United States Department of Agriculture

STANDARDS FOR AIRTANKER OPERATIONS

Forest Service

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Questions regarding content of this publication may be directed to the National Airtanker Program Manager or Branch Chief, Fixed-Wing Aviation Operations.

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Review and Revision Schedule: The National Airtanker Program Manager will review these standards annually, and make changes as needed. Significant changes made will be documented on a Digest Form (below), reviewed by the Regional Aviation Officers, WO Branch Chiefs and approved by either the Assistant Director, Aviation or the Director, Fire and Aviation Management.

Digest

The table below provides a list of approved significant changes made to the current approved version of these standards.

Note: This list is not inclusive of all changes made in the Standards for Airtanker Operations.

Page	Section/ Chapter	Sentence	Changes, Clarification, Edit
12	2.1	IDIQ	Added verbiage regarding the new MATOC (IDIQ) contract
17	7.0	Airtanker Ops	Mirrored the Redbook for verbiage on water dropping from airtankers
19	7.2	Airtanker Ops	Mirrored verbiage from the overload letter
21	7.4	Airtanker Ops	Added verbiage on what to do when a LAT is non-IA
21	7.4.1	New Section	Added verbiage regarding long distance airtanker orders
24	7.8.1	Airtanker Ops	Edited verbiage on leadplane for VLAT dispatching to match the Redbook
27	7.12	New Section	Added a section regarding safety and effectiveness of retardant drops in windy conditions.
27	7.14.1	New Section	Added verbiage regarding airtanker combat loads
28	9.0	Pilot Inspections	Added verbiage requiring an AKTP and leadplane for AKP rides and upgrades
32	12.3.1	New Section	Added a section regarding Airtanker Assignment Turndown Procedures
32	13.0	Type 1 and 2 Airtanker Info	Moved the similar items for all airtankers to the top and removed from individual airtanker pages
36	13.6	Last bullet	Corrected cruise speed from 330 Knots to 430 Knots
39	Appendix C	New Appendix	Added language regarding the airtanker CO Approved Equivalency process
Throughout			Updated web addresses

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Figures/Tables

1.0 Introduction

1.1 Background

Since 1955, airtankers have played a key role in suppressing wildfires. Airtankers deliver fire retardant to wildfires, thereby reducing fire intensity and rate of spread, allowing ground firefighters time to contain and/or control new, emerging and large fires. The reduced intensity and rate of spread can allow more effective use of hand crews and engines. As fire intensity increases, or as rate of spread increases, they become more difficult to control and costly to extinguish. Accessibility of terrain or the location of a wildfire can delay the deployment of ground resources. Consequently, aerial delivery of fire retardant is often the only available method to slow the growth of wildfires until ground firefighters can establish containment and/or control lines.

Multi-engine Airtankers are defined as turbine, fixed-wing aircraft converted to function as retardant or water delivery aircraft. Airtankers are defined by ICS Typing Standards and Forest Service contract requirements. Airtanker types can be found at: https://www.nwcg.gov/publications/pms200

For simplicity, when this document refers to airtankers, VLAT, Type 1, 2 and 3 airtankers (see Table 1. Types of Airtankers) are included. Single Engine Airtankers (SEATs) are contracted by the Bureau of Land Management and State Governments, and are not part of these standards. Forest Service (FS) SEAT operations shall be governed by the NWCG Standards for Airtanker Base Operations (SABO) at https://www.nwcg.gov/publications/508, Chapter 7, Operations.

Refer to the Forest Service Amphibious Water Scooper Aircraft Operations Plan, https://www.fs.usda.gov/managing-land/fire/aviation/publications, and the NWCG Standards for Water Scooping Operations (PMS 518), https://www.nwcg.gov/publications/518, for water scooper planning, safety and operations.

1.2 Objective

The objective of these standards is to identify uniform processes and procedures for utilization by staff, supervisors, specialists, and managers for planning, administering, and conducting airtanker operations.

The Forest Service Standards for Airtanker Operations references or supplements policy and connects contract requirements with policy for the planning, management, and operations of FS airtanker utilization.

The priority mission for airtankers is for initial attack (IA) of wildfires. Airtankers respond to new and emerging fires with typical missions of one hour or less. These immediate response actions occur in the first burning period and are intended to support personnel, either on scene or enroute to the incident, in containing the fire when it is least costly to do so.

The second priority for the airtankers is large fire support. However, if the airtanker is working on a large fire and an IA starts, the priority would be the IA and backfill on the large fire.

Modular Airborne Firefighting Systems (MAFFS) provides emergency capability to supplement commercial airtankers on wildland fires. MAFFS are national resources and are used as a reinforcement measure when contract airtankers are committed or not readily available. MAFFS require a leadplane or Aerial Supervision Module. Follow the national rotation policy for daily rotation procedures for MAFFS.

Cooperator airtankers, if federally approved, will be utilized following the closest resource concept for fires on FS lands.

1.3 Scope

FS contracted airtankers are national resources in terms of utilization, high demand, and limited availability.

Airtankers delivering retardant are one part of a multi-faceted national interagency wildfire response effort, they are important to federal, state, and local wildland firefighting missions of protecting communities and natural resources from wildfires.

1.4 Policy

All airtanker operations shall comply with the applicable provisions of:

- Title 14 Code of Federal Regulations (14 CFR). Parts 91, 137 and 145.
    - https://www.ecfr.gov/current/title-14
- FS Manual (FSM – 5700)
    - https://www.fs.usda.gov/cgi-bin/Directives/get_dirs/fsm?5700!
- FS Aviation Management Handbook (FSH – 5709.16)
    - https://www.fs.usda.gov/cgi-bin/Directives/get_dirs/fsh?5709.16!
- NWCG Standards for Airtanker Base Operations (PMS 508)
    - https://www.nwcg.gov/publications/508
- FS Fire and Aviation Management Qualifications Handbook (FSH – 5109.17)
    - https://www.fs.usda.gov/cgi-bin/Directives/get_dirs/fsh?5109.17
- Interagency Standards for Fire and Fire Aviation Operations (Redbook) (NFES 2724)
    - https://www.nifc.gov/standards/guides/red-book
- NWCG Standards for Aerial Supervision (PMS 505)
    - https://www.nwcg.gov/publications/505

- National Interagency Mobilization Guide
    - https://www.nifc.gov/nicc/logistics/reference-documents
- FS Procurement Documents (Contracts, Basic Ordering Agreements, Blanket Purchase Agreements, contract modifications)

Airtanker operations adhere to regulations, manuals, handbooks, guides, plans, standards, and checklists to execute and coordinate operations in a safe and effective manner. Where the terms “shall” and “must” are used in manuals, handbooks, standards or guides, compliance with those items is mandatory and not discretionary (FSM 1110.8 - Exhibit 01 Degree of Compliance or Restriction in Directives).

