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July 27, 2011

Countering the proliferation of Man-Portable Air Defense Systems (MANPADS) is a top U.S. national security priority. In the hands of terrorists, criminals, or other non-state actors, MANPADS – also known as shoulder-fired anti-aircraft missiles – pose a serious threat to passenger air travel, the commercial aviation industry, and military aircraft around the world. The United States is working closely with numerous countries and international organizations to keep the skies safe for all.



More than 40 civilian aircraft have been hit by MANPADS missiles since the 1970s. Since the November 2002 attempted shoot down by terrorists of a civilian airliner in Mombasa, Kenya, the United States has stepped up its efforts to keep MANPADS from falling into the wrong hands, launching an initiative to prevent the illicit acquisition and use of MANPADS by terrorists and other non-state actors.

Two insurgents in Iraq with SA-7b and SA-14 MANPADS.

Courtesy of U.S. Department of Homeland Security

At the direction of the White House, the U.S. Department of State, supported by the U.S. Department of Defense and in coordination with the U.S. Department of Homeland Security, leads the U.S. government's international efforts on this critical issue. Since 2003, our cooperation with countries around the globe has led to the destruction of more than 32,500 excess, loosely secured, illicitly held, or otherwise at-risk MANPADS in over 30 countries.

This updated fact sheet provides a brief description of MANPADS, their origins, and examples of MANPADS attacks on civilian aircraft, and highlights some of the United States' efforts to cooperate with other countries to counter the threat.

WHAT ARE MANPADS?

Man-Portable Air Defense Systems (MANPADS) are surface-to-air missiles that can be carried and fired by a single individual or carried by several individuals and fired by more than one person acting as a crew. Most MANPADS consist of: 1) a missile packaged in a tube; 2) a launching mechanism (commonly known as a "gripstock"); and 3) a battery. The

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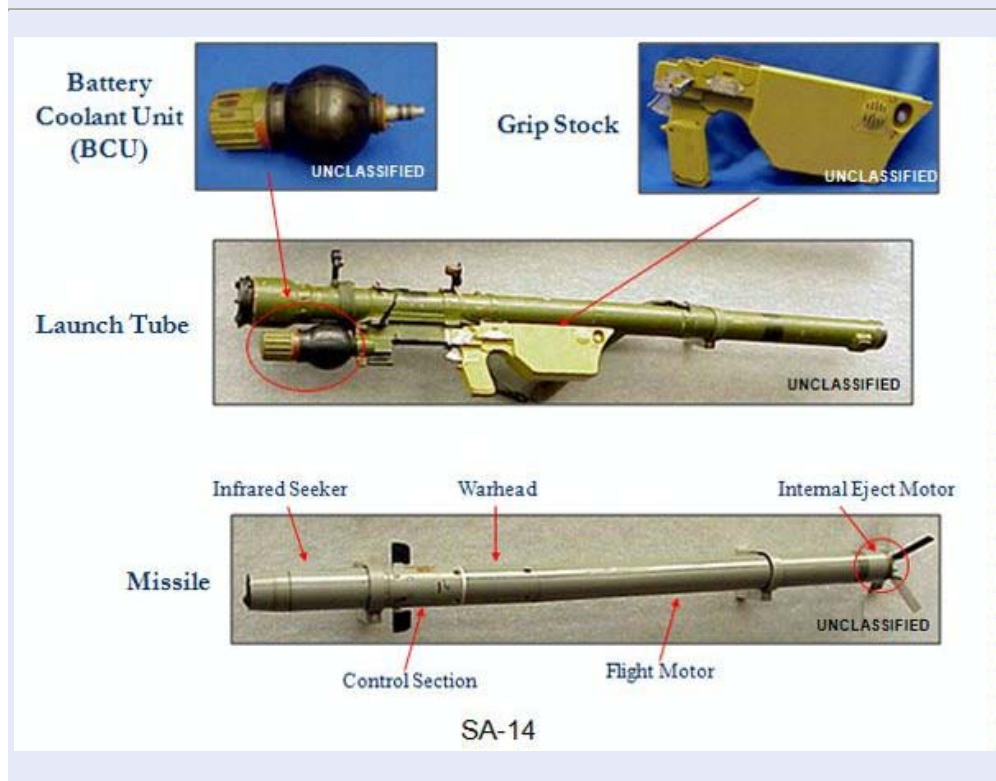


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tubes, which protect the missile until it has been fired, are disposable. Rudimentary sights are mounted on the tube. A single-use battery is typically used to power the missile prior to launch.

