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March 4, 2004

MEMORANDUM

To: Members of the Subcommittee on National Security, Emerging Threats, and International Relations

From: J. Vincent Chase, Chief Investigator

Re: Briefing memo for the hearing *Nonproliferation: Assessing Cruise Missile/UAV Technology Export Controls* scheduled for March 9, 2004 at 2:00 p.m. in room 2154 Rayburn House Office Building.

PURPOSE OF THE HEARING

The purpose of the hearing is to examine Department of Defense (DOD), Department of State (DOS), and Department of Commerce (DOC) export controls of critical cruise missile technology.

HEARING ISSUES

1. What is the nature and extent of proliferation of cruise missiles and unmanned aerial vehicles (UAVs)?

2. **How effective are multilateral export control regimes for controlling transfers of cruise missile and UAV technology?**

3. How effective are United States export controls for controlling transfers of cruise missile and UAV technology?

BACKGROUND

Cruise Missile and Unmanned Aerial Vehicles

A cruise missile is an unmanned, self-propelled long-range, low-flying weapon delivery vehicle that sustains flight through the use of aerodynamic lift. A cruise missile can be launched from air, sea, or land. The "missile"[1] is designed for one-time use and travels through the air like an airplane before delivering its payload. Unlike an unmanned aerial vehicle (UAV), a cruise missile is not recoverable. (**Attachment 1)**

Some of the major cruise missiles deployed by the U.S. military include the Tomahawk **(Attachment 2)**, the Harpoon **(Attachment 3)**, the AGM-86, **(Attachment 4)** and the JASSM. **(Attachment 5)**

Cruise missiles are very difficult to detect and defend against due to their capabilities and characteristics. However, some technologies are evolving which may provide improved defensive capabilities against cruise missiles. **(Attachment 6)**

Cruise missiles may fly relatively slowly and smoothly. Their airframes can be built out of inexpensive materials readily available to most countries. Virtually any airframe that is structurally strong enough to be used in an ordinary airplane is adequate for a rudimentary cruise missile. For a cruise missile to be effective, highly accurate, and survivable for long-range missions, modern technologies are required for airframe design, propulsion, navigation, and guidance. Cruise missiles contain a programmed map reference that helps controllers track the missile's position and make course corrections while in flight. Some of these technologies may not be readily accessible to developing or newly industrialized countries.

Cruise missiles can be programmed to travel hundreds of miles to deliver a weapon at a precise target. These missiles can fly at low altitudes to stay below radar, and in some cases, hide behind terrain features. New cruise missiles are incorporating stealth features to make them less visible to radars and infrared detectors as they approach and attack a target.

[1] Technically these weapon systems are not missiles at all because they rely on oxygen for propulsion and do not follow a ballistic trajectory.

An unmanned aerial vehicle is a pilotless vehicle that also operates like an airplane and is used for a variety of military purposes. UAVs have been referred to as remotely piloted vehicles, drones, robot planes, and pilotless aircraft. Most often called "UAV"s, they are defined by the Department of Defense (DOD) as powered aerial vehicles that do not carry a human operator, use aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or nonlethal payload. **(Web Resource 1)**

Currently, the primary mission of UAVs is intelligence gathering. The effectiveness of UAVs in recent conflicts such as Iraq (2003), Afghanistan (2001), and Kosovo (1999) has allowed the military the opportunity to examine the advantages and disadvantages provided by unmanned aircraft. **(Attachment 7)**

Long relegated to the sidelines in military operations, UAVs are now making national headlines as they are used in ways normally reserved for manned aircraft. **(Attachment 8)** According to the Congressional Research Service (CRS), UAVs offer two main advantages over manned aircraft: they are considered more cost-effective, and they minimize the risk to a pilot's life. However, the current UAV accident rate (the rate at which the aircraft are lost or damaged) is 100 times that of manned aircraft.

