Testimony of
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Subcommittee on National Security, Emerging Threats, and International Relations
on Nonproliferation: Assessing Missile Technology Export Controls

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Chairman Shays, Congressman Kucinich, Members of the Committee:

Thank you for the opportunity to appear before you today to discuss how the Defense Technology Security Administration (DTSA) formulates recommendations to the Departments of State and Commerce in the development of export control lists to help prevent the spread of missile technology, particularly critical cruise missile and unmanned aerial vehicle (UAV) technology.

The Defense Technology Security Administration is a Defense Field Activity of the Office of the Under Secretary of Defense for Policy. In addition to my position as Deputy Under Secretary of Defense for Technology Security Policy and Counterproliferation, I serve as the Director of DTSA. DTSA acts as the single point of contact for the coordination of Department of Defense support to the Departments of State and Commerce in their export control missions. DTSA provides technical assessments of license applications referred from the Department of State's Directorate of Defense Trade Controls (DDTC) and the Department of Commerce's Bureau of Industry and Security (BIS). Additionally, DTSA works closely with DDTC and BIS to support development of export control regulations and procedures.

The Defense Technology Security Administration also supports the development of DoD policy with respect to missile proliferation. We provide technical advice to our sister organization in the Pentagon, the Office of Negotiations Policy, which has responsibility for the formulation of DoD non-proliferation policy.

DTSA's nearly 200 military and career civilian personnel are actively engaged in the fashioning of the conditions and provisos that address national security concerns posed by export license applications. Last year, DTSA reviewed over 27,000 licenses. In support of DTSA's mission, I have outlined the following objectives for my staff:

- Retain U.S. technological edge while narrowing the gap with our Allies (if possible).
- Increase interoperability with Allies so as to:
    a. Improve military effectiveness, and
    b. Increase the pool of countries that can fight with us.
- Increase the scrutiny of exports that contribute to terrorism and weapons of mass destruction.
- Facilitate defense exploitation of commercial technology.
- Maintain a healthy defense industrial base.

To support this mission, DTSA has a technical directorate comprised of 40 engineers and scientists dedicated to our technology security mission. Nine of these engineers and technical experts have PhD's, 29 others have Master's Degrees, many of whom have multiple Master's Degrees. These individuals represent many decades of technical experience in laboratories, industry, academia, and government. Our experts have numerous publications, patents, certifications and awards to their credit. The Directorate is organized into six technical teams, each specializing in a different family of technologies. The Directorate includes three rocket scientists and five others with direct cruise missile and UAV experience.

United States Munitions List Review

During the past four years, DoD has undertaken a comprehensive review of the United States Munitions List (USML). Each category of the USML has been reviewed by a separate technical working group having specific expertise regarding the items described in that category. Two of these categories are particularly relevant to today's discussion. USML Category IV controls all missiles, including cruise missiles. Category VIII, which controls military aircraft, also controls unmanned air vehicles or UAVs.

Category IV review began in June 2002 when the DoD working group for that category first met. Over the next six months, a total of seven meetings were held. An average of 14 DoD representatives participated in each meeting and included technical experts from DTSA; OSD Acquisition, Technology and Logistics; Army, Navy, and Air Force; the Missile Defense Agency; and the Institute for Defense Analyses. This working group closely examined the Category IV controls for cruise missile systems, components, materials, test facilities, manufacturing equipment and tooling, and associated technologies. Comparison was made with other USML categories and with the CCL to ensure that all items were controlled appropriately while avoiding gaps or overlapping coverage. Controls used in multinational regimes such as the MTCR and the Wassenaar Lists were also examined to ensure USML congruence with international commitments while simultaneously identifying any gaps in the international lists. Current acquisition programs and laboratory efforts were examined to identify any emerging items that would merit additional control language. Licensing history, particularly commodity jurisdiction

determinations, was also studied to determine any precedents that might apply.

