

2010

NASF
COOPERATORS
AVIATION STANDARDS
For
INTERAGENCY FIRE

These standards were developed and are being maintained by the Western Area State Aviation Committee for the Western States Fire Managers, a Fire Subcommittee of the National Association of State Foresters.

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C-1 Scope of Document

This document contains the aviation standards developed for cooperating fire agencies. These standards are intended for use by Federal, State and Local cooperating agencies entering into agreements for the use of aviation assets utilized in the Interagency Fire program. The standards are based on the Interagency Call-When-Needed Helicopter and the Call When Needed Light Fixed Wing Services contracts. The basic document format has been retained for ease of use by personnel familiar with the federal agreements. However this document has been expanded to include all aircraft types and therefore some sections have been expanded to accommodate the different types of aircraft. In addition, the standards have been rewritten to accommodate Public Use specific issues such as the use of non-certificated aircraft.

- A. The intent of this document is to define the minimum standards for the use of cooperator aircraft, personnel and support equipment when being operated under Interagency Fire agreements.
- B. Cooperator personnel shall conduct themselves in a professional and cooperative manner in fulfilling this agreement.
- C. The aircraft furnished will be used for fire incident support, and may also be used for project, law enforcement, and administrative flights. If the cooperator agrees to perform law enforcement flights, such agreement shall be in writing.
- D. The Government has Interagency and Cooperative agreements with Federal and State Agencies and private landholders. Aircraft may be dispatched under these agreements for such use.
- E. When operating in Alaska, see Exhibit 3, for Alaska Supplement for additional requirements.

C-2 Certifications and Operations

A. General

- 1. The pilot is responsible for computing the weight and balance for all flights and for assuring that the gross weight and center of gravity do not exceed the aircraft's limitations. Pilots shall be responsible for the proper loading and securing of all cargo. Helicopter load calculations (Exhibit 13, Form 5700-17 or AMD-67) shall be computed and completed by the pilot using appropriate flight manual hover performance charts.

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B. Standard and Restricted Category Aircraft.

1. All standard category aircraft shall be operated within the instructions and limitations stipulated in the approved flight manual.
2. Aircraft with type certificates shall conform to the approved type design, or be in a properly altered condition.

C. Non-Certificated Aircraft.

1. All non-certificated aircraft shall be operated within the instructions and limitations stipulated in the aircraft flight manual.
2. In order to be authorized to haul essential crew members, all non-certificated aircraft shall be in compliance with the appropriate Instructions for Continued Airworthiness (ICA) contained in the supplement section. Refer to paragraph C-5(B) for the ICA requirements for any modifications performed.

- D. The Cooperator shall, on an annual basis, certify that the aircraft, equipment, and personnel being operated under these standards meet the requirements herein. This is an internal certification process stating compliance with these standards. This internal certification is not to be construed as the USFS or AMD approval process required for the federal agencies to issue their approval for use for Federal Interagency Fire.

C-3 Reserved

- A. Not Applicable. This issue is normally addressed in other agreements.

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C-4 Aircraft Requirements

A. General

1. Cooperators aircraft shall conform to the standards herein including the requirements of paragraph C-5 and any model specific requirements contained in the supplements.
2. All required documents needed to verify the data in Form FS-5700-21a or AMD 36b; Helicopter Data Record (including airframe logs, engine logs, compliance with mandatory manufacturer's bulletins, FAA AD's compliance, and aircraft status record, etc.) shall be made available to any appropriate inspector.

B. Airplane Performance Requirements

1. Single engine airplanes shall have a power loading of not more than 13.5 pounds per horse power.
2. Multi engine airplanes shall be capable of at least 200 horse power; per engine; any engine developing less than 240 horse power shall be turbo/super charged.

C. Condition of Equipment

1. Cooperator supplied aircraft and equipment shall be in good condition and function properly. Aircraft systems and components shall be free of leaks except within limitations specified in the appropriate maintenance manual.
2. All windows and windshields shall be clean and free of scratches, cracks, crazing, distortion, or repairs, which hinder visibility. Repairs such as safety wire lacing and stop drilling of cracks are not acceptable permanent repairs. Permanent repairs or replacement shall be performed at the next scheduled maintenance function where the repair can be performed but no later than 6 months.
3. The aircraft interior shall be clean and neat. There shall be no un-repaired tears, rips, cracks, or other damage to the interior. All interior materials shall meet FAA standards. Interior of non-certificated aircraft must meet the manufactures standards for their interior and any modifications must meet FAA standards.
4. The exterior finish, including the paint, shall be clean, neat, and in good condition (i.e. no severe fading or large areas of flaking or missing paint and etc.). Military or other low visibility paint schemes

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are unacceptable. Any corrosion shall be within manufacturer or FAA acceptable limits.

D. Center of Gravity

1. All aircraft shall be configured and operated within the center of gravity limits stated in the appropriate flight manual.

E. General Equipment

The following sections specify the equipment required for certain operations. This equipment is in addition to any equipment or configuration required by 14 CFR.

1. The following is required for all aircraft:
 - a. Instrumentation required by the Type Certificate and 14 CFR for use with the make and model furnished.
 - b. Free air temperature gauge.
 - c. Approved aircraft lighting for night operation in accordance with 14 CFR Part 91.209, plus instrument lights.
 - d. First Aid Kit Aeronautical (Exhibit 1, First Aid Kit Aeronautical)
 - e. Survival Kit Aeronautical (Exhibit 2, Survival Kit Aeronautical, Lower 48).
 - f. Reserved.
 - g. Deleted.
 - h. The Fire extinguisher(s) shall be a hand-held bottle, fully charged, with a minimum of a 2-B:C rating, maintained in accordance with NFPA 10 and mounted with a quick release attachment accessible to the flight crew while seated.
2. The following is required for helicopters:
 - a. FAA-approved double-strap shoulder harness with automatic locking inertia reels for each front seat occupant. Shoulder straps and lap belts shall fasten with one single-point, metal-to-metal, and quick-release mechanism. Standard factory shoulder harnesses are acceptable for Aerospatiale and Bell transport category helicopters. Military style harnesses are acceptable. (Exhibit 4, Restraint Systems Condition Inspection Guidelines).

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- b. FAA approved single or double shoulder harness integrated with seat belt with one single point metal to metal quick release mechanism for each cabin occupant.
- c. One flight hour meter (Hobbs) installed in a location observable by the pilot and front seat observer while seated. The meter shall be wired in series with a switch on the collective control, and a switch activated by engine or transmission oil pressure or equivalent system, to record flight time (in hours and tenths of hours) only.
- d. External load operations from other than the manufacturer's designated pilot station are allowed only when the aircraft has been properly modified in accordance with the requirements contained in section C-5. For standard category aircraft, alteration of the aircraft shall be approved under an FAA Supplemental Type Certificate (STC) or field approval and designation on the aircraft Interagency Data Card and for single piloted aircraft, field approvals in lieu of STCs are not acceptable unless operational gauges are installed in a manner which allows observation while the pilot's focus is on the external load.
- e. Convex mirror for observation of external loads and landing gear (not required for aircraft equipped ONLY for vertical reference operations).
- f. Standard Category helicopters with a floor height greater than 18-inches shall have an approved personnel access step to assure safe entrance and exit from each door of the helicopter. A section of external cargo rack may be utilized as a step by providing a clear space covered with non-skid material.
- g. Complete set of current aeronautical charts covering area of operation. The Cooperator shall be responsible for providing navigation publications.
- h. Dual controls are required for pilot evaluations.
- i. One or more white or white and red strobe light(s) mounted on top of the helicopter or otherwise visible from above. In accordance with 14 CFR Part 27.1401, Anticollision Light System (d) Color. Each anticollision light shall be aviation red and shall meet the applicable requirements of 14 CFR Part 27.1397. In order to meet agreement specifications, Cooperators shall obtain FAA approval (FAA Form 337) to alter the aircraft, if applicable.
- j. High visibility markings on main rotor blades (Exhibit 6, High Visibility Markings on Main Rotor Blades).
- k. Hooks and Long lines. (If Requested)
 - i. Refer to Exhibit 5(C) for additional requirements and alternate equipment.

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- ii. One cargo hook that may be loaded and locked in a single motion with one hand, and is rated at the maximum lifting capacity of the aircraft.
- iii. The cargo hook shall be inspected, overhauled and tested in accordance with the manufactures instructions. If the manufacture has no requirements then as a minimum, the cargo hook shall be completely disassembled and inspected with repairs made as required, lubricated and a full-load operational check in accordance with manufacturers recommendations every 24 months.
- iv. One remote cargo hook and 150 foot long line. Long line may consist of multiple segments and none shorter than 50 feet as per Exhibit 5.
- I. Variable capacity bucket(s)
 - i. Refer to Exhibit 5(C) for additional requirements and alternate equipment.
 - ii. One (1) collapsible, variable capacity water/retardant buckets shall be furnished under this Agreement.
 - iii. The bucket, at 100 percent of manufactures rated capacity (+/-5%) shall be commensurate with the maximum OGE lifting capability of the helicopter at 5000 PA and 30 degrees C with a 200 pound pilot and 1 1/2 hours of total fuel. The bucket shall be capable of being operated with all increments of the long-line. No partial dips allowed.
 - iv. Environmental operating conditions may dictate the need for more than one size bucket.
 - v. Helicopters equipped with electronic helicopter hook load measuring system (load cells) that provide a cockpit readout of the actual external load and a bucket that is equipped with a gating system that allows part of the load to be dispensed while retaining the remainder of the load are approved.
 - vi. Capacity of each position or adjustment level shall be marked on the bucket. Collapsible buckets with cinch straps shall only be adjusted to the marked graduations (i.e., 90%, 80%, 70%). Attempts to establish intermediate graduations or capacities below the manufacturer's minimum graduation (by tying knots, etc.) are prohibited.
 - vii. An Operations Manual for the type bucket(s) provided shall be available on site.
 - viii. Either the weight of the bucket or capacity at each adjustment level shall be marked on the bucket or the

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- operator shall have a written statement of the maximum capacity (weight) at each adjustment point.
- ix. The jettison-arming switch, if applicable, shall be in the armed position during external load operations.
 - x. When a bucket is attached directly to the cargo hook, it is critical to measure the maximum length of the extended bucket from the shackle on the control head to the extended dump valve/fire sock, making sure that it is at least 6-inches less than the distance from the belly hook to the closest possible point on the tail rotor. Lines attached between the cargo hook and the bucket shall extend the bucket past the outside arc of the tail rotor, the line shall be no shorter than 50 feet.
 - m. The bucket gate open/close switch(es) shall be clearly marked for "open" and "closed," spring-loaded to the "OFF" position, and mounted on the collective pitch lever to avoid confusion with the cargo hook release. The switch shall be of a different design and shall be mounted in such a way as to not easily be confused with the RPM Control (Beep) switch.
 - n. For Standard Category helicopters an auxiliary power connector (MS3112E12-3S) protected by a 5-amp circuit breaker connected to the avionics or main aircraft power buss shall be permanently mounted in a location convenient to the passenger compartment. Pin A shall be +24 VDC in 24 volt aircraft, Pin B shall be aircraft ground. Pin C shall be + 12 volts VDC in 12 volt aircraft. In dual voltage installations the unused side shall be disabled while the other side is in use.
 - o. Fuel Servicing Vehicle, if requested. (Exhibit 7 Additional Avionics Equipment and Exhibit 8 Fuel Servicing Equipment Requirements). (Not required for Alaska).
 - p. FAA Approved Extended Height /High Skid Landing Gear (if available by STC or aircraft manufacturer).
 - q. FAA approved high visibility, pulsating, forward facing, conspicuity lighting.
 - r. Approved locking cap(s) on all fuel filler ports. Single point refueling port dust caps need not have an FAA approved locking device.
 - s. (APPLICABLE TO LIGHT AND MEDIUM HELICOPTERS ONLY WHICH ARE APPROVED FOR CARRIAGE OF PASSENGERS OR ESSENTIAL CREW) Internal baggage compartment/external cargo racks. Fifteen (15) cubic feet of cargo space with isolated internal baggage compartment(s) capable of accommodating 58inch long shovels, rakes, and other fire fighting tools (requires rear bulkhead modification

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of baggage compartment of some models). External cargo racks with a closing mechanical latching lid may be provided in lieu of baggage compartments, which cannot be modified to accept fire tools. Cargo racks shall be at least 4-inches deep. These devices shall be simple in function and have the capacity of being installed quickly. If lid is not manufactured for make and model then cargo shall be secured with tie down nets, straps, or bungee.