DOD currently has five major UAV systems: the Air Force's Predator and Global Hawk **(Attachment 9),** the Navy and Marine Corps's Pioneer **(Attachment 10)**, and the Army's Hunter and Shadow **(Attachment 11)**.

The services continue to be innovative in the use of UAVs. Recent examples include arming UAVs (Predator, Hunter), using UAVs to extend the eyes of submarines, and teaming UAVs with strike aircraft and armed helicopters to improve targeting.

Cruise Missile Proliferation

A 1994 Defense Science Board (DSB) study concluded that the United States faces a threat from cruise missiles that is expected to evolve rapidly, and that will be difficult to predict in a timely way. **(Attachment 12)**

More than 80 nations today have cruise missiles of some kind. Eighteen of those countries manufacture cruise missiles domestically. The remaining 62 import the weapons. **(Attachment 13)**
Cruise missiles present a particular challenge for monitoring and control because they exploit technology that is well understood and well established in the civil aviation industry. **(Web Resource 2)**

According to the Congressional Research Service (CRS) missile airframes, navigation systems, jet engines, satellite maps, and mission planning computers and software all can be purchased on the commercial market. Cruise missile technology can be said to "hide in plain sight" making it difficult to identify a military program. At the same time, commercial availability generally means relatively low acquisition costs of significant military capabilities for many nations and, potentially, non-state actors.

In addition, some experts believe that it is fairly easy for a country to produce simple cruise missiles, upgrade purchased cruise missiles, or convert manned and unmanned aircraft into unmanned weapons. **(Web Resource 3)**

Manufacturers can exploit existing platforms. Several nations have modified anti-ship cruise missiles to attack land targets. In addition to today's 18 cruise missile manufacturers, 22 other countries appear to have the industrial and technological infrastructures required to make cruise missiles. The status of these "threshold cruise missile manufacturers" could have a significant impact on global cruise missile supply, demand, inventory, and capabilities.[2]

Export Control Agreements

The United States and other governments use multilateral export control regimes and national export controls to address the threat associated with weapons of mass destruction. Four principal regimes relevant to cruise missile and UAV weapons are:

[2] Bolkcom, Christopher, Specialist in National Defense, Congressional Research Service, Statement before the Senate Committee on Government Affairs, Subcommittee on International Security, Proliferation, and Federal Services, June 11, 2002.

- the Missile Technology Control Regime (MTCR),
- the Wassenaar Arrangement, (which focuses on trade in conventional weapons and related items with both civilian and military (dual-use) applications),

- the Australia Group, (which focuses on chemical and biological technologies), and

- the Nuclear Suppliers Group, (which focuses on nuclear technologies).

The United States is a member of all four regimes.

Table 1: Purposes of the Multilateral Export Control Regimes

Regime	Year established	Purpose	Precipitating event	Number of members
Nuclear Suppliers Group	1975	To ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or explosive devices while not hindering such trade.	India's 1974 nuclear explosion	40
Australia Group	1985	To ensure that the industries of the participating countries do not assist, either purposefully or inadvertently, states seeking to acquire a chemical and biological weapons capability.	Iraqi use of chemical weapons against Iran	33
MTCR	1987	To limit the risks of proliferation of weapons of mass destruction (i.e., nuclear, chemical, and biological weapons), by controlling transfers that could make a contribution to delivery systems (other than manned aircraft) for such weapons.	Missile developments in the late 1970s and early 1980s	33
Wassenaar Arrangement	1996	To contribute to regional and international security and stability, by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies, thus preventing destabilizing accumulations.	Dissolution of the Coordinating Committee for Multilateral Strategic Export Controls	33

Source: General Accounting Office

Multilateral export control agreements are a key instrument in the overall U.S. strategy to combat the proliferation of cruise missile and unmanned aerial vehicle technology. These multilateral export control regimes are voluntary, non-binding arrangements among like-minded supplier countries that aim to restrict trade in sensitive technologies. Regime members agree to restrict such trade through their national laws and regulations, which set up systems to license the exports of sensitive items. While countries make no legally binding commitments in joining export control regimes, participating countries undertake a political commitment to abide by the goals and principles of the regime. The regimes operate on the basis of consensus of

the members and decisions on how to implement and interpret regime decisions are left to the national discretion of each member. **(Web Resource 4)**

