

Background

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When Government Regulations Hinder Security: Shoulder-Fired Missile Defenses

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Worries about terrorists shooting down commercial airliners with shoulder-fired missiles are justified. Shoulder-fired missiles (in military terminology, man-portable air defense systems or MANPADS) are easily obtainable around the world and have been used by terrorists to bring down civilian aircraft. Technologies to defend against MANPADS are in various stages of development. These countermeasures work by jamming the incoming missile's guidance systems, diverting it away from its intended target.

Regrettably, government regulations in the form of the International Traffic in Arms Regulations (ITAR)¹ could prevent the deployment of countermeasures on civilian aircraft at foreign airports. ITAR, which restricts U.S. exports of military equipment, technology, and services, serves an important purpose but, in this case, is hindering the development and implementation of countermeasures to shoulder-fired missiles that could make Americans safer.

To resolve conflicts between export controls and these defensive systems, four things should be done:

1. Congress should mandate a consultative role for the Department of Homeland Security (DHS) in the ITAR process,
2. The U.S. Department of State should consider moving these countermeasures from the U.S. Munitions List to the Commerce Department's Export Administration Regulations,
3. The DHS should offer policy guidelines to direct private-sector development of countermeasures, and

Talking Points

- The potential threat of shoulder-fired anti-aircraft missiles to commercial airliners can be mitigated by deploying counter-MANPADS on planes and at airports, but deployment to protect international flights will likely run into problems with U.S. export controls.
- Minor modifications of legislation and export regulations, an improved export control process, and better technology integrated into an overall system will serve American homeland security interests while preventing military technology from falling into the wrong hands.
- Cost will also be a concern. A mixture of ground-based and plane-based systems would likely provide the greatest degree of security with the limited resources available.
- Better guidance from the DHS can help the private sector do a better and more efficient job of developing the needed technology, enabling the DHS to field an efficient, cost-effective system that greatly reduces the risk that the technology will proliferate abroad.

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4. The private sector should continue to improve the systems to minimize maintenance time and improve capabilities.

Defending Against the Threat

MANPADS are shoulder-fired anti-aircraft missiles designed to down low-flying aircraft. The near miss of an Israeli passenger flight in Kenya in 2002 is just one illustration. The State Department estimates that MANPADS have brought down 25 civilian aircraft, killing more than 600 people, since the 1970s. Near misses have endangered hundreds of other passengers.²

These missiles constitute a potentially serious threat to commercial airliners if acquired by terrorists. Given that over 1 million MANPADS have been produced worldwide and that they are easily available on the black market, it is very likely that terrorists have already acquired them.

There are two approaches to developing counter-MANPADS (C-MANPADS): plane-based systems and ground-based systems. The Department of Homeland Security has awarded contracts to BAE Systems and Northrop Grumman to develop plane-based defensive systems. Both companies are adapting devices already used by the military for use on civilian aircraft, and both are in the second and final phase of the DHS testing program. So far, direct infrared countermeasures have demonstrated the most promise of the plane-based systems. This type of system focuses an infrared beam on an incoming missile, disrupting its guidance system. Export controls could present a major challenge to implementing such a system.

Since only aircraft below 20,000 feet are vulnerable to shoulder-fired missiles, planes face a significant risk only during takeoff and landing. Consequently, ground-based systems also have potential. Independent of the DHS program, Raytheon is developing a ground-based system that

uses sensors installed near an airport to detect a missile launch. A high-power amplifier-transmitter then targets the missile with an electromagnetic wave, deflecting it away from the airplane.

Each of these systems has its strengths and limitations:

- **Plane-based.** Plane-based systems are closer to implementation and can protect individual planes, but cost would prohibit installing these systems on every aircraft. Yet partial coverage could deter terrorists because they will likely never know which planes are fitted with C-MANPADS. Terrorists would face the additional risk of firing at a protected plane and failing to achieve their goal while still exposing themselves to detection and capture.

On the other hand, plane-based systems require frequent maintenance. Currently, they need servicing approximately every 300 flight hours. This would require trained maintenance personnel in various places overseas, heightening the risk that technological expertise could be transferred to the wrong people.

- **Ground-based.** Access to ground-based systems can be controlled more tightly because these systems require less frequent maintenance. Moreover, this technology is potentially less harmful to U.S. military interests if the technological specifications ever fall into the wrong hands. This is because the ground-based system, while useful for homeland security purposes, is of little utility to potential adversaries on the battlefield. Placing ground-based systems at the 30 busiest U.S. airports could protect 71 percent of domestic air traffic.³

However, terrorists could easily determine which airports are not protected and target them instead. As with plane-based systems, it would be prohibitively costly to try to protect

1. 22 Code of Federal Regulations 120–130.

2. U.S. Department of State, Bureau of Political-Military Affairs and Bureau of International Security and Nonproliferation, “The MANPADS Menace: Combating the Threat to Global Aviation from Man-Portable Air Defense Systems,” September 20, 2005, at www.state.gov/t/pm/rls/fs/53558.htm (December 6, 2005).

3. Angela Kim, “Raytheon Unveils Ground-Based Missile Defense System,” *Aviation Daily*, June 15, 2005, p. 3.

every flight at every airport, and the sale of ground-based systems to airports overseas would be restricted by ITAR.

Obstacles to Implementation

ITAR derives its authority from the Arms Export Control Act⁴ and Executive Order 11958.⁵ The State Department's Directorate of Defense Trade Controls (DDTC) administers ITAR and, under Section 121.1, establishes the United States Munitions List, which catalogues equipment, materials, and technology that require DDTC approval for export. Furthermore, Section 126.1 establishes a list of countries to which no items on the Munitions List can be exported.

