverage of the report has focused primarily on the Committee's discussion of PRC espionage in pursuit of nuclear weapons design information. The Committee, however, set out to provide a broad evaluation of PRC technology acquisition efforts, based on case studies of transfers of space launch vehicle data, high performance computers, and defense-related manufacturing equipment. The Committee's report may have long-term repercussions on U.S.-China relations and on U.S. foreign and defense policy through its effect on a political debate over the right balance between commercial interests and national security in export policy.

This month we review what is publicly known about what China might have gained from illicit technology transfers. We provide our perspective on the Cox Committee's findings and discuss the Committee's recommendations, addressing whether they are likely to be implemented and their potential effect.

BACKGROUND

Despite initial partisan motivations, the "Cox Committee" was formed by a vote of 409-10. It included a cross section of senior members from key committees such as Chairman Chris Cox (CA), Republican Policy Committee Chairman; Norm Dicks (D-WA), Defense Appropriations; Porter Goss (R-FL), chairman of Intelligence; James Hansen (R-UT), Curt Weldon (R-PA), and John Spratt (D-SC) of Armed Services; Doug Bereuter (R-NE) of International Relations; Lucille Roybal-Allard (D-CA) of Banking; and Bobby Scott (D-VA) of Judiciary.

The Committee charter encompassed transfers of technology, information, or services that may have enhanced PRC missile, weapons of mass destruction, conventional weapons, and/or intelligence capabilities and their potential impact on national or regional security. The charter extended to examining the conduct of the Executive Branch, defense contractors, weapons manufacturers, other private or government-owned commercial firms involved with technology transfers, and related law enforcement. By charter, the Committee could have examined "any effort by the Government of China or any other person or entity to influence any of the foregoing matters through political contributions, commercial arrangements, or bribery, influence-peddling, or other illegal activities." Anticipating it would be a divisive issue, the Committee sidestepped this last area in its recommendations. The Committee produced a bipartisan report, although several members provided individual views taking issue with specific conclusions.

This inquest into technology transfer to China comes at a time when the character of the U.S. relationship with China is again uncertain – particularly after the U.S. bombing of the Chinese embassy in Belgrade – and complicated by a host of complex issues. Human rights, weapons proliferation, PRC opposition to the U.S.-led NATO air campaign against Yugoslavia, Taiwan, regional security, and the timing of PRC entry into the World Trade Organization are all important

issues contributing to this uncertainty. China's growing economic might, its sense of national entitlement, and the influence of overseas Chinese worldwide, make the U.S.-China relationship a key feature of international relations in the 21st century.

Against the background of alleged PRC attempts to influence American elections, the Cox report seems destined to play a significant role in the run-up to the 2000 presidential election. Whether it will also engender a serious debate over substantive geostrategic, trade, and national security issues remains to be seen.

SUMMARY OF COMMITTEE FINDINGS

The Committee found that China "has stolen design information on the United States' most advanced thermonuclear weapons. . . has stolen or otherwise illegally obtained U.S. missile and space technology that improves China's military and intelligence capabilities. . . seeks advanced U.S. military technology to achieve its long-term goals. . . uses a variety of techniques, including espionage, controlled commercial entities, and a network of individuals and organizations that engage in a vast array of contacts with scientists, business people, and academics." Further, the Committee alleged that "U.S. and international export control policies and practices have facilitated China's efforts to obtain militarily useful technology."

PRC Acquisition of U.S. Technology

Report Focus/Scope. The Committee identified a variety of methods used by China to learn about, acquire, and employ U.S. technology and described examples in which each of these methods was applied.

Report findings. The Committee indicated that China is placing priority on acquiring science and technology relevant to biological warfare, space, military information, laser weapons, automation, nuclear weapons, and exotic materials. PRC technology acquisition efforts consist of a wide range of difficult-to-track methods, including: using its Intelligence service; illegally obtaining U.S. military technology from other countries; pressuring U.S. companies involved with Chinese firms in joint ventures to transfer controlled technology; exploiting dual-use products for military purposes; using front companies and commercial organizations; and acquiring interests in U.S. technology companies. Complicating the U.S. Government's ability to track PRC technology acquisition efforts are the thousands of Chinese scientific and technical personnel who visit or work in the United States and visits to China by U.S. scientific delegations. U.S. shortcomings noted by the Committee included the absence of a robust counterintelligence effort, inadequate data collection and synthesis, insufficient resources applied to understanding PRC technology acquisition efforts, and a lack of U.S. Government interagency coordination.

Report recommendations. The Committee made several recommendations designed to better protect U.S. national security in light of the myriad PRC strategies for acquiring U.S. technology. For example, the final report suggests establishing a mechanism for identifying U.S. technologies which, if acquired by China, are of greatest national security concern. It also recommends mandatory reporting to the Committee on Foreign Investment in the U.S. (CFIUS) by U.S. firms that conduct national security-related business of any planned merger, acquisition, or takeover of the firm by a foreign entity or by a U.S. entity controlled by a foreign entity. The Committee suggests that Executive branch organizations conduct a counterintelligence threat assessment of PRC espionage against U.S. companies. Similarly, the report recommends that the Intelligence Community prepare and maintain an all-source analysis of PRC technology acquisition objectives and progress.

Our perspective. The Cox report shows some of the current deficiencies in the U.S. Government's ability to conduct assessments involving the intersection of national security, commercial, and political interests. The Executive branch lacked an integrated understanding of what China was trying to acquire, what it had already obtained, and how this information or technology would be used. The National Security Council (NSC) structure provides for a cadre of individuals skilled at developing national security policy. However, the NSC needs improved access to cross-agency information (especially correlated and integrated data from the Intelligence Community), better tools for analyzing the national security implications of international trade and commerce, and a mechanism for identifying technology export cases requiring senior-level policy review. On the legislative side, disjointed committee jurisdictions hinder effective oversight, and committee staffs generally lack the diverse technical expertise required. Even the Cox Committee staff, recruited specifically to carry out the panel's charter, lacked adequate geopolitical and technical knowledge to turn the raw material of interviews into persuasive policy recommendations.

