



Federal Aviation Administration

Memorandum

Date: SEP 16 2005

From: John W. McGraw, Manager, Flight Technologies and Procedures Division, AFS-400

To: John Timmerman, Acting Manager, System Safety and Procedures, ATO-R
THRU: Nancy B Kalinowski, Director, Air Traffic System Operations and Safety, ATO-R

Prepared by: Hank Cabler, Manager, Flight Technology Requirements Branch, AFS-430

Subject: Unmanned Aircraft Systems Operations in the U. S. National Airspace System - Interim
Operational Approval Guidance

Unmanned aircraft (UA) operations have increased dramatically during the past several years. In response to this increasing activity, it has become necessary to develop guidance for the Flight Technologies and Procedures Division (AFS-400) staff to use when evaluating applications for Certificates of Waiver or Authorization (COAs). This policy is not meant as a substitute for any regulatory process. This policy was jointly developed by, and reflects the consensus opinion of, AFS-400; the Avionics Systems Branch (AIR-130), FAA Aircraft Certification Service; and the Office of System Safety and Procedures, FAA Air Traffic Organization (ATO).

AFS-400 UAS Policy 05-01 (Attachment 1,) will be used by AFS-400 when evaluating applications for COAs. This policy provides additional information on a number of items in the COA Processor Checklist (Attachment 2) developed by you for ATO COA processors. The AFS-400 UAS Policy, used in conjunction with the COA Processor Checklist, will simplify the COA evaluation process. Additionally, dissemination of these documents will allow COA applicants to have a better idea of what the FAA is looking for in a COA application for UAS operations.

Sincerely,

A handwritten signature in black ink, appearing to read "John W. McGraw".

John W. McGraw
Manager, Flight Technologies and Procedures Division, AFS-400

2 Attachments

1. AFS-400 UAS POLICY 05-01
2. COA Processor Checklist

cc: COL Mike Mixon, USAF, AAT-4



Federal Aviation Administration

Memorandum

AFS-400 UAS POLICY 05-01

TITLE: Unmanned Aircraft Systems Operations in the U. S. National Airspace System - Interim Operational Approval Guidance

DATE: June 1, 2005

1. **Purpose:** AFS-400 UAS Policy 05-01 provides guidance to be used to determine if unmanned aircraft systems (UAS) may be allowed to conduct flight operations in the U. S. National Airspace System (NAS). AFS-400 personnel will use this policy guidance when evaluating each application for a Certificate of Waiver or Authorization (COA). Due to the rapid evolution of UAS technology, this policy will be subject to continuous review and updated when appropriate.
2. **National Security:** When the Department of Defense or the Department of Homeland Security declares that a UAS operation is a matter of "national security," the FAA may approve an application for a COA that, under normal circumstances, might not otherwise conform to the policies set forth in this policy. In this case, national security itself may override risk mitigation requirements and the applicant must declare in the COA application acceptance of all risks associated with the UAS operations. In general, such requests should be directed to the Administrator, Federal Aviation Administration, from an equivalent level individual of the applicant's organization.
3. **Background:** Unmanned aircraft (UA) operations have increased dramatically during the past several years in both the public and private sectors. In response to this increasing activity, it has become necessary to develop guidance for Federal Aviation Administration organizations to use when evaluating applications for Certificate(s) of Waiver or Authorization. This policy is not meant as a substitute for any regulatory process. This policy was jointly developed by, and reflects the consensus opinion of:
 - AFS-400, the Flight Technologies and Procedures Division, FAA Flight Standards Service (AFS);
 - AIR 130, the Avionics Systems Branch, FAA Aircraft Certification Service (AIR); and,
 - ATO-R, the Office of System Operations and Safety, FAA Air Traffic Organization (ATO).