When the FS contracted aircraft and flight crews are performing operations for other agencies or cooperators where policy may differ, the FS’s policies, guidance, and standard operating procedures shall be followed.

2.0 Program Management

All airtankers under contract with the FS shall adhere to the specifications set forth in the contract under which they are operating. Any concerns, requests, or proposed revisions to contract specifications shall be directed to the assigned Contracting Officer (CO) and/or the National Airtanker Program Manager (ATPM). The airtanker program requires regional management and oversight in addition to national program management.

The National Airtanker Program is managed by the National Airtanker Program Manager (ATPM). Additional programmatic and operational oversight shall be provided by:

- National Aviation Branch Chiefs and their permanent and/or detailed staff
- Regional Aviation Officers (RAO)
- Regional Fixed-Wing Program Managers (FWPM)
- Regional Fixed-Wing Operations Specialists (FWOS)
- Regional Aviation Safety Officers (RASO)
- Regional Aviation Maintenance Inspectors (AMI)
- Other Regional personnel who have been delegated oversight responsibility for airtankers.

The National FWC and staff in coordination with the National Interagency Coordination Center (NICC) coordinate operational and strategic movement of airtankers with the Geographic Area Coordination Centers (GACCs) and the National ATPM to optimize response efficiency and effectiveness.

The Washington Office, in cooperation with Regional Office Aviation Staff and Airtanker Base Managers (ATBMs), continue to adapt and develop operations and equipment to ensure a stable, efficient, and safe program. This is accomplished with quality assurance

reviews of the current management approach for effectiveness to include program funding, staffing, contract specifications, contract length, facilities, specialized training, placement of resources, and operations.

Communication between the regions, airtanker bases, and Washington Office is critical to maintain national mobility and response to support aviation and land management operations.

2.1 Contract Administration

Contracted airtankers are procured through the Forest Service Procurement and Property Services (PPS). Mandatory Availability Periods (MAP) and Call-When-Needed (CWN) activation of airtankers will be coordinated with the assigned CO, National ATPM, Contracting Officer's Representatives (CORs) and National Fixed-Wing Coordinator (FWC) based upon national fire requirements and needs.

Exclusive Use (EU) contracts are those awarded for a specific time period/MAP, during which the government has sole use of the aircraft and retardant delivery services.

Indefinite Delivery, Indefinite Quantity contracts (IDIQ), or Multiple Award Task Order Contracts (MATOC) provide for an indefinite quantity of services for a fixed time. Awards are usually for a base year and option years. The government places task orders against a basic/parent contract for airtanker services. There can be task orders for line items with MAPs and/or day-to-day line items based on the governments need.

CWN Basic Ordering Agreements (BOA) do not guarantee placement of orders, days, or flight hours. Airtankers brought on under the FS CWN contract are day-to-day and do not have a specific number of days they are required to be available to the FS. However, once ordered under the CWN contract, the airtankers are required to be available for 14 hours each day they are activated.

Airtanker contract and cooperator information is available by contacting the National ATPM.

States may have similar contracts or agreements, which are unique to that entity. Although not under contract to the FS, these airtankers must be federally carded or covered by a cooperator letter to be used on FS protected lands. Consult with the appropriate Regional Aviation Officer for assistance with cooperator airtankers. In addition, during periods of high fire activity airtankers from Alaska State, provinces in Canada, New South Wales and/or other countries or entities may be used within the United States. Canadian Provincial airtankers should be ordered through the National Interagency Fire Center and Canadian Interagency Firefighting Centre (NIFC – CIFFC) agreement, or through state compacts.

The CO is responsible for all contracting actions including contracting procedures, contract legality with existing laws, regulations, contract administration, and contract termination. In the contract administration's function, decisions on claims and disputes are final and can only be appealed to the Board of Contract Appeals or Court of Claims.

The COR is directly responsible to the CO for monitoring contract performance.[1] This is a contract chain of command and may not include the COR's direct supervisor, forest, or regional aviation staff. The COR and the National ATPM shall make every effort to maintain open dialogue with regions when contract issues affect regional airtanker operations and planning. Airtanker contract CORs are assigned by the CO and are generally, Airtanker Base Managers (ATBMs) or other regional or national aviation personnel. The COR is primarily responsible for assuring compliance with the provisions of the contract. The COR maintains communications with the vendor concerning day-to-day operation. The COR may represent the CO in making minor allowances which do not modify the price or other provisions of the contract. The COR is responsible for verifying the work performed upon which payment is based. Refer to the current Airtanker Schedule of Items for specific COR personnel and contact information.

The COR is responsible for entering contract information, flight time, availability, miscellaneous costs, etc. into the Incident Business System (IBS).

COR certification information regarding training requirements, external training opportunities, and the Federal Acquisition Institute's Corner Stone OnDemand is located at: https://id.dau.edu/

2.2 FLIGHT

FLIGHT is a software application that captures fixed-wing use and cost information. FLIGHT creates a single program of record for reporting that meets USDA security requirements. It interfaces with IRWIN for incident information and allows for the capture of daily information in a standardized format with real time data storage and recovery.

Every ATBM that has an FS contracted airtanker located on base shall enter information for the airtanker(s) and ensure completion by the end of the day.

3.0 Interagency Airtanker Board

The purpose of the Interagency Airtanker Board (IAB) is to promote the effectiveness, and efficiency of airtankers through approval of water and retardant delivery systems and recommendations to the contracting agencies. IAB criteria shall apply to fixed-wing airtankers intended for interagency use.

3.1 Approval Process

The IAB has established a step-by-step process for evaluation and approval of aircraft and tank delivery systems. All aircraft and tank delivery systems proposed for approval by the IAB shall be submitted by the proponent to the IAB chairperson for processing. The IAB

[1] Refer to the Designation of COR provided to each Airtanker Contract COR for specific duties and responsibilities.

reviews material submitted at each step and must ensure that all requirements of a step are met before the proponent will be allowed to proceed to the next step.

New airtankers, and/or older airtankers with newly modified tank and gating systems, may be given an IAB "Interim Approval" while field evaluations are conducted. The interim approval shall have an expiration date. Once the interim approval has expired, a full IAB approval must be granted to continue operating for the government. Refer to individual IAB letters for specific expiration dates or approvals.