Case-by-case determinations on export licenses, no matter how diligent the process, will have unsatisfactory results unless guided by a comprehensive perspective on the objectives and methods of the acquiring country. This perspective must then be coupled with a considered and concerted strategy for protecting those capabilities that can, in fact, be protected and that have the most national security import for the United States. We believe the Administration should enhance its capability to track the technology objectives and acquisition methods of key foreign countries. The findings should be summarized in periodic assessments and used to inform both overall export control policy and case-by-case licensing decisions.

Nuclear Weapons Design Information

Report focus/scope. The report contends that China conducted espionage, complemented by detailed reviews of unclassified information and technical exchanges with scientists at the Department of Energy (DoE) National Labs, over the course of a 20-year collection program that, the Committee contends, continues to this day.

Report findings. The Committee report asserts that China "has stolen design information on the United States' most advanced thermonuclear weapons." The Committee's conclusion was that China obtained weapons design information on all currently-deployed U.S. warheads and the neutron bomb.

The Committee judged that "the stolen U.S. secrets have helped China fabricate and successfully test modern strategic thermonuclear weapons." The report asserts that some of the stolen information will aid China's development of a new generation of nuclear warheads for use in road-mobile and submarine launched ICBMs. The Committee believes China has the infrastructure and technical ability necessary to effectively use the stolen information. Since China is a known proliferator, the Committee also fears that nuclear weapons design information acquired from the U.S. may have been provided to countries such as Iran, North Korea, and Pakistan.

Report recommendations. The Committee's recommendations address Executive branch organizational structure, reporting requirements, and international treaty enforcement. The report urges implementation of an enhanced counterintelligence program within DoE and suggests a comprehensive review of DoE's nuclear weapons responsibilities. The Committee encourages a damage assessment of security breaches at the National Labs and a risk assessment of scientific exchange programs. Finally, the report affirms the need for U.S. leadership within, and PRC

compliance with, the Missile Technology Control Regime[1] (MTCR), and recommends that the U.S. Government push for stringent multilateral nuclear and missile proliferation controls.

Our perspective. The Cox Committee has performed a useful service in exposing lax security practices at DoE nuclear weapons labs. The Administration has reportedly adopted many of the Committee's nuclear security recommendations. Moreover, Congress is likely to pass legislation this year aimed at streamlining DoE's nuclear weapons management structure and giving greater organizational visibility and autonomy to the nuclear weapons programs. Congress will likely recommend a semi-autonomous nuclear weapons agency within DoE reporting directly to the Energy Secretary. However, finding and, potentially, securing Congressional confirmation of an effective leader for this restructured entity will be difficult for a lame-duck Administration not known for its alacrity in personnel matters.

Efforts to remedy physical security and cyber-security lapses can do little to stop scientists from deliberately passing sensitive information to their counterparts abroad. Personnel reliability, to encompass smarter approaches than mass polygraphing (e.g., technology-aided real-time monitoring of individuals' financial status), must be at the core of DoE's security program. Moreover, DoE cannot continue to attract top scientists to the nuclear weapons complex in an environment of constant suspicion and draconian limits on intellectual interchange. Further, international scientific contacts by weapons scientists have significant national security value. Accordingly, measures must be identified to continue these contacts while providing stricter security.

The report's more extreme statements about the national security impact of what was lost should not be allowed to influence significantly the broader U.S.-China relationship. The recent findings of a study conducted by the President's Foreign Intelligence Advisory Board and chaired by former New Hampshire Senator Warren Rudman provides a more balanced perspective. The "Rudman report" concluded that "the actual damage done is currently unknown; at worst, it may be unknowable. The factual record supports plausible inferences but not irrefutable proof." The Rudman panel also endorsed the conclusions of an intelligence community damage assessment completed by a panel of national security and nuclear weapons experts, led by the former Vice Chairman of the Joint Chiefs of Staff, Admiral David Jeremiah. According to this damage assessment, it is not possible to "determine the full extent of weapon information obtained. For example, we do not know whether any design documentation or blueprints were acquired."

It is possible, even likely, that China could have developed high yield-to-weight warheads without external assistance had it simply devoted sufficient resources to the task. China's acquisition of U.S. nuclear weapons data did not likely provide China with any wholly new methods for nuclear weapons design or production. However, it seems logical that such information could have enabled them to economize their existing efforts by illuminating promising design paths. Moreover, it takes sophisticated manufacturing processes, hands-on experience, and advanced system integration skills to translate stolen design information into deployable warheads. On balance, it is safe to say that whatever U.S. nuclear information China obtained, it has not yet affected materially the strategic balance, and is unlikely to do so for some time. The U.S. should closely monitor – with an eye toward anomalous progress – China's nuclear weapons program and policy, and identify, collect, and analyze the signatures associated with such changes.

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[1] The MTCR is a voluntary arrangement among 27 countries restricting the export of delivery systems and related technology for those systems capable of carrying a 500-kilogram payload at least 300 kilometers, as well as systems intended for the delivery of WMD.

Space Launch Vehicles

Report focus/scope. The Committee addressed the potential breach in national security resulting from the participation of U.S. industry personnel in space launch failure investigations. The Committee focused on three failed launches of PRC rockets carrying U.S.-manufactured satellites: 1992 and 1995 launches of Hughes satellites and the 1996 launch of a Space Systems/Loral satellite. The Committee's principal concerns were whether the corporations had violated U.S. export controls during the launch failure investigations, what information China obtained, and how this information could have been used to satisfy PRC military objectives.

Report findings. For each of the three launch failures, the Committee's findings describe procedural errors on the part of the U.S. Government, Hughes, and Loral and the information acquired by China. Regarding the 1992 failure investigation, the Committee concluded that the information transferred to PRC technicians by Hughes personnel was not properly licensed. Following the 1995 launch failure, the information transferred by Hughes personnel during the subsequent investigation was incorrectly authorized for export. In both cases, information provided to China pertained to the rockets' fairing, which protects the payload during launch. The Committee determined that this information could be used to improve the PRC capability to launch military satellites and enhance PRC ballistic missile reliability. The Committee found that, while investigating the 1996 launch failure, Loral and Hughes employees "acted without the legally required license, and violated U.S. export control laws." The Committee alleges that the information provided during the course of the failure investigation could be "militarily useful" to China by improving rocket reliability, enhancing rocket design and test practices, and accelerating rocket failure investigations.

