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EXPORT CONTROLS

Issues Related to the Export of Communications Satellites

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Mr. Chairmen and Members of the Committees:

I am pleased to submit for the record my testimony on the evolution of export controls on commercial communications satellites. The allegation that a major U.S. satellite manufacturer provided China with sensitive technologies that may have applicability to its missile programs has highlighted how the United States controls the export of such technology and how this policy has changed in recent years.

My testimony today is based largely on our January 1997 report, prepared at the request of the Chairman and Ranking Minority Member, House National Security Committee, on the military sensitivity of commercial communications satellites and the implications of the 1996 change in export licensing jurisdiction.[1] I will discuss (1) key elements in the export control systems of the Departments of Commerce and State, (2) how export controls for commercial satellites have evolved over the years, (3) the concerns and issues debated over the transfer of commercial communications satellites to the export licensing jurisdiction of the Department of Commerce, and (4) the safeguards that may be applied to commercial satellite exports. Lastly, I will share some observations on the current export control system.

Summary

The U.S. export control system—comprised of both the Commerce and State systems—is about managing risk. Exports to some countries involve less risk than to other countries and exports of some items involve less risk than others. The planning of a satellite launch with technical discussions and exchanges of information taking place over several months involves risk no matter which agency is the licensing authority. Recently, events have focused concern on the appropriateness of Commerce jurisdiction over communications satellites. This is a difficult judgment. By design, Commerce's system gives greater weight to economic and commercial concerns, implicitly accepting greater security risks. And by design, State's system gives primacy to national security and foreign policy concerns, lessening—but not eliminating—the risk of damage to U.S. national security interests.

Background

The U.S. export control system for items with military applications is divided into two regimes. State licenses munitions items, which are

[1]Export Controls: Change in Export Licensing Jurisdiction for Two Sensitive Dual-Use Items (GAO/NSIAD-97-24, Jan. 14, 1997).

designed, developed, configured, adapted, or modified for military applications, and Commerce licenses most dual-use items, which are items that have both commercial and military applications. Although the Commerce licensing system is the primary vehicle to control dual-use items, some dual-use items—those of such military sensitivity that stronger control is merited—are controlled under the State system.

Commercial communications satellites are intended to facilitate civil communication functions through various media, such as voice, data, and video, but they often carry military data as well. In contrast, military communications satellites are used exclusively to transfer information related to national security and have one or more of nine characteristics that allow the satellites to be used for such purposes as providing real-time battlefield data and relaying intelligence data for specific military needs. There are similarities in the technologies used to integrate a satellite to its launch vehicle and ballistic missiles.

In March 1996, the executive branch announced a change in licensing jurisdiction transferring two items—commercial jet engine hot section technologies and commercial communications satellites—from State to Commerce. In October and November 1996, Commerce and State published regulations implementing this change, with Commerce defining enhanced export controls to apply when licensing these two items.

Key Elements of Export Control System

State and Commerce's export control systems are based on fundamentally different premises. The Arms Export Control Act gives the State Department the authority to use export controls to further national security and foreign policy interests, without regard to economic or commercial interests. In contrast, the Commerce Department, as the overseer of the system created by the Export Administration Act, is charged with weighing U.S. economic and trade interests along with national security and foreign policy interests.

Differences in the underlying purposes of the control systems are manifested in the systems' structure. Key differences reflect

- who participates in licensing decisions,
- scope of controls,
- time frame for the decision,
- coverage by sanctions, and
- requirements for congressional notification.

Participants. Commerce's process involves five agencies—the Departments of Commerce, State, Defense, Energy, and the Arms Control and Disarmament Agency. Other agencies can be asked to review specific license applications. For most items, Commerce approves the license if there is no disagreement from reviewing agencies. When there is a disagreement, the chair of an interagency group known as the Operating Committee, a Commerce official, makes the initial decision after receiving input from the reviewing agencies. This decision can be appealed to the Advisory Committee on Export Policy, a sub-cabinet level group comprised of officials from the same five agencies, and from there to the cabinet-level Export Administration Review Board, and then to the President.