To view the most current IAB Criteria, visit Guidance Documents at the site below
https://www.nwcg.gov/committees/interagency-airtanker-board

4.0 Aircraft Inspection and Approval

Each year prior to the use of aircraft and their crews, the FS will conduct pre-use inspections for compliance with the FS contract specifications and conditions. When the aircraft has met contract specifications it will be issued an aircraft approval card or cooperator letter. When the crew meets contract specifications, they will be issued a pilot qualification card or be named on the cooperator letter. Once approved or carded (aircraft and crew) the aircraft is available to operate as specified in the contract or cooperator letter. The cards are valid through the expiration date and can only be changed by the appropriate FS airworthiness representative (aircraft) or pilot inspector (aircrew).

4.1 Airtanker Return to Contract Availability Process

The steps below must be followed for every FS contracted airtanker:

1. The pilot notifies their Director of Maintenance of the discrepancy.
2. The agency representative (e.g., ATBM, COR, PI) notifies the appropriate FS Aviation Maintenance Inspector (AMI) and COR by completing the FS Contracted Airtanker Status Notification Form available at https://www.nwcg.gov/sites/default/files/committee/docs/iabs-airtanker-out-of-service-qr-codes.pdf

   The FS Contracted Airtanker Status Notification Form and most current Airtanker AMI Return to Contract Availability list is located at https://www.nwcg.gov/sites/default/files/committee/docs/iabs-airtanker-ami-contacts.pdf
3. Maintenance action is taken by the contractor to correct the discrepancy.
4. The AMI monitors progress of contractor's maintenance action.
5. The aircraft is approved for "Return to Service" in accordance with 14 CFR by the contractor's maintenance personnel and the maintenance log is signed off.
6. Once the aircraft is approved for "Return to Service" by the contractor, the contractor notifies the AMI who then reviews the paperwork and either approves or denies the aircraft to "Return to Contract Availability" The AMI will notify the

base and the COR of the time they returned them to contract availability by replying to the email generated by the FS Contracted Airtanker Status Notification Form.

7. The ATBM documents and ensures that the COR has been notified of the unavailability times for the airtanker.

4.2 Aircraft Maintenance

Airtankers require inspections and maintenance especially when they are flying several hours per day. The ATBM and contractor will coordinate maintenance needs and timing. Aircraft maintenance is typically performed before and/or after duty hours. Some airports require badged personnel to be on site for any after-hours maintenance. Maintenance crews need to work with the ATBM to ensure proper staffing for any needed after-hours maintenance.

During the duty day, the contractor may request maintenance time. The aircraft may be released from standby for scheduled or preventive maintenance once they have notified the AMI of the need and get the approval from the ATBM. The ATBM must work with the dispatch centers and coordination centers to ensure the aircraft will not be needed during the down time.

- Scheduled or preventative maintenance does not normally require action by agency personnel, unless they become out of service, cannot respond to a dispatch, or request a maintenance break. Communication between the ATBM, COR, AMI and contractor personnel is essential.
- Unscheduled maintenance must be reported to an AMI by the contractor's maintenance personnel.
- Only a qualified AMI can return an aircraft to contract availability after being unavailable. All details will be documented in the appropriate aircraft contract daily diary/air base daily log. If a SAFECOM is to be filed for a maintenance deficiency, it shall include the name of the inspector who approved the aircraft back to contract availability.
- Aircraft maintenance and engine run-ups at the airtanker base will be coordinated with the ramp manager and ATBM. Depending upon the situation, it may be necessary to move the aircraft to another area to avoid impacting other aircraft or operations.
- ATBMs will ensure a FS Contracted Airtanker Status Notification Form is completed any time the airtanker is out of service or has requested a maintenance break. This form is not needed for maintenance performed before or after the duty day.

5.0 Conduct and Ethics

All airtanker personnel employed or contracted by the FS are accountable to the public for their actions. Professional conduct is always expected and is measured by accountability, respect, leadership, communication, and the integrity of the program. Personnel will

conduct all operations with the highest regard to safety and within the boundaries of policy and/or the contract. Personnel will only perform those services in which they are qualified, trained, and equipped.

6.0 Communications

Lines of communication are established to keep all parties informed of pending or potential issues that may arise.

Contract related issues will be communicated through the COR to the CO and the National ATPM.

Operational issues will be communicated to the National ATPM.

National and Regional personnel (including ATBMs and CORs) and airtanker crew or contractor representatives are responsible for:

- Resolving problems/issues at the lowest level while ensuring documentation of the problem/issue.
- Early and proactive communication to anticipate issues or problems that could be a safety problem or affect the availability of an airtanker.
- Notify the COR with all contract compliance questions and/or concerns, major maintenance or mechanical issues, disputes, etc.
- The COR will notify the CO or National ATPM if the concerns or issues are outside the scope of their COR designation.
- Notify the appropriate national or regional personnel such as maintenance inspectors, inspector pilots, aviation safety managers/officers, operations specialists, etc. depending on the nature of the issue.
- Submit an FS Contracted Airtanker Status Notification Form at https://www.nwcg.gov/sites/default/files/committee/docs/iabs-airtanker-out-of-service-qr-codes.pdf as soon as possible after an issue has been identified by the contractor.
- Notify the appropriate dispatch center of aircraft status (i.e., available/unavailable).

7.0 Airtanker Operations

The FS airtanker mission is primarily focused on wildfire suppression dropping retardant in support of ground firefighters. The primary mission for Type 1, 2 and 3 airtankers is initial attack of new and emerging fires. Depending on pilot qualifications, most of the Type 1, 2 and 3 airtankers are initial attack capable. This means they don't need a leadplane or Aerial Supervision Module (ASM) on scene to drop retardant. Very Large airtankers are primarily used for large fire support and require a leadplane/ASM to be on scene prior to arriving on the fire. The mission profiles for airtankers may vary somewhat based on the specific

aircraft retardant delivery system, range, and performance capabilities; however, the general features of the mission remain the same. A mission sortie is assumed to be less than .91 flight time (55 minutes) on average; this includes transit to and from the airtanker base and delivery of retardant.

Airtankers shall not be loaded with water with the intention of dropping water instead of retardant. Local fire management plans, agreements or environmental conditions which limit or restrict the use of retardant should utilize water dropping aircraft such as helicopters and water scoopers.

Loading Type 2, Type 1 or VLAT airtankers with water or dropping water operationally shall not occur unless the FS National Airtanker Program Manager has been notified. Use of water operationally from these airtankers requires the following:

- That the use of retardant is restricted by the fire management plan (FMP) for the unit requesting the approval to use water.
- A copy of the section of the FMP restricting use of retardant shall be provided to the Forest Service National Airtanker Program Manager with the notification.
- Prior to ordering an airtanker, the receiving unit should request the appropriate water aerial dispensing aircraft, such as a water scooper or helicopter.