Regime members conduct a number of activities in support of the regimes, including (1) sharing information about each others' export licensing decisions, including certain export denials and, in some cases, approvals and (2) adopting common export control practices and control lists of sensitive equipment and technology into national laws or regulations.
The export of cruise missiles, their production technology, and components are regulated globally under two of the four export control agreements: the Missile Technology Control Regime (MTCR) and the Wassenaar Arrangement.

The MTCR was formed in 1987 by Canada, France, Germany, Italy, Japan, the United Kingdom and the United States. Since that time, the MTCR has grown to include thirty-three nations all of which have equal standing within the Regime. **(Web Resource 5)**

The MTCR is not a treaty or an international agreement but instead a voluntary arrangement among like-minded countries wishing to slow the spread of missile proliferation. The Regime consists of guidelines and an associated Annex and each member nation honors the commitment to the Regime by the application of national export control laws and regulations. **(Web Resource 6)**

The MTCR Guidelines call on each of the member countries to exercise restraint when considering transfers of equipment or technology that would provide or help a recipient country build a missile capable of delivering a 500 kilogram (kg) (1,100 pound) warhead to a range of 300 kilometers (km) (186 miles) or more. The 500 kg weight threshold was intended to limit transfers of missiles that could carry a relatively crude nuclear warhead.

A 1993 addition to the Guidelines calls for particular restraint in the export of any missiles or related technology if the nation controlling the export judges that the missiles are intended to be used for the delivery of weapons of mass destruction (WMD). With the 1993 addition, some missiles with warheads weighing less than 500 kg now fall under MTCR Guidelines. The MTCR Annex divides equipment and technologies into two categories.

Category I items include complete missile and rocket systems and complete subsystems. Category II items consist of other components, equipment, material, and technology that could be used in the development, production, or testing of a missile.

According to the Guidelines**,** the export of Category I items is subject to a presumption of denial. Category I items include:

- Complete rocket systems including ballistic missile systems, space launch vehicles (SLVs), and sounding rockets;

- Unmanned aerial vehicles (UAVs) such as cruise missiles and target and reconnaissance drones;

- Specially-designed production facilities for the aforementioned systems; and

- Certain complete subsystems such as rocket engines or stages; reentry vehicles (RVs); guidance mechanisms; thrust-vector controls; warhead safing devices; and missile arming, fuzing, and firing devices.

Category II items include an extensive collection of parts, components, and subsystems such as propellants, missile structural materials, test equipment, and flight instrumentation. Category II items can be exported at the discretion of MTCR member governments for acceptable end-uses on a case-by-case basis. Category II items can also be exported with government-to-government assurances that the items will not be used for proscribed purposes.

The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies was established in July 1996 by 33 participating countries. The Wassenaar Arrangement was established in order to contribute to regional and international security and stability by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies. Participating countries seek, through their national policies, to ensure that transfers of these items do not contribute to the development or enhancement of military

capabilities which undermine these goals, and are not diverted to support such capabilities. **(Web Resource 7)**

This Arrangement is also intended to enhance cooperation between countries to prevent the acquisition of armaments and sensitive dual-use items for military end-uses, if the situation in a region or the behaviour of a state is, or becomes, a cause for serious concern to the participating countries.

The Wassenaar Arrangement picks up the lower range of the capability spectrum. Wassenaar export controls specifically regulate UAVs and UAV technology designed for military uses. Thus, exports of cruise missiles with ranges shorter than 300 km that can carry warheads weighing less than 500 kg that are not destined for countries with WMD programs are subject to Wassenaar restrictions. However, Wassenaar includes exceptions, as does the MTCR, for technologies and components intended for manned aircraft.