Report recommendations. The Committee endorsed the House's earlier legislation transferring satellite export licensing authority from the Commerce Department to the State Department. They also made several recommendations designed to improve launch site security and thus help mitigate the broader risk to national security entailed with launching U.S. satellites from foreign countries. These recommendations focused on the provision, training, and reporting of DoD-provided launch site monitors. The Committee suggested the development of legislation to encourage growth of domestic launch capability and reduce the attractiveness of overseas launch to U.S. satellite-makers.

Our perspective. The possible connection between Loral CEO Bernard Schwarz's role as a leading Democratic campaign contributor and Loral's alleged role in helping China increase its space launch reliability was the original hook that led to the Cox Committee. Initially, it was alleged that U.S. cryptographic capabilities and guidance technologies were compromised by Loral, but the Cox report suggests that the national security compromise was indirect at most. Loral likely enhanced China's understanding of a guidance system failure not likely used in military systems. In the process, they may have even improved China's grasp of more broadly applicable failure analysis techniques. Yet, such tutelage is available through graduate engineering courses. Moreover, as recent U.S. military satellite launch/deployment failures – attributed in part to poor quality control – painfully illustrate, advanced engineering knowledge and training does not always translate into sound engineering practice, much less guarantee mission success. Hughes allegedly taught China how to analyze aerodynamic loads on space launch vehicle fairings. This may have improved China's satellite launch capabilities (including military satellites), but is unlikely to have enhanced China's ability to launch MIRVed (Multiple Independently targeted Remote Vehicle) missiles, which typically experience lower aerodynamic loads.

More troubling than any national security compromise stemming from the actions of Loral and Hughes are the apparently systemic problems plaguing the export licensing system. The companies' alleged transgressions seem to have involved the evasion of a cumbersome export licensing system in which the firms dealt with multiple government agencies acting bureaucratically rather than responsively balancing national interests as they impinged on a specific case. Instead of asking whether a more responsive and consultative export control regime might enlist U.S. business in its favor, the Cox Committee appears to operate from an antibusiness mindset. The underlying assumption is that industry places its own interests ahead of – and will pursue these interests even at the recognized detriment of – national security. Accordingly, the Committee's recommendations call for more intrusive government monitoring of foreign launches of U.S. satellites, despite government trends – more outsourcing and less technical competence at lower levels – that make their effective implementation more difficult.

Another aspect of the government/industry balance not addressed by the Cox report is U.S. industry's need and opportunity to understand Chinese interests. For example, many U.S. engineers and technicians spend weeks to months on-site prior to and following a satellite launch. During the 1996 launch failure investigation, for example, Loral, Hughes, and Chinese engineers exchanged most of their information at a hotel in China. The U.S. Government knows that Chinese hotels are frequently bugged but neglects to consistently warn U.S. industry. Government and industry fails to exploit the potential these visits offer for enriching their comprehension of Chinese technology requirements. To take full advantage of these opportunities while mitigating the risk of unintended technology transfer, industry needs to be aware of the technology acquisition goals and strategies of China.

Legislative action prior to and in the wake of the Cox report will have significant yet mixed effects on the U.S. satellite-building and space launch industries. Prior to the Committee's report, the House had already voted to restrict future U.S. launches from foreign countries. This legislation was a knee-jerk reaction that would, in all probability, hurt U.S. satellite makers' competitiveness far more than it helps national security. It remains to be seen whether the Committee's recommendation to streamline firms' export licensing-related interactions with State will improve matters. Report language indicates that State's expanded jurisdiction over satellite exports would include review of data exchanged during launch failure investigations. If so, it is essential that State develops an enlightened understanding of the national security risk associated with providing data during a launch failure investigation. Such risk must be balanced against the reward of averting the insurance losses, higher insurance premiums, and lost satellite service revenues that necessarily result from any launch failure. The Committee's recommendation to facilitate growth in America's space launch capability is a good one. If domestic launch capability were so improved, it would not only enhance U.S. competitiveness in the burgeoning satellite and space launch industries (e.g., by attracting foreign customers to U.S. launch facilities and lowering launch costs to U.S. satellite builders), it would also advance our overall space launch capabilities.

High Performance Computers (HPCs)

Report focus/scope. The Committee reviewed Clinton Administration rationale for liberalizing HPC export controls and discussed the extent to which computer networking technology advances are affecting the U.S. Government's ability to control, and China's ability to use, HPCs. The Committee also examined potential military applications of HPCs by China and identified the number of computers purchased by China from both indigenous and nonU.S. suppliers.

Report findings. Following the relaxation of export controls in 1996, nine times as many HPCs were sold to China in a nine-month period as were sold during the six preceding years. As of

January 1999, the U.S. had conducted only a single end-use check in China. The Committee found that the U.S. is the dominant HPC supplier to China whereas the majority (60%) of the PRC personal computer and workstation market is supplied from within China. They acknowledge that the ability to link or "cluster" multiple low-end machines together to achieve high-performance levels using readily available (e.g., via the Internet) tools and software increases the export control challenge. And they express concern over the ability of PRC nationals to access high-performance computing networks such as those at certain U.S. research universities and at DoE's nuclear weapons laboratories.

The report suggests that China could be using HPCs acquired from U.S. firms for a variety of military applications, including: nuclear weapons design and maintenance; intelligence collection and analysis; offensive information warfare; chemical and biological weapons and ballistic missile production; and training both weather prediction specialists and combat units.

Report recommendations. The Committee identified several methods for improving the U.S. Government's capability to understand and control the national security impact of U.S. HPC exports to China, including: a comprehensive review of the national security implications thereof (to include an assessment of the military applicability of clustering lower-performance computers); procedures to increase the frequency of and strengthen end-use/user verification; and working towards multi-lateral HPC export control policies with other HPC-manufacturing countries.

Our perspective. The HPC section of the Cox report demonstrates that the U.S. Government needs to understand what technology needs to be protected, what can be protected, and why. In 1996, the U.S. made a conscious decision to liberalize the export of HPCs, based in large part on its assessment of HPC controllability. The Committee found no substantiation for early suspicions that the 1996 liberalization might have been motivated by concerns other than the national interest. A study used as a basis for loosening export controls tried to establish a performance breakpoint at which, given advances in computer power and price/performance, computers are available as a commodity and hence uncontrollable. The study noted that the minimum required performance levels for specific defense applications and the tradeoffs in trying to control computers at these performance levels were not well understood. While in the Committee's view this imprecision represented a critical policy-making deficiency, we believe that rapid increases in commercially available computing power would have rendered obsolete any controls based on such fine tradeoffs within a year or so.

