Military Asset Protection Act (HR 1968, 115th Congress)

Gives the Department of Defense more jurisdiction to protect military-related entities from unmanned aircraft.

Updated last **August 4, 2017**
for the 04/06/2017 version of HR 1968.

HAL Humans and Autonomy Lab

WHAT IT DOES

The Military Asset Protection Act (HR 1968) amends the United States Code (10 U.S.C. 130) to increase the authority of the Department of Defense (DOD) to take necessary actions to protect military facilities and information from threats posed by unmanned aircraft or unmanned aircraft systems.

More specifically, the bill permits the DOD in conjunction with the Department of Transportation (DOT) to take the following actions against an unmanned aircraft that has been determined a threat to military assets:

- Disrupt control of the unmanned aircraft;
- Seize and confiscate the unmanned aircraft;
- Destruct the unmanned aircraft through reasonable force; and
- Disrupt and alter communication from and to the unmanned aircraft.

The bill further directs the DOD and the DOT to create regulations and guidance for situations in which debilitating action needs be taken against an unmanned aircraft, particularly in situations where the unmanned aircraft was obtained illegally or used inconsistently with the intentions of its owner.

RELEVANT SCIENCE

An unmanned aircraft system (UAS) is an aircraft system that operates without a human pilot on board. Depending on the available control system, UAS can either be pre-programmed to function under supervisory control or remote controlled by a human pilot on ground. As such, the UAS is comprised of the aircraft, also referred to as a drone, the ground control station, and the communication link between the aircraft and the control station.

The US Government Accountability Office (GAO) reports that UAS technology has undergone rapid expansion in recent years. This expansion is primarily due to the increased compactness of UAS technology. Smaller and more compact forms of technology allow for increased speed, maneuverability, and discreetness in UAS operations. The GAO further states that, with increased functionality, UAS technology is now serving advanced applications in military, law enforcement, industry surveillance, environmental monitoring, and recreational use. The use of drones is expanding especially quickly in military operations, as militaries can use drones for high resolution imaging, audio recording, pedestrian and vehicle surveillance and targeting, and weaponry simulation.

As drone technology expands, militaries are simultaneously developing counter-UAS technologies to detect and engage with potential UAS threats. Examples include:

- Detection technologies

- Audio: Sounds of drones are detected by microphones and compared to a database of known sound properties of drones. Audio detection can be effective within a range of 50 feet, but is not as effective in noisy environments.
- Radar: Radio frequencies (RF) emitted by drones and their remote controls are detected by RF sensors. The Federal Aviation Administration (FAA) has expanded this technology to locate the operators of drones in addition to the drone itself. This can be effective within a range of many miles.
- Thermal: Heat produced by drones is detected by thermal sensors. Thermal detection can be effective within a range of 250 feet, but is not as effective for drones that are not powered by gas engines.
- Video: Images of potential drones are captured and identified by video systems. Video detection can be effective within a range of a few hundred feet depending on the quality of the video system, but is not as effective in areas with many flying objects.
- Wi-fi: Unique identifying information (e.g., SSID, MAC ID) broadcast by the UASs can be collected in instances where drones are operated using Wi-Fi. This has an effective range of several miles.

- Engagement technologies

- Laser weaponry (LaWS): Infrared beams are aimed and fired at drones to disable them. LaWS has an effective range over a mile.
- Shotguns: Metal shells either hit or latch onto parts of the drone crucial for function such as the rotor or engine, paralyzing the drone. This can be effective within a range of about 70 feet.
- Missiles: Radar-guided missiles are aimed towards drones, paralyzing the drone. This has an effective range of several miles.
- Net guns: Drones are captured by nets projected out of a net gun. This can be effective within a range of 50 feet, but is less effective in non-ideal climate conditions such as heat and wind.
- Signal jamming: Radio or Wi-Fi signals connecting the drone to its operator are jammed, making the drone unresponsive. This has an effective range of several miles.

RELEVANT EXPERTS

Mary Cummings, PhD, is a Professor of Mechanical Engineering and Materials Science at the Duke Pratt School of Engineering and the Duke Institute of Brain Sciences and Director of the Humans and Autonomy Lab. Her research focuses on interactions between humans and unmanned vehicles and the engineering of human-robot systems.

Relevant Publications:

- Ryan, Jason C., and Mary L. Cummings. 2016. "A Systems Analysis of the Introduction of Unmanned Aircraft Into Aircraft Carrier Operations." *IEEE Transactions on Human-Machine Systems* 46(2): 209–220. doi:10.1109/THMS.2014.2376355
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- Aubert, Miles C., Serhat Üzümcü, Andrew R. Hutchins, and Mary L. Cummings. "Toward the Development of a Low-Altitude Air Traffic Control Paradigm for Networks of Small, Autonomous Unmanned Vehicles." Paper presented at the AIAA SciTech Conference, Kissimmee, FL.
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Jeremiah Gertler is a Senior Specialist in Military Aviation at and Senior Advisor to the Director of the Congressional Research Service. His work involves analyzing and writing public policy reports on military aviation services.

- Haddal, Chad, and Jeremiah Gertler. 2010. "Homeland Security: Unmanned Aerial Vehicles and Border Surveillance." Washington: Congressional Research Service.
- Gertler, Jeremiah. 2012. "U.S. Unmanned Aerial Systems." Washington: Congressional Research Service.