U.S. Export Controls

The Departments of Commerce, Defense, Homeland Security and State are responsible for monitoring the export of sensitive items or technology that could have an impact on national security. Exports of commercially supplied American-made cruise missiles, military UAVs, and related technology are transferred pursuant to the Arms Export Control Act,[3] and the International Trafficking in Arms Regulations,[4] implemented by the Department of State. Government-to-government transfers are made pursuant to the Foreign Assistance Act of 1961,[5] and subject to DOD guidance.

Exports of dual-use items[6] related to conventional weapons and weapons of mass destruction are covered under the Export Administration Act of 1979,[7] and the Export Administration Regulations,[8] implemented by the Department of Commerce (DOC). DOC is responsible for ensuring that exports from the United States and reexports of U.S. origin items to other countries are

[3] 22 U.S.C. §§ 2751
[4] 22 C.F.R. §§ 120
[5] 22 U.S.C. §§ 2311
[6] "Dual-use" items are those that have both commercial and military uses and can be used in the development or production of advanced conventional weapons or weapons of mass destruction.
[7] 50 U.S.C. §§ 2401
[8] 15 C.F.R. §§ 730-774

consistent with national security and foreign policy objectives. DOC's Control List, which is included in the regulations, specifies the items and technologies to be controlled. Under the Act and regulations DOC is responsible for conducting post-shipment verification (PSV) checks to confirm that exported items are not misused or diverted. At the same time, DOC works to avoid impeding the flow of legitimate trade. PSV checks are DOC's primary method to detect and prevent illegal transfer of controlled U.S. origin goods and technology already shipped overseas. DOC may conduct a PSV check on any controlled item it licenses that is exported from the United States.

Bureaus in DHS and DOS are responsible for the initial enforcement of export control laws.

- The Bureau of Immigration and Customs Enforcement (ICE) in the Department of Homeland Security conducts investigations enforcing the Arms Export Control Act, which is administered by the Department of State.

- The Bureau of Immigration and Customs Enforcement shares responsibility with Commerce's Bureau of Industry and Security for enforcing the Export Administration Act.

ICE and the Bureau of Industry and Security use enforcement tools such as investigations of purported violations of law and regulation and interdictions of suspected illicit shipments of goods. Investigations can result in criminal prosecutions, fines, or imprisonment or in export denial orders, which bar a party from exporting any U.S. items for a specified period of time.

The Arms Export Control Act requires the President to establish a program for end-use monitoring of defense articles and services sold or exported under the provisions of the act and the Foreign Assistance Act.[9] This requirement states that, to the extent practicable, end-use monitoring programs should provide reasonable assurance that recipients comply with the requirements imposed by the U.S. government on the use, transfer, and security of defense articles and services.

[9] 22 U.S.C. §§ 2785

In addition, monitoring programs, to the extent practicable, are to provide assurances that defense articles and services are used for the purposes for which they are provided. The President delegated this authority to the Secretaries of State and Defense.

On October 18, 2002, the Subcommittee asked the General Accounting Office (GAO) to assess U.S. and international efforts to limit the proliferation of cruise missiles, unmanned aerial vehicles, and related technology. On February 23, 2004 GAO issued the report *NONPROLIFERATION: Improvements Needed to Better Control Technology Exports for Cruise Missiles and Unmanned Aerial Vehicles* (GAO-04-175). (Attachment 14)

GAO's findings and recommendations regarding Department of Defense (DOD), Department of State (DOS), and Department of Commerce (DOC) efforts to control the export of restricted cruise missiles, UAVs and related technology will be the subject of the March 9, 2004 hearing.

DISCUSSION OF HEARING ISSUES

1. What is the nature and extent of proliferation of cruise missiles and unmanned aerial vehicles (UAVs)?

There is a growing awareness of the potential dangers posed by the unchecked proliferation of cruise missile and unmanned aerial vehicle (UAV) technology. Improvements in the capability of cruise missiles and UAVs have made them very desirable as a cost effective and reliable delivery system for both conventional weapons and weapons of mass destruction (WMD). The unrestricted availability of cruise missiles, related components and technology would make it easier for countries of concern and terrorists to acquire or build rudimentary cruise missiles or UAV systems.