MANPADS launch tubes typically range from about 4 feet to 6 1/2 feet (1.2 to 2 meters) in length and are about 3 inches (72 millimeters) in diameter. Their weight, with launcher, varies from about 28 pounds to just over 55 pounds (13 to 25 kilograms). They are easy to transport and conceal. Some of the most commonly proliferated MANPADS can easily fit into the trunk of an automobile.

Because MANPADS are easy to transport, conceal, and use – and because a single successful attack against an airliner would have serious consequences for the international civilian aviation industry – they are particularly attractive weapons to terrorists and criminals. Keeping MANPADS out of their hands is thus a major priority for the U.S. government.



TYPES OF MANPADS

There are three main types of MANPADS: 1) Infrared (IR) systems that hone in on an aircraft's heat source, usually the engine or the engine's exhaust plume; 2) Command Line-of-Sight (CLOS) systems whereby the MANPADS operator visually acquires the target aircraft using a magnified optical sight, and then uses radio controls to guide the missile into the aircraft; and 3) Laser Beam Riders in which the missile flies along the laser beam and strikes the aircraft where the operator has aimed the laser.

MANPADS were designed to be used by national military forces to protect their troops and facilities. With their relatively short range, MANPADS are regarded as the last missile-based air defense available to protect against aerial attack, to be deployed in tandem with gun-type systems that seek to defeat attacking aircraft by destroying them with a barrage of projectiles. They can attain a speed of about twice the speed of sound and strike aircraft flying at altitudes up to approximately 15,000 feet (4.57 kilometers) at a range of up to 3.2 miles (5 kilometers). Most of the older systems are ineffective against modern military aircraft, though civilian aircraft remain vulnerable due to the lack of countermeasures.

Although superficially similar in appearance, MANPADS should not be confused with rocket-propelled grenades (RPGs). RPGs are also portable and shoulder-fired. However, RPGs are unguided weapons designed primarily to be used against ground targets and are generally ineffective against aircraft, except at very close range. Some RPG attacks on low-flying aircraft have been mistaken for MANPADS attacks.



Iraqi Security Force member performs a foot patrol, armed with an RPG.

Courtesy of U.S. Marine Corps



Iraqi insurgent firing a MANPADS.

Courtesy of U.S. Department of Homeland Security

WHEN HAVE MANPADS BEEN USED AGAINST CIVIL AVIATION?

Since 1975, 40 civilian aircraft have been hit by MANPADS, causing about 28 crashes and more than 800 deaths around the world. The following list is a sample of reported incidents involving civilian aircraft. All of the incidents listed below, except the November 2002 incident in Mombasa, took place in zones of conflict.



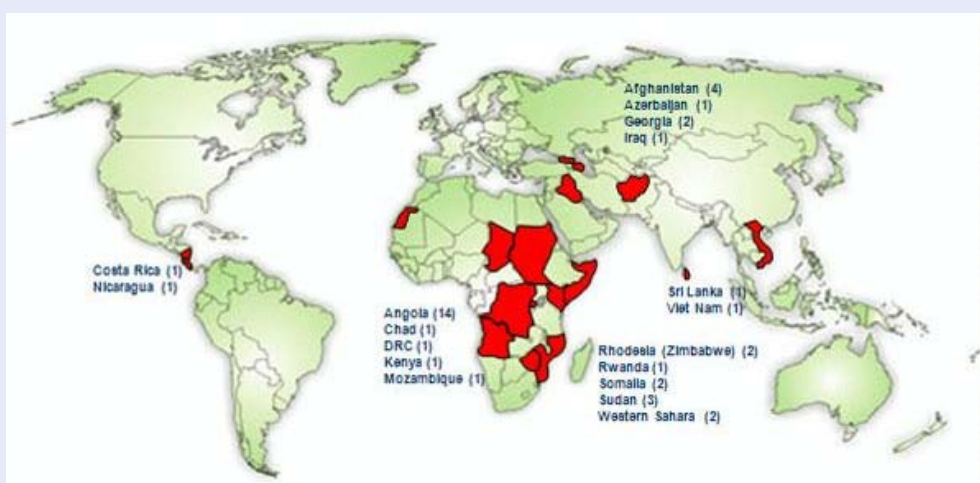
A DHL Airbus air cargo jet with left wing on fire returns to the airport in Baghdad to make a controlled landing shortly after being hit by a MANPADS fired by an Iraqi insurgent. Fortunately, there were no injuries to the crew.