Refer to the Interagency Standards for Fire and Fire Aviation Operations for more information. https://www.nifc.gov/standards/guides/red-book

Use of water enhancers (gels) and foam is prohibited in FS contracted airtankers.

Airtankers on cooperator or foreign country contracts may be contracted to use water enhancers or foam. Prior to being inspected to start an FS contract, the airtanker retardant delivery system shall be thoroughly cleaned and rinsed of any water enhancer or foam residue.

Airtankers are not assigned permanent bases, which helps facilitate national mobility and response. A COR is assigned to each airtanker (contract line item). The COR provides technical direction, clarification, guidance and reporting with respect to the contract and payment system, IBS. The COR is delegated contract administration duties by the CO.

7.1 Airtanker Bases

Airtanker Bases (ATB) are generally managed by local forests with national and regional oversight. The host forest is responsible for ensuring all established facilities are maintained and operated per the FS policy, SABO and the Occupational Safety and Health Administration (OSHA) standards. ATBMs are responsible for development of a base operations plan based on regional and national direction.

All airtanker bases, permanent, or temporary, shall have an operations plan as outlined in the SABO. Selection of the actual airport in terms of aircraft performance shall be pre-

approved by the National ATPM after receiving the completed New Airtanker Base Checklist (Appendix B) from the region.

All airtanker bases, permanent, and temporary, will have overweight authorizations or waivers if airtankers exceed the published weight bearing capacity. The written authorization or waiver shall come from the airport authority and be in place prior to any airtanker operations. Overweight authorizations and waivers will address runways, taxiways, and ramps, and be specific to airtanker Max Gross Landing Weight and Max Gross Taxi Weight. The FS shall not be held liable for airtanker operations unless the FS or the airtanker vendor cause damage due to operator error or negligence.

When FS contracted airtankers operate from airtanker bases owned or managed by state or local agencies, that FS Region should provide a liaison between the agency managing the ATB and the FS. The liaison will assist and provide oversight to the administration of the FS airtanker contracts, policies and operational procedures that affect FS airtankers.

Airtanker base facilities, base operations, procedures, ramp operations, aircraft maneuvering, emergency procedures, and dispatch information can be found in the SABO, at https://www.nwcg.gov/sites/default/files/publications/pms508.pdf .

Airtanker base and fixed-wing base ramp operations shall adhere to the ramp operations procedures in the SABO.

ATBMs, with concurrence from the PIC and notification made to the COR, may authorize an agency employee to ride on an airtanker during taxi to/from a pit. The ability of the FWPT, RAMP or ATBM to see the ramp from the pilot's perspective greatly enhances the awareness of the ground personnel. Being able to see the visual hinderances of the pilots will help the ATBMs, RAMPs and FWPTs make better decisions on ground maneuvering and increase the awareness of the limitations of the pilots during taxi.

7.1.1 Airtanker Base Types

There are two types of airtanker bases, permanent, and temporary.

All permanent and temporary bases will have an Airtanker Base Operations Plan (ABOP), and a qualified ATBM prior to operations out of the airtanker base airport. All personnel conducting airtanker base operations shall review the SABO and have it available. ATBMs are authorized to manage SEATs. Both airtankers and SEATs have applicable aircraft contracts that will be available for reference, as well as the National Long-Term Fire Retardant contract.

Permanent Base: An airtanker base that has permanent infrastructure installed in an identified area to service airtankers and support aircraft. Retardant may be stored on this site year-round. The airtanker base can have permanent personnel whose main role is to act as management and support for the airtanker base and its facilities or may be staffed as needed.

Temporary Base: An identified and approved airport that could serve the need of loading airtankers. The airport would have little if any infrastructure to support the loading of

airtankers and the additional equipment would have to be delivered and set up. Retardant are stored on-site temporarily to support operations as needed. This term would be used regardless of the ownership of the mixing and loading equipment. Personnel could be identified at the local unit to facilitate the management in support of the temporary airtanker base or personnel from outside of the area may be utilized in the management and support of the airtanker base.

In coordination with appropriate local and regional agency aviation management, FS National ATPM must pre-approve the proposed temporary base before any FS contracted airtankers operate from that location.

7.1.2 Supplemental Airtanker Base Equipment: Portable and Mobile

The two types of equipment listed below can be ordered for a temporary airtanker base or used as supplemental equipment at a permanent base. Neither of these terms is descriptive of an airtanker base type. These terms are only descriptive of the types of equipment and facilities that may be in use at a temporary airtanker base or used as supplemental equipment at permanent airtanker bases. An airtanker base type is not identified by the method through which equipment and facilities are procured or obtained.

Portable Airtanker Base (PAB) The unit is an enclosed semi-trailer with the equipment and supplies required for temporary airtanker base operations. PABs have most commonly been used and hosted by Region 8 but may be used anywhere. The current PABs are agency owned and requests for them must be coordinated through Region 8’s Regional Aviation Officer (RAO).

Mobile Retardant Base (MRB) An MRB is a portable retardant mixing plant typically provided through the Retardant On-Demand contract.

7.2 Operations

To maintain total mobility and effectiveness, all contracted FS airtankers shall carry the maximum contract retardant dispensing payload and shall carry the contract fuel load (no less than 2.5 hours), on the first load of the day when departing from an airport in support of firefighting operations unless environmental factors preclude it.

Airtanker contract (AT23), Section B-4(b)(2):

- On the initial retardant load, with a minimum of 2.5 hours of fuel, a download of up to 30% of the maximum dispensable volume, reference Exhibit 21, will be allowed. All subsequent loads will be 90% or greater of the maximum dispensable volume. The PIC is responsible for the weight and balance of the aircraft and shall have the final authority as to the quantity of retardant loaded into the aircraft. If downloading is necessary to meet environmental performance requirements, notify the Airtanker Base Manager (ATBM).
- The PIC is responsible to document each download as well as the ATBM.

Each airtanker make/model has payload limitations in their Supplemental Type Certificate (STC), in the IAB approval, and in their respective contracts. The STC can limit based on weight, volume, or both. The IAB limit is maximum dispensable volume while the contract limitation is weight. When a product is loaded into an airtanker, each specific make/model shall not be loaded beyond its limitations (FAA, IAB and/or contract). Retardant loading must cease once the first of either limit is reached. In any case where the limit(s) are exceeded this will be considered an "overloaded aircraft" and the difference beyond the allowable limits shall be removed from the airtanker prior to takeoff. For more information and specific load amounts per airtanker, refer to the Airtanker Overfilling or Overloading Direction at https://www.nwcg.gov/sites/default/files/committee/docs/iabs-airtanker-overfilling-or-overloading-direction.pdf

Exception: When load and return missions are requested, it is not necessary to refuel if the amount of fuel on board is sufficient to complete the load and return request and the PIC can meet fuel reserve requirements.