The working group ultimately determined that the existing Category IV control is appropriate and no new control or definition was proposed for cruise missile systems. However, new control language was proposed for test equipment and facilities and for manufacturing equipment and tooling specific to cruise missile development and production. Existing control language on ablative and composite materials for heat shields or nozzles was also revised to better describe the items meriting export control. Except for these changes, it was found that MTCR items were already effectively described. Once DTSA concluded its technical review, further study was conducted in 2003 to determine whether more detailed breakdown description of the controlled items was needed. DTSA concluded that no further breakdown was required and submitted the working group draft language for interagency review with the Departments of State and Commerce in October 2003. Interagency agreement for the controls was obtained in December 2003.

The Category VIII review was conducted in similar fashion, beginning in 2000. UAVs are currently controlled under Category VIII, but are simply called "drones." To clarify export control of UAVs, the DOD working group developed language that controls "unmanned aerial vehicles including remotely piloted vehicles, drones, and optionally piloted vehicles specifically designed, developed, configured, adapted, or modified for military purposes." The DOD working group also recommended control of "all other unmanned aerial vehicle systems capable of delivering at least a 500 kg payload to a range of at least 300 km." This latter item would control any UAV defined to be an MTCR Category I system as a munitions item. In addition, the Category VIII working group clarified that launchers, ground support equipment, command and control equipment, test equipment and facilities, and manufacturing equipment and tooling for the UAVs are also subject to munitions controls. The Defense Technology Security Administration provided these DOD recommendations to the Departments of State and Commerce in May 2001. Category VIII language continues to be discussed within the interagency process.

Missile Technology Control Regime

The Defense Technology Security Administration has provided technical advice in support of the development and modification of the MTCR Technical Annex since 1991. As new threats evolve and technologies mature, our technical experts develop proposals to modify the Technical Annex and evaluate proposals submitted by other United States government agencies, such as the Departments of State and Commerce, as well as by our MTCR partners.

After the September 11, 2001 terrorist attacks, the threat from the use of crop dusting aircraft for the spread of chemical and biological agents was highlighted. As a

result of this heightened awareness, DTSA reviewed the use of unmanned crop dusters available in the international marketplace and realized this was an emerging market. Given the threat from using these UAVs for the delivery of WMD, we recommended adding this new control in March 2002 at the US interagency Missile Annex Review Committee. A U.S. white paper, drafted by DTSA, was presented and discussed with our MTCR partners during the bi-annual MTCR Technical Experts Meeting (TEM) in April 2002.

Following the April Technical Experts Meeting, DTSA developed a formal USG proposal to control aerosol dispensing UAVs, including crop dusting UAVs, and presented this proposal at the next multi-national Technical Experts Meeting in September 2002. Concurrent with the September Technical Experts Meeting, we held bi-lateral meetings with several of our MTCR partner countries to address MTCR policy issues and to pave the way for acceptance of this new control. In September 2002, the multinational TEM reached consensus on controlling UAVs equipped for aerosol spraying conditional upon MTCR Plenary acceptance of this new control. The MTCR Plenary agreed to a six month silence procedure for approval. Subsequently, in March 2003, one of the partners broke silence and requested modifications to the control language. The United States submitted new control language addressing the partner's concerns during the March 2003 MTCR Point of Contact (POC) meeting and initiated a new 15 day silence procedure for adoption. Silence was not broken and new controls on UAVs equipped for aerosol spraying were adopted into the multinational Technical Annex in April 2003.

There are two aspects of this effort that are of particularly noteworthy. First, the USG proposal to control UAVs equipped for aerosol spraying *without regard to range* was a significant shift in thinking for the MTCR regime. Previously, the MTCR Technical Annex did not control UAVs or cruise missiles with a range less than 300 km. Second, with strong interagency cooperation and support, we were able to gain international acceptance of this proposal *in just slightly over a year* from the time the idea was first discussed in the U.S. interagency to adoption into the MTCR Technical Annex. Both the Departments of State and Commerce cleared short suspense papers and proposals making major modifications to the types of systems controlled by the MTCR. Likewise, State and Commerce leadership during the Plenary and Technical Experts Meetings proved critical in quickly gaining MTCR partner concurrence. This is an example of how the interagency process should work. The unprecedented speed with which this new MTCR control gained USG and international acceptance is a model for future modifications to the MTCR Technical Annex.