The Committee's recommendation that the U.S. Government enhance its understanding of architectural constructs like networking and clustering are useful since they are a determining factor in computational performance but are not addressed by current export control policy. However, the likely policy result will not, as the Committee seems to hope, be a U.S. attempt to control networks and clustering technology, but rather to admit that a higher range of processor capability is uncontrollable.

The Committee urges multilateral development and enforcement of HPC export limitations. However, other HPC-producing countries – most of whom do not view China with strategic concern – have been reluctant to restrict dual-use exports to China. Moreover, since the U.S. is the primary supplier of HPCs to China, it appears that multilateral controls in this area would adversely affect U.S. corporations by creating a market void for competitors of U.S. companies to fill.

The Committee's recommendations concerning verification of HPC end-use seem beneficial. U.S. implementation of this recommendation will be difficult, however, since data can be transferred easily and deceptive tactics can be employed. Enforcement of these procedures may prevent some,

though by no means all, diversion to Chinese military users but needs to be complemented by a better knowledge of potential HPC military applications.

On the whole, governmental efforts aimed at controlling the export of advanced (and ever changing) computing technologies seem unlikely to succeed as a formula for protecting U.S. advantages in military applications of information technology. While certain controls (e.g., on the highest-end HPCs) are no doubt warranted and practical, a complementary path is for the U.S. to maintain its lead in the military application of high-end computer architectures through appropriate R&D investments such as DoE's Accelerated Strategic Computing Initiative.

Manufacturing Processes

Report focus/scope. The Committee examined two specific cases of manufacturing-related technology transfer: machine tools and jet engines. With regard to the former, the Committee addressed China's attempt to divert to military use McDonnell Douglas machine tools exported there for civil purposes. In the jet engine case, China attempted to forge a joint venture agreement with a U.S. corporation in order to obtain access to "a reliable, high-performance Western engine for its developmental K-8 military aircraft." The report also examined PRC strategies for acquiring U.S. aircraft manufacturing processes, including those related to stealth and composite technologies.

Report findings. In the McDonnell Douglas case, the U.S. Government worked with the company to determine that licensed machine tools were diverted to a Chinese factory known to manufacture military aircraft. Subsequently, McDonnell Douglas executives worked with their counterparts in China to re-transfer the machine tools to a civil aviation company in Shanghai. In the jet engine case, China intended to co-produce engines with the U.S. manufacturer. A State Department official noted that "flow-through of applicable production technologies to China's cruise missile engine program was almost inevitable." In the end, the U.S. Government interagency export review process determined that co-production technology should not be transferred.

The Committee also found that China has been acquiring the finite element software used in stealth and antisubmarine warfare applications. They allege further that China is using joint ventures as a way to acquire composite materials technology essential for stealth aircraft production. Similarly, China used joint ventures to learn about precision tooling, repeatable manufacturing processes, and how to achieve and sustain high aircraft production rates.

Report recommendations. U.S. corporations in these manufacturing process cases were operating within existing export control regulations. Recognizing the military importance of these technologies, the report recommends establishing a process for identifying technologies that are of greatest national security concern. The report also calls for the multilateral tracking of sensitive technology exports.

Our perspective. In the McDonnell Douglas case, government and industry worked together to institute and enforce end-use restrictions on China. In the jet engine case, the corporation seems to have tried to subvert the intent of existing export controls but accepted a tighter determination following technical input from the Federal Aviation Administration and after the U.S. Government expressed concern over proliferation. These cases indicate the value of close cooperation between government and industry and the need for significant technical and policy expertise among those responsible for administering export controls.

The report barely touches on the importance of the critical skills and knowledge required to create a manufacturing infrastructure. Such skills include system engineering and integration, software engineering, quality control processes, test and evaluation processes, and creative/critical thinking. Further, the report only briefly addressed specialized, defense-critical production technologies such as stealth and electronic countermeasures. China believes itself to be deficient in these areas and is attempting to gain the benefit of U.S. expertise.

CONCLUSIONS

The Cox Committee performed a valuable service in drawing attention to lax security at DoE nuclear weapons labs and incoherence within the development and administration of U.S. export control policies. However, the Committee's report is not always an accurate guide to either the seriousness of all the problems considered or to the right way to solve them. We have already noted that in the nuclear area it is important that DoE and its contractors move rapidly to tighten security without hurting the scientific acumen of the weapons program. In what follows, we present our views on where the U.S. should move in three areas: export administration, technology competitiveness, and relations with China. In each of these areas there is value in the Cox report but also a danger that the wrong path could be chosen as a result of how the report might be interpreted.

A more integrated assessment of China's technology acquisition strategy is needed and should be used to inform overall policy and case-by-case decisionmaking. Policy needs to be realistic about what level of retardation of PRC technology acquisition effort is possible and the effect of tightened controls on other objectives, including U.S.-China relations, competitiveness of U.S. industries, and relations with our other trading partners.

The Cox report provides ample evidence of disarray in export control policy and administration. There is a need for a more capable interagency forum, perhaps under the NSC, for analyzing China's technology acquisition strategy and its progress in implementing that strategy. Using this information, the government should take a top-down approach to determine what U.S. technologies should be controlled and the potential commercial, political, and national security implications (positive and negative) of specific transfers. It should also determine whether the would-be recipient could obtain functionally equivalent technology elsewhere, i.e., indigenously or from foreign sources. One option is to identify those technologies which, based on military criticality, merit strict control (e.g., nuclear weapons, stealth, electronic warfare), then provide adequate resources to enforce this policy. From an international perspective, the best way to foster a tightening of multilateral controls is to focus on controlling only a few critical technologies.

Focusing on the division of export control administration between the State and Commerce Departments, as Congress has recently done, has only limited utility. Moreover, these moves could exacerbate fragmented policy formulation and enforcement and increase the costs of doing business for U.S. firms. Congress should reauthorize the Export Administration Act, and in so doing should undertake a comprehensive reform of export administration.