Courtesy of U.S. Department of Homeland Security

- March 12, 1975: A Douglas C-54D-5-DC passenger airliner, operated by Air Vietnam, crashed into Vietnamese territory after being hit by a MANPADS. All six crew members and 20 passengers were killed in the crash.
- September 3, 1978: An Air Rhodesia Vickers 782D Viscount passenger airliner crash landed after being hit by a MANPADS fired by forces from the Zimbabwe Peoples Revolution Army. Four crew members and 34 of the 56 passengers were killed in the crash.
- December 19, 1988: Two Douglas DC-7 spray aircraft en route from Senegal to Morocco, chartered by the U.S. Agency for International Development to eradicate locusts, were struck by MANPADS fired by POLISARIO militants in the Western Sahara. One DC-7 crashed killing all 5 crew members. The other DC-7 landed safely in Morocco.
- September 22, 1993: A Tupolev 154B aircraft operated by Transair Georgia was shot down by Abkhazian separatist forces, crashed onto the runway and caught fire, killing 108.

- April 6, 1994: A Dassault Mystère-Falcon 50 executive jet carrying the Presidents of Rwanda and Burundi and its French flight crew was shot down over Kigali, killing all aboard and sparking massive ethnic violence and regional conflict.
- October 10, 1998: A Boeing 727-30 Lignes Aeriennes Congolaises airliner was downed over the Democratic Republic of the Congo jungle by Tutsi militia, killing 41.
- December 26, 1998: A United Nations-chartered Lockheed C-130 Hercules transport was shot down over Angola by UNITA forces, killing 14.
- January 2, 1999: A United Nations Lockheed L-100-30 Hercules transport was shot down by UNITA forces in Angola, killing 9.
- November 28, 2002: Terrorists fired two MANPADS at an Arkia Airlines Boeing 757-3E7 with 271 passengers and crew as it took off from Mombasa, Kenya. Both missiles missed.
- November 22, 2003: A DHL Airbus A300B4-203F cargo jet transporting mail in Iraq was struck and damaged by a MANPADS. Though hit in the left fuel tank, the plane was able to return to the Baghdad airport and land safely.
- March 23, 2007: A Transaviaexport Ilyushin 76TD cargo plane was shot down over Mogadishu, Somalia, killing the entire crew of 11.

MANPADS Attacks on Civil Aircraft Since 1975



CREDIT: Santo Polizzi, Transportation Security Administration

WHO PRODUCES AND POSSESSES MANPADS?

Some 20 countries have produced or have licenses to produce MANPADS or their components. These include Bulgaria, China, Egypt, France, Germany, Greece, Iran, Japan, the Netherlands, North Korea, Pakistan, Poland, Romania, Russia, Serbia, South Korea, Sweden, Turkey, the United Kingdom, and the United States.

It is estimated that more than 1 million MANPADS missiles have been manufactured worldwide since they were first produced in 1967. The United States believes that most of these systems are either stockpiled in national inventories or have been destroyed. Thousands of MANPADS, however, have not been accounted for properly and are believed to be outside of the control of national governments. The United States believes that a number of terrorist organizations, including al-Qaida, have MANPADS in their possession.