3. The Following are required for fixed wing operations:
 - a. Safety Belts. FAA-approved shoulder harness front seat occupant. Shoulder straps and lap belts shall fasten with one single-point, metal-to-metal, and quick-release mechanism. Standard factory shoulder harnesses are acceptable. Military style harnesses are acceptable. (Exhibit 4, Restraint Systems Condition Inspection Guidelines).
 - b. Seat belts for all seats. One set of individual lap belts for each occupant.
 - c. Flight Hour Meter. Each aircraft shall be equipped with a flight hour meter, which measures in hours and tenths.
 - d. Cargo Restraint. The Cooperator shall furnish tie downs, net(s), or cargo straps meeting requirements of 14 CFR to restrain cargo while in flight.
 - e. Each aircraft shall carry current copies of the following:
 1. DOT Exemption 9198 and the Interagency Aviation Transport of Hazardous Materials Handbook/Guide (NFES 1068) (if required)
 2. Aeronautical charts covering area of operation

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C-5 Aircraft Maintenance

A. General

These general maintenance requirements are applicable to both certificated and non-certificated aircraft. See below for additional specific compliance instructions for non-certificated aircraft.

- a. Type certificated aircraft shall be maintained in accordance with the requirements of 14 CFR Part 43 and Part 91 and the manufacture's instructions regardless of its public use status.
- b. Persons authorized to perform maintenance, preventive maintenance; rebuilding and alterations will do so in accordance with FAR part 43 and part 65. FAA, CFR 14, Part 145 Repair Stations may be used for specific maintenance functions that the repair station is certified for. The aircraft must be returned to service under the repair station certificate and not under an individuals' certificate for the repair station; for example, repairman or A&P mechanic. Refer to the non-certificated aircraft supplements for specific requirements.
- c. Special equipment and/or modification of the aircraft to meet requirements of this agreement shall be inspected, repaired, and altered in accordance with 14 CFR requirements and manufacturer's recommendations or engineered data and, if required, be FAA approved.
- d. Aircraft shall have discrepancies and inoperative equipment repaired or replaced as per FAR 91.405.
- e. Except as provided in FAR part 91.213, no pilot will takeoff an aircraft with inoperative instruments or equipment. Placards will be installed for any inoperative instruments or equipment allowed by FAR 91.213(d)(2).
- f. No aircraft will be operated in an un-airworthy or unsafe condition in accordance with FAR 91.7 and will have such conditions repaired before resuming normal operations.
- g. Maintenance record keeping will be in accordance with FAR 91. Content, form and disposition of the records will be in accordance with the requirements of FAR part 43. Reference FAA Advisory Circular (AC) No. 43-9C as revised.

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- h. In accordance with FAR 91.403(c), no aircraft will be operated unless the mandatory replacement times, inspection items or related procedures are complied with. Aircraft shall not be approved or used if any component time in service exceeds the manufacturers' recommended Time Between Overhaul (TBO) unless authorized by an industry accepted extension (Manufactures, Military, FAA-approved extension etc.).

- i. The applicable Airworthiness Directives required by FAR part 39 shall be complied with. Refer to the non-certificated aircraft supplements for specific requirements.

- j. The manufacture's mandatory bulletins are to be complied with. Refer to the non-certificated aircraft supplements for specific requirements.

- k. Aircraft shall comply with the inspection requirements of FAR 91.409. Refer to the non-certificated aircraft supplements for specific requirements.

- l. Inspections shall be performed in a maintenance facility, or in the best field conditions available.

- m. The aircraft's equipped weight is to be calculated using weight and balance data which was determined by actual weighing of the aircraft. The aircraft is to be re-weighed in accordance with the schedule listed below and following any major repair or major alteration or change to the equipment list which significantly affects the center of gravity of the aircraft. Helicopters are to be reweighed every 24 months, multi-engine airplanes every 36 months and single engine airplanes every 60 months. All weighing of aircraft shall be performed on scales that have been certified as accurate within the preceding 24-months. The certifying agency may be any accredited weights and measures laboratory.

- n. A list of equipment installed in the aircraft at the time of weighing shall be compiled. The equipment list shall include the name of each item installed. Items that may be easily removed or installed for aircraft configuration changes (seats, doors, radios, cargo hook, baskets, special mission equipment, etc.) shall also be listed including the name, weight, and arm of each item. Each page of the equipment list shall identify the specific aircraft by serial and registration number. Each page of the equipment list shall be dated indicating the last date of actual weighing or computation. The weight and balance shall be revised each time equipment is

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removed or installed.

- o. For turbine powered helicopters, a power assurance check shall be accomplished on the first day of operation, and thereafter within each 10-hour interval of agreement flight operation unless prohibited by environmental conditions (i.e. weather, smoke). The power assurance check shall be accomplished by the cooperator in accordance with the Aircraft Flight Manual or approved cooperator performance monitoring program. The results shall be recorded in the appropriate aircraft flight records. Aircraft with power output below the minimum published performance charts or procedures shall be removed from service. The below-minimum power condition shall be corrected before returning to service and availability.
- p. A maintenance test flight must be performed, in accordance with FAR 91.407, after any maintenance activity which could have appreciably altered the aircraft's flight characteristics or substantially affected its operation in flight.

B. Non-Certificated Aircraft Specific Requirements

- a. Non-type certificated public use aircraft shall be maintained in a manner consistent with certificated aircraft and in accordance with the aircraft model specific Instructions for Continued Airworthiness (ICA) contained in the appendices of this document.
- b. Inspection programs, airworthiness limitations, overhauls, and FAA AD compliance are all addressed in each aircraft models ICA.
- c. RETURN TO SERVICE

The aircraft, components, parts, etc. shall be considered certificated for the purpose of determining persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations and for determining the requirements for return to service in accordance with FAR Part 43 with the following exceptions:

- 1. In lieu of the certificate number required by FAR 43.9 and 43.11 a cooperator issued unique number or stamp, which identifies the individual, may be utilized.
- 2. The execution of the repair or alteration form authorized by or furnished by the Administrator in accordance with FAR 43.5(b) is to be completed and retained with the aircraft records but a copy need not be submitted to the FAA.

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- d. The following requirements must be met when performing major modifications on non-certificated aircraft:
- i. Modifications performed on non-certificated aircraft are to be based on acceptable data and sound aeronautical practices. Examples of acceptable data:
 - 1. Data such as Supplemental Type Certificates applicable to certificated versions of the aircraft or similar aircraft.
 - 2. Generic STC's, such as an STC for a radio install on all helicopters
 - 3. Data reviewed by an FAA DER or DAR representative.
 - 4. Manufactures Data.
 - 5. Military Modification Data.
 - 6. Standard Practices such as the latest version of AC43.13.
 - ii. The modifications must be documented in the aircraft's records.
 - iii. The weight and balance data and equipment list must be updated.
 - iv. Instructions for Continued Airworthiness (ICA) are to be incorporated into the aircraft's records and maintenance program to ensure that the aircraft is properly maintained. Refer to FAA Order 8110.54 for assistance. At a minimum ICA's must include the following:
 - 1. Instructions for compliance with FAA Part 39 Airworthiness Directives.
 - 2. Airworthiness limitations section including: mandatory replacement times and mandatory inspection items.
 - 3. Inspection procedures.
 - 4. Overhaul intervals and data to be used for overhauls.
 - 5. Maintenance instructions.
 - v. A flight manual supplement must be added to the flight manual when a modification affects the operation of the aircraft.

C-6 Aircraft and Equipment Security

- A. The security of Cooperator provided aircraft and equipment is the responsibility of the Cooperator.
- B. Aircraft shall be electrically and/or mechanically disabled by two independent security systems whenever the aircraft is unattended. Deactivating security systems shall be incorporated into preflight

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checklists to prevent accidental damage to the aircraft or interfere with safety of flight.

- C. Examples of Unacceptable disabling systems are:
 - a. Locked door/windows; and/or
 - b. Fenced parking areas.
 - c. Any device that could induce an unsafe condition.

C-7 Avionics Requirements

- A. Required avionics systems and cooperators offered avionics/communication equipment must meet the performance specifications as specified in FS/AMD A-24 at: www.fs.fed.us/fire/niicd/documents.html

C-8 Cooperator Furnished Avionics Systems

A. Communications Systems

1. Emergency Locator Transmitters

One automatic-portable/automatic-fixed or automatic-fixed Emergency Locator Transmitter (ELT) utilizing an external antenna and meeting the same requirements as those detailed for airplanes in 14 CFR Part 91.207 (excluding 14 CFR Part 91.207f), shall be installed per the manufacturer's installation manual, in a conspicuous or marked location. ELTs certified under TSO-91 are not acceptable. Note: ELTs operating on 121.5 MHz, 406 MHz or both frequencies are acceptable.

2. VHF-AM Transceivers

One panel mounted VHF-AM aeronautical transceiver (VHF-1), operating in the frequency band of 118.000 to 136.975 MHz, with a minimum of 760-channels in no greater than 25 kHz increments, and a minimum of 5-watts carrier output power.

3. Aeronautical VHF-FM radio transceiver (FM-1). For a list of currently acceptable VHF-FM radios, visit

<http://www.fs.fed.us/fire/niicd/documents.html>

- a. The transceiver shall operate from 150 to 174 MHz, permit the operator to program any usable frequency within that band while in flight, provide operator selection of both wide-band (25 kHz

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bandwidth/5 kHz modulation) and narrow-band (12.5 kHz bandwidth/2.5 kHz modulation) operation by channel for MAIN and AIR GUARD operation. Transceivers shall be set to operate in the narrowband mode (typically indicated with a lower case “n”) unless local requirements dictate otherwise.

- b. Carrier output power shall be 10 watts nominal. The transceiver shall be capable of displaying receiver and transmitter operating frequency. Transceivers shall provide both receiver and transmitter activation indicators for MAIN and AIR GUARD. Simultaneous monitoring of both MAIN and AIR GUARD (168.6250 MHz) is required. Scanning of AIR GUARD is not acceptable. AIR GUARD communications may only be used for: Emergencies; initial call; recall; and redirection.
- c. A CTCSS sub-audible tone encoder with a minimum of 32 standards selectable tones, meeting the current TIA/EIA-603 standard, shall interface with the above transceiver. The encoder shall encode a 110.9 Hz tone on all AIR GUARD transmissions.
- d. The transceiver's operational controls shall be mounted in a location that is convenient to both Pilot and Co-Pilot/observer.
- e. Aircraft having two or more aeronautical VHF-FM radio transceivers need only have an AIR GUARD receiver in the first transceiver (FM-1).
- f. The primary aeronautical VHF-FM transceiver furnished to meet the requirements of this standard must be multimode (P25) digital. Multimode (P25) digital aeronautical VHF-FM transceivers shall meet FS/AMD A-19. For a copy of FS/AMD A-19 and a current list of acceptable radios visit <http://www.fs.fed.us/fire/niicd/documents.html>

4. Provisions for auxiliary VHF-FM (AUX-FM) portable radio:

In lieu of the AUX-FM requirements, the Cooperator may substitute one aeronautical VHF-FM transceiver (FM-2).

- a. The Cooperator shall provide the necessary interface for installing and properly operating an auxiliary VHF-FM portable radio through the aircraft's audio control system(s). The interface shall consist of the appropriate wiring from the audio control system, terminate in an MS3112E12-10S type connector and utilizing the contact assignments as specified by drawing FS/AMD-17 ; AUX-FM RADIO

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INTERFACE, at the following website:

www.fs.fed.us/fire/niicd/documents.html

- b. One weatherproof, external, broadband antenna (Comant type CI-177 or equal) covering the 150-174 MHz band, with associated RG-58A/U (or equivalent) coaxial cable and connector, terminated in a bulkhead-mounted, female BNC connector adjacent to the above 10-pin connector.
 - c. Mounting facilities, in accordance with the specifications of FAA Advisory Circular AC 43.13-2A, for secure installation of the auxiliary VHF-FM portable radio in the cockpit shall be provided (Field Support Services (www.helifire.com) AUX-EPH-RB or equivalent). The location of the mounting facilities shall be such that, when connected with an 18-inch adapter cable, allows the Co-Pilot/observer full and unrestricted movement of the radio's controls.
 - d. Positive-polarity microphone excitation voltage shall be provided to the AUX-FM system from the aircraft DC power system through a suitable resistor network. A blocking capacitor shall be provided to prevent the portable radio microphone excitation voltage from entering the system. Sidetone for the AUX-FM shall also be provided (NAT AA34, Premier PA-34, or equivalent).
 - e. If the AUX-FM specifications are intended for UHF or Low Band use, the appropriate antenna shall be used and the audio control(s) shall be labeled accordingly.
5. Automated Flight Following (AFF)
- a. One Automated Flight Following (AFF) system compatible with the government's AFF tracking network (Webtracker) is required. Not all available AFF systems are compatible with Webtracker nor meet Webtracker's requirements. The Cooperator shall ensure that the AFF system offered is compatible with Webtracker. To view Webtracker's current compatibility requirements refer to <https://www.aff.gov>.
 - b. The AFF system shall be powered by the aircraft's electrical system, installed per the manufacturer's installation manual, and operational in all phases of flight. AFF equipment shall utilize as a minimum: Satellite communications, an internally or externally mounted antenna, provide data to the Government's Webtracker software, use aircraft power via a dedicated circuit breaker for

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power protection, and be mounted so as to not endanger any occupant from AFF equipment during periods of turbulence. Antennas should be placed where they have the best view of the overhead sky as possible. Externally mounted antennas are recommended to improve system performance. Any AFF manufacturer required pilot display(s) or control(s) shall be visible/selectable by the Pilot(s). Remote equipment having visual indicators should be mounted in such a manner as to allow visual indicators to be easily visible.