The Cox Committee tended to see export control issues as a conflict between economics and national security. But U.S. high-technology companies need exports to maintain their competitiveness and their R&D budgets, and thus to contribute to our future economic strength, production capability, and technology base. In a global economy, U.S. firms must also be able to enter into appropriate strategic alliances with foreign commercial entities. Thus, the tradeoff in export control is often not just between private and public interests, but between competing elements of national security concern.

Congress is beginning to respond to the Cox Committee's findings and recommendations. The Senate, along lines suggested by the Rudman panel, is considering creation of a semi-autonomous agency within DoE to afford more concerted attention to nuclear security issues. The House has not yet endorsed this change. Although we expect a semi-autonomous entity to result, we believe that the exact nature of this semi-autonomy is not as important as pruning and rationalizing the lines of authority and bureaucratic structures between DoE headquarters and the labs and plants that make up the operating units of the weapons complex. Also as an outgrowth of the Cox report, the House passed an amendment to the FY00 National Defense Authorization Act that supports such Cox Committee recommendations as the U.S. Government taking a more aggressive role in on-site inspections and DoD providing foreign launch monitors. Such legislation places additional responsibility on the Executive branch for some rather technical tasks. With the trend in many government agencies towards outsourcing and the continuing loss of technical experience in government, the probability of success for these recommendations is quite low. Congressional acquiescence to the Administration's recent increase to the performance level at which computers are subject to export control indicates that there may be little legislative follow-through on the Cox Committee's HPC recommendations.

China will continue to try to obtain military and dual-use technology through espionage and legal means. The appropriate nature and level of restrictions on defense and dual-use technology transfers will remain controversial so long as China remains under control of the Communist party and maintains positions on such international issues as regional stability and proliferation that are at variance with our own.

China, by virtue of its population, its possession of nuclear weapons, its permanent seat on the UN Security Council, its perpetually beckoning future market, and the large number of overseas Chinese, is more than just another regional power. China views itself as the natural arbiter of Asian events, a perspective in conflict with America's long-standing role of providing the regional security and stability within which democracy and economic growth can flourish. Environmental deficits and developmental imbalances suggest it is unlikely to continue over the long term its torrid rate of economic growth, especially if the Communist Party does not relinquish control peacefully. Thus, China is unlikely over the near term to either modernize rapidly or become a significant military threat. However, along with Russia's decline, China's emergence as a prominent force, first on the Asian and then on the global scene, is one of the two key challenges for U.S. policy and international security as a whole. As former Defense Secretary William Perry indicated, the challenge for U.S. policy is to encourage China to develop into a responsible international citizen while working with our Asian allies to ensure that they feel secure in their independence even if China turns aggressive. The hedging action creates incentives for China to pursue a responsible approach by preventing any easy reward for aggressive behavior.

On balance, we believe that attempting to limit the pace of Chinese economic modernization through aggressive controls on dual-use technology is not beneficial to the U.S., in part because a prosperous China is in our long-term interest. Chinese acquisition of certain dual-use technologies will likely amplify PRC military capabilities, both conventional and unconventional. However, we believe that the United States can maintain for the foreseeable future and with little difficulty its military advantage through an active R&D and modernization program. We also believe that preventing China from acquiring key elements of advanced military capability remains a plausible U.S. objective. This can be best achieved through a clear understanding of China's military technology needs on the one hand and a more cooperative working relationship with U.S. industry on the other.

The need to engage China on a broad range of issues, related to both commercial and military development, will create continuing dilemmas for U.S. policy. Technology transfer that relates to future Chinese economic growth and military potential should not be considered apart from the complex of issues in U.S.-PRC relations. The Cox Committee is right to insist that the government maintain a clear view of China's technology acquisition activities, but an integrated policy must consider the range of issues and interests. China's continuing effort to obtain U.S. technology shows it is something they value – and so it is an incentive that we should leverage as part of our overall policy. Fortunately, the immediate strategic situation and China's own state of military and economic development are such that there is little immediate danger that leakage of technology information of the sort outlined in the Cox report would pose a near-term threat to the United States or its global interests.

A History Of Bipartisan Support For Commercial Satellite Waivers

#1 Granting Waivers For U.S. Commercial Satellite Launches On Chinese Rockets Has Been Found To Be *"In The National Interest"* 20 Times By President's Reagan, Bush And Clinton.

President Reagan: On September 9, 1988, President Reagan approved a plan to allow the export of U.S. made communications satellites to China for launching on Chinese rockets. Reagan's State Department spokesman Charles Redman noted that the plan would *"protect legitimate U.S. national security interests..."* [Washington Post, 9/10/98]

President Bush: President Bush, on 3 separate occasions over 4 years, granted waivers to allow the export of a total of 9 separate commercial satellites for launch on Chinese rockets. On each of those occasions the President specifically reported to Congress that the waivers were *"in the national interest."* [Public Papers of the President's, 1989 (Book II, p.1721);1991 (Book I, p.446); 1992 (Book II, p.1546)]

President Clinton: President Clinton, over 6 years, has granted waivers to allow the export of a total of 11 separate commercial satellites for launch on Chinese rockets. Each and every time, the President has notified the Congress that the waivers were *"in the national interest."*

As Well As...

Colin Powell (1988): In an October 20, 1988 letter to then House Foreign Affairs Committee Chairman Dante Fascell, then National Security Adviser Colin Powell wrote: *"Legislation may be offered to prohibit or delay issuance of licenses authorizing the export of U.S. satellites...for launch on Chinese vehicles. This would be a serious mistake.... I request your assistance in forestalling any last minute actions in Congress that could jeopardize the important commercial and national security interests we are seeking to advance in our approach."* [House Foreign Affairs Cmte. Hearing on Proposed Sale and Launch of United States Satellites on Chinese Missiles, 9/28/88 (p.100-101)]

Frank Carlucci (1988): Also in an October 20, 1988 letter to Chairman Fascell, Reagan Defense Secretary Frank Carlucci wrote: *"I remain concerned that another attempt may be made to block the export of these satellites.... Your support for this important national security issue can make a difference. I strongly urge you to support the administration's initiative to license these satellites to the Chinese."* [House Foreign Affairs Cmte. Hearing on Proposed Sale and Launch of United States Satellites on Chinese Missiles, 9/28/88 (p.122-123)]