In contrast, the State system commonly involves only Defense and State. While no formal multi-level review process exists, Defense officials stated that license applications for commercial communications satellites are frequently referred to other agencies, such as the Arms Control and Disarmament Agency, the National Security Agency, and the Defense Intelligence Agency. Day-to-day licensing decisions are made by the Director, Office of Defense Trade Controls, but disagreements could be discussed through organizational levels up to the Secretary of State.

This difference in who makes licensing decisions underscores the weight the two systems assign to economic and commercial interests relative to national security concerns. Commerce, as the advocate for commercial interests, is the focal point for the process and makes the initial determination. Under State's system, Commerce is not involved, underscoring the primacy of national security and foreign policy concern.

Scope of Controls. The two systems also differ in the scope of controls. Commerce controls items to specific destinations for specific reasons. Some items are subject to controls targeted to former communist countries while others are controlled to prevent them from reaching countries for reasons that include antiterrorism, regional stability, and nonproliferation. In contrast, munitions items are controlled to all destinations, and State has broad authority to deny a license; it can deny a request simply with the explanation that it is against U.S. national security or foreign policy interests.

Time frames. Commerce's system is more transparent to the license applicant than State's system. Time frames are clearly established, the

review process is more predictable, and more information is shared with the exporter on the reasons for denials or conditions on the license.

Congressional Notification. Exports under State's system that exceed certain dollar thresholds (including all satellites) require notification to the Congress. Licenses for Commerce-controlled items are not subject to congressional notification, with the exception of items controlled for antiterrorism.

Sanctions. The applicability of sanctions may also differ under the two export control systems. Commercial communications satellites are subject to two important types of sanctions: (1) Missile Technology Control Regime and (2) Tiananmen Square sanctions. Under Missile Technology sanctions, both State and Commerce are required to deny the export of identified, missile-related goods and technologies. Communications satellites are not so-identified but contain components that are identified as missile-related. When the United States imposed Missile Technology sanctions on China in 1993, exports of communications satellites controlled by State were not approved while exports of satellites controlled by Commerce were permitted.

Under Tiananmen Square sanctions, satellites licensed by State and Commerce have identical treatment. These sanctions prohibit the export of satellites for launch from launch vehicles owned by China. However, the President can waive this prohibition if such a waiver is in the national interest.

Evolution of Export Controls for Commercial Satellites

Export control of commercial communications satellites has been a matter of contention over the years among U.S. satellite manufacturers and the agencies involved in their export licensing jurisdiction—the Departments of Commerce, Defense, State, and the intelligence community. To put their views in context, I would now like to provide a brief chronology of key events in the transfer of commercial communications satellites to the Commerce Control List.[2]

[2]For a chronology and background information on satellite launches from China, see China: Possible Missile Technology Transfers From U.S. Satellite Export Policy—Background and Chronology, by Shirley A. Kan, Congressional Research Service, May 20, 1998 (98-485 F).

Origin of Commercial Space Cooperation With China

As the demand for satellite launch capabilities grew, U. S. satellite manufacturers looked abroad to supplement domestic facilities. In 1988, President Reagan proposed that China be allowed to launch U.S.-origin commercial satellites. The United States and China signed an agreement in January 1989 under which China agreed to charge prices for commercial launch services similar to those charged by other competitors for launch services and to launch nine U.S.-built satellites through 1994.

Following the June 1989 crackdown by the Chinese government on peaceful political demonstrations on Tiananmen Square in Beijing, President Bush imposed export sanctions on China. President Bush subsequently waived these sanctions for the export of three U.S.-origin satellites for launch from China. In February 1990, Congress passed the Tiananmen Square sanctions law (P.L. 101-246) to suspend certain programs and activities relating to the Peoples Republic of China. This law also suspends the export of U.S. satellites for launch from Chinese-owned vehicles.