The PIC is responsible for the safe operation of the aircraft. The PIC has the final authority whether the flight can be accomplished safely and shall refuse any flight or landing which they consider unsafe.

7.3 Types of Airtankers

Table 1. Types of Airtankers

TYPE	CAPACITY GALLONS	EXAMPLES
VLAT	> 8,000	DC-10
1 (LAT)	3,000 – 5,000	BAe-146, RJ85, MD-87, C-130, B-737
2	1,800 – 2,999	Q-400
3	800 to 1,799	S-2T, AT-802F
4	Up to 799	Thrush

7.4 Mobilization

The National Interagency Coordination Center (NICC) based on National Multi-agency Coordinating Group (NMAC) priorities, will allocate federal airtankers nationally by positioning them in areas of current or predicted high wildfire danger or activity. Geographic Areas managing these aircraft will make them available for wildfire assignments when ordered by the NICC. This will be accomplished by ensuring that all support functions (i.e. airtanker bases and local dispatch centers) that are required for the mobilization of national resources are staffed and maintained to support mobilizations. Host GACCs will check with NICC prior to releasing flight crews for the day when those resources are not being used within the host area and could be utilized elsewhere for emerging or ongoing fire activity.

When a GACC is utilizing all hosted airtankers, additional airtanker request(s) will be placed with the NICC. Airtankers shall be used for initial attack across a GACC boundary when the

airtanker outside the boundary is the closest resource to the incident. A National Aircraft Dispatch Form (or similar) should be sent direct to the sending GACC and dispatch center to launch the airtanker. A resource order from the receiving GACC should be placed to the NICC who will then place the order with the sending GACC.

Mobilization will occur through the NICC, then to the GACC where the airtanker is located. All airtankers are required to have a resource order or knee-board/aircraft dispatch form generated prior to departure. The airtanker type mobilized will be based on incident needs, resource availability, location in relation to the requesting unit, and aircraft and crew capability.

Prepositioning may require a job code for the flight. The National FWC and National ATPM have an assigned prepositioning code for this use. The job code will be provided to a requesting GACC or airtanker base.

Aerial Supervision Modules (ASMs)/Leadplanes shall be ordered and mobilized immediately with airtankers that require a Leadplane. When Leadplanes are co-located with airtankers they should be dispatched together. When airtankers are ordered to a congested area a lead/ASM shall be ordered. When airtankers are ordered and a Leadplane is available they should be dispatched as well. If an airtanker is not capable of, or qualified to do initial attack, it shall not be dispatched without an ASM/Leadplane.

7.4.1 Long Distance Airtanker Orders

Airtankers have variable mandatory availability start and end dates throughout the year. Long distance airtanker dispatches may occur or be requested, especially early and late season. Long distance tanker dispatches create many challenges tactically for firefighters, but also for dispatch centers, coordination centers, airtanker bases and air crews. Long distance airtanker dispatches may be justified during initial attack, especially when life and property are at risk.

When long distance dispatches are required, consideration should be given to using the most efficient assets (to include Type 1 helicopters), to be able to bring the most retardant with the shortest amount of flight time. More than one day of long-distance airtanker requests will require local incident logistical and dispatching support. If fire activity is predicted to remain at elevated levels, end users will need to establish logistical and dispatching support within 24 hours. If end users cannot logistically support the requested assets, communication with the National Airtanker Program Manager needs to occur.

7.5 Dispatching Procedures

Airtankers shall be dispatched using the NWCG Aircraft Dispatch Form (PMS 250) or equivalent. Resource order forms are not an acceptable aircraft dispatch information format.

The following terminology will be used when requesting aircraft through NICC:

- Knots (kts) will be the standard term used to reference airspeed.
- VORs (Very High Frequency Omni-directional Range) will be used to reference direction.
- Latitude/Longitude must be provided in Degrees Decimal Minutes (DDM), utilizing GPS Datum WGS84 degrees and minutes.
- Airtankers will be referenced by the airtanker number, e.g., T-###.

7.6 Flight Following Procedures

7.6.1 Flight Following

Flight-Following is mandatory for all flights. Refer to the *National Interagency Mobilization Guide* https://www.nifc.gov/nicc/mobguide/index.html for specific direction.

It is the pilot's responsibility to confirm with dispatch which type of FAA flight plan will be used. Automated Flight Following (AFF) or Verbal flight following is not required enroute when an FAA flight plan has been filed. Flight following is the responsibility of the originating dispatch office and will remain so until transferred through a documented, positive handoff.

- Agency FM radio capability is required for all mission flights.
- For mission flights, there are two types of agency flight following: Automated Flight Following (AFF) and radio check-in. AFF is the preferred method of agency flight following. If the aircraft and flight following office have AFF capability, it shall be utilized. Reference the AFF procedures section of the *National Interagency Mobilization Guide* for more information.
    - Airtanker resources are identified in AFF as an orange fixed-wing icon.
- All dispatch centers designated for fire support shall have the ability to monitor AFF as well as the capability to transmit and receive "National Flight Following" and "Air Guard."
- If AFF becomes inoperable the aircraft will normally remain available for service, utilizing radio/voice system for flight following. The system must be returned to full operational capability within 5 calendar days. Each occurrence must be evaluated individually and decided by the COR/CO.
- AFF is the preferred method of flight following. If AFF has been confirmed, the 15-minute radio checks are not needed. Adding the radio checks clutters the radio for the pilots and can be distracting to the crew.
- If radio contact cannot be established, the pilot will abort the mission and return to the airport.

7.6.2 National Flight Following Frequency (168.6500 MHz Rx and Tx)

The National Flight Following Frequency is used to monitor interagency and contract aircraft. All aircraft on point-to-point or mission flights should establish/terminate flight following and confirm AFF on the National Flight Following frequency. All dispatch centers/offices will monitor the National Fight Following frequency at all times. A Continuous

Tone-Coded Squelch System (CTCSS) tone of 110.9 must be placed on the transmitter and receiver of the National Flight Following frequency. The National Flight Following frequency is to be used for flight following, dispatch, or redirection of aircraft. No other use is authorized.

7.6.3 Flight Following Script

The following information is required every time a flight is initiated or continued with a dispatch center.