At least 70 nations possess some type of cruise missile, mostly short-range, anti-ship missiles armed with conventional, high explosive warheads, according to a U.S. government study. Estimates of the total number of cruise missiles place the world inventory at a minimum of 75,000. Countries that export cruise missiles currently include China, France, Germany, Israel, Italy, Norway, Russia, Sweden, United Kingdom, and the United States. Nations that manufacture but do not yet export cruise missiles currently include Brazil, India, Iran, Iraq, North Korea, South Africa, and Taiwan. None of these non-exporting manufacturing countries is a member of the Wassenaar Arrangement, and only Brazil and South Africa are in the MTCR. The number of cruise missile exporters is expected to grow with producers such as India and Taiwan making their missiles available for export. **(Attachment 14, pg.11)**

In addition, interest has increased from countries interested in acquiring and developing UAV technology. Forty-one countries operate about 80 types of UAVs, primarily for reconnaissance. Currently, some 32 nations are developing or manufacturing 250 models of UAVs. Several countries involved in the exportation of UAVs and related technology are not members of the MTCR.

Although the MTCR is generally regarded as successful in curbing missile exports, member states have disagreed from time to time. As an example, even with the new definition of range that the MTRC adopted in 2002,

different interpretations remain among members over whether particular cruise missiles could be modified to achieve greater range. In one case, which has been debated for the last few years, the U.S. and France disagreed about the MCTR implications of France's proposed transfer of *Black Shahine* cruise missiles to the United Arab Emirates from a British-French company.

According to GAO, cruise missile inventories are projected to increase through 2015 and one to two dozen countries probably will possess a land-attack cruise missile capability by that date. While both land-attack and anti-ship cruise missile inventories are projected to increase, land-attack cruise missile inventories are expected to experience a significantly higher percentage of growth. The proliferation of cruise missile and UAV technology is well established. Consequently, according to some, there is a growing school of thought that national security relies on the U.S. staying technologically one-step-ahead in the development and defense capabilities of cruise missiles and UAVs as the proliferation of cruise missile and UAV technology and components spread to other countries.

Purchasing complete missile systems provides the immediate capability of fielding a proven weapon. Complete cruise missiles can be acquired from a variety of sources. For example, China and Russia have sold cruise missiles to Iran, Iraq, Libya, North Korea, and Syria. In addition, France has widely exported the Exocet, now in service in more than 29 countries. Israel, Italy, Norway, Sweden, the United Kingdom, and the United States have also exported anti-ship cruise missiles.

Various government and academic studies have raised concerns that the wide availability of commercial items, such as global positioning system (GPS) receivers and lightweight engines, allows both nations and non-state actors to enhance the accuracy of their systems, upgrade to greater range or payload capabilities, and convert certain anti-ship cruise missiles into land-attack cruise missiles. Thus, less capable and expensive systems could be more easily improved to attack targets not currently accessible, especially on land. Although not all cruise missiles can be modified into land-attack cruise missiles because of technical barriers, specific cruise missiles can and have been. For example, a 1999 study outlined how the Chinese Silkworm anti-ship cruise missile had been converted into a land-attack weapon. Furthermore, the Iraq Survey Group reported in October 2003 that it had

discovered 10 Silkworm anti-ship cruise missiles modified to become land-attack cruise missiles and that Iraq had fired 2 of these missiles at Kuwait.

Many issues concerning modification of cruise missiles also apply to UAVs, according to one industry group. Larger UAVs are more adaptable to change. Although several experts said that it is more expensive and difficult to modify an existing aircraft into a UAV than to develop one from scratch, some countries, such as Iraq, developed programs to convert manned aircraft into UAVs. Some experts also expressed concerns over adding autopilots to small aircraft to turn them into UAVs that could deliver chemical or biological weapons.