The new controls on UAVs equipped for aerosol spraying is just one example of improvements made to the MTCR technical annex over the past three years. Three others warrant brief mention:

- In 2001, we enhanced our controls on small, fuel efficient turbojet and turbofan engines. Previously, the MTCR only controlled engines with a large thrust, allowing the smaller turbojet and turbofan engines to be exported without any missile technology controls. We recognized the limited number of countries in the world capable of producing highly efficient turbojet and turbofan engines and that this was a key chokepoint where enhanced protection and export controls could yield significant payoff. The approved revision resulted in control of lower thrust engines that are of proliferation concern for use in smaller cruise missiles and UAVs.

- We have recognized the growing utility of integrating GPS systems into lower fidelity navigation systems to achieve very precise navigation solutions. As a result, in 2002 we revised the previous GPS controls that were focused on ballistic missiles to ensure capture of GPS systems particularly well suited for supersonic cruise missiles. We also agreed on new controls on integrated navigation systems that incorporate a GPS receiver to update other, less precise navigational instrumentation.

- We have closely monitored the development of new technologies that are usable in missiles. In 2003, when new continuous propellant mixers were developed and became available on the international marketplace, we modified existing MTCR controls to ensure we captured these new designs.

We have also made progress on strengthening the MTCR language to ensure adequate protection of key technologies while ensuring a level playing field between US and foreign industries. For example, previous language controlling telemetry equipment was vague and imprecise. As a result, the US was one of the few partners controlling telemetry ground equipment. In 2003, we worked with our MTCR partners to clarify this language and ensure that all partners are controlling ground based telemetry receivers designed for the development, testing and upgrading of missile systems.

We have also been sensitive to the unique needs of US industry. New technologies and processes have been developed in the commercial world that are not applicable to missiles and UAVs but were inadvertently captured by existing MTCR controls. We have removed controls on nitrogen trifluoride, used in the semi-conductor industry, when it was captured by a generic control of liquid oxidizers for missiles. This reduced a significant licensing burden on US industry and helped ensure we remain competitive in the global market.

Commerce Control List

Revisions of the Commerce Control List typically follow multilateral acceptance

of changes to the MTCR Technical Annex. The Department of Commerce prepares proposed modifications to the CCL to incorporate MTCR Technical Annex changes into the Export Administration Regulations (EAR). Prior to publishing these CCL changes in the Federal Register, DTSA engineers review each proposed modification to ensure it captures the agreed MTCR Technical Annex changes. After our technical review, we recommend any necessary changes and must concur with the final text prior to its incorporation into the EAR.

Future Technologies Evaluation

Besides controlling specific hardware, it is important to control the underlying technology and know-how that enables production of UAVs and cruise missiles. To identify future technologies that may yield military capabilities beyond that envisioned during review of the current export controls, DTSA created an interdisciplinary team to identify emerging technologies that are likely to result in fundamental warfighting paradigm shifts. They began their work six months ago. The members of this team represent many decades of personal involvement in technology development and technology export control. The team also conducts literature searches; visits government and industry laboratories and other organizations with technology development expertise or responsibilities; and participates in technical reviews and conferences to identify technologies for further review.

While I must stress that our review is at the most preliminary stages, our initial internal review identified certain enabling technologies related to UAVs for further examination. Specifically, technologies related to miniature sensors, advanced data links, and micro-miniature guidance and navigation components have been identified as key enabling technologies for UAVs. Besides unmanned air vehicles, the team believes these same technologies will also enhance other unmanned vehicles such as ground and underwater systems. The team is currently examining hypersonic propulsion technology and carbon laminate phase change materials as potentially enabling technologies that could result in hypersonic cruise missile development. Although these are only initial results, I believe that our ongoing review will underscore the importance of controlling these emerging systems and capabilities.

As we refine this examination of emerging technologies, as we widen the scope of our review, and as we discuss further with our DoD colleagues, we will make additional recommendations in the coming years regarding appropriate changes to our technology export control lists, international agreements, and processes.

Conclusion

Mr. Chairman, I trust that my comments have addressed the specific question raised by your staff: how does DTSA formulate its recommendations to the Departments

of State and Commerce concerning export control lists.

I would be happy to answer any questions you may have regarding this subject.