- Call sign (T-###)
- Departure location
- Number of flight crew on board
- Fuel on board (hours)
- Estimated time enroute (ETE)
- Destination
- AFF confirmation

7.7 Airtanker Use in Optional and Post Season Periods

Need for airtankers in the pre and post season should be anticipated through use of Predictive Services at least 24-48 hours in advance. This allows for a much quicker response to actual airtanker orders. Orders shall be communicated to the NICC through the GACC with a follow up to the National FWC who will coordinate with the National ATPM.

All airtanker orders outside of the MAP (unless already on Optional Use) or Optional Use period will allow 24-48 hours for activation. In some cases, aircraft and/or pilots may need annual inspections, which may take several days to arrange.

Post Season and Optional Use airtanker activations are processed by the CO, through the Designated Administrative Contracting Officers (ACO). The following process is used to activate airtankers during the Post Season and Optional Use periods:

1. The requesting GACC will place request(s) for airtankers with the NICC.
    a. Regional or GACC personnel will not directly contact Contracting Officers or vendors for nationally contracted aircraft to inquire about aircraft availability.
2. NICC will notify the National FWC of the order.
3. The National FWC will notify the National ATPM of the need with any additional information.
4. The CO and the National ATPM will determine the availability of airtankers and will notify the AMIs and Pilot Inspestors if needed. The CO will modify the contract as needed to activate the airtanker.

5. The National FWC will notify the NICC of the available airtankers, inspection timing if needed and other activation issues.
6. The NICC will notify the GACC of the airtanker activation.

7.8 Very Large Airtankers

A VLAT carries 8,000 or more gallons of retardant. Because of their size, weight, and gallons, they will require additional operational and logistical equipment considerations.

VLAT base operations will not limit or restrict the capacity of an airtanker base to load Type 1, 2 and 3 airtankers. Operations which affect their loading and turnaround in the pits or base will not be allowed. If this is the case or anticipated to be the case, a separate VLAT retardant base, on the same airport, or alternate base must be planned for and implemented.

7.8.1 Flight Operations Considerations

- Aerial supervision (leadplane or ASM) is required by contract and interagency policy for VLATs while dropping retardant.
- The leadplane or ASM must be on scene prior to the VLAT arriving over the fire.
- Establish flight paths holding areas/altitudes, to avoid creating hazards to other aerial resources within the Fire Traffic Area (FTA).

To avoid wake turbulence, it is required to wait a minimum of 3 minutes after the VLAT has dropped to resume aerial operations near the pattern from the drop. VLATs minimum drop height is 250 feet above the ground or canopy cover whichever is higher. Generally, drop heights should increase when using higher coverage levels. Each region/GACC will request evaluation by the National ATPM of airports and/or airtanker bases where VLATs are anticipated to operate. In some cases, these locations may not be existing airtanker bases, but separated from an existing airtanker base on a pre-designated ramp area of the same airport, supported by an MRB.

Each designated VLAT base is required to have the following available for VLAT base operations:

- Airport overweight agreements shall be current and provide the appropriate weight allowances for the applicable VLAT. The VLATs on contract at this time have dual tandem main landing gear and fully loaded can weigh up to 400,000 pounds.
- VLATs using existing airtanker bases will not impact Type 1, 2 or 3 airtanker operations including, access to the pits and/or mixing and loading capacity/capability.
- A minimum of 30 feet clearance (nose, wing tips and tail) from any other aircraft and obstacles must be maintained. If less than 30 feet of clearance is possible, wing walkers must be utilized. No part of the aircraft may come closer than 10 feet of any object or obstacle.

- Foul line/boxes should be established for ground support equipment (GSE) to be secured prior to aircraft movement.
- The VLAT contractor is responsible for hiring or leasing airstairs. The company (Contractor, Fixed Base Operator (FBO) or other) offering the airstairs is responsible to maneuver and place the airstairs. FS personnel shall not operate or maneuver airstairs.
- FS personnel shall not operate or maneuver Ground Support Equipment (GSE) for contract aircraft.
- Retardant mixing and pump capacity to sustain continued VLAT operations for one day with resupply available for current or expected operations.
- The VLATs on contract may require approximately 10,000 gallons of off-load capacity.

7.9 Modular Airborne Firefighting Systems (MAFFS)

MAFFS is a joint FS and Department of Defense (Air Force) program governed by an interagency agreement. The FS provides eight (8) MAFFS retardant delivery units. Three Air National Guard Wings (California, Nevada, and Wyoming), and one Air Force Reserve Wing (Colorado Springs) provide the C-130H/J aircraft and flight crews.

MAFFS provides surge capability to supplement commercial airtankers on wildland fires. MAFFS are national resources when mobilized by the FS and are used as a reinforcement measure when contract airtankers are committed or not readily available. MAFFS will be made available to assist foreign governments when requested through Department of State or other diplomatic Memorandum of Understandings (MOU).

On fire activations, Leadplane Pilots In Training may lead MAFFS aircraft while under the direct supervision of a Leadplane Instructor Pilot. Trainees will normally be well into phase 2 of their training, receive approval from their assigned mentor, and document a briefing with the instructor pilot in their training folder prior to leading MAFFS. Trainees may not lead MAFFS during the annual certification exercise.

GACCs are responsible for assuring all suitable FS contracted airtankers are assigned to wildland fires or committed to initial attack before placing a request for a MAFFS mission to the NICC. For additional information, see the MAFFS Operating Plan at https://www.fs.usda.gov/managing-land/fire/aviation/publications.

The NICC is responsible for assuring that all suitable FS contract airtankers nationally are committed to wildland fires, initial attack, or cannot meet timeframes of requesting units. When this occurs, the Coordinator on Duty (COD) will notify the WO Assistant Director, Operations. The WO Assistant Director, Operations, or their acting, in their absence, the WO Assistant Director, Aviation is responsible for initiating a MAFFS mission. Once approval is given, the NICC Manager activates the request through proper Department of Defense (DOD) channels. After the initial contact has been made, the NICC will submit a Request for Assistance (RFA) to the DOD Liaison at NIFC.

The Governors of California, Wyoming, Nevada, may activate their respective Air National Guard MAFFS Wings for State-controlled fires. Approval for use of MAFFS equipment must be obtained from the FS Assistant Director, Operations, prior to these activations.

When National Guard MAFFS are activated by a governor, the FS Regional Office for that State will assign an accounting code for the incident. The Regional Office shall notify the WO Assistant Director, Operations of state MAFFS activations.