- c. AFF communications shall be fully operational in the lower 48 states. Cooperators accepting dispatches to the State of Alaska, Southern Canada, or Western Canada shall have an AFF system capable of being tracked in these locations at all times. Not all manufacturers' AFF equipment communication links will operate effectively in all geographic areas.
- d. The Cooperator shall maintain a subscription service through the AFF equipment provider allowing AFF position reporting for satellite tracking via Webtracker. The position-reporting interval shall be every two minutes while the aircraft is in flight. The Cooperator shall register their AFF equipment with the Fire applications Help Desk (FAHD) providing: Complete tail number, manufacturer and serial number of the AFF transceiver; aircraft make and model; and Cooperator contact information. If the Cooperator relocates previously registered AFF equipment into another aircraft, then the Cooperator shall contact the FAHD making the appropriate changes prior to aircraft use. In all cases, the Cooperator shall ensure that the correct aircraft information is indicated within Webtracker. The Cooperator shall contact the FAHD of system changes, scheduled maintenance, and planned service outages.
- e. Registration contact information, a web accessible feedback form, and additional information is available at: <https://www.aff.gov>. The FAHD can be reached at (800) 253-5559 or (208) 387-5290.
- f. Prior to the aircraft's annual Coop inspection, the Cooperator shall ensure compliance with all AFF systems requirements. The Cooperator shall additionally perform an operational check of the system. As a minimum, the operational check shall consist of confirming the aircraft being tested is displayed in Webtracker (indicating it is currently transmitting data to Webtracker) and that all information displayed in Webtracker is current. A username and password is required to access Webtracker. Log on to the AFF website at <https://www.aff.gov> to request a username and password, or contact the FAHD.

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- g. This clause incorporates Specification Section Supplement available at: <https://www.aff.gov/agreement.asp> with the same force and effect as if they were presented as full text herein.

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6. Additional Airplane Requirements

The following requirements are in addition to the requirements in the remainder of this document.

- a. For Resource Reconnaissance missions or Fire Reconnaissance
 - i. The minimum avionics equipment required by the remainder of this document is sufficient for these missions.
- b. Air Tactical Aircraft. Air Tactical aircraft shall meet all the following (as required by Type):
 - i. All Air Tactical Types:
 - a. Two aeronautical VHF-AM radio transceivers.

Note: Regardless of available aircraft equipment or capabilities, Supplemental Air Attack Kit installations in any Type shall not elevate the aircraft's capability beyond that Type for which the aircraft would normally be carded, if the supplemental radio kit were removed.

Note: If an approved TCAS/TCAD is furnished, the aircraft shall be identified as a "Type I with TCAS/TCAD" or a "Type II with TCAS/TCAD".

- b. Type I:
 - 1) A set of audio/mic jacks with PTT capability in the rear seat for an ATGS instructor connected to the Co-Pilot/ATGS's audio control system.
 - 2) Two permanently installed aeronautical VHF-FM radio transceiver.
 - and either**
 - 3) Provisions for an Auxiliary VHF-FM Portable Radio.
 - Or**
 - 4) A third aeronautical VHF-FM radio transceiver.

- c. Type II:
 - 1) A set of audio/mic jacks with PTT capability in the rear seat for an ATGS instructor connected to the Co-Pilot/ATGS's audio control system. A separate audio control system for the instructor is acceptable.
 - and either**

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- 2) Provisions for an Auxiliary VHF-FM Portable Radio.
or
- 3) A second aeronautical VHF-FM radio transceiver.

d. Type III and Type IV:

- 1) The minimum avionics equipment required by the remainder of this document is sufficient for these missions.

B. Navigation Systems

One Global Positioning System (GPS). The GPS shall be panel-mounted; located where both the pilot and the co-pilot/observer can clearly view the display; utilize WGS-84 datum; reference latitude and longitude coordinates in the DM (degrees/minutes/decimal minutes) mode; and be powered by the aircraft electrical system. Antennas must have a clear view of the sky. The GPS unit must have the ability for manual entry of waypoints in flight. The GPS shall have a database, updated annually, covering the continental United States. Cooperators accepting dispatches to Alaska shall also include an Alaska database in the GPS. Aviation portable GPS units (Garmin GPSMAP 296/396/496 or equivalent) are acceptable provided they use remote antennas, are securely mounted, present information from an overhead orientation (not a drive along the road type), installation approved via FAA Form 337 (or in accordance with C5 (B) for non-certificated aircraft), and meet all previously stated GPS requirements.

C. Transponder/Altitude Encoders

One ATC transponder and altitude reporting system(s) meeting the requirements of Part 91.215 (a) and (b), 14 CFR Part 91.413 and be tested and inspected every 24-calendar months as specified by 14 CFR Part 43, appendix F.

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D. Static Pressure, Altimeter, and Automatic Pressure Altitude Reporting Systems

The aircraft's static system(s) shall be maintained in accordance with the IFR requirements of 14 CFR Part 91, and inspected and tested every 24-calendar months as specified by 14 CFR Part 43, appendix E.

E. Audio Control Systems

Two audio control systems (which may be combined in a single unit) shall be installed providing the pilot and observer/co-pilot separate systems. Each system shall provide pilot and observer/co-pilot with separate controls for selection of multiple receiver audio outputs and transmitter microphone/push-to-talk (PTT) audio inputs. Each system shall also provide pilot and observer/co-pilot with separate controls for adjustment of both ICS and receiver audio output levels. Note: One audio control system is required for aircraft designed for a single occupant (i.e. K-MAX).

F. Transmitter Selection and Operation

Separate transmitter selection controls shall be provided to the microphone/PTT inputs of both the pilot and observer/co-pilot. The system shall be configured so that the pilot and observer/co-pilot may each simultaneously select and utilize a different transmitter (or Public Address (PA) System when installed) via their respective microphone/PTT. Whenever a transmitter is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the user as well as for cross monitoring via the corresponding receiver selection switch on the other audio control system.

G. Receiver Selection and Operation

Separate controls shall be provided for both pilot and observer/copilot to select audio from one or any combination of available receivers. The aft exit passenger positions shall monitor the receiver(s) as selected by the observer/co-pilot (two positions minimum).

H. Radios and Systems

As a minimum, the audio control system(s) shall provide for selection of all installed radios and PA systems.

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I. Earphones and Microphones

The audio system shall be designed for operation with 600-ohm earphones and carbon-equivalent, noise-canceling boom-type microphones (Gentex electret type Model 5060-2, military dynamic type M-87/AIC with CE-100 TR preamplifier, or equivalent). Only the pilot's position may be configured for low impedance (dynamic) operation.

All earphone/microphone jacks in the Helicopter shall be U-92A/U type. All U-92A/U cords shall be of an adequate length to provide the user free and unrestricted movement according to mission requirements.

J. Push-to-Talk Systems

Separate Push-to-Talk (PTT) switches shall be provided for radio transmitter and ICS microphone operation at the pilot and observer/copilot positions. The pilot's PTT switches shall be mounted on the cyclic/yoke control. The observer/co-pilot's PTT switches shall be mounted on the cord to an earphone/microphone connector. In lieu of the observer/co-pilot's cord mounted PTT switches, a foot switch operated or panel mounted PTT system may be utilized. In aircraft requiring two pilots the observer/co-pilot's PTT system may be on the cyclic/yoke control. The aft exit passenger positions shall be equipped with an ICS PTT switch mounted on a cord to the earphone/microphone connector (two positions minimum).

K. Intercommunications Systems (ICS)

An ICS system shall be provided for the pilot, observer/co-pilot, and the aft exit passenger positions (2 positions minimum). ICS audio shall mix with, but not mute, selected receiver audio. An ICS audio level control shall be provided for each position above. Adjustment of the ICS audio level at any position shall not affect the level at any other position. A "hot mic" capability, controlled via an activation switch or voice activation (VOX), shall be provided for the pilot and observer/co-pilot. ICS sidetone audio shall be provided for the earphone corresponding with the microphone in use.

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C-9 Avionics Installation and Maintenance Standards

- A. All avionics systems used in or on the aircraft for this agreement and their installation and maintenance shall comply with all manufacturers' specifications and applicable 14 CFR requirements.
- B. Strict adherence to the recommendations in FAA AC 43.13-1B Chapter 11, "Aircraft Electrical Systems", and Chapter 12, "Aircraft Avionics Systems", as well as AC 43.13-2A Chapter 1, "Structural Data", Chapter 2, "Radio Installation", and Chapter 3, "Antenna Installation", is required.
- C. All avionics systems requiring an antenna shall be installed with a properly matched aircraft-certified, broadband antenna unless otherwise specified.
- D. Antennas shall be polarized as required by the avionics system and have a Voltage Standing Wave Ratio (VSWR) less than 2.5 to 1.
- E. Labeling and marking of all avionics controls and equipment shall be clear, understandable, legible, and permanent. Electronic label maker marking is acceptable.
- F. Avionics equipment mounting location and installation shall not interfere with passenger safety, space, and comfort. Avionics equipment will not be mounted under seats designed for energy attenuation. In all instances, the designated areas for collapse shall be protected.

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C-10 Operations

A. General

1. Regardless of any status as a public aircraft operation, the Cooperator shall operate in accordance with the applicable portions of 14 CFR part 91.
2. A Government Representative, Aviation Manager or Flight Manager may inspect the Pilot's Interagency Airplane Pilot Qualification Card for currency before any flight. The Flight Manager has mission control and can delay, terminate, or cancel a flight at any time.

B. Pilot Authority and Responsibilities

1. The Pilot-In-Command (PIC) is responsible for the safety of the aircraft, loading and unloading of occupants and cargo. The Pilot shall comply with the directions of the Government, except when in the Pilot's judgment compliance will be a violation of applicable federal or state regulations or agreement provisions. The Pilot has final authority to determine whether the flight can be accomplished safely and shall refuse any flight or landing which is considered hazardous or unsafe.
2. The pilot is responsible for computing the weight and balance for all flights and for assuring that the gross weight and center of gravity do not exceed the aircraft's limitations. Pilots shall be responsible for the proper loading and securing of all cargo. Load calculations shall be computed and completed by the pilot. (Exhibit 13, Interagency Helicopter Load Calculation)
3. Smoking is prohibited within 50-feet of fuel servicing vehicle, fueling equipment, or aircraft.
4. After rotorcraft engine(s) shutdown, the pilot may exit the aircraft while the rotor(s) are turning unless the Rotorcraft Flight Manual (RFM) prohibits and the pilot remains within the arc of the rotor(s). The pilot shall coordinate this action with the Helicopter Manager. If not allowed by the RFM, aircraft must be shutdown and rotors stopped for pilot to exit aircraft or change seats.
5. Pilot will use an approved aircraft cockpit checklist for all flight operations.
6. Toe-in, single-skid, step-out landings are prohibited.

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7. Equipment such as radios, survival gear, fire tools, etc., shall be located in or on the aircraft in such a manner as to potentially not cause damage or obstruct the operation of equipment or personnel. All cargo shall be properly secured.
8. The pilot shall not permit any passenger in the aircraft or any cargo to be loaded therein unless authorized by the helicopter manager.
9. Passenger Briefing

Before each takeoff, the PIC shall ensure that all passengers have been briefed in accordance with the briefing items contained in 14 CFR 135. Briefing shall include the following; Personal Protective Equipment (PPE), Shut-Off Procedures for Battery and Fuel, and Aircraft Hazards.

10. Flight Plans

When relocating aircraft, pilots shall file and operate on a FAA, ICAO, or Agency flight plan when outside of dispatches control. Flight plans shall be filed prior to takeoff when possible.

11. Flight Following

Pilots are responsible for flight following with the FAA, ICAO, or in accordance with FS or DOI-Bureau approved flight following procedures, which includes Automated Flight Following (AFF) and radio check-ins. Failure of the AFF is not grounds for aborting a mission. Prompt repair of the AFF system is required.

12. Manifesting

Prior to any takeoff, the PIC shall provide the appropriate FS or DOI dispatch office/coordination center or helibase with current passenger and cargo information.

13. Fuel Reserve

To provide adequate fuel reserve all operations shall comply with 14 CFR Part 91 for VFR helicopter (20-minutes reserve) and airplane (30-minutes reserve) and night (45 minutes reserve).