Universities provide an excellent source for many of the needed skills. Major universities in the developing world frequently include faculty and students educated at western universities specializing engineering and computer science. As an example, technical personnel from the former Soviet Union are a nonproliferation concern. The Chinese have recruited a large team of Russian technical personnel to assist in their cruise missile programs. **(Attachment 15)**

Civilian and military industries would also represent useful sources of skills. A manufacturing base for light aircraft would offer skills needed to fabricate cruise missile airframes. Critical systems integration could be developed from the automotive industry. Workers from electronic, telecommunication and computer industries could also contribute key programming, design and testing skills.

2. How effective are multilateral export control regimes for controlling cruise missile and UAV technology?

The United States and other governments have used the MTCR, and the Wassenaar Arrangement, as the key tools to address the proliferation of cruise missiles and UAVs. While the United States has had some success in urging these regimes to focus on cruise missiles and UAVs, new suppliers who do not share regime goals limit the regimes' ability to impede proliferation. As an example, despite the efforts of these regimes, nonmembers such as China and Israel continue to acquire, develop, and export cruise missile or UAV technology.

The growing capability of nonmember supplier countries to develop technologies used for WMD and trade them with other countries of concern undermines the regimes' ability to impede proliferation. For example, China has sold anti-ship cruise missiles to Iran and Iraq. Israel also reportedly sold the Harpy UAV to India, according to a Director of Central Intelligence report in 2003.[10] In addition, there has been difficulty among members in reaching a consensus to restrict cruise missiles and UAVs. **(Attachment 14, pg.14-15)**

Another criticism of the MTCR is that the Regime is inherently unverifiable due to the dual use nature of cruise missile and UAV technology. If a nation seeks to acquire missiles, it can do so in a relatively straightforward and perfunctory fashion. Producing significant quantities of highly effective cruise missiles calls for access to commercially available components and indigenous or foreign-provided engineering talent. Cruise missiles and UAVs can be acquired in several ways, including purchase of complete systems and conversion of existing systems into more capable weapons. Acquisition of commercially available dual-use technologies has made development of new systems and conversion of existing systems more feasible. In addition, overlapping military and civilian technology increases pressure to allow technology exports such as UAV technologies in the aircraft industry.

The U.S. government is pursuing efforts to strengthen the Wassenaar Arrangement, including more frequent reporting and a no-undercut provision (once an export is denied by one member state, all member states agree not to export that item to the denied state) which exists, *de facto*, under the MTCR. Some analysts have suggested, however, that the United States' prominent use of cruise missiles and UAVs in recent conflicts increases their attractiveness to other nations.

According to GAO, nonproliferation experts and foreign government officials noted that the effectiveness of the MTCR has been limited because members have not always agreed with each others' interpretation of the MTCR guidelines and control lists concerning cruise missiles.

[10] Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 01-06/2002, Central Intelligence Agency (Washington, D.C.: April 2003).

Specifically, members have had different views on how to measure the range and payload of cruise missiles and UAVs, making it difficult to determine when a system has the technical characteristics that require more stringent export controls to apply under MTCR guidelines. For example, cruise missiles can take advantage of more fuel-efficient flight at higher altitudes to gain substantially longer ranges than manufacturers and exporting countries advertise. Even with the new definition of range that the MTCR adopted in 2002, different interpretations remain among members over whether particular cruise missiles could be modified to achieve greater range. In one case, the United States and France disagreed about France's proposed sale of its Black Shaheen cruise missile to the United Arab Emirates. **(Attachment 14, pg.16)**

Other export control regime limitations found by GAO include sharing complete and timely information, such as members' denied export licenses, in part because the Regime lacks an electronic data system to send and retrieve such information. For example, GAO found Wassenaar Arrangement members share export license approval information but collect and aggregate it to a degree that it cannot be used constructively. Both MTCR and the Wassenaar Arrangement use a consensus process that makes decision-making difficult. In addition, the agreements lack a means to enforce compliance with regime principles. **(Attachment 14, pg.17)**

3. How effective are United States export controls for controlling transfers of cruise missile and UAV technology?

According to GAO, the Bureau of Immigration and Customs Enforcement (ICE) and Department of Commerce authorities have had difficulty identifying and tracking dual-use exports in transit that could be useful for cruise missiles and UAV development.