4. **General:** The FAA is particularly concerned that UA operate safely among non-cooperative aircraft and other airborne operations not reliably identifiable by RADAR, i.e. balloons, gliders, parachutists, etc. While considerable work is ongoing to develop a certifiable “detect, sense and avoid” system, an acceptable solution to the “see and avoid” problem for UA is many years away. If UA operators were held rigorously to the “see and avoid” requirements of Title 14, Code of Federal Regulations (14 CFR) part 91.113¹, Right-of-Way Rules, there would be no UA flights in civil airspace. The FAA supports UA flight activities that can demonstrate that the proposed operations can be conducted at an acceptable level of safety. AFS intends to approve COA applications supported by a system safety study if the conclusion of the study indicates that a collision with another aircraft, parachutist or other civil airspace user is extremely improbable. Additionally, it is the applicant’s responsibility to demonstrate that injury to persons or property along the flight path is extremely improbable. Acceptable system safety studies must include a hazard analysis, risk assessment, and other appropriate documentation that support the “extremely improbable” determination.

If special types of RADAR or other sensors are utilized to mitigate risk, the applicant must demonstrate that –

- noncooperative aircraft, including targets with low-RADAR reflectivity, such as gliders and balloons, can be consistently identified at all operational altitudes and ranges, and,
- consequently, collision between those targets and the UA is highly unlikely.

5. **Definitions:** The following definitions apply to terms used in this policy.

¹ § 91.113 Right-of-way rules: Except water operations.

(a) Inapplicability. This section does not apply to the operation of an aircraft on water.

(b) General. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

(c) In distress. An aircraft in distress has the right-of-way over all other air traffic.

(d) Converging. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

(1) A balloon has the right-of-way over any other category of aircraft;

(2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

(3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

(e) Approaching head-on. When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.

(f) Overtaking. Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear.

(g) Landing. Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface, except that they shall not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on final approach. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91-282, 69 FR 44880, July 27, 2004]

- Chase aircraft – a manned aircraft flying in close proximity to UA that carries a qualified observer and/or UA pilot.
- Cooperative aircraft – aircraft that are being tracked by Air Traffic; or, an aircraft that has an electronic means of identification (i.e., a transponder) aboard.
- Line-of-sight – method of control and collision avoidance that refers to the pilot or observer directly viewing the UA with human eyesight. Corrective lenses (spectacles or contact lenses) may be used by the pilot or visual observer. Aids to vision, such as binoculars, field glasses, or telephoto television may be employed as long as their field of view does not adversely affect the surveillance task.
- Noncooperative aircraft – aircraft that are not being tracked by Air Traffic; or, an aircraft that does not have an electronic means of identification (i.e., a transponder) aboard.
- Observer – a trained person who assists the UA pilot in the duties associated with collision avoidance.
- Pilot-in-Command (PIC) – the person directly responsible for the operation of the UA. The responsibility and authority of the pilot in command as described by 14 CFR 91.3², Responsibility and Authority of the Pilot in Command, apply to the UA PIC. This definition is not intended to suggest that there is any requirement for the UA PIC to be qualified as a crewmember of a manned aircraft.
- Unmanned Aircraft – a device that is used or intended to be used for flight in the air that has no onboard pilot. This includes all classes of airplanes, helicopters, airships, and translational lift aircraft that have no onboard pilot. A UA is an aircraft as defined in 14 CFR 1.1³.

6. Criteria: The following criteria apply to specific terms or concepts pertinent to UAS.

6.1. Certificate of Waiver or Authorization: ATO is responsible for the COA process as outlined in FAA Order 7610.4, Special Military Operations, and FAA Order 7210.3, Facility Operations and Administration. Applications should be made on FAA Form 7711-2⁴, Application for Certificate of Waiver or Authorization, through the local Air Traffic Service Area office. ATO has developed a guidance checklist covering the application and approval process.

² § 91.3 Responsibility and authority of the pilot in command.

(a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft.

(b) In an in-flight emergency requiring immediate action, the pilot in command may deviate from any rule of this part to the extent required to meet that emergency.

(c) Each pilot in command who deviates from a rule under paragraph (b) of this section shall, upon the request of the Administrator, send a written report of that deviation to the Administrator.

(Approved by the Office of Management and Budget under control number 2120-0005)

³ § 1.1 General definitions.

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Aircraft means a device that is used or intended to be used for flight in the air.