Gov. Pete Wilson (1993): In a November 16, 1993 letter to Secretary of State Warren Christopher, Wilson wrote: *"I urge you to use your waiver authority under the law to allow the satellite sales to the PRC to proceed. These sales are important to the California economy and in themselves are no threat to further missile proliferation."*

Reps. Rohrabacher, Thomas, Gallegly, Dreier, et al (1993): In an October 27, 1993 letter to Secretary of State Warren Christopher, 30 members of Congress -- including 16 Republicans -- wrote that while they supported "the objective of controlling missile proliferation" they were concerned that sanctions *did not "allow communications satellites to be launched from China"* -- specifically satellites owned by Hughes Aircraft Company. The letter concludes: *"We believe that national policy objectives can be met without placing sanctions on communications satellites, and we ask you to direct that these satellites be excluded from any list of sanctionable items."* The letter was signed by 30 Representatives (16 Republicans and 14 Democrats) including Reps. Dana Rohrabacher, William Thomas, Elton Gallegly, David Dreier. [Letter to Warren Christopher, 10/27/93]

#2 Transfer Of Authority To Grant Waivers From The State Department To The Commerce Department Was A Policy Decision Supported By Both Democrats And Republicans.

President Bush (1992): In a September 25, 1992 "Message to Congress," President Bush noted *"the transfer from the State Department to the Commerce Department of licensing jurisdiction"* over certain civil aircraft equipment and added that *"this transfer of items formerly included in the State Department's United States Munitions List (USML) to the [Commerce Control List] CCL is ongoing."* President Bush also predicted that: *"In the future, certain commercial telecommunications satellites, imaging technologies, and navigational technologies will be removed from the USML and added to the CCL."* [Public Papers of the President's, 1992 (Book II, p.1651; emphasis added)]

Frm. Congressman Roth (1993-1996): Former Rep. Toby Roth (R-WI) served as the ranking member and Chairman (1995-96) of the House Foreign Affairs Committee's Subcommittee on Economic Policy, Trade and Environment. Roth was an adamant proponent of shifting jurisdiction for commercial satellite exports from the State Department to the Commerce Department. Roth sponsored a 1995 bill (HR 361) which -- in its original form -- included language stating that *"the export of commercial communications satellites...may be regulated only by the Secretary of Commerce."* Roth also co-authored a July 18, 1994 *New York Times* op-ed with Rep. Gejdensen which was critical of *"prohibit[ing] American companies from selling communications satellites to China..."* [HR 361, 104th Congress, 1/11/95 (version 1)]

Congressman Gallegly (1994): On May 17, 1994, Rep. Elton Gallegly (R-CA) signed up as a cosponsor on HR 4276 sponsored by Rep. Jane Harman. The legislation's only function was "to amend the Arms Export Control Act and Export Administration Act of 1979 to require that the export of certain commercial communications satellites and associated equipment be regulated solely by the Secretary of Commerce..." Introducing her bill on April 21, 1994, Harman noted the bill *"completes a process that was initiated by the Bush Administration by shifting jurisdiction over these licenses from the State Department to the Commerce Department."* Other cosponsors were Democratic Reps. Berman (CA); Beilenson (CA) and Edwards (CA). [Bill Tracking Report HR 4276, 103rd Congress (Lexis/Nexis); Congressional Record, 4/21/94 (emphasis added)]

Congressman Gilman, Roth, Burton, Rohrabacher, et al: In 1994, the House Foreign Affairs Committee (May 18th) and its Subcommittee on Economic Policy, Trade, and Environment (March 10th) both *passed by voice vote* legislation stating that *"the export of commercial communications satellites...may be regulated only by the Secretary of Commerce."* Members of the Subcommittee at the time of the March 10, 1994 voice vote included: Reps. Toby Roth, Dana Rohrabacher, Don Manzullo, Doug Bereuter, Jan Myers, and Cass Ballenger. And, in addition to those listed above, the members of the full committee at the time of May 18, 1994 voice vote included: Reps. Ben Gilman, Dan Burton, James Leach, Elton Gallegly, Chris Smith and eight other Republicans. [103rd Congress, House Report 103-531, 5/25/94]

#3 Both President Bush And President Clinton Granted Waivers For Chinese Launch Of Loral Made Commercial Satellites. National Security Was The Controlling Factor In Both Decisions.

President Bush: In a letter informing Congress of his decision to grant a waiver to Loral for its Intelsat VIIA project, Bush wrote that *"it is in the national interest of the United States to waive the restrictions"* on exporting to China. ["Message to the Congress on trade with China," Public Papers of the Presidents: George Bush, Book II, p. 1546]

President Clinton: On February 6, 1996 and February 18, 1998, President Clinton also told Congress that *"it is in the national interest of the United States to waive"* restrictions on exporting to China for Loral's Mabuhay and Chinasat 8 projects. ["Message to Congress on Satellite Exports to China," Public Paper of the Presidents: Bill Clinton, Book I, p. 177; Congressional Record, 2/24/98, p. H573]

Note: The satellite launched as a result of President Bush's 1992 waiver exploded at launch in 1996 -- leading to the controversial "industry review" and subsequent Justice Department investigation

SELECTED STATISTICAL FACTOIDS:
EXPORT LICENSING DURING CLINTON ADMIN. VS. BUSH ADMIN.

- The volume of licenses approved has decreased dramatically, from 75,000 per year at the beginning of the Bush Administration to about 10,000 today. The decrease was the result of major decontrols beginning in the Bush Admin and continuing into the early Clinton Admin. (particularly evident between 1990-1991, 1991-1992, and 1993-1994). (In comparison, the Clinton Admin's computer decontrol of 1995 is hardly noticeable in the licensing volume).

- The license denial rate (the percentage of licenses denied out of all received) has been consistently higher in the Clinton Administration than in the Bush Administration. This is true for India, for China, and for the overall denial rate for all countries as a whole. This is likely explained by the large volume of less sensitive exports still controlled in the Bush Administration which were easily approved. The massive decontrols of the early 1990's have eliminated much of the less sensitive trade, and the remaining exports require closer scrutiny resulting in a higher denial rate.

- Not surprisingly, India and China had a higher denial rate than average in both the Bush Administration and the Clinton Administration. India and China cases also take on average twice as long to process (about 60 days), which is evidence of the complexity and thoughtfulness of the analysis on exports to these countries. In recent years, India and China denials combined make up about half of all license denials, although these two countries account for only about ten to fifteen percent of all licenses received. (During the Bush Admin, denials to India and China accounted for only about 25-30% of all denials and while also comprising about 10 percent of total licenses).