First Transfer of Licensing Jurisdiction

In November 1990, the President ordered the removal of dual-use items from State's munitions list unless significant U.S. national security interests would be jeopardized. This action was designed to bring U.S. controls in line with the industrial (dual-use) list maintained by the Coordinating Committee for Multilateral Export Controls, a multilateral export control arrangement. Commercial communications satellites were contained on the industrial list. Pursuant to this order, State led an interagency review, including officials from Defense, Commerce, and other agencies, to determine which dual-use items should be removed from State's munitions list and transferred to Commerce's jurisdiction. The review was conducted between December 1990 and April 1992. As part of this review, a working group identified and established performance parameters for the militarily-sensitive characteristics of communications satellites. During the review period, industry groups supported moving commercial communications satellites, ground stations, and associated technical data to the Commerce Control List.

In October 1992, State issued regulations transferring jurisdiction of some commercial communications satellites to Commerce. These regulations also defined what satellites remained under its control by listing nine militarily sensitive characteristics that, if included in a commercial communications satellite, warranted their control on State's munitions list. (These characteristics are discussed in app. I.) The regulations noted that

parts, components, accessories, attachments, and associated equipment (including ground support equipment) remained on the munitions list, but could be included on a Commerce license application if the equipment was needed for a specific launch of a commercial communications satellite controlled by Commerce. After the transfer, Commerce noted that this limited transfer only partially fulfilled the President's 1990 directive.

Interagency Groups Consider Whether to Transfer Additional Satellites

Export controls over commercial communications satellites were again taken up in September 1993. The Trade Promotion Coordinating Committee, an interagency body composed of representatives from most government agencies, issued a report in which it committed the administration to review dual-use items on the munitions list, such as commercial communications satellites, to expedite moving them to the Commerce Control List.

Industry continued to support the move of commercial communications satellites, ground stations, and associated technical data from State to Commerce control. In April 1995, the Chairman of the President's Export Council met with the Secretary of State to discuss issues related to the jurisdiction of commercial communications satellites and the impact of sanctions that affected the export and launch of satellites to China.

Also in April 1995, State formed the Comsat Technical Working Group to examine export controls over commercial communications satellites and to recommend whether the militarily sensitive characteristics of satellites could be more narrowly defined consistent with national security and intelligence interests. This interagency group included representatives from State, Defense, the National Security Agency, Commerce, the National Aeronautics and Space Administration, and the intelligence community. The interagency group reported its findings in October 1995.

Consistent with the findings of the Comsat Technical Working Group and with the input from industry through the Defense Trade Advisory Group, the Secretary of State denied the transfer of commercial communications satellites to Commerce in October 1995 and approved a plan to narrow, but not eliminate, State's jurisdiction over these satellites.

President Overturns State's Decision to Retain Export Control of Satellites

Unhappy with State's decision to retain jurisdiction of commercial communications satellites, Commerce appealed it to the National Security Council and the President. In March 1996, the President, after additional

interagency meetings on this issue, announced the transfer of export control authority for all commercial communications satellites from State to Commerce. A key part of these discussions was the issuance of an executive order in December 1995 that modified Commerce's procedures for processing licenses. This executive order required Commerce to refer all licenses to State, Defense, Energy, and the Arms Control and Disarmament Agency. This change addressed a key shortcoming that we had reported on in several prior reviews.[3]

In response to the concerns of Defense and State officials about this transfer, Commerce agreed to add additional controls to exports of satellites designed to mirror the stronger controls already applied to items on State's munitions list. Changes included the establishment of a new control, the significant item control, for the export of sensitive satellites to all destinations. The policy objective of this control—consistency with U.S. national security and foreign policy interests—is broadly stated. The functioning of the Operating Committee, the interagency group that makes the initial licensing determination, was also modified. This change required that the licensing decision for these satellites be made by majority vote of the five agencies, rather than by the chair of the Committee. Satellites were also exempted from other provisions governing the licensing of most items on the Commerce Control List.