⁴ FAA Form 7711.2 may be found at this URL: <http://forms.faa.gov/forms/7711-2.pdf>

- 6.1.1. COA Review by FAA Flight Standards Service: Prior to issuance of a COA, ATO normally requests a review by AFS. Specifically, AFS-400 evaluates each application to determine if risks associated with the operation have been acceptably mitigated. In some cases, AFS 400 will refer an application to AIR for an airworthiness determination. Additionally, an application may be referred to the FAA Office of the Chief Counsel (AGC), for determination of the status of an applicant, i.e., public or civil.
- 6.2. Civil COA applications: COA applications for civil UA operations will not be accepted. Civil UA operators should follow current airworthiness certification processes established by AIR in order to operate in the NAS.
- 6.3. Airworthiness Certification – General: UA must be shown to be airworthy to conduct flight operations in the NAS.
- 6.3.1. Public applicants – Public COA applications must include one of the following:
- a civil airworthiness certification from the FAA, or
 - a statement specifying that Department of Defense Handbook “Airworthiness Certification Criteria” (MIL-HDBK-516), as amended⁵, was used to certify the aircraft, or
 - specific information explaining how an airworthiness determination was made. The appropriate FAA offices must approve all COA applications in which the UA has neither a civil airworthiness certification from the FAA nor a statement specifying that MIL-HDBK-516 was used to certify the UA. Applicants submitting a COA application in this manner should anticipate a lengthy processing time.
- 6.4. Chase Aircraft Operations: Chase aircraft pilots must not concurrently perform either observer or UA pilot duties along with chase pilot duties. Observers onboard a chase aircraft must keep visual contact with the UA at all times. To the extent consistent with the safety of the chase aircraft, the chase aircraft should be operated within one mile laterally and 3000 feet vertically from the UA.
- 6.5. Communications Requirements: Any visual observer, radar monitor, or sensor operator charged with providing collision avoidance for the UA must have direct communication with the UA pilot.
- 6.6. Dropping Objects/Hazardous Materials. If UA intended use includes the dropping or spraying of aircraft stores, the application must specifically address this hazard and make a clear case that injury to persons on the ground is very unlikely. A similar case must be made for hazardous materials carried aboard the UA.

⁵ MIL-DHDBK-516 may be found at this URL:

http://www.assistdocs.com/search/document_details.cfm?ident_number=212162&StartRow=1&PaginatorPageNumber=1&doc%5Fnumber=516&search%5Fmethod=BASIC

6.7. Flight Below 18,000 Feet Mean Sea Level (MSL). -- In general, UA operations below 18,000 feet MSL in any airspace generally accessible to aircraft flying in accordance with visual flight rules (VFR) require visual observers, either airborne or ground-based. Use of ATC radar alone does not constitute sufficient collision risk mitigation in airspace where uncooperative airborne operations may be conducted.

6.7.1. UA flight below 18,000 feet MSL is acceptable if the UA operates on an instrument flight plan (see paragraph 6.7.1.1.). UA operating on other than an instrument flight plan below 18,000 feet MSL is also acceptable (see paragraph 6.7.1.2.).

6.7.1.1. If operating on an instrument flight plan, the UA pilot-in-command must ensure the following:

6.7.1.1.1. An ATC clearance has been obtained.

6.7.1.1.2. The UA is equipped with an operating mode C (mode S preferred) transponder.

6.7.1.1.3. Direct two-way radio communication between the UA pilot and ATC is available. Communication relay through the UA is preferred.

6.7.1.1.4. Visual observers are utilized in accordance with this policy memo.

6.7.1.2. If operating on other than an instrument flight plan, the UA pilot-in-command must ensure the following:

6.7.1.2.1. Pre-coordination with ATC has been accomplished.

6.7.1.2.2. The UA is equipped with an operating mode C (mode S preferred) transponder if the UA operates beyond line-of-sight or higher than 400 feet above ground level (AGL) in the absence of a ground-based visual observer. NOTE: UA operations without a transponder are authorized when using a ground-based visual observer. However, at no time will visual observers conduct their duties more than one mile laterally or 3000 feet vertically from the UA.