According to Immigration and Customs Enforcement officials, it is difficult to conduct Customs enforcement investigations of possible export violations concerning certain cruise missile or UAV dual-use technologies. First, parts or components that are not on control lists are often similar to controlled parts or components, enabling exporters to circumvent the controls entirely, according to ICE officials. Because ICE inspectors are not engineers and shipping documents do not indicate the end product for the component being shipped, determining what the components can do is problematic. Second,

countries seek smaller UAVs than those controlled. ICE officials said that buyers who cannot get advanced UAVs instead try to obtain model airplanes and model airplane parts, which might substitute for UAVs and their components. Third, ICE officials noted that circumventing the export control law is easy because the U.S. government has to prove both the exporter's knowledge of the law and the intent to violate it.

According to GAO, the U.S. government seldom uses its end-use monitoring programs to verify compliance with conditions placed on the use of cruise missile, UAV, or related technology exports. For example, Department of State officials do not monitor exports to verify compliance with license conditions on missiles or other items, despite legal and regulatory requirements to do so. Post-shipment verification (PSV) is a key end-use monitoring tool used by U.S. agencies to confirm that authorized recipients of U.S. technology both received transferred items and used them in accordance with conditions of the transfer. However, the Departments of State and Commerce seldom conduct PSVs of transferred cruise missiles, UAVs, and related items. **(Attachment 14, pg.23)**

The Department of Commerce (DOC) conducted visits to assess the end use of items for about one percent of the 2,490 missile-related licenses GAO reviewed. As a result, DOC cannot be confident that recipients are effectively safeguarding equipment in ways that protect U.S. national security and nonproliferation interests.

Department of State's (DOS) end-use monitoring is known as the Blue Lantern program. DOS conducts end-use monitoring of direct commercial sales of defense articles and services, including cruise missiles, UAVs, and related technology. According to Blue Lantern program guidance, a PSV is the only means available to verify compliance with license conditions once an item is exported.

Specifically, a PSV is used (1) to confirm whether licensed defense goods or services exported from the United States actually have been received by the party named on the license and (2) to determine whether those goods have been or are being used in accordance with the provisions of that license. However, despite these requirements, GAO found that DOS did not use PSVs to assess compliance with cruise missile or UAV licenses having conditions limiting how the item may be used.

Based on DOS licensing data, GAO identified 786 licenses for cruise missiles, UAVs, or related items from fiscal years 1998 through 2002. Of these, 480 (61 percent) were licenses with conditions, while 306 (39 percent) were licenses without conditions. GAO found that State did not conduct PSVs for any of the 480 licenses with conditions and conducted PSVs on only 4 of 306 licenses approved without conditions. Each license reviewed through the post-shipment checks involved transferred UAV-related components and equipment. **(Attachment 14, pg.24)**

In addition, the Department of Defense (DOD) has not used its end-use monitoring program, called Golden Sentry, initiated in 2002 to check the compliance of users of more than 500 cruise missiles exported between fiscal years 1998 and 2002. Specifically, DOD officials were not aware of any end-use monitoring for more than 500 cruise missiles transferred through government-to government channels, although officials are considering conducting such checks in the future. **(Attachment 14, pg.26)**

Finally, according to GAO a gap in U.S. export control regulations could allow missile proliferators to acquire unlisted American cruise missile or UAV dual-use technology without violating the regulations. Although several criminal laws might apply to these acquisitions, the laws do not specifically apply to the export control process so bringing prosecutions under these criminal laws might be difficult. **(Attachment 14, pg.18)**

WITNESS TESTIMONY

PANEL ONE

Mr. Andrew Feickert, Specialist in National Defense, Congressional Research Service will testify regarding nature and extent of the threat posed by unrestricted export of cruise missile and UAV technology.

