

FAA Releases Remote ID ARC Report and Recommendations

December 21, 2017

On December 19, 2017, the Federal Aviation Administration (FAA) released its Unmanned Aircraft Systems (UAS) Identification (ID) and Tracking Aviation Rulemaking Committee (ARC) report and recommendations. In response to concerns from law enforcement and the security agencies, Congress enacted Section 2202 of the FAA Extension, Safety, and Security Act of 2016, Pub. L. 114-190, which required the FAA to convene industry stakeholders to facilitate the development of consensus standards for remotely identifying operators and UAS owners. The FAA chartered the ARC in June 2017 to provide recommendations on the technologies available for remote identification and tracking of UAS, and how remote identification may be implemented.

Although the ARC did not reach consensus as to which operations the remote ID and tracking requirement should apply, it found consensus on other important issues, including the type of information to require, methods of providing this information, and how to implement the rule. The FAA is now considering these recommendations and is expected to issue a proposed rule for public comment in 2018.

Applicability of Remote ID and Tracking Requirement

The ARC did not reach consensus on to which operations the remote ID and tracking requirement should apply. The ARC split between two options:

- Apply remote ID and tracking requirements to all UAS except:
(1) those operated within the visual line of sight of the remote pilot and where the UAS is not capable of flying beyond 400 feet of the remote pilot; (2) UAS that comply with Part 101

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except for limited circumstances; (3) where the UAS is operated under air traffic control (ATC); and (4) where FAA exempts the UAS operation from ID and tracking requirements (such as through a waiver or for security purposes).

- Apply the remote ID and tracking requirements to aircraft that can navigate between more than one point without direct and active control of the pilot or aircraft with a range from control station greater than 400 feet and with a real-time remotely viewable sensor. This option likewise exempts UAS operated under ATC and where the UAS operation is exempt from ID and tracking requirements by the FAA.

The ARC leaves the final decision of applicability to the FAA. Regardless of which option the FAA selects, the ARC recommends that the remote ID and tracking requirements apply only to the remote pilot, and that manufacturers label their products to indicate whether they are capable of meeting applicable remote ID and tracking requirements. The ARC also recommends that the FAA consider whether to exempt from these requirements UAS equipped with advanced flight system technologies that are strictly for safety purposes and keep the aircraft within the visual line of sight of the remote pilot.

Methods of Providing Remote ID and Tracking Information

The ARC evaluated eight different technologies for providing remote ID and tracking information: Automatic Dependent Surveillance Broadcast, low-power direct radiofrequency (using unlicensed spectrum, including Bluetooth, WiFi, and RFID), networked cellular, satellite, software-based Flight Notification with Telemetry, unlicensed integrated C2 communication channels on unlicensed spectrum, physical indicators, and visual light encoding.[1] The ARC recognized that these technologies fall into two broad categories – direct broadcast solutions and network publishing solutions – and recommended that the FAA adopt these two categories as methods for providing remote ID and tracking information:

- Providing remote ID and tracking information via direct broadcast means transmitting data in one direction only with no specific destination or recipient. This would make data available to anyone within broadcast range.
- Network publishing involves transmitting data to an FAA-approved internet service or federation of services. Access to this data would be limited to approved clients, and the FAA would be responsible for maintaining a personal identifiable information system.

The ARC recommends a tiered structure to determine whether a UAS needs to comply with the broadcast or publication requirement (or both).

- Tier 0 UAS would not be subject to the ID or tracking requirement. UAS in this tier are operated within visual line of sight of the remote pilot and are not designed to have the capability of flying beyond 400 feet of the remote pilot. UAS in this category also must be operated in compliance with 14 C.F.R. Part 101, with some exceptions.
- Tier 1 UAS can either broadcast or network publish their ID and tracking information. These UAS are those that do not qualify for an exemption from remote ID and tracking requirements and do not meet

the conditions for Tiers 0, 2, or 3.

- Tier 2 UAS must direct broadcast and network publish their ID and tracking information. UAS in this tier are those conducting waived operations that deviate from certain part 107 operating rules, and for which the FAA determines that Tier 2 ID and tracking are required as a condition of the waiver.
- Tier 3 UAS must comply to the rules of manned aircraft as defined in 14 C.F.R. Part 91. This tier is intended for aircraft that are integrated into the manned aircraft airspace. An example of UAS that may fall into Tier 3 are those weighing above 55 pounds and operating beyond the visual line-of-sight, in instrument flight rules conditions, or operating in controlled airspace.