7.9.1 MAFFS Ordering Criteria

1. FS domestic requests will be placed through established ordering channels to NICC.
2. NICC will place a Request for Assistance (RFA) to the NIFC Defense Coordinating Officer (DCO). The DCO places the RFA concurrently with the US Northern Command and the Joint Directorate of Military Support for approvals.
3. The requesting GACC needs to order the following support:
    a. 1 each MAFFS Liaison Officer (MLO aka MAFF) and 1 each MLO trainee
    b. 1 each Airbase Radio Kit (NFES 4660)
    c. 1 each MAFFS Communications Specialist (THSP)
    d. 1 each Assistant MAFFS Liaison Officer (MALO)
    e. 1 each MAFFS Airtanker Base Manager (MABM) and 1 each MABM trainee
    f. 1 MABS at each airtanker base the MAFFS plan to operate out of. Check with the local bases prior to ordering as they may have a MABS on staff.
    g. Logistics, Finance, and Information personnel
4. MAFFS Operations must also include a MAFFS qualified Leadplane/ASM.

The receiving unit must be prepared to provide administrative support (procurement, hotel rooms, phones, office space, clerical and timekeeping support, transportation) to accommodate as many as 26 people per two (2) aircraft. Refer to the current MAFFS Operating Plan for specifics.

7.10 Airtanker Rotation

Refer to the Interagency Standards for Fire and Fire Aviation Operations Red Book, Chapter 16 for the most current information regarding airtanker rotation.
https://www.nifc.gov/standards/guides/red-book

7.11 Retardant Operations in Adverse Flight Conditions

Incident aviation operations are often conducted under adverse flight conditions. Congested airspace, reduced visibility, poor weather, and mountainous terrain all add risk and complexity to operations.

Complexity must dictate the level of supervision required to conduct aerial operations safely and effectively. Aerial supervision may be provided by a leadplane, ASM, or ATGS. Dispatchers and ATBMs, in consultation with aerial supervisors, are mutually responsible for ensuring that policies are applied, and limitations not exceeded.

7.12 Wind and Turbulence Limitations for Airtanker Operations

Moderate to high winds and turbulent conditions affect flight safety and water/retardant drop effectiveness. Several factors including terrain, fuel type, target location, resources at risk, crosswinds, etc., must be considered. Aerial operations should cease when safety-of-flight is or may be compromised, water/retardant drops become ineffective, or at the pilot's recommendation.

GACCs should consider not ordering aviation assets, including airtankers, when winds on the fire exceed 25 knots.

Pilots should take into consideration wind and weather conditions (including crosswinds) at the base of operations prior to accepting a dispatch. The effect of wind is to deflect retardant and greatly increase the pattern's fringe area. The effectiveness of retardant/water drops should be closely evaluated when wind velocities reach 15 kts. Based on retardant effectiveness, in wind, a velocity exceeding 25 knots requires special considerations. Above this velocity, retardant effectiveness is decreased to the point that it compromises the risk vs. gain. This does not prevent a decision to cease operations when any unsafe or inefficient conditions are present. This limitation in no way supersedes any aircraft or pilot operational restrictions.

7.13 Retardant Operations during Low Light Conditions

Refer to the NWCG Standards for Aerial Supervision (PMS 505) for the most current direction on retardant operations during low light conditions.
https://www.nwcg.gov/publications/505

7.14 Loading Retardant

FS contracted airtankers and Modular Airborne Firefighting System (MAFFS) airtankers shall be loaded using a mass flow meter to measure the retardant payload in pounds regardless of which agency owns or manages the airtanker base.

Each airtanker has a metering system on board their aircraft. When loading product onto an airtanker, the loader will monitor the mass flow meter as well as the onboard meter. When either meter shows full, stop loading immediately.

7.14.1 Combat Loads

A combat load is defined as a retardant load that the PIC determines that if canceled after take-off, they can land without having to jettison any part of the retardant load. The airtanker contracts allow for the use of combat loads by saying "On the initial retardant load,

with a minimum of 2.5 hours of fuel, a download of up to 30% of the maximum dispensable volume will be allowed."

As long as the airtanker can carry 70% of their allowable payload, combat loads will be supported.

7.15 Retardant Hot Loading (FSH 5709.16 Chapter 30)

https://www.fs.usda.gov/cgi-bin/Directives/get_dirs/fsh?5709.16

7.16 Simultaneous Fueling and Retardant Loading (FSH 5709.16 Chapter 30)

https://www.fs.usda.gov/cgi-bin/Directives/get_dirs/fsh?5709.16

7.17 Contract Airtanker Deployments Internationally

FS contracted airtankers may be ordered for more than initial response through agreement for use internationally.

When ordered and deployed for more than two operational periods, an airtanker COR approved by the National ATPM will be ordered and deployed with the contract airtanker to administer the contract and be a liaison with the country's Forest Fire Center.

The order and assignment will be coordinated with NICC and FS Operations.

8.0 Aerial Supervision

Refer to the NWCG Standards for Aerial Supervision for the most current direction on aerial supervision regarding airtanker operations. https://www.nwcg.gov/publications/505

9.0 Pilot Inspections

Each year prior to pilots working on FS airtanker contracts, the FS will conduct pre-use inspections of contract pilots for compliance with the contract specifications and conditions.

Inspections may be scheduled by mutual agreement between the Contracting Officer and the Contractor. Inspection priority and determination of need shall be at the government's discretion. When a pilot has met inspection criteria, they will be issued a pilot card. Once carded, the pilot may operate as specified in the airtanker contract. The card is valid through the expiration date and can only be altered by the FS Pilot Inspector who issued the card.

For all Airtanker Captain (AKP) rides/upgrades an Airtanker Training Captain (AKTP) is required to be in the right seat and must use a leadplane. The leadplane pilot shall confer with the airtanker inspector pilot before the flight to cover expectations, communications and conduct of the ride.

No MASP is required as this is covered under the agency strategic risk assessment. Refer to the applicable contract for timing and additional requirements for each pilot qualification evaluation.

10.0 Pilot Proficiency

If the Pilot-in-Command (PIC) of the mission crew has not flown the contract line-item aircraft type/make/model while on a USFS contract within 30 days, the PIC shall have a proficiency flight in the contract line-item aircraft type/make/model prior to executing any flights supporting USFS operations.

When a revenue proficiency flight is needed, a leadplane pilot trainee can use that as an opportunity to ride along with the airtanker if all requirements are met and notifications made.

11.0 Flight Hour and Duty Limitations

All flight time, regardless of how or where performed, except personal pleasure flying, shall be reported by each flight crewmember, and used to administer flight hour and duty time limitations. Flight time to and from the assigned base as a flight crewmember (commuting) shall 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.