The total number of MANPADS remaining in the global inventory is difficult to estimate with precision because the destruction of MANPADS systems—either by warfare, accident, or systematic demilitarization—is not always tracked or publicized. Even more uncertain is the number of operational systems within that total inventory, as a number of variables—age, storage conditions, and quality of maintenance—influence the life-expectancy of such systems.

Given the unique threat to aviation posed by MANPADS due to their ease of use, relatively small size, and portability, the United States exercises strict controls over production, storage, and transportation of its MANPADS, as well as diligence when selling them to other governments, in order to ensure that they are properly secured and not sold or transferred to others without prior U.S. consent.

The black market cost of MANPADS can vary widely, ranging from as little as a few hundred dollars to over one hundred thousand dollars, depending on the model and its condition. Given the relatively low cost of some of these systems, there

is a heightened risk for acquisition by terrorists or other non-state actors.

A variety of non-state actors are believed to have MANPADS in their possession. The most proliferated type of MANPADS is the first-generation, infrared-homing system designed by the former Soviet Union known as the SA-7b. It is the MANPADS most commonly held by terrorist groups. Non-state actors acquire MANPADS in a variety of ways, including from gray/black markets, arms dealers, front companies, transshipment, intermediaries, end-use certificate falsification, and corrupt government officials. Terrorist groups and other non-state actors are demonstrating increasingly sophisticated and aggressive approaches towards acquiring MANPADS.

WHAT IS THE UNITED STATES DOING TO COUNTER THE PROLIFERATION OF MANPADS?

An interagency task force chaired by the State Department is implementing the United States International Aviation Threat Reduction Plan -- a component of the broader National Strategy for Aviation Security-- to protect global aviation from MANPADS attacks.

The Department of State has taken the lead in engaging foreign government officials on partnering with the U.S. government in bilateral and multilateral efforts to reduce the potential worldwide threat from MANPADS. This includes the U.S. program to eliminate or better secure other countries' excess, obsolete, loosely secured, or otherwise at-risk MANPADS that could fall into the hands of non-state actors, which is managed by the Office of Weapons Removal and Abatement in the Bureau of Political-Military Affairs ([PM/WRA](#)). Many MANPADS currently retained in national stockpiles are aged and obsolete, and are therefore relatively ineffective against modern military aircraft, but could still pose a threat to slower-moving civilian aircraft. PM/WRA assists countries to secure their stockpiles, to maintain reliable inventories of their systems, and/or to safely dispose of MANPADS stocks that are no longer needed for national defense.

The Office of Conventional Arms Threat Reduction in the Bureau for International Security and Nonproliferation ([CATR](#)) works through bilateral and multilateral engagement, with an emphasis on responsible export controls, to prevent illicit transfers of MANPADS or the technology to produce the weapons.

The Department of Defense supports international negotiations by providing expertise on the proper management and control of MANPADS in foreign holdings, and by enforcing stringent physical security and accountability for MANPADS in U.S. possession. The Department of Defense established the Golden Sentry program to monitor the end use of MANPADS sold through Foreign Military Sales to ensure that they are not diverted for unauthorized use, and conducts a 100 percent inventory check of these MANPADS annually (in addition to more frequent inventory checks by foreign government personnel). Golden Sentry is supported by the Defense Security and Cooperation Agency ([DSCA](#)), the Defense Threat Reduction Agency ([DTRA](#)), and the U.S. Army.

PM/WRA's MANPADS programs are supported by DTRA's Small Arms and Light Weapons Branch, which provides physical security and stockpile management (PSSM) seminars and assessments. DTRA's programs assess current host-nation storage practices, offer tailored advice to countries, and orient host-nation experts to international best practices, on how to better secure their MANPADS and other weapons retained for national defense purposes. All of this assistance is offered at little or no cost to the host nation. PM/WRA can, in some cases, provide technical and financial assistance to implement DTRA's recommendations. Assistance may also be provided to countries at the request of the United States' Geographic Combatant Commanders or other elements of the U.S. Department of Defense.