Implementing a Remote ID and Tracking Rule

The ARC recommends three stages for implementing a remote ID and tracking rule:

- A “pre-rule” stage, which would broaden UAS safety education efforts and continue the UAS detection research with industry to address regulatory and technical issues before enacting a final rule.
- Before the final rule is enacted, the FAA would scope the standards needed to enable direct broadcast and network publishing technologies for implementing the remote ID and tracking requirement on new and existing equipment. The ARC also recommends that the FAA work with industry to develop architecture for a personal identifiable information system.
- After the final rule is enacted, all UAS manufactured and sold within the United States that are capable of meeting the threshold for compliance should be labeled. The ARC recommends a grace period to allow UAS manufactured and sold before the final rule takes effect to be retrofitted.

Minimum Data Requirements

The ARC recommends that the following types of data must be transmitted by the unmanned aircraft (UA):

- Unique identifier of the UA: This should be specific to the UA, continuously available in near-real time, electronically and physically readable, tamper resistant, and easily accessible.
- Tracking information for the UAS: This should include aircraft position and control station location (or take-off location if ground control station location is not available).
- Identifying information of the UAS owner and remote pilot: This information would not be broadcast or published, but would be available from the Personally Identifiable Information System.

The ARC also recommends that the FAA make three types of identifying information optional to report:

- Mission type: This characterizes the flight path of the UA.
- Route data: This includes pre-programmed navigation or flight plans.
- Operating status of the UA: This refers to operational information that may provide some insight into the current operations of the UA.

Interoperability with Air Traffic Control, Airports and Critical Infrastructure

The ARC makes a series of recommendations for how the FAA can facilitate interoperability with ATC.

- First, the FAA should identify whether operations beyond-visual-line-of-sight will routinely occur without instrument flight rules, and under what conditions.
- Second, any solution for ID and tracking should avoid causing congestion or interference on the FAA's Secondary Surveillance Radar, Airborne Collision Avoidance Systems, and Automatic Dependent Surveillance – Broadcast systems.
- Third, the UAS ID and tracking system should interoperate with ATC automation.
- Fourth, FAA automation should by default filter out UAS ID and tracking system targets from the ATC display that fall outside of adapted airspace deemed to be of interest to ATC.
- Finally, FAA automation and the UAS ID and tracking system should be able to display designated UAS targets of interest to ATC personnel.

The ARC also recognized that remote ID and tracking will affect the operation of airports themselves and other critical infrastructure. To ensure that the proper integration of this technology with these operations, the ARC recommends:

- The FAA incorporate implementation costs of critical infrastructure facilities into its rulemaking analysis.
- Identify an approach and timeline to designating approved technologies for airports and critical infrastructure facilities.
- Address any legal barriers to implementing approved technologies.
- Provide guidance to airports on any impact or interference to safe operations that could be caused by UAS ID and tracking.

Other Recommendations

The ARC identified several related issues that could impact the implementation of effective UAS ID and tracking solutions. These include:

- Access to data related to direct broadcast and network publishing. The ARC recommends that the FAA implement at least three levels of access to this information: information available to the public; information available to designated public safety and airspace management officials; and information available to the FAA and certain identified Federal, State, and local agencies.
- Maintaining personal information. The ARC recommends that the U.S. Government be the sole keeper of any personal identifiable information collected or submitted due to UAS ID and tracking.
- Government UAS operations. The ARC recommends that the remote ID and tracking system include reasonable accommodations to protect the operational security of certain governmental UAS operations.

The report also mentioned the First Amendment, education, pending federal and state legislation, and children. It did not issue recommendations related to any of these issues.

[1] The ARC's working group on evaluating technology did not reach full consensus on the operational performance value of technology solutions that use licensed versus unlicensed spectrum. The group noted that factors to consider include: whether the spectrum is protected from interference by regulation; how much spectrum is available to support the communications link; if the spectrum is shared with other users for similar or dissimilar uses in controlled or uncontrolled environments; and if the FAA has, or will have, any requirements for use of licensed spectrum or unlicensed spectrum in certain UAS operating environments or for certain UAS functions.