- The average processing time for all licenses increased slightly during the Clinton Administration (up from 19 days in 1989 to a high of 36 days in 1996). Again, this is likely due to the increasing complexity of remaining exports subject to controls after the big liberalizations of the early 1990's.

- The Executive Order issued in December 1995 resulted in a slight increase in average processing time for all countries as a whole (due to the participation of other agencies in virtually all license reviews). However, the E.O. led to a decrease in processing times for India and China (down to 45-50 days from 60-70 prior to E.O.). Since other agencies were already reviewing exports to these countries, the E.O.'s major effect was to speed up their response rate to BXA.

- The Executive Order also resulted in a slight increase in denial rates for India cases, China cases, and all licenses as a whole.

Hua Mei

AT&T exported telecommunications equipment (e.g., ATM hub switches, SDH transmission equipment) to Hua Mei Telecommunications for a prototype Integrated Services Digital Network (ISDN) demonstration system set up in four rooms at large hotels in Guangzhou City. The purpose of this small network was to permit demonstration of the full range of service (interactive multimedia, high-resolution video transfer, video conferencing, voice, data, etc.) available in such a system. The objective of the Hua Mei Telecommunications project apparently is to build such a network for the full city and eventually to install a network for the entire surrounding province. The advantage of a B-ISDN network is that it provides for full video, voice and data services. Similar equipment is also produced by non-US suppliers in such countries as Germany, France, and Canada.

The U.S. stopped requiring individual license for this type of technology because of the growing availability of telecommunications equipment and services from foreign suppliers, the consequent decreased ability to control the export of such equipment and services, and the desire to improve prospects for democratic and economic reforms in China. Improved civilian communications is an important ingredient for economies like China to become better integrated with the Western global telecommunications system. The equipment was exported under license procedure GLX, which was implemented in April 1994 after an extensive interagency review process involving Commerce, State, DOD, and others. This license applies to exports to civil end-users for civil end-uses in countries formerly proscribed by COCOM, including the former Soviet Union and China. A GLX license could not be used for exports to military end-users or to known military end-uses. The GLX procedure was in force in late 1994 when AT&T transferred the technology to Hua Mei and was used by AT&T to make the transfer. AT&T has certified that, to the best of its knowledge, the joint Sino-American venture, Hua Mei Telecommunications, is a civil end-user and that the equipment will be used for a civil end use.

While virtually all modern, state-of-the-art telecommunications technology theoretically can be used to enhance military capabilities, the PLA already has its own, extensive and very modern communications infrastructure that incorporates very advanced technologies, including fiber optic systems and a nation-wide military microwave system. The type of civilian communications equipment purchased from AT&T by Hua Mei Telecommunications was routinely approved by COCOM governments for shipment for civil end uses to formerly proscribed countries, like China, following the end of the Cold War. We have no information to indicate that the PLA expects to use or benefit from the system directly, other than by deriving profit from the investment. Indeed, the Chinese military communications infrastructure is largely separate from the civil system, the latter of which is managed by the Ministry of Posts and Telecommunications. In this regard, AT&T has advised that its central switching equipment is physically located in that Ministry's facilities; other parts of its equipment must, of course, be located at the hotels which use the communications system.

C:hua mei

Question #1: *Please describe the nature and potential applications of the fiber-optics telecommunications technology transferred to Hua Mei?*

Answer: Because DoD did not review the transfer in question, the following information was provided by AT&T at our request for use in response to your letter of inquiry. AT&T reports that it exported telecommunications equipment (e.g., ATM hub switches, SDH transmission equipment) to Hua Mei Telecommunications for a prototype Integrated Services Digital Network (ISDN) demonstration system set up in four rooms at large hotels in Guangzhou City. The purpose of this small network was to permit demonstration of the full range of services (interactive multimedia, high-resolution video transfer, video conferencing, voice, data, etc.) available in such a system. The objective of the Hua Mei Telecommunications project apparently is to build such a network for the full city and eventually to install a network for the entire surrounding province. The advantage of a B-ISDN network is that it provides for full video, voice and data services. Similar equipment is also produced by non-US suppliers in such countries as Germany, France, and Canada.

Question #2: *Was this the "first time" sale of such technology to the PRC? Were objections raised inside the U.S. Defense or intelligence communities prior to the sale? If so, who raised objections?*

Answer:

Was this the "first time" sale of such technology to the PRC?

As further discussed below, individually validated export licenses (IVL) would have been required for the transfer of relevant United States telecommunications technology to the PRC prior to April 1994. After that date, such technology could have been transferred to the PRC for civilian end use without an IVL, and accordingly without government knowledge. A review of DTSA files indicates that no applications were reviewed for such technology prior to the sale to Hua Mei Telecommunications by AT&T. Similarly, a search by the Bureau of Export Administration, Department of Commerce, of its licensing database, which we recently requested, also has turned up no applications for an IVL for such technology. The intelligence community has been unable to provide any information concerning transfers of such technology from non-U.S. manufacturers to the PRC.

Were objections raised inside the U.S. Defense or intelligence communities prior to the sale? If so, who raised objections?

DTSA learned of the Hua Mei venture through an informational briefing given by the U.S. companies involved in the venture in April 1993, during the early formative stages of that venture. At that time, DTSA was not asked to take, nor did it take, any action with respect to the proposed technology transfer to Hua Mei. There was, however, some internal discussion about whether then-current government policy would permit such a transfer. No conclusion was ever reached on this issue because of the subsequent change in United States technology licensing policy in early 1994. Similarly, there was no decision requested of and no decision made by the NSA.

As you may know, a new Commerce Department "GLX" license procedure was implemented in April 1994, after an extensive interagency review process involving Commerce, State, DOD, and others. The GLX license is defined by 15 C.F.R. § 771.20. This license applies to exports to civil end-users for civil end-uses in countries formerly proscribed by COCOM, including the former Soviet Union and China. A GLX license may not be used for exports to military end-users or to known military end-uses. The new GLX procedure, which was in force in late 1994 when AT&T transferred the technology to Hua Mei and was used by AT&T to make the transfer, allows export *without* case-by-case prior government review or approval. As a result, since April 1994, the government has not had occasion to review or comment on any proposed transfers of such technology to China under General License GLX.