The logic behind this is sound. Allowing American companies to export the latest defense technology to rogue states like North Korea or Iran would be against the U.S. national interest. ITAR generally succeeds in balancing corporate interests with public policy, but, as in the case of C-MANPADS, the good intentions behind ITAR sometimes hinder implementation of systems that would make Americans safer.

If the present situation continues, commercial airlines and/or airports wishing to install these defensive systems would encounter bureaucracy and red tape. First the companies would need to register with the State Department to apply for export licenses. Then they would have to apply for an export license for every flight traveling to a foreign country. In addition, they would need to request a transfer authorization for every flight from one foreign country to another. For ground-based systems, an export license would likely be required for every foreign airport.

Such measures would likely force the already beleaguered airlines to establish entirely new departments dedicated solely to monitoring ITAR compliance, adding one more disincentive to improving security. Furthermore, if Congress should mandate such a safety feature, it would likely hasten the

downward financial spiral that most commercial airlines are already experiencing.

Another potential obstacle to implementation is uncertainty about what a future counter-MANPADS system will look like. Will it be primarily plane-based, ground-based, or both? Will export restrictions prevent systems from being developed for use by allied nations? Will those restrictions prevent systems from being implemented at all? These concerns are important for the private sector in determining future research, development, and production priorities.

Addressing the Threat

Congress and the private sector can take several steps to implement technology that will protect Americans without significantly altering the Arms Export Control Act or ITAR. Specifically:

Require the DHS and the State Department to Collaborate on ITAR. Congress should mandate that the State Department establish a process for consulting with the DHS on systems that have a significant homeland security purpose.

For instance, the Department of State and the DHS should examine whether Section 121.1 should apply to plane-based and ground-based defenses against MANPADS since they could provide protection to civilian aircraft against terrorist attacks. The analysis should include a risk assessment of the likelihood of a terrorist attack using MANPADS against U.S. airliners and the severity of such a possible attack. It should then balance that risk against the likelihood that nations or groups hostile to the U.S. could acquire the technology and then threaten U.S. military forces with it. If such an assessment determines that the benefits to homeland security outweigh the potential risks, the technology should not be placed on the U.S. Munitions List.

Place Appropriate Systems on the Commerce Department's Export Administration Regulations List. If the DHS and the State Department agree that a certain system has a significant home-

4. Public Law 90-629.

5. Gerald R. Ford, "Administration of Arms Export Controls," Executive Order 11958, January 18, 1977, at www.archives.gov/federal-register/codification/executive-order/11958.html (December 5, 2005).

land security benefit and is unlikely to be wrongfully acquired and used, the State Department's arms control regulations should not apply, and the system should be subject to the Commerce Department's Export Administration Regulations (EAR).

EAR works in much the same way as ITAR, except that EAR deals with dual-use technology rather than defense items. Thus, the Export Administration Regulations offer greater flexibility, reduce red tape for exporters, and decrease processing time. Congress does not need to radically alter the Arms Export Control Act and ITAR; it just needs to update these regulations to reflect the contemporary concern over terrorism by outlining a role for the DHS in the overall export control process.

Develop an Integrated System. Ground-based systems can protect a greater number of flights at lower cost, but they are also easily avoided. Plane-based systems would inject a degree of unpredictability into the system that, even though they may protect fewer flights, would make them an effective deterrent since terrorists would not know which planes are protected and which are not. Combining the advantages of both systems in a layered aviation security strategy would provide a higher level of protection than either system could achieve by itself.

Cost will be a significant concern. Any attempt to protect every flight with either type of system alone would be prohibitively expensive. Plane-based systems will cost an estimated \$1 million per plane, while ground-based systems will cost about \$25 million per airport. Installing ground-based systems at the 30 busiest airports would cost a total of \$750 million. Rather than installing a ground-based system at every major airport or fitting every passenger aircraft with a plane-based system, a mix of ground-based and plane-based systems would be more likely to provide the greatest degree of security with the limited resources available.

Improve the Technology. The greatest risk of C-MANPADS technology falling into the wrong hands stems from the frequency of maintenance and services required. Ground-based systems require less

frequent maintenance, although it is questionable which system would better deter terrorists.

With better guidance from the DHS, the private sector could do a better and more efficient job of developing the technology that the DHS needs. This should result in lower manufacturing costs and reduce the maintenance requirements, eventually enabling the DHS to field an efficient, cost-effective system that limits maintenance expertise to fewer people, greatly reducing the risk that the technology will proliferate abroad.

Conclusion

The uncertainty caused by unanswered legal and policy questions may deter companies from developing counter-MANPADS technology. By addressing the legal issues related to export controls and providing clear guidelines for deployment, Congress, the DHS, and the State Department can remove some of the obstacles that inhibit the technological improvements needed to deploy an integrated C-MANPADS system.

ITAR and the Arms Export Control Act play necessary and important roles in enhancing U.S. national security by controlling the export of military equipment and technology, but laws and regulations sometimes create perverse results. The legal obstacles to defenses against shoulder-fired missiles are one such example.

Since technological advancements usually outpace legislation, policymakers need to start thinking about export issues and developmental policy guidelines now. Minor modifications of legislation and export regulations, an improved process for export controls, and improved technology integrated into an overall system will serve American homeland security interests while preventing military technology from falling into the wrong hands.

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