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C. IFR/Night Flight

1. Only multi-engine aircraft are approved for transporting passengers at night. Pilots flying night missions shall not land at an airport unless it meets Federal Aviation Administration (FAA) airport lighting standards.
2. Notwithstanding the FAA definition of night in 14 CFR Part 1, Sec 1.1; for ordered flight missions that are performed under the agreement, night shall mean: 30 minutes after official sunset to 30-minutes before official sunrise, based on local time of appropriate sunrise/sunset tables nearest to the planned destination.
3. Single engine aircraft flights at night are authorized only for ferry and cargo carrying missions at the Cooperator's option and in accordance with 14 CFR 91.

D. Flights with Cowling(s) or Doors Open/Removed

The Cooperator is responsible for removal, reinstall and security of the doors. Flights with cowlings removed are not permitted. The aircraft external registration number shall be displayed in such a manner to not be compromised.

E. Bucket Operations

The following procedure shall be used for bucket operations:

1. Determine allowable payload using the Interagency Helicopter Load Calculation, appropriate HOGE helicopter performance charts, and current local temperature and pressure altitude. Partial dips for performance planning purposes are not authorized.
2. At the beginning of the fuel cycle, bucket capacity shall be adjusted so that the bucket, when filled to the adjusted capacity, does not exceed the allowable payload.
3. Helicopters equipped with electronic hook load measuring systems that provide cockpit readout of the actual external load and a bucket that is equipped with a gating system that allows part of the load to be released while retaining the remainder of the load is authorized.
4. The calculation of the actual bucket payload shall be documented on the Interagency Helicopter Load Calculation Form. Use 8.3 pounds per gallon for water. When mixed fire retardant is being delivered by bucket, use the actual weight per gallon of the mixed retardant. The weight of the empty bucket and any associated suspension hardware (lines, cables,

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connectors, etc.) shall be included when calculating the actual payload.

5. Bucket capacity at each position or adjustment level shall be marked on the bucket. Collapsible buckets with cinch straps shall only be adjusted to marked graduations (i.e., 90%, 80%, 70%). Intermediate graduations or capacities below the manufacturer's minimum graduation (by tying knots, etc.) are prohibited.
6. Buckets shall be attached directly to the belly hook unless the pilot is approved for vertical reference.
7. Extension (Tag) lines of less than 50-feet are not permitted for bucket operations
8. Aircraft equipped with a tail rotor and conducting external load operations (excluding class A loads) will be limited to an airspeed of 80 knots indicated or the airspeed limitation established by the rotorcraft flight manual, whichever is less. All other aircraft conducting external load operations shall comply with applicable Rotorcraft Flight Manual Limitations.
9. When conducting external load operations, rotors will remain above the canopy, or aircraft will operate within an opening no less than 1 1/2 times the main rotor diameter (e.g. an aircraft with a 48' main rotor diameter would require a 72' diameter opening).

F. Dual Controls (Helicopters)

Dual controls are required and shall be made accessible to an approved agency Helicopter Inspector Pilot (HIP) for all pilot performance evaluations. Dual controls need not be removed from Type I and II aircraft; however, during flight operations the front seat not occupied by a pilot may only be occupied by a Helicopter Manager, or a briefed and authorized aerial observer.

G. Exemption for Transportation of Hazardous Material (HazMat)

1. All aircraft may be required to carry hazardous materials. Such transportation shall be in accordance with DOT Special Permit and the DOI or FS Aviation Transport of Hazardous Materials Handbook/Guide (NFES 1068). A copy of the current Special Permit and handbook/guide and emergency response guide shall be aboard each aircraft operating under the provisions of this Special Permit and can be found at this website: [http://amd.nbc.gov/library/handbooks .htm](http://amd.nbc.gov/library/handbooks.htm).
2. It is the responsibility of the cooperator to ensure that cooperator employees have received training in the handling of hazardous

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materials in accordance with 49 CFR 172. Documentation of this training shall be retained by the company in the employee's records and made available to the Government as required. Training is available at this website:

<https://www.iat.gov/Training/modules/a110/pre-110.html>

3. The pilot shall ensure personnel are briefed of specific actions required in the event of an emergency. The pilot shall be given initial written notification of the type, quantity, and the location of hazardous materials placed aboard the aircraft before the start of any project. Thereafter, verbal notification before each flight is acceptable. For operations where when the type and quantity of the materials do not change, repeated notification is not required.

C-11 Cooperator's Environmental Responsibilities

- A. The Cooperator is responsible to ensure that all maintenance, fueling, and flight activities do not cause environmental damage to property or facilities. The Cooperator is responsible to clean and rehabilitate areas adversely affected by Cooperator activities and shall, whenever practical and possible, utilize solvents and cleaning agents that are either biodegradable or consistent with acceptable safety, health and environmental concern practices.
- B. The Cooperator is responsible for all clean-up of fuel, oil, and retardant contamination on airport ramps, retardant sites, parking areas, landing areas, etc., when caused by Cooperator aircraft or personnel.
- C. The Government may, at its option, assign an area to be utilized by the Cooperator for storage of equipment used in support of Agreement performance. Oil, solvents, parts, engines, etc. shall be stored and utilized in a manner consistent with acceptable safety, health and environmental concerns.
- D. The cooperator shall ensure that they are in compliance with 40 CFR Part 112: Oil Pollution Prevention; Spill Prevention, Control, and Countermeasure Plan Requirements (SPCC).

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C-12 Personnel

A. General

- a. Pilots, fuel servicing personnel, and mechanics shall speak English fluently and communicate clearly.

B. Inspector Qualifications

- a. The cooperators inspectors are the persons certifying that personnel and equipment meet the requirements herein.
- b. The cooperators inspectors are to be personnel with qualifications consistent with industry Chief Inspector and/or Chief Pilot qualifications.

C. Pilot Approvals and Qualifications

1. The Cooperator's Chief Pilot will verify that Cooperator pilots meet the experience and qualification requirements under this agreement.
2. Each PIC shall, at the discretion of the Chief Pilot, pass a flight evaluation check. The satisfactory completion of the evaluation flight will not substitute for any of the total flight hour requirements listed in this clause.
3. All Pilots shall possess a current Class I or Class II FAA medical certificate.
4. The PIC shall be capable of performing basic programming functions and operations of Cooperator installed aircraft avionics. This includes the ability to enter and utilize newly assigned frequencies and tones by selected channel positions. The PIC shall be able to instruct the Agency observer in how to perform basic programming and operation of VHF-AM and VHF-FM radios, and GPS.
5. Written evidence of Airman Competency Proficiency Check by a cooperator check airman and signed by the Chief pilot.
6. When a flight evaluation check is required, each pilot shall pass an agency flight evaluation in make, model, and series –conducted over typical terrain.
7. Pilots may function as mechanics providing:
 - a. The pilot meets all the Mechanic Qualifications of this Agreement.
 - b. Pilot duty limitations will apply to the pilot when functioning as a mechanic.
 - c. When pilots act as a mechanic, mechanic duties in excess of 2-hours will apply as flight hours on a one-to-one basis toward flight hour limitations.
 - d. A mechanic, other than the pilot, shall perform any scheduled inspections such as 50-hour, 100-hour, or progressive inspections.
 - e. If approved by the Cooperator's Operations Specifications, and in accordance with 14 CFR Part 43.3(h), 43.5 and 43.7, pilots may

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perform preventive maintenance on the aircraft.

D. Pilot Requirements – General

1. Helicopter

- a. Commercial or Airline Transport Pilot (ATP) Certificate with appropriate rating (Rotorcraft-Helicopter) and a valid Class I or Class II FAA Medical Certificate.
- b. Pilots shall complete appropriate portions of the Helicopter Pilot Qualifications and Approval Record (Form FS-5700-20a or AMD-64) prior to evaluation. The Chief Pilot shall certify each pilot's approval by issuing a Cooperator Helicopter Pilot Qualification Card documenting make, model and series of aircraft approved to operate and the missions each pilot is approved to perform.
- c. Written evidence of qualification to transport external loads.
- d. Written evidence of an Equipment Check Endorsement for Restricted Category helicopters by the Chief Pilot (as applicable).
- e. Proof of qualifications to meet 14 CFR Part 137.53 for congested areas.
- f. All special-use evaluations shall be conducted in accordance with the Interagency Helicopter Practical Test Standards
- g. All longline evaluations shall be conducted using a minimum of a 150 foot line
- h. All pilots shall have completed the IAT Aviation Firefighting courses MH1, MH2, and MH3 within the last 36 months
- i. All pilots shall have completed A-110 Hazardous Materials within the last 36 months

2. Airplane (reserved)

E. Pilot Requirements – Experience

Pilots shall have accumulated as pilot-in-command (PIC) the minimum flight hours listed below. Flight hours shall be determined from a certified pilot log.

1. Helicopter

Pilot in command, helicopters	1500 hours
Helicopter, preceding 12 months	100 hours or as authorized by
Weight Class	100 hours
Turbine helicopter operations	100 hours
Make and model	50 hours*
Make, model, and series, preceding 12 months	10 hours

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* Flight hour requirements may be reduced by 50% if the pilot submits evidence of satisfactory completion of the manufacturer’s approved pilot ground and flight procedures training in the applicable make and model.

Additional Special Mission Requirements:

Pilot-in-Command (as related to the applicable special mission approval)

Special Missions	Minimum Experience Flying Hours
Mountain Flying (see 1)	200
Mountain Flying Experience—Make and Model	10
Long Line Vertical (VTR) Reference Experience	10
Annual Long Line VTR Recurrency Training	2

1 Operating helicopters in mountainous terrain as identified in 14 CFR 95 Subpart B – Designated Mountainous Area. Operating includes, maneuvering and numerous takeoffs and landings to ridgelines, pinnacles and confined areas.

2. Airplane

a. Pilot-In-Command (PIC)

All airplanes	Flying hours
Total time	1500
Pilot-in-command total Fixed Wing	1200
Pilot-in-command, as follows:	
Category and class to be flown	200
Fixed wing – preceding 12-months	100
Cross Country	500
Operations in low level mountainous terrain*	200
Night	100
Instrument – in flight	50
Instrument – actual/simulated	75
Make & Model to be flown	25
Make & Model - preceding 12 months	10

*Low level mountainous terrain is flight at 500 feet AGL and below in terrain identified as mountainous in 14 CFR 95.11 and depicted in the Aeronautical Information Manual (AIM) Figure 5-6-2.

b. Mountain/Remote Airstrips: Pilots flying missions to Category 4 mountain/remote airstrips shall have successfully passed an evaluation ride given by a qualified Pilot Inspector into a minimum of two typical mountain/remote airstrips and shall have a mountain/remote airstrip endorsement on their Interagency

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Airplane Pilot Qualification Card. Prior to dispatching a Pilot into a mountain/remote airstrip the designated Cooperator Check Pilot or Cooperator will brief the Pilot on the hazards associated with the airstrip and verify that the Pilot meets initial, recurrent and 12-month specific mountain/remote airstrip requirements. Individual National Forests may have specific requirements for a particular airstrip. The appropriate dispatch office should be contacted to obtain current airstrip information. Before dispatching an aircraft into a Category 4 airstrip, a Pilot shall meet special requirements and the mission shall be coordinated with the local Forest. See USDA Forest Service Airfield/Airstrip Directory website:
http://www.fs.fed.us/fire/aviation/av_library/AAD2000.pdf

Category 4 mountain/remote airstrips are restricted by the Forest Service to day VFR flight only. Use authorization shall be obtained from the appropriate dispatch office. Pilots shall have an endorsement on their Cooperators Airplane Pilot Qualification Card and meet specific currency requirements in accordance with the **USDA Forest Service Airfield/Airstrip Directory**.

F. Pilot - Equipment Proficiency

Pilots shall be required to demonstrate proficiency with all mission equipment.

G. Pilot - Vertical Reference Proficiency (if applicable)

1. Pilots may be required to demonstrate this capability during a cooperators evaluation. (Exhibit 10, Interagency Guidelines for Vertical Reference/External Load Training Standards)
2. Vertical reference qualified pilots shall maintain proficiency in vertical reference or external load operations. When active under Agreement for a period of 30-consecutive days and no vertical reference activity occurs, the pilot will be provided a 1-hour proficiency flight at the cooperators expense.

H. Reserved

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I. Mechanic Qualifications

The following requirements apply to maintenance technicians maintaining aircraft under field conditions:

1. The mechanic shall have a valid FAA mechanic certificate with airframe and power plant ratings, and shall have held the certificate or foreign equivalent with both ratings for a period of 24-months. The mechanic shall have been actively engaged in aircraft maintenance as a certificated mechanic for at least 18-months out of the last 24-months immediately preceding the start date of the agreement.
2. The mechanic shall have 12-months experience as an Airframe & Power Plant (A&P) mechanic or foreign equivalent in maintaining helicopters. Three months experience shall have been in the last 2 years.
3. The mechanic must show evidence of maintaining a helicopter of the same make and model as offered under "field" conditions for at least 1-full season. Three months experience maintaining a helicopter away from the operator's Principle Base of Operations, and while under minimal supervision, will meet this requirement.
4. Mechanics shall have satisfactorily completed a manufacturer's maintenance course or an equivalent Forest Service or DOI-approved Cooperator's training program for the make and model of helicopter offered, or show evidence of the mechanic has 12months maintenance experience on a helicopter of the same make and model offered.