In October and November 1996, Commerce and State published changes to their respective regulations, formally transferring licensing jurisdiction for commercial communications satellites with militarily sensitive characteristics from State to Commerce. Additional procedural changes were implemented through an executive order and a presidential decision directive issued in October 1996.

Concerns and Issues Debated in the Decision

According to Commerce officials, the President's March 1996 decision reflected Commerce's long-held position that all commercial communications satellites should be under its jurisdiction. Commerce argued that these satellites are intended for commercial end use and are therefore not munitions. Commerce maintained that transferring jurisdiction to the dual-use list would also make U.S. controls consistent with treatment of these items under multilateral export control regimes.

[3]See Export Controls: Some Controls Over Missile-Related Technology Exports to China Are Weak (GAO/NSIAD-95-82, Apr. 17, 1995) and Export Controls: Concerns Over Stealth-Related Exports (GAO/NSIAD-95-140, May 10, 1995).

Manufacturers of satellites supported the transfer of commercial communications satellites to the Commerce Control List. They believed that such satellites are intended for commercial end use and are therefore not munitions subject to State's licensing process. They also believed that the Commerce process was more responsive to business due to its clearly established time frames and predictability of the licensing process. Under State's jurisdiction, the satellites were subject to Missile Technology sanctions requiring denial of exports and to congressional notifications. Satellite manufacturers also expressed the view that some of the militarily sensitive characteristics of communications satellites are no longer unique to military satellites.

State and Defense point out that the basis for including items on the munitions list is the sensitivity of the item and whether it has been specifically designed for military applications, not how the item will be used. These officials have expressed concern about the potential for improvements in missile capabilities through disclosure of technical data to integrate the satellite with the launch vehicle and the operational capability that specific satellite characteristics could give a potential adversary. The process of planning a satellite launch takes several months, and there is concern that technical discussions between U.S. and foreign representatives may lead to the transfer of information on militarily sensitive components.

Defense and State officials said they were particularly concerned about the technologies to integrate the satellite to the launch vehicle because this technology can also be applied to launch ballistic missiles to improve their performance and reliability. Accelerometers, kick motors, separation mechanisms, and attitude control systems are examples of equipment used in both satellites and ballistic missiles. State officials said that such equipment and technology merit control for national security reasons. They also expressed concern about the operational capability that specific characteristics, in particular antijam capability, crosslinks, and baseband processing, could give a potential adversary.

Safeguards Applied to Commerce and State Satellite Exports

No export license application for a satellite launch has been denied under either the State or Commerce systems. Therefore, the conditions attached to the license are particularly significant.

Exports of U.S. satellites for launch in China are governed by a government-to-government agreement addressing technology safeguards.

This agreement establishes the basic authorities for the U.S. government to institute controls intended to ensure that sensitive technology is not inadvertently transferred to China. This agreement is one of three government-to-government agreements with China on satellites. The others address pricing and liability issues.

During our 1997 review and in recent discussions, officials pointed to two principal safeguard mechanisms to protect technologies. These safeguard mechanisms include technology transfer control plans and the presence of Defense Department monitors during the launch of the satellites. State or Commerce may choose to include these safeguards as conditions to licenses.

- Technology transfer control plans are prepared by the exporter and approved by Defense. The plans outline the internal control procedures the company will follow to prevent the disclosure of technology except as authorized for the integration and launch of the satellite. These plans typically include requirements for the presence of Defense monitors at technical meetings with Chinese officials as well as procedures to ensure that Defense reviews and clears the release of any technical data provided by the company.
- Defense monitors at the launch help ensure that the physical security over the satellite is maintained and monitor any on-site technical meetings between the company and Chinese officials. Authority for these monitors to perform this work in China is granted under the terms of the government-to-government safeguards agreement.