The Department of Homeland Security supports international efforts through an International MANPADS Assist Visit (MAV) program within the Transportation Security Administration ([TSA](#)). This program assists host nations in conducting vulnerability assessments to identify potential launch areas around their international airports, and develop mitigation strategies to counter the threat. Since 2003, TSA has assisted 30 countries in conducting 38 MAVs.

The Federal Bureau of Investigation supports the mission to prevent terrorist use of MANPADS by working to improve domestic security against MANPADS. The FBI also coordinates with the field and aviation industry through various committees, training seminars, and conferences.

The Department of the Treasury works to block terrorists from acquiring MANPADS by targeting their financial support networks. Individuals and entities engaging in or supporting terrorist activities, such as using or trading MANPADS, can be subject to financial sanctions under [Executive Order 13224](#). The U.S. government may also nominate certain groups (such as al-Qaida or the Taliban) for similar UN sanctions.

MULTILATERAL EFFORTS

Under the auspices of ISN/CATR, the United States has worked in a number of international fora to obtain agreement with countries to strengthen controls over the export of MANPADS and to enhance weapons stockpile security. More than 95 countries have agreed to adopt measures that ensure the standards established are put in place.

At the June 2003 G-8 Evian Summit, leaders agreed to a U.S.-initiated MANPADS Action Plan that includes the following measures:

- provide assistance and technical expertise for the destruction of excess MANPADS;
- adopt stringent national export controls on MANPADS and their essential components;
- ban transfers of MANPADS to non-state end-users; MANPADS should only be exported to foreign governments or to agents authorized by a government;
- exchange information on uncooperative countries and entities;
- examine for new MANPADS the feasibility of adding specific technical performance or launch control features that preclude their unauthorized use; and
- encourage action in the International Civil Aviation Organization's (ICAO) Aviation Security Working Group on MANPADS (ICAO Resolution A-35-WP/50).

In December 2003, the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies ([WA](#)), the first multilateral institution covering conventional weapons and sensitive dual-use goods and technologies, adopted strengthened guidelines for control over MANPADS transfers. These guidelines detail how countries will evaluate exports of MANPADS; conditions they will set for recipients to receive the systems; and how systems will be stored, transported, used, inventoried, and inspected. ISN leads U.S. participation in the WA and other appropriate fora to encourage international adherence to and effective implementation of these rigorous MANPADS guidelines. ISN conducts seminars and workshops, distributes reference materials to educate producers and recipients, and works closely with foreign governments to promote WA guidelines and best practices regarding the proper storage and safeguarding of MANPADS.

Similar guidelines were adopted by the Organization for Security and Cooperation in Europe ([OSCE](#)) in May 2004. Asia-Pacific Economic Cooperation Forum ([APEC](#)) adopted these guidelines in November 2004. In June 2005, the 35th General Assembly of the Organization of American States (OAS) also adopted similar guidelines in [Resolution AG/RES 2145 \(XXXV-O/05\)](#).

The United States is continuing efforts in all of these and other regional fora to emphasize the need for implementation. The United States has submitted to the Wassenaar Arrangement and the OSCE a detailed paper on how the United States controls MANPADS. Since then, over half of the participating states have submitted papers on their MANPADS control. In addition, the MANPADS guidelines were updated at the 2007 Plenary.

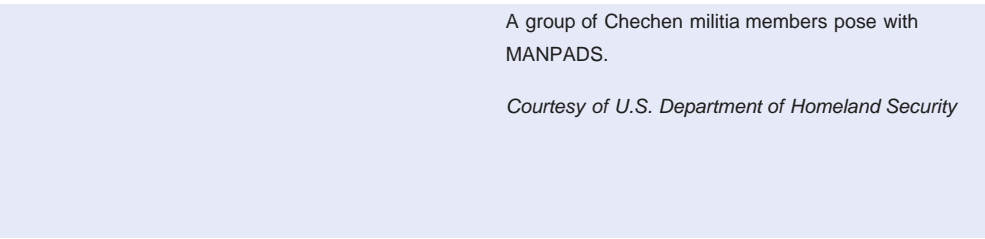
In recent years, various international organizations have worked to destroy stockpiles of MANPADS. The NATO Partnership for Peace Trust Fund Project has helped Ukraine destroy excess munitions, small arms, light weapons, and MANPADS. In addition, the OSCE has destroyed surplus weapons, including MANPADS, in Cyprus and Tajikistan.