Joseph Eyerman, PhD, MA, is a senior research methodologist and director of the RTI Center for Security, Defense, and Safety. His research focuses on terrorism and international conflict, and he has been involved in drones and unmanned aircraft research since

2013.

- Eyerman, Joseph, Clark Letterman, Wayne Pitts, John Holloway, Ken Hinkle, David Schanzer, Katrina Ladd, Susan Mitchell, and S. Cornelia Kaydos-Daniels. 2013. "Unmanned Aircraft and the Human Element: Public Perceptions and First Responder Concerns." Durham, NC: Institute for Homeland Security Solutions.
- Schanzer, David H., and Joseph Eyerman. 2010. "Improving Strategic Risk Management at the Department of Homeland Security." *Business of Government, Spring:* 61–67.
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BACKGROUND

The NATO Industrial Advisory Group classifies three main types of military drones:

- Class I drones (<150 kg) are comprised of micro drones and small drones. These drones can operate at up to 5,000 feet and are primarily used for basic target-monitoring purposes. More specifically within this category, the FAA classifies small as those weighing between .55 and 55 pounds.
- Class II drones (<150–600 kg) are comprised of tactical drones. Most military drones fall under this category. These drones can operate at up to 10,000 feet and are primarily used for intelligence, surveillance, target acquisition, and reconnaissance (ISTAR) purposes.
- Class III drones (>600 kg) are comprised of strategic drones. These drones are used for advanced surveillance such as target position determination and signal interception. They are also capable of carrying and unloading missiles on target areas.

Expanding UAS technologies present an increasing threat to military base protection and homeland security by enabling more governments to integrate drones into their militaries. The Center for New American Security reports that over 90 governments and non-state groups have utilized drones for surveillance purposes. The number of governments using armed drones for weaponry purposes is also high. According to a report from the International Security Program, as of 2015, 26 governments were in possession of armed drones and 9 governments had used armed drones in combat. Meanwhile, dozens of other governments are developing these technologies to expand their warfare capabilities.

The use of drones by groups such as the Islamic State in Iraq and Syria (ISIS) for surveillance and attacks is a growing concern. In a statement to the Senate Armed Services Committee, Vincent Stewart, director of the Defense Intelligence Agency, is quoted, "In the past year, ISIS use of unmanned aerial systems (drones) for surveillance and delivery of explosives has increased, posing a new threat to civilian infrastructure and military installations."

The FAA is participating in several ongoing programs to research and develop methods of combatting drone threats. Additionally, both the Navy and the Air Force have initiated programs that aim to expand their abilities to detect, track, and engage UAS that are weaponized or controlled by hostile operators. Such programs include the UAS Detection Initiative, the Drone Detection Pathfinder Initiative, the TACTIC program, and numerous other demonstration initiatives. Additionally, the DOD budget request for 2017 proposed $226 million to be spent on the development of counter-drone solutions.

ENDORSEMENTS & OPPOSITION

Endorsements:

- Representative Neal Dunn (R-FL-2), press release, April 6, 2017: "Our Armed Forces face a new threat from drones, and the law needs to catch up. Military leaders have advised us that they lack clear authority to interdict drones over domestic installations, even though we've seen the devastating consequences of terrorist fighters using these new technologies in combat overseas. This legislation gives the Defense Department the clear authority to use the latest technologies against drones that are a danger

to Americans on military installations."

At present, there has not been any publicly reported opposition to this bill.

STATUS

HR 1968 was introduced in the House on April 6, 2017. It was referred to the Subcommittee on Aviation by the Committee on Transportation and Infrastructure on April 7, 2017, and to the Subcommittee on Tactical Air and Land Forces by the Committee on Armed Services on April 24, 2017.

RELATED POLICIES

The following list features recent related governmental actions to address unmanned aircraft operation and military property protection, including all introduced bills and enacted laws from current congressional session, the 115th Congress:

- 21st Century AIRR Act (HR 2997) was introduced in the House on June 22, 2017. This bill would transfer some air traffic regulation responsibilities to a nonprofit corporate entity and authorize FAA programs.
- Drone Innovation Act of 2017 (HR 2930) was introduced in the House on June 16, 2017. This bill would develop a set of policy guidelines for the operation of unmanned aircrafts.
- Drone Aircraft Privacy and Transparency Act of 2017 (HR 1526) was introduced in the House on March 13, 2017. Another version of this bill was introduced in the Senate (S 631) on March 15, 2017. This bill would amend the FAA Modernization and Reform Act of 2012 to provide guidelines for integrating unmanned aircrafts into US airspace.
- Wildfire Airspace Protection Act of 2017 (HR 1138) was introduced in the House on February 16, 2017. This bill would make it a criminal offense to use drones to impede efforts to fight fires affecting federal property.
- NADA Act of 2017 (HR 129; SciPol brief available) was introduced in the House on January 3, 2017. This bill would amend the FAA Modernization and Reform Act of 2012 to prohibit the authorization of an unmanned drone used as a weapon or to deliver a weapon in the national airspace system.

SPONSORS

Sponsor: Representative Neal Dunn (R-FL-2)

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RECOMMENDED CITATION

Duke SciPol, "Military Asset Protection Act (HR 1968, 115th Congress)" available at http://scipol.duke.edu/content/military-asset-protection-act-hr-1968-115th-congress (08/04/2017).

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