Federal Aviation Administration

Memorandum

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To: James Williams, Manager, UAS Integration Office, AFS-80

From: Mark W. Bury, Assistant Chief Counsel for International Law, Legislation and Regulations, AGC-200

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Subject: UAS Operations by Public Universities for Aeronautical Research

This responds to your memo of March 2013 requesting clarification of allowable operations of Unmanned Aircraft Systems (UAS) by state universities authorized as operators of public aircraft. More specifically, you request a clarification of the provisions on commercial purpose and governmental function under 49 USC 40125(a)(1) and (2). In this memorandum, we are addressing the use of UAS by public universities to conduct aeronautical research.

For purposes of this analysis, we presume the following:

- UAS are aircraft and are subject to the public aircraft statute just as manned aircraft.
- Provisions of the statute regarding flight crewmembers and qualified non-crewmembers are not applied to UAS analysis.
- The statutory prohibition on compensation is interpreted broadly, based on a concept of non-competition with civil entities, and is as stated in Paragraph 10.c. the Public Aircraft Operations Advisory Circular AC 00-1.1A.[1]
- Public aircraft operations are generally not subject to the regulations in 14 CFR Chapter I except those that affect all aircraft, such as air traffic operations. Public aircraft UAS COAs are issued to provide a means to operate a UAS in accordance with 14 CFR 91.113.

The current unavailability of routine civil operation of UAS has caused a considerable rush by government entities to qualify as public aircraft operators and be the sole source for near-

[1] **What Constitutes a "Commercial Purpose" that Removes Someone from PAO Status?** In general, the FAA interprets the commercial purpose prohibition in 49 U.S.C. § 40125(a)(1) to mean that there can be no type of reimbursement to government entities for PAO, except under the one set of specific circumstances described in that section. Specific instances of whether an operation has a commercial purpose may be submitted for interpretation to the FAA Office of the Chief Counsel, International Law, Legislation, and Regulations Division (see Appendix 2). As detailed in Paragraph 8 above, a government entity may contract with a private operator (and pay that operator) to conduct a PAO on behalf of the government entity. The statutory prohibition on commercial purpose prevents a government entity from getting paid or reimbursed to operate a PAO, not for paying for contracted services.

unregulated UAS operations. In doing so, those entities may not have been aware that the window of opportunity provided by the public aircraft statute also comes with significant restrictions.

The specific question raised by your request is whether some UAS operations by a university may qualify as aeronautical research under the description of "governmental function" under § 40125, and whether the funding of such research, when made by a grant to an educational institution, rises to level of prohibited compensation to conduct a public aircraft operation.

We are not prepared to say that the use of a UAS by a governmental entity to conduct 'research' of any kind qualifies as a governmental function under § 40125, thereby allowing it to be done under a public aircraft UAS COA. The public aircraft statute's description of governmental function includes the term "aeronautical research." We do not interpret this term to encompass any research conducted using an aircraft (manned or unmanned). If Congress meant all research, that term could easily have been included without modification and would have included any research conducted by a government entity for any reason (provided it did not have a commercial purpose).

We interpret the term "aeronautical research" in a more limited sense to include research about aircraft, as the statute by its nature includes federal entities that carry on such research as their daily activities, such as the National Aeronautics and Space Administration, and the parts of the U.S. military that develop aircraft as their function. The term "aeronautical research" would have at its core the development of aircraft and systems. For UAS, we interpret the term as research and testing of the aircraft themselves, the control systems, equipment that is part of the aircraft (such as sensors), flight profiles, or development of specific functions and capabilities for them.

In our opinion, expanding the types of research that may be conducted using a public aircraft beyond the categories of aeronautical research described would not be consistent with the intent of § 40125. Therefore, a research program to design a UAS to evaluate the capabilities of an unmanned aircraft for soybean field monitoring could be considered aeronautical research, whereas using an off-the-shelf UAS – as opposed to some other available means – to monitor moisture levels in a soybean field as part of an agricultural research project would not qualify as aeronautical research.[2] If a research project does not have at its core the development of the aircraft and aircraft systems and uses, but rather focuses on the thing being observed or monitored using an aircraft, then it is not aeronautical research. Non-aviation research that incidentally uses an aircraft does not qualify as aeronautical research, and would need another governmental function before it would qualify as a public aircraft operation.

A state university with a UAS public aircraft COA could use its COA for aeronautical research if such research is the state's intended mission. The findings of the research would have to belong to the state regardless of the source of funding, including research grants from private entities. To find otherwise would mean a private entity could pay a state university to operate a public aircraft to conduct aeronautical research solely for the private entity's benefit. The provision of

[2] Similarly, using an aircraft in the day-to-day activities of an agricultural extension service, if not related to development of an aircraft, would also not qualify as a governmental function.

funding under this scenario would constitute compensation for the operation of the public aircraft. In the case of UAS, a private entity might use such a funding arrangement to enter into a partnership with a public university solely to get the benefit of the university's COA.[3]

The public aircraft statute exists to free governments from regulation, not to confer a benefit on government entities that is unavailable to civil operators. There is no new operational authority that can be read into the public aircraft statute simply because a government entity is the operator. The public aircraft statute and UAS COAs do not exist to create a loophole of exclusive operation, or allow state universities to become exclusive providers of certain aircraft operations by any entity willing to fund them as 'research.' Consideration of whether a UAS is easier, cheaper, or arguably safer than a larger manned aircraft in a given application does not factor into the analysis of whether the operation constitutes a valid public aircraft operation. Neither utility nor novelty alone create a governmental function to support the operation of a public aircraft.

Accordingly, government entities, including qualified state educational institutions, may use a UAS to conduct aeronautical research as public aircraft operations as outlined above. Such aeronautical research may be funded by a grant (without being a commercial purpose) provided that the results of the research belong to the state (university) and the research does not carry the property of another (including the entity funding the grant). Other types of research that are simply conducted using an aircraft and that do not meet one of the other functions in 49 USC 40125 (a)(2), (or a reasonable expansion of a listed function) do not qualify as public aircraft operations, and COAs should not be granted when permissible purposes are not stated as the intended use.

[3] These limitations on funding arrangements would not, however, apply if a public university or other government entity accepted grant funding to operate a civil aircraft.[3] It is only when a government entity seeks to use an unregulated public aircraft that these restrictions arise under the statute.