Additional government control may be exercised on technology transfers through State's licensing of technical assistance and technical data. State technical assistance agreements detail the types of information that can be provided and give Defense an opportunity to scrutinize the type of information being considered for export. Technical assistance agreements, however, are not always required for satellite exports to China. While such licenses were required for satellites licensed for export by State, Commerce-licensed satellites do not have a separate technical assistance licensing requirement.[4]

[4]A Commerce-licensed satellite would also require a State technical assistance license if the technical discussions exceed the basic information required to attach the satellite to the rocket, commonly described as "form, fit, and function" data.

Observations on the Current Export Control System

The addition of new controls over satellites transferred to Commerce's jurisdiction in 1996 addressed some of the key areas where the Commerce procedures are less stringent than those at State. There remain, however, differences in how the export of satellites are controlled under these new procedures.

- Congressional notification requirements no longer apply, although Congress is currently notified because of the Tiananmen waiver process.
- Sanctions do not always apply to items under Commerce's jurisdiction. For example, under the 1993 Missile Technology sanctions, sanctions were not imposed on satellites that included missile-related components.
- Defense's power to influence the decision-making process has diminished since the transfer. When under State jurisdiction, State and Defense officials stated that State would routinely defer to the recommendations of Defense if national security concerns are raised. Under Commerce jurisdiction, Defense must now either persuade a majority of other agencies to agree with its position to stop an export or escalate their objection to the cabinet-level Export Administration Review Board, an event that has not occurred in recent years.
- Technical information may not be as clearly controlled under the Commerce system. Unlike State, Commerce does not require a company to obtain an export license to market a satellite. Commerce regulations also do not have a separate export commodity control category for technical data, leaving it unclear how this information is licensed. Commerce has informed one large satellite maker that some of this technical data does not require an individual license. Without clear licensing requirements for technical information, Defense does not have an opportunity to review the need for monitors and safeguards or attend technical meetings to ensure that sensitive information is not inadvertently disclosed.
- The additional controls applied to the militarily sensitive commercial communications satellites transferred to Commerce's control in 1996 were not applied to the satellites transferred in 1993. These satellites are therefore reviewed under the normal interagency process and are subject to more limited controls.

This concludes our statement. We appreciate the opportunity to provide this information for the record of this hearing.

Militarily Sensitive Characteristics Integrated in Commercial Communications Satellites

Component or characteristic	Definition	Military sensitivity of characteristics exceeding certain performance parameters
Antijam capability	Antennas and/or antenna systems with the ability to respond to incoming interference by adaptively reducing antenna gain in the direction of the interference.	Ensures that communications remain open during crises.
Antenna	Allows a satellite to receive incoming signals.	An antenna aimed at a spot roughly 200 nautical miles in diameter or less can become a sensitive radio listening device and is very effective against ground-based interception efforts.
Crosslinks	Provide the capability to transmit data from one satellite to another without going through a ground station.	Permits the expansion of regional satellite communication coverage to global coverage and provides source-to-destination connectivity that can span the globe. It is very difficult to intercept and permits very secure communications.
Baseband processing	Allows a satellite to switch from one frequency to another with an on-board processor.	On-board switching can provide resistance to jamming of signals.
Encryption devices	Scramble signals and data transmitted to and from a satellite.	Allows telemetry and control of a satellite, which provides positive control and denies unauthorized access. Certain encryption capabilities have significant intelligence features important to the National Security Agency.
Radiation-hardened devices	Provide protection from natural and man-made radiation environment in space, which can be harmful to electronic circuits.	Permit a satellite to operate in nuclear war environments and may enable its electronic components to survive a nuclear explosion.
Propulsion system	Allows rapid changes when the satellite is on orbit.	Military maneuvers require that a satellite have the capability to accelerate faster than a certain speed to cover new areas of interest.
Pointing accuracy	Provides a low probability that a signal will be intercepted.	High performance pointing capabilities provide superior intelligence-gathering capabilities.
Kick motors	Used to deliver satellites to their proper orbital slots.	If the motors can be restarted, the satellite can execute military maneuvers because it can move to cover new areas.

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