Prior to this change in practice, an IVL, issued only after prior government review and approval, would have been required on a case-by-case basis for the transfer of designated modern telecommunications technology to the PRC. The government stopped requiring IVLs for this type of technology because of the growing availability of telecommunications equipment and services from foreign suppliers, the consequent decreased ability to control the export of such equipment and services, and the desire to improve prospects for democratic and economic reforms in the FSU, other former Warsaw Treaty states, and the Peoples Republic of China. Improved civilian communications is an important ingredient for these economies to become more integrated with the Western global telecommunications system.

In summary, because the Department plays no role in the issuance of the GLX license, the actual transfer of telecommunications equipment to Hua Mei Telecommunications was never considered by the Department.

Question #3: *Can the fiber-optics telecommunications technologies or any information transferred to the PRC be utilized for military C4I or other defense related applications? If so, what are the implications for PLA modernization goals?*

Answer: While virtually all modern, state-of-the-art telecommunications technology theoretically can be used to enhance C4I military capabilities, the PLA already has its own, extensive and very modern communications infrastructure that incorporates very advanced technologies, including fiber optic systems and a nation-wide military microwave system. The type of civilian communications equipment purchased from AT&T by Hua Mei Telecommunications was routinely approved by COCOM governments for shipment for civil end uses to formerly proscribed countries, like China, following the end of the Cold War. The government's decision to make certain telecommunications equipment eligible for the GLX license was taken, in part, because of the growing availability of telecommunications equipment and services from foreign suppliers, and our consequent inability to control transfers of such equipment and technology, and the desire to improve prospects for democratic and economic reforms in the FSU, other former Warsaw Treaty States and the Peoples Republic of China. Improved civilian communications is an important ingredient for these economies to become more integrated with the Western global telecommunications system.

Through its use of General License GLX for the shipment of its equipment to China, AT&T has certified that, to the best of its knowledge, the joint Sino-American venture, Hua Mei Telecommunications, is a civil end-user and that the equipment will be used for a civil end use. We are aware that the Commission on Science, Technology and Industry for National Defense (COSTIND) is a part owner of Hua Mei Telecommunications. Such partial ownership is increasingly common as the Chinese military establishment invests in commercial (civilian) enterprises. We have no information to indicate that the PLA expects to use or benefit from the system directly, other than by deriving profit from the investment. Indeed, the Chinese military C4I infrastructure is largely separate from the civil system, the latter of which is managed by the Ministry of Posts and Telecommunications. In this regard, AT&T has advised that its central switching equipment is physically located in that Ministry's facilities; other parts of its equipment must, of course, be located at the hotels which use the communications system.

Question #4: *What is the Department's position on another reported sale of similar equipment, involving the investment of $100 million, to be made to the PLA's General Logistics Department?*

Answer: Our review of DTSA licensing files has not revealed any information regarding a sale of similar equipment to the PLA's General Logistics Department. A search of the Commerce Department's licensing database, recently undertaken at our request, also has turned up no information on this matter. Because such a sale would constitute an explicit

transfer to a military end user, it *would* require an IVL from the Department of Commerce and would be reviewed by all appropriate agencies, including the Department of Defense.

Question #5: *Did the transfer of such fiber-optics telecommunications technologies require a policy change? When was such a policy change made and what were the circumstances under which it occurred?*

Answer: As discussed above, no prior government decision or policy change was required for the AT&T transfer to the Hua Mei Telecommunications project, because the transfer occurred after the GLX license procedure was instituted in April 1994.

By way of background, the Defense Technology Security Administration routinely holds meetings with industry representatives to discuss national security concerns about their specific, proposed technology exports. Our review indicates that a meeting was held in April 1993 between DTSA staff and representatives of the involved corporate entities to hear about a proposed sale of telecommunications equipment to China by SCM/Brooks. The corporate representatives were told about standard considerations in licensing telecommunications equipment to China at that time and informed about how to submit applications for an individual validated license (IVL), which was then required, through the Commerce Department. (It should be noted that the requirement for an IVL does not mean that a license necessarily would be denied, but it would require a case-by-case interagency government review of the proposed export.)

Senior DoD officials, including the Secretary, also meet periodically with industry representatives to understand the impact of U.S. trade and national security policies on the global competitiveness of American industry. In this regard, then-Deputy Secretary Perry met with Dr. Lewis in 1993 to hear about the Hua Mei project. Dr. Perry made no commitments, either direct or implied.

Question #6: *Is the PLA's deputy director of Beijing's defense industry (COSTIND), Lt. Gen. Huai Gumo, the founder of Hua Mei Telecommunications? Was Huai Gumo's affiliation to the PLA known prior to the 1993 sale of the fiber-optics technologies? Is it true that the daughter of PLA General and COSTIND Director, Ding Henggao, serves as the PRC's Chair of Hua Mei?*

Answer: Because AT&T used general license GLX for the shipment of its equipment to Hua Mei Telecommunications, the Department of Defense did not review the shipment at the time it was made and therefore did not receive any information on the founders or Chinese corporate directors of Hua Mei Telecommunications through the export licensing process (or otherwise), nor did the Department receive such information informally in meetings held in 1993 with representatives of the United States venture partners. To further answer the question posed in your letter, the Department recently requested

information from SC&M International, Ltd., one of the United States partners in the Hua Mei venture, which supplied a list of the officers and directors of Hua Mei Telecommunications from its inception in mid-1993. The list received is attached hereto. The Chinese board chair, Madame Nie Li, is reported to be the wife of Ding Henggao, not his daughter.

Question #7: *Did Mr. John Lewis receive compensation from any entity related to the Hua Mei project contemporaneously with his duties as a member of the Defense Policy Board or as a consultant to the Department? Were these relationships fully disclosed by Mr. Lewis?*

Answer: Attached hereto is a summary of information in the Department's files. This summary is subject to the Privacy Act, and must be handled in accordance with restrictions on government release of confidential information. It is provided to you in your capacity as Chair of the House Committee on National Security pursuant to 5 U.S.C. § 552a(b)(9) and DODD 5400.11-R, chapter 4, § B.11.