6.7.1.2.3. Direct two-way radio communication between the UA pilot and ATC is available, if specified by Air Traffic.

6.7.1.2.4. Visual observers are utilized in accordance with this policy memo.

6.8. Flight Above 18,000 Feet MSL to and including Flight Level (FL) 600. -- UA with performance characteristics that impede normal air traffic operations may be restricted in their operations. UA operating in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace must comply with 14 CFR 91.180⁶, Operations Within Airspace Designated As Reduced Vertical Separation Minimum Airspace.

6.8.1. UA flight above 18,000 feet MSL is acceptable if the UA –

6.8.1.1. operates on an instrument flight plan.

6 § 91.180 Operations within airspace designated as Reduced Vertical Separation Minimum airspace.

(a) Except as provided in paragraph (b) of this section, no person may operate a civil aircraft in airspace designated as Reduced Vertical Separation Minimum (RVSM) airspace unless:

(1) The operator and the operator's aircraft comply with the minimum standards of appendix G of this part; and

(2) The operator is authorized by the Administrator or the country of registry to conduct such operations.

(b) The Administrator may authorize a deviation from the requirements of this section.

[Amdt. 91-276, 68 FR 70133, Dec. 17, 2003]

- 6.8.1.2. obtains an air traffic control (ATC) clearance.
- 6.8.1.3. is radar monitored throughout the portion of the flight above 18,000 feet MSL.
- 6.8.1.4. is equipped with an operating mode C transponder (mode S preferred).
- 6.8.1.5. maintains two-way radio communication between the UA pilot and ATC. Communication relay through the UA is preferred.

6.9. Flight in FAA controlled oceanic airspace is acceptable if the UA:

- 6.9.1. Operates on an instrument flight plan,
- 6.9.2. Obtains an ATC clearance, and
- 6.9.3. Maintains communication through a means acceptable to the airspace managing authority.

6.10. Flight Above FL 600. – (reserved)

6.11. Flight Over Congested or Populated Areas. If flight over congested areas, heavily trafficked roads, or an open-air assembly of persons is required, the applicant must provide information that clearly establishes that the risk of injury to persons on the ground is highly unlikely.

6.12. Lost Link. The UA must be provided with a means of automatic recovery in the event of a lost link. There are many acceptable approaches to satisfy this requirement. The intent is to ensure airborne operations are predictable in the event of Lost Link.

6.13. Model Aircraft. Advisory Circular (AC) 91-57, Model Aircraft Operating Standards, published in 1981, applies to model aircraft. Operations that comply with the guidance in AC 91-57 are considered model aircraft and are not evaluated by the UA criteria in this policy.

6.14. Observer Qualifications. Observers must have been provided with sufficient training to communicate clearly to the pilot any turning instructions required to stay clear of conflicting traffic. Observers will receive training on rules and responsibilities described in 14 CFR 91.111⁷, Operating Near Other Aircraft, and 14 CFR 91.113⁸, Right-of-Way Rules.

⁷ § 91.111 Operating near other aircraft.

- (a) No person may operate an aircraft so close to another aircraft as to create a collision hazard.
- (b) No person may operate an aircraft in formation flight except by arrangement with the pilot in command of each aircraft in the formation.
- (c) No person may operate an aircraft, carrying passengers for hire, in formation flight.

⁸ § 91.113 Right-of-way rules: Except water operations.

- (a) Inapplicability. This section does not apply to the operation of an aircraft on water.
- (b) General. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.
- (c) In distress. An aircraft in distress has the right-of-way over all other air traffic.

6.15. Onboard Cameras/Sensors. In general, onboard cameras that are positioned to observe targets on the ground are of little use in detecting airborne operations for the purpose of deconfliction. Therefore, optical systems may not be considered as the sole mitigation in see and avoid risk assessment.

6.16. Pilot/Observer Medical Standards. Pilots and observers must have in their possession a current third class (or higher) airman medical certificate that has been issued under 14 CFR 67, Medical Standards And Certification. 14 CFR 91.17⁹, Alcohol or Drugs, applies to both UA pilots and observers.