J. Availability of Mechanics

1. A mechanic (other than the pilot) shall maintain the aircraft in accordance with the Cooperator's Maintenance Program.
2. When the mechanic serves as the fuel servicing vehicle driver, the more stringent of the duty limitations apply.

K. Fuel Servicing Vehicle and Driver Qualifications (if ordered)

1. The Cooperator shall furnish a fuel servicing vehicle driver (FSVD) for each day the helicopter is available. The driver shall meet all DOT requirements.
2. Driver(s) shall be experienced in proper fueling procedures and be familiar with the safety equipment installed on the fuel servicing vehicle.

C-13 Conduct of Personnel

N/A

C-14 Suspension and Revocation of Personnel

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N/A

C-15 Substitution or Replacement of Personnel, Aircraft, and Equipment

N/A

C-16 Relief Crews

N/A

C-17 Flight Hour and Duty Limitations

- A. All flight time, regardless of how or where performed, except personal pleasure flying, will be reported by each flight crewmember and used to administer flight hour and duty time limitations. Flight time to and from an Assigned Work Location as a flight crewmember (commuting) will be reported and counted toward limitations if it is flown on a duty day. Flight time includes, but is not limited to: military flight time; charter; flight instruction; 14 CFR Part 61.56 flight review; flight examinations by FAA designees; any flight time for which a flight crewmember is compensated; or any other flight time of a commercial nature whether compensated or not.
- B. Various work schedules are acceptable. The compliment of cooperator personnel shall be on the same work schedule however days off may be staggered (Examples of work schedules are 12 on and 2 off, 12 on and 12 off).
- C. For each day during mobilization and demobilization, duty time will be computed based on the Time Zone at the point-of-hire.
- D. Pilots
 - 1. Pilot flight hour computations shall begin at liftoff and end at touchdown and will be computed from the flight hour meter installed in the aircraft. All flight hours shall fall within duty hour limitations.
 - a. Flight time shall not exceed a total of 8-hours per day.
 - b. Pilots accumulating 36 or more flight hours in any 6-consecutive duty-days shall be off duty the next day. Flight time shall not exceed a total of 42-hours in any 6consecutive days. After any 1-full off-duty day, pilots begin a new 6-consecutive day duty-period for the purposes of this clause, providing during any 14-consecutive day period, each pilot shall have two full days off-duty. Days off need not be consecutive.
 - c. Assigned duty of any kind shall not exceed 14-hours in any 24-hour period. Within any 24-hour period, pilots shall have a minimum of 10-consecutive hours off duty immediately prior to the beginning of any duty-day. Local travel up to a maximum of 30-minutes each way between the work site and place of lodging will not be considered duty time. When one-way travel exceeds 30 minutes, the total travel time shall be considered as part of the duty day.
 - d. Duty includes flight time, ground duty of any kind, and standby or alert status at any location.
 - e. During times of prolonged heavy fire activity, the Government may

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issue a notice reducing the pilot duty-day/flight time and/or increasing off-duty days on a geographical or agency-wide basis.

- f. Aircraft operated on point-to-point flights (airport to airport, heliport to heliport, etc.) with a pilot and copilot shall be limited to 10-flight hours per day. (A helicopter that departs "Airport A," flies reconnaissance on a fire, and then flies to "Airport B," is not point-to-point).
- g. Pilots may be relieved from duty for fatigue or other causes created by unusually strenuous or severe duty before reaching duty limitations.
- h. When pilots act as a mechanic, mechanic duties in excess of 2-hours will apply as flight hours on a one-to-one basis toward flight hour limitations.
- i. Relief, additional, or substitute pilots reporting for duty under this Agreement shall furnish a record of all duty and all flight hours during the previous 14-days.

2. Mechanics

- a. Within any 24-hour period, personnel shall have a minimum of 8 consecutive hours off duty immediately prior to the beginning of any duty day.
- b. Mechanics will have 2 full calendar days off duty during any 14 day period. Days need not be consecutive.
- c. Duty includes standby, work, or alert status at any location.
- d. Mechanics may be removed from duty for fatigue or other causes created by unusually strenuous or severe duty before reaching duty limitations.
- e. The mechanic shall be responsible to keep the Government apprised of their ground duty limitation status.
- f. When the mechanic serves as the fuel servicing vehicle driver, the more stringent of the duty limitations apply.

3. Fuel Servicing Vehicle Drivers

- a. It is the Cooperators' responsibility to insure that employees comply with DOT Safety Regulation 49 CFR Part 390-399, including duty limitations.
- b. Fuel servicing vehicle drivers may be removed from duty for fatigue or other causes created by unusually strenuous or severe duty before reaching duty limitations.
- c. The fuel servicing vehicle driver will be responsible to keep the Government apprised of their ground duty limitation status.
- d. DOT Safety Regulation 49 CFR Part 390-399, the fuel servicing vehicle driver shall have a minimum of two (2) full calendar days off duty during any 14-day period. Off duty days need not be consecutive.

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C-18 Accident Prevention and Safety

A. The Cooperator shall furnish a copy of all reports required to be submitted to the Federal Aviation Administration (FAA) by the Federal Aviation Regulations (FAR) that relate to Pilot and maintenance personnel performance, aircraft airworthiness or operations.

B. Following the occurrence of a mishap, the Cooperator and the Regions aviation officer will evaluate whether noncompliance or violation of provisions of the Federal Aviation Regulations applicable to the Cooperators operations, company policy, procedures, practices, programs, and/or negligence on the part of employees may have caused or contributed to the mishap.

C. The Cooperator shall keep and maintain programs necessary to assure safety of ground and flight operations. The development and maintenance of these programs are a material part of the performance of safe operations. When, in the sole judgment of the using agency, that the safety programs will not adequately promote the safety of operations, the using may terminate the approval of the cooperators for cause.

Examples of such programs are (1) personnel activities, (2) maintenance, (3) safety, and (4) compliance with regulations.

D. The Cooperator shall fully cooperate with the using agency in the fulfillment of safe operations.

C-19 Mishaps

A. Reporting

The Cooperator shall, by the most expeditious means available, notify the National Transportation Safety Board (NTSB) and the FS or DOI when an "Aircraft Accident" or NTSB reportable "Incident" occurs within any company operations. Also, the FS or DOI shall immediately be notified when an "Incident-with-Potential" Occurs.

B. Forms Submission

1. Following an "Aircraft Accident" or when requested by the NTSB following the notification of a reportable "incident," the Cooperator shall provide the FS or DOI with the information necessary to complete a NTSB Form 6120.1/2.

2. The NTSB Form 6120.1/2 does not replace the Cooperator responsibility, within 5-days of an event, to submit to the FS or DOI a "SAFECOM" to report any condition, observance, act, maintenance problem, or circumstance that has potential to cause an aviation-related mishap.

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3. Blank SAFECOMS and assistance in submitting SAFECOMS can be obtained from the FS or DOI. SAFECOMS may be submitted electronically at www.safecom.gov.

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C. Wreckage Preservation

1. The Cooperator shall not permit removal or alteration of the aircraft, aircraft equipment, or records following an "Aircraft Accident", "Incident", or "Incident-with-Potential" which results in any damage to the aircraft or injury to personnel until a thorough accident investigation has been completed. Exceptions are when threat-to-life or property exists; the aircraft is blocking an airport runway, etc.

D. Investigation

The Cooperator shall maintain an accurate record of all aircraft accidents, incidents, aviation hazards and injuries to Cooperator or Government personnel arising in the course of performance of operations. Further, the Cooperator fully agrees to cooperate with the FS or DOI during an investigation and make available personnel, personnel records, aircraft records, and any equipment, damaged or undamaged, deemed necessary by the FS or DOI. Following a mishap, the Cooperator shall ensure that personnel (pilot, mechanics, etc) associated with the aircraft shall be readily available to the mishap investigation team.

E. Related Costs

The NTSB, FS' or DOI shall determine their individual agency investigation cost responsibility. The Cooperator will be fully responsible for any cost associated with the reassembly, approval for return-to-duty availability, and return transportation of any items disassembled by the FS or AMD.

F. Search, Rescue, and Salvage

The cost of search, rescue and salvage operations made necessary due to causes other than negligent acts of a Government employee shall be the responsibility of the Cooperator.

C-20 Personal Protective Equipment

A. General Operations

The following personal protective equipment shall be furnished by the Cooperator, be operable and maintained in serviceable condition as per appropriate manufacturer's specifications.

B. Helmets

The following is required for helicopter operations.

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1. Cooperator personnel shall wear a flight helmet consisting of a one-piece hard shell made of polycarbonate, Kevlar, carbon fiber, or fiberglass that must cover the top, sides (including the temple area and to below the ears), and the rear of the head. The helmet shall be equipped with a chinstrap and shall be appropriately adjusted for proper fit. The helmet shall be worn with the chinstrap fastened.
2. Flight helmets currently approved for helicopters are the: SPH-5, HGU-84P, SPH-4B, the HGU-56P manufactured by Gentex, the Alpha 200, Alpha 400 and Alpha Eagle (900) manufactured by Interactive Safety Products and the MSA Gallet LH050 (single inner visor), LH150 (single outer visor) and the LH250 (dual visor-one inner and one outer).
3. Helmets designed for use in fixed wing aircraft do not provide adequate protection for helicopter occupants and are not approved for helicopter use.

C. Clothing

The following is required for helicopter and certain fixed wing operations.

1. Cooperator personnel while flying shall wear long-sleeved shirt and trousers (or long-sleeved flight suit) made of fire-resistant polyamide or aramid material, leather boots and leather, polyamide, or aramid gloves. A shirt with long-sleeves overlapping gloves, and long-pants overlapping boots by at least 2-inches, shall be worn by the pilot(s). Personnel shall not wear clothing made of non fire-resistant synthetic material under the fire-resistant clothing described herein.
2. Nomex® or other material proven to meet or exceed specifications contained in MIL-C83429A may be worn. Currently, the following "other" materials meet this specification:
 - a. FRT Cotton Denim Cloth, MIL-C-24915
 - b. FRT Cotton Chambray Cloth, MIL-C-24916
3. Clothing not containing labels identifying the material either by Brand Name or MIL-Spec will not be acceptable.

D. Helicopter Ground Operations

1. While within the safety circle of a helicopter with engine(s) running and/or rotor(s) turning, all Cooperator personnel shall wear the following PPE:
 - a. Shirt with long-sleeves overlapping gloves, long-pants, hardhat/flight helmet with chinstrap, appropriate footwear, hearing and eye protection.

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- b. Maintenance personnel working on running helicopter are exempt from gloves, eye protection (eye protection may be worn at the option of maintenance personnel or company policy), long sleeves, and hardhat requirements.

2. During all fueling operations, fuel-servicing personnel shall wear a long-sleeved shirt, long trousers, boots, and gloves. The shirt and pants must be made of 100% cotton or other natural fiber, or be labeled as non-static.

E. Personal Flotation Devices

The following is required for helicopter operations.

1. A personal flotation device (PFD) required by 14 CFR Part 91 shall be worn by each individual on board the aircraft when conducting operations beyond power-off gliding distance to shore, and for helicopters during all hovering flight operations conducted over water sources such as ponds, streams, lakes, and coastal waters.
2. Automatic inflation (water activated) personal flotation devices shall not be allowed.

C-21 Inspection and Acceptance

Inspection and acceptance of personnel and equipment provided under this agreement shall be performed at a time and location mutually agreed upon by the parties involved.

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EXHIBIT 1
First Aid Kit (Aeronautical).

First aid kit shall be in a dust-proof and moisture-proof container. The kit shall be readily accessible to the Pilot and passengers. At a minimum, the contents shall include the following items:

Item Description	Passenger Seats (0- 9) Quantity	Passenger Seats (10- 50) Quantity
Adhesive bandage strips (3 inches long)	8	16
Antiseptic or alcohol wipes (packets)	10	20
Bandage compresses, (4 inches)	2	4
Triangular bandage compresses, 40 inch (sling)	2	4
Roller bandage, 4 inch x 5 yards (gauze)	2	4
Adhesive tape, 1 inch x 5 yards (standard roll)	1	2
Bandage scissors	1	1
Body Fluids Barrier Kit:	1	1
2-pair of non-latex surgical gloves		
1-face shield		
1-mouth-to-mouth barrier		
1-protective gown		
2-antiseptic towelettes		
1-biohazard disposal bag		

Notes: Splints are recommended if space permits.

Kits may be commercially available types which are FAA approved for the appropriate number of crew and passengers carried.