In 2011, the United States helped to launch the MANPADS Contact Group (MCG), a multilateral initiative between Australia, Canada, New Zealand, the United Kingdom, and the United States with the primary function of coordinating each country's efforts to counter the illicit proliferation of MANPADS. The MCG will ensure that the partner countries are aware of each other's activities and of potential areas for cooperation and collaboration.

BILATERAL COOPERATION

United States bilateral efforts are focused on regions and countries where there is a combination of excess MANPADS stocks and a demonstrable risk of proliferation potential to terrorist groups or other undesirable end-users. The United States works with countries whose MANPADS might be vulnerable to develop a nonproliferation strategy to reduce stocks, secure remaining weapons, and ensure that the host governments have in place appropriate policies and procedures for controlling exports.

On February 24, 2005, the United States and Russia signed the "[United States-Russia Arrangement on Cooperation in Enhancing Control of Man-Portable Air Defense Systems](#)" in Bratislava, Slovakia to facilitate destruction of obsolete or excess MANPADS, exchange information on controlling MANPADS including improving measures to enhance physical security, and to share information about MANPADS sales and transfers to third countries.



A group of Chechen militia members pose with MANPADS.

Courtesy of U.S. Department of Homeland Security



The Office of Weapons Removal and Abatement uses funds from [Non-proliferation, Anti-terrorism, Demining and Related \(NADR\) Small Arms and Light Weapons Destruction Program](#) to:

- destroy obsolete MANPADS that have little military value but could be lethal against global aviation in the hands of terrorists; and
- improve physical safety and security as well as standards of inventory control and accountability of MANPADS in national inventories that may be needed for legitimate self-defense purposes to ensure that they are not stolen or illicitly transferred.

Since 2003, the U.S. Department of State has enabled the destruction of more than 32,500 MANPADS in more than 30 countries worldwide.



MAG (Mines Advisory Group) America and the Burundian Army worked together under a U.S. Department of State Office of Weapons Removal and Abatement grant to safely destroy over 312 excess MANPADS in Burundi, January 2008.

CREDIT: Didier Leonard, MAG Burundi Technical Field Manager

A few examples of some successes illustrate the Department of State's extensive efforts. The Office of Weapons Removal and Abatement has supported:

- Bosnia and Herzegovina to destroy its government-held stockpile of almost 6,000 MANPADS between 2003 and 2004,
- Hungary's destruction of over 1,500 MANPADS,
- Macedonia's destruction of 156 MANPADS,
- Montenegro's destruction of 1,500 MANPADS,
- Liberia's destruction of 45 MANPADS in 2003,
- Burundi's destruction of 312 MANPADS,
- An OSCE project to help Cyprus destroy 324 MANPADS missiles and 101 gripstocks in 2009,
- the elimination of over 100 MANPADS in Afghanistan as part of a broader conventional weapons destruction program in that country.

WHAT YOU CAN DO TO HELP

If you have information concerning the illegal possession of MANPADS, immediately contact the appropriate law enforcement authorities in your country.

Americans who are living or traveling overseas who wish to report the illicit possession or location of illicitly-held MANPADS should contact the Regional Security Officer (RSO) at the nearest U.S. Embassy, or the Legal Attaché at the specific U.S. Embassies listed on this website www.fbi.gov/contact/legat/legat.htm, as soon as possible.

In the United States, American citizens, other residents, and visitors who have knowledge about the possession or location of illicit MANPADS, either in the United States or in other countries, should immediately report this information to the nearest field office of the Federal Bureau of Investigation (FBI) by telephone, or by e-mail using this web tip sheet: <https://tips.fbi.gov/>. Or, they may telephone the Bureau of Alcohol, Tobacco and Firearms (BATF) at this toll-free

number: 1-888-ATF-BOMB (or 1-800-283-2662).

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