(d) Converging. When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

(1) A balloon has the right-of-way over any other category of aircraft;

(2) A glider has the right-of-way over an airship, powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

(3) An airship has the right-of-way over a powered parachute, weight-shift-control aircraft, airplane, or rotorcraft.

However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

(e) Approaching head-on. When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.

(f) Overtaking. Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear.

(g) Landing. Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface, except that they shall not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on final approach. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

[Doc. No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91-282, 69 FR 44880, July 27, 2004]

9 § 91.17 Alcohol or drugs.

(a) No person may act or attempt to act as a crewmember of a civil aircraft—

(1) Within 8 hours after the consumption of any alcoholic beverage;

(2) While under the influence of alcohol;

(3) While using any drug that affects the person's faculties in any way contrary to safety; or

(4) While having .04 percent by weight or more alcohol in the blood.

(b) Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft.

(c) A crewmember shall do the following:

(1) On request of a law enforcement officer, submit to a test to indicate the percentage by weight of alcohol in the blood, when—

(i) The law enforcement officer is authorized under State or local law to conduct the test or to have the test conducted; and

(ii) The law enforcement officer is requesting submission to the test to investigate a suspected violation of State or local law governing the same or substantially similar conduct prohibited by paragraph (a)(1), (a)(2), or (a)(4) of this section.

(2) Whenever the Administrator has a reasonable basis to believe that a person may have violated paragraph (a)(1), (a)(2), or (a)(4) of this section, that person shall, upon request by the Administrator, furnish the Administrator, or authorize any clinic, hospital, doctor, or other person to release to the Administrator, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates percentage by weight of alcohol in the blood.

(d) Whenever the Administrator has a reasonable basis to believe that a person may have violated paragraph (a)(3) of this section, that person shall, upon request by the Administrator, furnish the Administrator, or authorize any clinic, hospital, doctor, or other person to release to the Administrator, the results of each test taken within 4 hours after acting or attempting to act as a crewmember that indicates the presence of any drugs in the body.

- 6.17. Pilot Qualifications. The intent of this paragraph is to ensure that UA pilots interacting with ATC have sufficient expertise to perform that task readily.
- 6.17.1. Pilots must have an understanding of Federal Aviation Regulations applicable to the airspace where the UA will operate.
- 6.17.2. If the UA is operating on an instrument flight plan, the UA pilot must have an instrument rating.
- 6.17.3. Pilots flying UA on other than instrument flight plans must pass the required knowledge test for a private pilot certificate as stated in 14 CFR 61.105¹⁰, Aeronautical Knowledge, (or military equivalent) for all operations beyond visual line-of-sight and for all operations conducted for compensation or hire regardless of visual proximity.
- 6.17.4. Pilots requiring instrument ratings will be certificated pilots of manned aircraft.
- 6.17.5. Recent Flight Experience. Pilots will not act as a pilot-in-command unless they have had three qualified proficiency events within the preceding 90 days. The term qualified proficiency event is a necessarily broad term because of the diversity of UA types and control systems. A qualified event is an event requiring the pilot to exercise the training and skills unique to the UA in which proficiency is maintained.

(e) Any test information obtained by the Administrator under paragraph (c) or (d) of this section may be evaluated in determining a person's qualifications for any airman certificate or possible violations of this chapter and may be used as evidence in any legal proceeding under section 602, 609, or 901 of the Federal Aviation Act of 1958.

¹⁰ § 61.105 Aeronautical knowledge.

(a) General. A person who is applying for a private pilot certificate must receive and log ground training from an authorized instructor or complete a home-study course on the aeronautical knowledge areas of paragraph (b) of this section that apply to the aircraft category and class rating sought.