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 EXHIBIT 2
SURVIVAL KIT AERONAUTICAL (LOWER 48).

The survival kit shall include the following minimum items:

Knife	Signal Mirror
Aviation-type Signal Flares (6-each) (Laser lights are acceptable)	Matches (2-small boxes in waterproof containers)
Space Blanket (1-per occupant)	Water (1-quart per occupant – not required when operating over areas with adequate drinking water)
Food (2-days emergency rations per occupant)	Candles
Collapsible Water Bag	Whistle
Magnesium Fire Starter	Nylon Rope or Parachute Cord (50 feet)
Water Purification Tablets	

Suggested additional survival kit items (appropriate to the geographic area.)

Container w/carrying Handle or Straps	Individual First Aid Kit
Large Plastic Bags	Signal Panels
Flashlight with Spare Batteries	Hand Saw or Wire Saw
Collapsible Shovel	Sleeping Bag (1-per two occupants)
Survival Manual	Snowshoes
Insect Repellant	Axe or Hatchet
Insect Head net (1-per occupant)	Gill Net/Assorted Fishing Tackle
Personal ELT	Sunscreen

Note: A hand-held 760 channel VHF transceiver radio or satellite phone is recommended. It should be located on a crewmember rather than placed in the aircraft survival kit.

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**EXHIBIT 3
ALASKA SUPPLEMENT**

The following provisions shall apply when operating in Alaska. All other provisions not expressly changed herein continue to apply.

A. SECTION C, **General Equipment** Additional Equipment:

- a. One set of approved Tundra Boards or Snow Pads with accompanying FAA certification.
- b. Complete set of current aeronautical charts and navigation publications covering areas of operation within Alaska and Canada. Survival kit: All aircraft will carry survival equipment.
- c. Survival kits will contain at least the following items and additional items required by local regulation as is appropriate for local climate and terrain conditions. The minimum equipment to be carried during the summer months:

Item	Item
Ax or hatchet (1), and Knife (1)	Water Purification Tablets
Magnesium Fire Starter	Mosquito repellent containing DEET
Whistle	Mosquito headset for each occupant (1)
Signal Mirror	Candles (5 each)
Signal Flares (6-each)	Space Blanket (1 per occupant)
Matches (2-small boxes in waterproof containers)	Nylon Rope or Parachute Cord (50-feet)
Food (Each occupant sufficient to sustain life for 1-week)	An assortment of fishing tackle such as hooks, flies, lines, sinkers, etc.
Personal Locator Beacon (PLB) (Note: required only if Aircraft ELT requires tools to be removed)	

In addition to the above, the following shall be carried as minimum equipment from October 15 to April 1 of each year:

Item	Item
Pair of Snowshoes (1)	Sleeping bag per two occupants (1)
Wool blanket or equivalent for each occupant over 4-years of age (1)	

Note: A hand-held 760 channel VHF transceiver radio is recommended. It should be attached, or immediately accessible, to a crewmember rather than placed in the aircraft survival kit.

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EXHIBIT 3
ALASKA SUPPLEMENT (Cont)

FUEL SERVICING VEHICLE SPECIFICATIONS –

A fuel servicing vehicle and driver are not required.

The Government will furnish, transport, and store all aircraft fuel required at no expense to the Cooperator. Grades of Government-furnished fuel vary from location to location, and the Cooperator shall use the grade available. The appropriate type of fuel (Avgas or Jet fuel) will be available at each location:

All lubricating oil, parts, and supplies shall be furnished and transported by the Cooperator to the Assigned Work Location.

The Cooperator shall furnish for each aircraft a portable hand or electrically-operated fuel pump, barrel stem, hoses, and filtration system for refueling in remote areas.

The filtration system shall include a unit which accomplishes water separation with positive shut-off. The size of the filtration system unit shall be compatible with pump size. One acceptable three-stage unit is FACET part number 050971. If this model FACET is used, the third stage monitor should be a Velcon part number CDF-210K which is rated to 10 GPM. Also acceptable are Velcon filter spin on 5 micron cartridges, part number 40505SP, rated to 13 GPM; or Velcon VF-31 with 1 micron cartridge element, part number ACO-21005B, rated to 15 GPM. All filtering components shall be changed annually or sooner if needed, and the date of the change shall be placarded on the canister.

Two complete spare filter changes shall be furnished by the Cooperator.

AVAILABILITY OF MECHANICS –

The mechanic shall be present for all operations in Alaska. The mechanic shall accompany the helicopter to any assigned work location.

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EXHIBIT 4

RESTRAINT SYSTEMS CONDITION INSPECTION GUIDELINES

A. Federal Aviation Regulations require that occupant restraint systems are to be replaced in aircraft manufactured after July 1, 1951; such systems shall conform to standards established by the FAA. These standards are contained in Technical Standard Order TSO-C22. Restraint system eligible for installation in aircraft may be identified by the marking TSO-C22, TSO-CI14 on the webbing or by a military designation number since military systems comply with the strength requirements of the TSO. Aircraft manufacturer installed restraint systems with part numbers are acceptable. Each system shall be equipped with an approved metal-to-metal latching device.

B. Federal Aviation Regulations provide minimum inspection guidance, other than to state, that mildew and fraying may render the restraint system un-airworthy and that suspected webbing should be tested for tensile strength. The tensile strength requirement for a single person system is 525 pounds (most systems are rated at 1,500 pounds).

C. Unacceptable Condition Criteria:

	Webbing	Hardware	Stitching		
	Frayed (5%)	Inoperable	Broken		
	Torn	Damaged	Excessive Wear		
	Crushed	Corroded	Missing		
	Swollen	Excessive Wear			
	Creased				
	Deteriorated				

D. References:

14 CFR Part 91.205, 14 CFR Part 21.607, AC 21-34, TSO-C22, TSO-CI14

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EXHIBIT 5

ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT

This section contains additional requirements for equipment specified or alternate equipment being utilized.

A. Fixed Suppressant/Retardant Delivery Tank with Self-Filling Capability

In Lieu of the variable capacity bucket, one (1) externally mounted baffled, quick-disconnect (45-minutes) fixed suppressant/retardant delivery tank or one (1) or more internally mounted baffled, fixed suppressant/retardant delivery tank(s) that meets or exceeds the following specification:

Capacity commensurate with the maximum related lifting capability of the helicopter equipped with the tank at sea level on a standard day.

NOTE: ALL CONTROLS FOR TANK SYSTEM SHALL BE LABELED AS TO FUNCTION

1. Door(s)

The Tank door(s) shall be designed such that:

- a. The frontal area of the retardant column is minimized.
- b. The door(s) does not appreciably deflect the retardant when fully opened .
- . c. The tank and doors shall be leak proof, i.e. 1/2 gallon or less in a 24-hour period
- d. The doors shall be closeable in flight if the aircraft is not capable of landing with the door(s) open without damaging the door(s).

2. Venting

- a. The tank shall be vented so that no more than 0.25 PSI negative pressure will be created in the tank head space during the fastest drop sequence.
- b. The vent shall not leak during filling or normal flight maneuvers.

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ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

3. Fill Port(s)

- a. The fill port shall be a 3-inch Kamlock ® fitting (male) and shall be located on the right and left side of the aircraft.
- b. The fill port shall not leak or overflow during ground operations or during normal flight maneuvers.

Note: For hover draft operations, fill ports are not required.

4. Controls

- a. The door open switch shall be the same switch that opens the water bucket.
- b. When required, the tank close switch shall be the same switch that closes the water bucket.
- c. All tanks shall be equipped with an independently controlled and operated emergency dump system enabling the entire load to be dropped in less than 6-seconds. This system shall use mechanical, pneumatic, or fluid pressure for operation.
- d. Emergency systems operated by pneumatic or fluid pressure shall be isolated from the normal tank system pressure. Normal function or failure of the normal system shall not affect the emergency system pressure. Emergency systems dependent on normal operating aircraft or tank systems for initial charge shall have a pressure gauge or indicator readily visible to the crew. Emergency systems dependent on precharged bottles shall have a positive means of checking system charge during preflight.
- e. The primary emergency dump control shall be positioned within easy reach of the pilot and copilot while strapped in their respective seats. Electrically operated controls shall be wired direct to a source of power isolated from the normal aircraft electrical bus and protected by a fuse or circuit breaker of adequate capacity.

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ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

5. Certifications

- a. The aircraft will be certificated in the normal or transport category except when restricted operations are authorized by the Government Official .
- a. Weight and balance computations shall be made with the tank full, empty, and removed, showing the helicopter to remain within acceptable center of gravity limits at all times
- b. The tank shall accept filling at a rate sufficient to allow the tank to be filled to capacity in no more than 1-minute.

B. Suppressant/Retardant Mixing Equipment

1. Installation

The unit shall be designed for ease of installation and loading and shall not require any modifications to the helicopter. Modifications are defined as any change to the integrity of the structural components of the helicopter airframe, such as drilling holes in tubing or distorting the metal.

2. Containment

Any unit mounted inside the helicopter (other than those that have STC's or 337's) shall have a containment vessel around the pumping and concentrate storage supply. The containment vessel shall be able to hold 125% of the concentrate supply. The discharge hose and fittings shall be able to withstand 150 PSI or two times the rated maximum pressure output of the pump, whichever is greater. The discharge hose that is inside the cabin shall have a containment sleeve of clear hose to check for leaks.

3. Restraint

The foam pumping unit containment vessel and concentrates shall be affixed to the helicopter in a means to prevent injury to any occupants. The design shall meet the maximum inertia forces specified in 14 CFR 23.56 I (b)(2).

4. Hose Routing

The hose used to carry the concentrate shall be routed out the side of the helicopter away from the pilot. Hoses will be routed in a manner that will not interfere with flight controls.

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EXHIBIT 5

ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

5. Breakaway Fittings

Any hose shall have a disconnect that will pull away from the hose when the bucket is released. The disconnect shall be close to the helicopter to keep the hose from beating against the helicopter. The disconnect shall hold the pressure of the line and be able to activate at 1/3 of the bucket empty weight.

6. Compatibility of Materials

The materials used in construction of any foam dispensing unit shall be compatible with all foams. Materials shall be resistant to corrosion, erosion, etching, or softening. To evaluate the materials, submerge in foam concentrate for 96 hours then in a 1 1/2% solution for 96-hours. Material samples shall be measured, weighed and visually examined to insure that deterioration of the materials and the assembly does not occur with operational use. Unacceptable conditions may be, but are not limited to cracking, crazing, softening, joint separation, bulging, diminished wall thickness, glue or mastic breakdown, or defective fasteners, gaskets or fittings.

7. Foam Quantity

Unit is to be of the optimum size compatible with the make and model helicopter. However, the unit shall carry a minimum of 5 (five) gallons of concentrate for each 100 gallons of bucket capacity. Downloading may be accomplished when desirable during operations.

8. Power

Power source for the dispenser shall be obtained from the helicopter by installing a MS 3116FI2-3P, 3 pin connector on the cord to the unit pin A shall be +28 VDC and pin B for ground (this is the same plug used for the infrared imaging system). Electrical power required to operate the concentrate pump shall not be in excess of that normally available from the plug used as the source of power.

9. Vibration

The unit shall not cause undue vibration in the helicopter during operation or in flight. The unit shall be padded to keep from causing any single stress points on any parts not designed for such.

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ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

10. Operation

The pilot shall be able to operate the unit with a minimal level of attention. The system shall be automated to the point where the pilot has one control to operate. Once the control is set for flow rate there should be no further adjustment necessary to the unit.

11. Flow Rate

The system shall be capable of dispensing a variable amount of concentrate, in flight, to achieve a mixture ratio ranging from 0.1 to 1.0% by volume in 0.1 % increments.

12. Concentrate Loading

Loading using 5-gallon containers is preferred. Bulk loading shall be performed so such loading will avoid any spillage on the helicopter or come in contact with the helicopter. Servicing shall be accomplished during normal refueling time for the helicopter and take no longer than the refueling operation. Loading operations are to be performed by Cooperator personnel.

13. Approved Foam Products can be found at: Wildland Fire Chemical Systems (WFCS) www.fs.fed.us/rm/fire

- a. When transporting retardant or equipment containing retardant residue, Cooperator shall take precautions to prevent retardant from coming in contact with the aircraft structure.
- b. Offered equipment will be approved by the Government Official prior to any use under the Agreement.

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EXHIBIT 5

ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

C. Additional equipment offered shall meet the following requirements:

1. Power source for a Helitorch or remote cargo hook

- a. An MS3101A-24-11S, 9-pin connector shall be provided. Pin D shall be airframe ground. Pin E shall be switched 28VDC, protected by a 50 amp circuit breaker that can be manually opened and reset. The water bucket open switch shall also activate this circuit.
- b. The connector shall be mounted adjacent to the cargo hook (within 12 inches). A wire rope lanyard or other similar device shall be provided for support of the connector so that tension loads will not be placed on the electrical wiring ..
- c. This connector has multiple circuit capacity sufficient to provide power and control for Cooperator-furnished equipment such as the required water bucket. Water buckets shall be wired through this connector.