Mr. Joseph A. Christoff, Director, International Affairs and Trade Team U.S. General Accounting Office will testify regarding GAO's findings outlined in the report *Nonproliferation: Improvement Needed To Better Control Technology Exports for Cruise Missiles and Unmanned Aerial Vehicles.*

Mr. Dennis M. Gormley, Senior Fellow, Monterey Institute of International Studies will testify why U.S. and multilateral export controls are a national security concern.

PANEL TWO

Ms. Lisa Bronson, Deputy Under Secretary of Defense for Technology Security Policy and Counterproliferation, Department of Defense will testify regarding cruise missile, UAV and related dual-use technology transfers.

Lt. Gen. Tome H. Walters, Jr., USAF, Defense Security Cooperation Agency, will testify regarding dual-use and post shipment verification end-use monitoring under Foreign Military Sales program for cruise missile and UAV technology.

Mr. Peter Lictenbaum, Assistant Secretary for Export Administration, Department of Commerce will testify regarding dual-use and post shipment verification end-use export control programs for cruise missile and UAV technology.

Mr. Robert W. Maggi, Directorate Defense Trade Controls, Department of State will testify regarding dual-use and post shipment verification end-use export control programs for cruise missile and UAV technology.

ATTACHMENTS

1. *CRUISE MISSILES: Potential Delivery Systems for Weapons of Mass Destruction,* U.S. Government Publication, April 2000.

2. United States Navy Fact File, Tomahawk cruise missile, Department of Defense.

3. United States Navy Fact File, Harpoon missile, Department of Defense.

4. United States Air Force Fact File, AGM-86B/C missiles, Department of Defense

5. Federation of American Scientist, Military Analysis Network, smart weapons file, the Joint Air to Surface Standoff Missile (JASSM),

6. *Cruise Missiles Provide Flexible, Undetectable Power*, American Forces Press Service, DefenseLink, Department of Defense.

7. *Unmanned Aerial Vehicles: Background and Issues for Congress*, Summary, Report for Congress, Congressional Research Service, RL31872, April 25, 2003.

8. *Unmanned Helicopter May Be Used In Army Roles*, Andrew Koch, Washington Bureau Chief, Jane's Defence Weekly, March 7, 2001; *DOD Commits to Buying More Than 1,700 Small Unmanned Aircraft*, Inside the Air Force, December 5, 2003.

9. Department of the Air Force, *FACT SHEET-Global Hawk*, April 2003. Department of the Air Force, *FACT SHEET-Predator Unmanned Aerial Vehicle*, July 2001.

10. Department of the Navy, *FACT FILE-Pioneer Unmanned Aerial Vehicle*, November 28, 2000.

11. Federation of American Scientists, Intelligence Resource Program, *Brigade Shadow 200 UAV*, January 27, 2004; Federation of American Scientists, Intelligence Resource Program, *Hunter TUAV: Today's Workhorse*, January 27, 2004; Army Deploys *'SHADOW' UNMANNED AIR*

VEHICLE IN IRAQ, January 20, 2004, Federal Document Clearing House, Inc.

12. *Report of the Defense Science Board Summer Study Task Force on Cruise Missile Defense*, Executive Summary, January 1995, Department of Defense.

13. *Cruise Missile Proliferation*, CRS Report for Congress, Congressional Research Service, RS21252, April 25, 2003.

14. *NONPROLIFERATION: Improvements Needed to Better Control Technology Exports for Cruise Missiles and Unmanned Aerial Vehicles* (GAO-04-175), January 2004, General Accounting Office.

15. Dealing with the Threat of Cruise Missiles, Adelphi Paper 339, Oxford University Press, 2001, Dennis M. Gormley, The International Institute for Strategic Studies.

WEB RESOURCES

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