(b) Aeronautical knowledge areas. (1) Applicable Federal Aviation Regulations of this chapter that relate to private pilot privileges, limitations, and flight operations;

(2) Accident reporting requirements of the National Transportation Safety Board;

(3) Use of the applicable portions of the "Aeronautical Information Manual" and FAA advisory circulars;

(4) Use of aeronautical charts for VFR navigation using pilotage, dead reckoning, and navigation systems;

(5) Radio communication procedures;

(6) Recognition of critical weather situations from the ground and in flight, windshear avoidance, and the procurement and use of aeronautical weather reports and forecasts;

(7) Safe and efficient operation of aircraft, including collision avoidance, and recognition and avoidance of wake turbulence;

(8) Effects of density altitude on takeoff and climb performance;

(9) Weight and balance computations;

(10) Principles of aerodynamics, powerplants, and aircraft systems;

(11) Stall awareness, spin entry, spins, and spin recovery techniques for the airplane and glider category ratings;

(12) Aeronautical decision making and judgment; and

(13) Preflight action that includes—

(i) How to obtain information on runway lengths at airports of intended use, data on takeoff and landing distances, weather reports and forecasts, and fuel requirements; and

(ii) How to plan for alternatives if the planned flight cannot be completed or delays are encountered.

[Doc. No. 25910, 62 FR 16298, Apr. 4, 1997; Amdt. 61-103, 62 FR 40902, July 30, 1997]

Instrument experience is similarly defined as six qualified proficiency events in the preceding six calendar months. An instrument proficiency event is defined as an event requiring the pilot to exercise instrument flight skills unique to the UA in which proficiency is maintained.

6.17.6. Equivalent military flight and medical certifications and training are acceptable in all cases.

6.18. Pilot Responsibilities.

6.18.1. Pilots are responsible for a thorough preflight inspection of the UA.

6.18.2. Flight operations will not be undertaken unless the UA is airworthy. The airworthiness provisions of 14 CFR 91.7¹¹, Civil Aircraft Airworthiness, apply.

6.18.3. One pilot-in-command (PIC) must be designated at all times and is responsible for the safety of the UA and persons and property along the UA flight path.

6.18.4. The UA pilot will be held accountable for controlling his aircraft to the same responsible standards as the pilot of a manned aircraft. The provisions of 14 CFR 91.13¹², Careless and Reckless Operation, apply to UA pilots.

6.19. Pilot/Observer Task Limitations.

6.19.1. Pilots and observers must not perform crew duties for more than one UA at a time.

6.19.2. A qualified observer must assist the UA pilot when his aircraft is being provided collision avoidance by visual observation.

6.20. Radar/Sensor Observer. The radar/sensor operator must be thoroughly familiar with and possess operational experience with the equipment being utilized for observation and detection of other aircraft for collision avoidance purposes.

6.21. Visual Observer Responsibilities. In general, UA should yield the right of way to any manned aircraft. The task of the observer is to provide the pilot of the UA with instructions to steer the UA clear of any potential collision with other traffic. Visual observer duties require continuous visual contact with the UA at all times. At no time will the visual observer permit the UA to operate outside his line-of-sight to ensure that any required maneuvering information can be reliably provided to the PIC. At no time will visual observers conduct their duties more than one mile laterally or 3000 feet

11 § 91.7 Civil aircraft airworthiness.

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

(b) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

12 § 91.13 Careless or reckless operation.

(a) Aircraft operations for the purpose of air navigation. No person may operate an aircraft in a careless or reckless manner so as to endanger the life or property of another.

(b) Aircraft operations other than for the purpose of air navigation. No person may operate an aircraft, other than for the purpose of air navigation, on any part of the surface of an airport used by aircraft for air commerce (including areas used by those aircraft for receiving or discharging persons or cargo), in a careless or reckless manner so as to endanger the life or property of another.

vertically from the UA. When using aids to vision, such as binoculars, field glasses, or telephoto television, visual observers must use caution to ensure that the UA remains within one mile laterally and 3000 feet vertically of the observer.

7. Comments, suggested changes, or corrections concerning this policy may be submitted to Hank Cabler, Manager, Flight Technology Requirements Branch, AFS-430 at Hank.Cabler@FAA.gov or (202) 385-4622.



John W. McGraw
Manager, Flight Technologies and Procedures Division, AFS-400