Notes:

- i). See FS/AMD A-16 for a 9-pin wiring diagram for suppressant/retardant buckets (See: [www.fscfed.us/fire/niicd/ documents.html](http://www.fscfed.us/fire/niicd/documents.html))
- ii). The 9-pin connector is required on Type II (Medium) Exclusive Use helicopters and all Type III (Light) helicopters.

2. Remote Cargo Hook

- a. The cargo hook shall be inspected, overhauled and tested in accordance with the manufactures instructions. If the manufacture has no requirements then as a minimum, the cargo hook shall be completely disassembled and inspected with repairs made as required, lubricated and a full-load operational check in accordance with manufacturers recommendations every 24 months.

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EXHIBIT 5

ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

3. Long-lines(as applicable)

a. Rotation resistant wire rope

(1) Rotation resistant wire rope with swaged fittings rated in accordance with ANSI Standards

(2) Fabrication and installation methods shall be in accordance with aircraft and ANSI Standards.

b. Synthetic Long Line

(1) Helicopter synthetic long-lines shall be constructed from the HMWPE (High Molecular Weight Polyethylene Equipment) or HMPE (High Molecular Polyethylene Equipment) family of rope fibers including brand names such as Spectra® by Allied Signal or fibers with similar properties.

(2) Rope Diameter. Minimum rope diameter shall be 1/2-inch

(3) Working or Rated Load

A. The working or rated load of a rope is the maximum static load that will be lifted by the rope. Working loads are based on a percentage of the approximate breaking or ultimate strength of the rope when new and unused. The working load shall be appropriate to the lifting capability of the helicopter.

B. For reference, lifting capability for each category of helicopter is as follows:

Type I (Heavy) 8000 to 30,000 lbs or greater

Type II (Medium) 1600 lbs to 4500 lbs

Type III (Light) 750 lbs to 1600 lbs

(4) Factor of Safety

A factor of safety of 7 shall be used for helicopter synthetic long-lines. Therefore, all ropes shall have an ultimate strength of seven times the rated or working load. For example, if a Type II (Medium) helicopter line will have a working load of 4,500 pounds, the rope shall have strength, when new, of at least 31,500 pounds. Rope diameters will vary depending on strength and type of rope.

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ADDITIONAL SUPPRESSION/PRESCRIBED FIRE EQUIPMENT Cont.

(5) Knots and Splices

Knots are not permitted in the synthetic long-line. Knots can decrease rope strength by as much as 50%. Splices may be used in the assembly of the long-line, but no mid-line splicing repairs may be done. Re-splicing at the end of the line is permitted only if the rope is in good condition, and the new splice is done per manufacturer's recommended splicing practices. Splices should always follow the manufacturers recommended splicing practices.

(6) Maintenance and Inspections

Manufacturer's recommended maintenance and inspection procedures shall be complied with.

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**EXHIBIT 6
HIGH VISIBILITY MARKINGS ON MAIN ROTOR BLADES**

- A. Starting at blade tip, paint first 1/6th of blade length with gloss white. Paint second 1/6th of blade length with orange. Paint third 1/6th of blade length with gloss white. Paint next 1/3rd of blade length with orange. Paint remaining 1/6th of blade length with gloss white.

Hub End

White	Orange	White		Orange		White	White		Orange		White	Orange	White
1/6	1/6	1/6		1/3		1/6	1/6		1/3		1/6	1/6	1/6

- B. One black and one white blade.
- C. Paint schemes previously approved under Interagency Fire and Aviation Agreement.
- D. Paint schemes and color variations specified by manufacturer in a service bulletin, instructions, or other manufacturer published document or text.

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EXHIBIT 7
ADDITIONAL AVIONICS EQUIPMENT

A. GPS Data Connector

Standard Category Type II (Medium) & Type III (Light): One GPS Data Port Connector. A GPS data port connector shall be installed for the purpose of external data retrieval by a GIS laptop computer. The connector shall be a DB-9F type D sub-connector shall be wired for RS-232C serial format for laptop computers (pin 2-transmit data, pin 3-receive data if applicable, and pin 5-ground) and shall be mounted in a location convenient to the observer. Note: Not required for aircraft designed for a single occupant (i.e. K-MAX) or tanked aircraft.

B. Fuel Service Vehicle Radio

1. VHF-FM two-way mobile radio, with a matched broadband antenna (Antenna Specialists ASPR7490, Maxrad MWB5803, or equivalent), shall be installed in the fuel-servicing vehicle. The radio's operational bandwidth shall include the 150 MHz to 174 MHz frequency band, with user-programmable channels. Selection of either wideband (25.0 kHz) or narrowband (12.5 kHz) channel spacing is required on each channel. The radio shall be frequency-synthesized, equipped with a CTCSS sub-audible tone encoder having a minimum of 32 selectable tones meeting the current TIA/EIA-603A standard, and develop a minimum of 30 watts carrier output power.

2. Transceivers shall be set to operate in the analog narrowband mode unless local requirements dictate otherwise. All radios must have the ability to be programmed in the field by the radio operator.

3. The use of appropriate VHF-FM portable radios with suitable output power booster units is permissible. See the below VHF-FM Portable Radio section for portable radio requirements.

4. All VHF-FM transceivers (aeronautical, mobile, and portable) furnished to meet the requirements of this contract must be multimode (P25) digital.

C. VHF-FM Portable Radio

d. A VHF-FM two-way portable radio operating from 150 MHz to 174 MHz. The radio shall provide selection of either wideband(25.0 kHz) Of narrowband (12.5 kHz) channel spacing on each channel. The radio shall be frequency-synthesized, equipped with a CTCSS sub-audible tone

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encoder having a minimum of 32 selectable tones meeting the current TIA/EIA-603 standard, and develop a minimum of 1 watt nominal output power but no more than 10 watts nominal output power. Modified or Family Service Radios (FSR) are not acceptable.

- e. Transceivers shall be set to operate in the analog narrowband mode unless local requirements dictate otherwise. All radios must have the ability to be programmed in the field by the radio operator.
- f. When the above Fuel Service Vehicle Radio requirement is met with the use of a VHF-FM portable radio with output power booster, that portable VHF-FM radio may be used to comply with this section as long as the portable radio complies with all specified VHF-FM Portable Radio requirements. The VHF-FM portable radio used in the fuel service vehicle must be removable and still operate as a portable radio.
- g. At least two fully charged batteries per radio are required at the beginning of each shift. These cooperators supplied batteries must operate the portable radio throughout the shift. It is highly recommended that all portable radios utilize an AA alkaline battery clamshell. A source of 115 V AC power may not be available for rechargeable batteries.
- h. All VHF-FM transceivers (aeronautical, mobile, and portable) furnished to meet the requirements of this agreement must be multimode (P25) digital.

Note: It is highly recommended that a programming "cheat sheet" accompany the VHF-FM portable radio. Additionally, the radio should have a carrying case or chest pack carrier and utilize AA batteries.

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EXHIBIT 8
FUEL SERVICING EQUIPMENT REQUIREMENTS

A. General

1. An approved fuel servicing vehicle (FSV) (truck, pump-house, or trailer) shall be provided with each helicopter if requested. The FSV shall be inspected annually and shall be stationed at the Assigned Work Location unless dispatched by the requesting agency. The current Cooperators inspection sticker, certifying the vehicle conforms to the requirements herein, shall be kept with the vehicle.
2. The fuel-servicing vehicle shall be capable of transporting fuel over rough mountainous terrain to include grades of up to 9%.
3. Fuel tank/chassis combinations which are not compatible and/or that exceed the gross vehicle weight rating (GVWR) when tank(s) are full are not permitted.
4. Fuel servicing vehicles shall be properly maintained, cleaned, and reliable. Tanks, plumbing, filters, and other required equipment shall be free of leaks, rust, scale, dirt, and other contaminants. Trailers used for storage and transport of fuel shall have an effective wheel braking system.
5. Spare filters, seals, and other components of the fuel-servicing vehicle filtering system shall be stored in a clean, dry area in the fuel service vehicle. A minimum of one set is required to be with the vehicle.
6. The fuel servicing vehicle tank capacity shall be sufficient to sustain 8-hours of flight (14 hours of flight when the aircraft is doubled crewed and required in the Schedule of Items). Note that the aircrafts fuel load, at the start of the day, may be considered part of the sustained flight time requirement. Barrels are not acceptable. The fuel servicing vehicle manufacturers' gross vehicle weight (GVW), with a full fuel tank, shall not be exceeded.
7. All tanks will be securely fastened to the vehicle frame in accordance with DOT regulations and shall have a sump or sediment settling area of adequate capacity to provide uncontaminated fuel to the filter.
8. A 10-gallon per minute filter and pump is the minimum size acceptable. Filter and pump systems sizes shall be compatible with the helicopter being serviced.

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9. The filter manufacturer's Operating, Installation and Service Manual shall be with the fuel-servicing vehicle. Filters shall be changed in accordance with the filter manufacturer's manual, at a minimum of every 12-months, whichever is less, and documented. The filter vessel shall be placarded indicating filter change date and documented in service vehicle log.
10. Gasoline engine driven pumps shall be designed to pump fuel, have shielded ignition system, Forest Service approved spark arrestor muffler, and a metal shield between the engine and pump. Other exposed terminal connections shall be insulated to prevent sparking in the event of contact with conductive material.

B. Equipment

1. Each aircraft fuel servicing tank vehicle shall have two fire extinguishers, each having a rating of at least 20-B:C with one extinguisher mounted on each side of the vehicle. Extinguishers shall comply with NFPA 10 Standards for Portable Fire Extinguishers.
2. Fuel tanks shall be designed to allow contaminants to be removed from the sediment settling area.
3. Fuel hoses must be compatible with the fuel being dispensed. Hoses shall be kept in good repair. The fueling hose length shall be a minimum of $\frac{1}{2}$ the rotor diameter plus 20 feet for rapid refueling.
4. Fuel nozzle shall include a 100-mesh or finer screen, a dust protective device, and a bonding cable with clip or plug. Except for closed circuit systems, no hold-open devices will be permitted.
5. An accurate fuel-metering device for registering quantities in U.S. gallons of fuel pumped shall be provided. The meter shall be positioned in full view of the fuel handler while fueling the helicopter.
6. Fuel servicing vehicle shall have adequate bonding cables.
7. Fuel servicing vehicle shall comply with DOT and EPA requirements for transportation and storage of fuel, and shall carry sufficient petroleum product absorbent pads or materials to absorb or contain up to a 5-gallon petroleum product spill. The Cooperator is responsible for proper disposal of all products used in the cleanup of a spill in accordance with the EPA, 40 CFR 261 and 262.
8. Operator shall provide locking devices for all filler ports on all fuel storage tanks.

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9. A deadman flow control shall be installed in the fuel system in accordance with NFPA 407.

C. Markings

1. Each fuel-servicing vehicle shall have "NO SMOKING" signs with 3-inch minimum letters visible from both sides and rear of vehicle.
2. Each vehicle shall also be conspicuously and legibly marked to indicate the nature of the fuel. The marking shall be on each side and the rear in letters at least 3 inches high on a background of sharply contrasting color such as Avgas by grade or jet fuel by type. Example: Jet-A white on black background.
3. All fuel servicing vehicles shall be placarded in accordance with 49 CFR 172.

D. Filtering System (Three-Stage or Single-Stage is acceptable)

1. The first and third stage elements of a three-stage system and the elements of a single-stage system shall be new and installed by the Cooperator during the annual inspection.
2. The separator element (Teflon screen) of the three-stage system shall be inspected and tested as prescribed by the manufacturer during the inspection. The filter assembly shall be placarded with that data.
3. If equipped with a drain, the bottom of the filter assembly shall be mounted to allow for draining and pressure flushing into a container. If the unit is drained overboard, the fuel shall not come in contact with the exhaust system or the vehicle's wheels. If the unit is equipped with a water sight gauge, the balls shall be visible.
4. Three-Stage (filter, water separator, monitor) System:

Fueling systems shall utilize a three-stage system such as a Facet Part Number 050970-M2 for 20 gallon-per-minute (gpm) pump, or equal. A Facet Part Number 050971-M2 for a 10 gallon-per-minute pump, or equal. An acceptable third-stage (monitor) unit is Velcon CDF-220 Series for 20-gpm flow or Velcon CDF-210E for 10 gpm systems.

5. Single-Stage System or Three-in-One Filter Canister:

Fueling systems shall utilize a single element system such as a Velcon

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filter canister with Aquacon cartridge of a size compatible with pumps flow rate.

6. Differential pressure gauge(s) shall be installed and readable.
Example: Velcon VF61 canister with an ACO-51201C cartridge.

E. Fuel Servicing

1. General

- a. The Cooperator shall supply all aircraft fuel unless the Government exercises the option of providing fuel. All fuel provided by the Cooperator will be commercial grade aviation fuel. Only fuels meeting the specifications contained in the aircraft's flight manual shall be used.
- b. Fueling operations, including storage and handling, shall comply with the airframe and engine manufacturer's recommendations and all applicable FAA standards. NFPA Standard No. 407, Aircraft Fuel Servicing, shall be followed except that no passengers may be on board during fueling operations.
- c. The cooperator shall ensure that they are in compliance with 40 CFR Part 112: Oil Pollution Prevention; Spill Prevention, Control, and Countermeasure Plan Requirements (SPCC).
- d. Fuel shall pass through a filtering system in accordance with the filter manufacturer's recommendations.

2. Rapid Refueling

- a. There are two approved methods (CCR and Open Port) for fueling helicopters with engine(s) running.
 - 1) Closed Circuit Refueling (CCR). This method of refueling uses a CCR system designed to prevent spills, minimized fuel contamination, and prevent escape of flammable fuel vapors.
 - 2) Open Port. This method of refueling allows flammable fuel vapors to escape.
- b. Rapid refueling of helicopters is permitted if requested by the Government, and the Cooperator follows NFPA 407 procedures, and the cooperator has an approved rapid refueling procedure. For 14 CFR Part 133 and 137 operators a copy of company rapid refueling procedures must be submitted prior to rapid refueling. Rapid refueling authorization shall be annotated on the aircraft approval card. Additionally, the Cooperator shall meet the following requirements:

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- 1) A pilot shall be seated at the controls of the aircraft during refueling operations.
- 2) The aircraft shall be shut down after every 4-hours of continuous operation.
- 3) Personnel providing onsite fire protection are briefed on the Cooperator's rapid refueling procedures.
- 4) Government personnel shall not refuel Agreement aircraft unless the pilot requests Government assistance due to an emergency situation; or when the Government provides the fuel servicing system and dispensing personnel.
- 5) The hose shall be a minimum of $\frac{1}{2}$ the rotor diameter plus 20 feet for rapid refueling.
- 6) A Closed Circuit refueling adapter shall be provided to allow fueling of aircraft with standard fueling ports.

F. Fuel Quality Control Procedures

Compliance with fuel quality control requirements is the responsibility of the cooperator. NFPA 407 shall be followed for Aircraft Fuel Servicing.

1. Daily

- a. Check for and remove any water from fuel tanks. A water check will be performed each morning before the vehicle is moved, after every reloading of fuel, washing of equipment, and after a heavy rain or snowstorm.
- b. Drain all filter/separator drain valves and check for water and other contaminants. Draw off any accumulation of water.
- c. Draw off a sample from the fuel nozzle. Sample shall be collected in a clean, clear glass jar and examined visually. Any visual water, dirt, or filter fibers are not acceptable.

2. During Helicopter Fueling Process

- a. Check sight gauge for water, if equipped.
- b. Visually inspect fuel system for leaks. Repair as necessary.

3. Weekly

- a. With pump operating, pressure flush filter assembly. Continue flush operation until sample is clear, clean, and bright.
- b. Time flow rate with full open flow from nozzle. Record gallons-per-minute to nearest 1/10 gallon.

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- c. Check condition of covers, gaskets, and vents.
 - d. Inspect all fire extinguishers for broken seals, proper pressure, and recharge date. Recharge as necessary.
 - e. Inspect hoses for abrasions, separations, or soft spots. Weak hoses will be replaced.
4. Record Keeping. The fuel handler shall keep a daily record containing the following information: (as a minimum)
- a. Condition (clean, clear, bright, etc.) of fuel sample at:
 - 1. Nozzle Sample
 - 2. Filter Sump Sample
 - 3. Tank Sump Sample
 - b. Flow rate in gallons per minute to the nearest 1/10 gallon.
 - c. Filter change (reason & date)
 - d. Record of source, location, when and quantity of fuel loaded into servicing vehicle.
 - e. Fuel servicing vehicle tank ports will be secured and locked to prevent access by unauthorized individuals.

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EXHIBIT 9

**OPERATIONS AND SAFETY PROCEDURES GUIDE FOR HELICOPTER
PILOTS**

It is important for Cooperator pilots to be familiar with the Agreement specifications. See Forest Service web site:
<http://W.N.N.nifc.gov/aviation/helicopters.htm>

Pilot operation briefings will emphasize the following areas:

1. Pilot Authority and Responsibility
2. Helicopter Management
3. Operational Requirements
4. Operating Limitations and Weather Requirements
5. FM Radio and GPS Operations
6. Flight Following and Flight Plans
7. Incident Airspace
8. Knowledge and Procedure Overview
9. Regional Procedures
10. Reference Web Sites
11. Pilot Certification
12. Verification of Long-Line and/or Snorkel Training
13. Flight Hour requirements and experience verification
14. Required documentation for pilot carding

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EXHIBIT 10
**INTERAGENCY COOPERATOR GUIDELINES FOR VERTICAL
REFERENCE/EXTERNAL LOAD TRAINING STANDARDS**

Each Cooperator pilot shall have a minimum of 10-hours Vertical Reference/External Load flight training during initial qualification, and a minimum of 2-hours annual recurrent training prior to use under the Agreement.

- A. The pilot shall be able to demonstrate proficiency with either 100 to 150-foot length lines, and:
- B. Exhibit knowledge by explaining the elements of external load operations.
- C. Perform a thorough preflight briefing of ground personnel to include hookup procedures, signals, pilot, and ground personnel actions in the event of an emergency or hook malfunction.
- D. Visually determine that the cargo hook(s) and cables are installed properly and that electrical and manual releases are functioning properly.
- E. Ascend vertically using vertical reference techniques while centered over the load until the load clears the ground, then maintain a stable hover with a load 10-feet (+ - 5-feet) above the ground for 30-seconds.
- F. Control the hook movement and stop load oscillations while in a hover.
- G. Maintain positive control of the load throughout the flight while maintaining specified altitude within 50-feet, airspeed within 10-knots and heading within 10°.
- H. Maintain the proper approach angle and rate of closure to establish an out-of-ground effect hover with the load 10 feet above the ground (+ -5-feet) for 30-seconds. The load will then be placed within a 10- foot radius of the specified release/touchdown point.
- I. Maintain the proper approach angle and rate of closure to establish an out-of-ground effect hover within a confined area with the load 10-feet above the ground (+ - 5-feet) for 30-seconds. The load will then be placed within a 10-foot radius of the specified release/touchdown point.

I certify that _____ meets the currency and performance requirements of our Cooperator's Vertical Reference/External Load Training Manual.

Chief Pilot Signature

Date

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EXHIBIT 10
**INTERAGENCY COOPERATOR GUIDELINES FOR VERTICAL
REFERENCE/EXTERNAL LOAD TRAINING STANDARDS (Continued)**

Each cooperator pilot shall have an annual proficiency endorsement from the cooperator's chief pilot.

**VERTICAL REFERENCE GUIDELINES FOR HELICOPTERS USING A FIXED
TANK WITH SNORKLE**

The pilot shall demonstrate proficiency with the snorkel by:

- Exhibiting knowledge of the elements of vertical reference operations.
- Performing a thorough preflight of the tank and snorkel
- Establishing a hover before takeoff by ascending vertically using vertical reference techniques while not dragging the snorkel.
- Establishing and maintaining the proper approach angle and rate of closure to establish a 5 foot snorkel height above the porta-tank and then lowering the snorkel into the tank. Maintain a stable hover for 30 seconds. Ascend vertically while keeping the snorkel clear of the edges of the tank until the snorkel is at least five (5) feet above the tank. Transition to forward flight without allowing the snorkel to settle back into the tank,

OR

- Establishing and maintaining a proper approach angle and rate of closure to establish a 5 foot snorkel height above the ground and over a circle of 8 to 10 feet in diameter. The circle shall be marked by paint or other easily identifiable material. From a stable hover, lower the aircraft until the snorkel head is touching the ground. Execute a 360 degree turn (left or right) while maintaining the snorkel head in contact with the ground within the circle and not allowing any part of the snorkel hose to touch the outside of the circle. The maneuver should be completed in 90-120 seconds,

AND

- Perform a landing while placing the main landing gear in a 6 foot diameter circle

I certify that _____ meets the currency and performance requirements of our Cooperator's Vertical Reference/External Load Training Manual.

Chief Pilot Signature

Date

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**EXHIBIT 13
INTERAGENCY HELICOPTER LOAD CALCULATION**

Instructions

A load calculation must be completed for all flights. A new calculation is required when operating conditions change ($\pm 1000'$ in elevation or $\pm 5^{\circ}\text{C}$ in temperature) or when the Helicopter Operating Weight changes (such as changes to the Equipped Weight, changes in flight crew weight or a change in fuel load).

The current version of the Interagency Helicopter Load Calculation form OAS-67/FS5700-17 shall be utilized.

All blocks must be completed. Pilot must complete all header information and Items 1-13. Helicopter Manager completes Items 14 & 15.

1. DEPARTURE – Name of departure location and current Pressure Altitude (PA, read altimeter when set to 29.92) and Outside Air Temperature (OAT, in Celsius) at departure location.
2. DESTINATION – Name of destination location and PA & OAT at destination. If destination conditions are unknown, use MSL elevation from a map and Standard Lapse Rate of $2^{\circ}\text{C}/1000'$ to estimate OAT.

Check the box in Line 1 (Departure) or Line 2 (Destination) to indicate the most restrictive values used to obtain Computed Gross Weight in Line 7b.

3. HELICOPTER EQUIPPED WEIGHT – Equipped Weight equals the Empty Weight (as listed in the Weight and Balance Data) plus the weight of lubricants and onboard equipment required by agreement (i.e. survival kit, rappel bracket).
4. FLIGHT CREW WEIGHT – Weight of the Pilot and any other assigned flight crewmembers on board (i.e. Co-pilot, flight engineer, navigator) plus the weight of their personal gear.
5. FUEL WEIGHT – Number of gallons onboard X the weight per gallon (Jet Fuel = 7.0 lbs/gal; AvGas = 6.0 lbs/gal).
6. OPERATING WEIGHT – Add items 3, 4 and 5.
7.
 - a. PERFORMANCE REFERENCES – List the specific Flight Manual supplement and hover performance charts used to derive Computed

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Gross Weight for Line 7b. Separate charts may be required to derive HIGE, HOGE and HOGE-J. HIGE: use Hover-In-Ground-Effect, External/Cargo Hook Chart (if available). HOGE & HOGE-J: use HoverOut-Ground-Effect charts for all HOGE operations.

- b. COMPUTED GROSS WEIGHT - Compute gross weights for HIGE, HOGE and HOGEJ from appropriate Flight Manual hover performance charts using the Pressure Altitude (PA) and temperature (OAT) from the most restrictive location, either Departure or Destination. Check the box in Line 1 (Departure) or Line 2 (Destination) to indicate which values were used to obtain Computed Gross Weight.
8. WEIGHT REDUCTION – The Government Weight Reduction is required for all “nonjettisonable” loads. The Weight Reduction is optional (mutual agreement between Pilot and Helicopter Manager) when carrying jettisonable loads (HOGE-J) where the pilot has total jettison control. The appropriate Weight Reduction value, for make & model, can be found in the current helicopter procurement document (agreement).
9. ADJUSTED WEIGHT – Line 7b minus Line
10. GROSS WEIGHT LIMITATION – Enter applicable gross weight limit from Limitations section of the basic Flight Manual or the appropriate Flight Manual Supplement. This may be Maximum Gross Weight Limit for Take-Off and Landing, a Weight/Altitude/Temperature (WAT) limitation or a Maximum Gross Weight Limit for External Load (jettisonable). Limitations may vary for HIGE, HOGE and HOGE-J.
11. SELECTED WEIGHT – The lowest weight, either line 9 or 10, will be entered for all loads. Applicable limitations in the Flight Manual must not be exceeded.
12. OPERATING WEIGHT – Use the value entered in Line 6.
13. ALLOWABLE PAYLOAD – Line 11 minus Line 12. The maximum allowable weight (passengers and/or cargo) that can be carried for the mission. Allowable Payload may differ for HIGE, HOGE and HOGE-J.
14. PASSENGERS AND/OR CARGO – Enter passenger names and weights and/or type and weights of cargo to be transported. Include mission accessories, tools, gear, baggage, etc. A separate manifest may be used.
15. ACTUAL PAYLOAD – Total of all weights listed in Item 14. Actual payload must not exceed Allowable Payload for the intended mission profile, i.e. HIGE, HOGE or HOGE.

Both Pilot and Helicopter Manager must review and sign the form. Check if

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HazMat is being transported. Manager must inform the pilot of type, quantity and location of HazMat onboard.

LIST OF SUPPLEMENTS

- A. Supplement for UH-1H Instructions for Continued Airworthiness
Document name: COOP STD UH-1H ICA