Pilots

1. Flight time will be measured “block-to-block”.
2. Flight time shall not exceed a total of 8-hours per day (except for point-to-point flights which allows for 10-hours per day in a 2-pilot aircraft).
3. 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 6-consecutive days. After any 1-full off-duty day, pilots begin a new 6-consecutive day duty-period, providing during any 14-consecutive day period, each pilot shall have 2 full days off-duty. Days off need not be consecutive.
4. 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 shall 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.
5. Duty includes flight time, ground duty of any kind, and standby or alert status at any location.

6. Pilots may be relieved from duty for fatigue or other causes created by unusually strenuous or severe duty before reaching duty limitations.
7. During times of prolonged heavy fire activity, the Government may issue a notice reducing the pilot duty-day/flight time and/or increasing off-duty days on a geographical or agency-wide basis.
8. Flights point-to-point (airport-to-airport, etc.) with a pilot and co-pilot shall be limited to 10-flight hours per day. (An aircraft that departs “Airport A,” flies reconnaissance on a fire, and then flies to “Airport B,” is not point-to-point).
9. When pilots act as a mechanic, mechanic duties in excess of 2-hours shall apply as pilot flight hours on a one-to-one basis toward flight hour limitations.
10. Relief, additional, or substitute pilots reporting for duty under this contract shall furnish a record of all duty and all flight hours during the previous 14-days. Pilots shall be FAA qualified, FAA current in the aircraft, proficient and approved in the special mission.

12.0 Aviation Safety

12.1 Flight Risk Assessments

The PIC shall complete a Flight Risk Assessment Tool (FRAT) prior to each flight.

The vendor will complete a FRAT each year that addresses flights with a mechanic or other non-flight crew member on board.

12.2 Hazards

Aerial firefighting presents many hazards and risks associated with the dynamic nature of operations and the fire environment. Historic data identifies most hazards develop while airborne and during times of communication complexities. Common hazards include but are not limited to:

1. Airspace congestion/aircraft proximity/co-altitude
2. Low visibility
3. Hazardous/masking terrain
4. Low level flight profiles
5. Weather/wind shift/variable wind conditions
6. Insufficient aerial supervision
7. Lack of communication
8. Communication blocking
9. Sense of urgency

10. Mission focus based on unreasonable expectations

This environment demands a significant level of situational awareness. Hazards such as these can overwhelm operators, causing loss of situational awareness, possibly leading to more complex/simultaneous hazards increasing risk and mishap potential.

12.3 Risk Refusal

Every individual (government and contracted employees) has the right and obligation to report safety problems and contribute ideas regarding their safety. In return, supervisors are expected to give these concerns and ideas serious consideration. When an individual feels an assignment is unsafe, they also have the obligation to identify, to the degree possible, safe alternatives for completing that assignment. Turning down an assignment is one possible outcome of managing risk.

Any threat, implied or otherwise regarding release from assignment, adverse contract action, or reassignment based on refusing risk shall be reported to Regional/State Aviation Managers and National Aviation Safety Officers who will coordinate with the specific aircraft program manager and contracting officer.

Per the Incident Response Pocket Guide (IRPG), a “turn down” is a situation where an individual has determined they cannot undertake an assignment as given and is unable to negotiate an alternative solution. The turn down of an assignment must be based on assessment of risks and the ability of the individual or organization to control or mitigate those risks. In aviation, situations where an assignment may be turned down include:

- There is a violation of regulations, aviation policy or safe aviation practices.
- There is a violation of regulated safe aviation practices.
- Communication issues.
- Airspace congestion or inadequate management.
- Aircraft capabilities, performance and/or limitations.
- Environmental conditions make the work unsafe.
- Flight crew, air crew or support personnel lack the necessary qualifications or experience.
- Any other situation deemed unsafe by those participating in the assignment.

Individuals will directly inform their supervisor, or incident supervisor, that they are turning down the assignment as given. The most appropriate means of documented turn down criteria is using the Aviation Watch Out Situations in the NWCG IRPG at https://www.nwcg.gov/publications/461.

Supervisors will notify the Air Operations Branch Director (AOBD) or unit aviation leadership immediately upon being informed of a turn down. If there is no AOBD, notification shall go to the appropriate Section Chief, the Incident Commander or local fire and aviation staff.

Proper handling of turn downs provides accountability for decisions and initiates communication of safety concerns within the incident organization.

If the supervisor asks another resource to perform the assignment, they are responsible to inform the new resource that the assignment was turned down and the reasons why it was turned down.

These actions do not stop an operation from being carried out. This protocol is integral to the effective management of risk as it provides timely identification of hazards to the chain of command, raises risk awareness for both leaders and subordinates, and promotes accountability.

If an unresolved safety hazard exists or an unsafe act was committed, the individual should also document the turn down by submitting a SAFECOM form in a timely manner.

12.3.1 Airtanker Assignment Turndown Procedure

Every airtanker assignment turndown shall be documented using the Airtanker Assignment Turndown Form at https://forms.office.com/g/8qfbTDVpTj.

Airtanker Base Managers are responsible for filling out the Airtanker Assignment Turndown Form when they are told by the airtanker PIC that they cannot fulfill the dispatch request.

13.0 Type 1 and 2 Airtanker Information

Key points similar to all type 1 and 2 airtankers:

- Airtanker base and parking ramps must have a weight bearing capacity sufficient to support the aircraft. Local bases need to insure both the airport and agency engineering have data indicating ramp weight bearing capacity at the base. Letters documenting waivers for over-weight operations and drawings of the ramp structure must be on file at the airtanker base.
- Simultaneous Loading and Fueling and/or Retardant Hot Loading (RHL) may be authorized. The contractor must have documented risk assessment and operations practices approved by the CO, National ATPM and the WO Branch Chief, Aviation Safety. The ATBM is delegated, by the RAO, the decision authority for these types of operations.
- A Leadplane/ ASM is required for this aircraft if the Pilot in Command is not Initial Attack rated.
- All airtankers, except the DC-10 and MAFFs, can land loaded. Depending on the fuel on board and other weight factors, some of the load may need to be jettisoned to get to get down to max landing weight.

- The drop height is a minimum of 150 feet above the ground or canopy cover, whichever is higher. The drop height for a VLAT is 250 feet above the ground or canopy, whichever is higher. Generally, drop heights should increase when using higher coverage levels.
- They can be used in challenging terrain.
- They are relatively agile for their size and require some planning by the supervising aircraft to provide a stabilized path for delivery. Flight paths for pattern speeds of 120 to 140 knots on final should be planned.

13.1 Aircraft: Boeing (McDonnell Douglas) MD-87 Large Airtanker

Vendor: Erickson Aero Tanker (AeroAir)

Key Points:

- The MD-87 has a retardant capacity of 3,000 gallons and/or 27,000 pounds.
- The MD-87 can operate from almost all existing airtanker bases with no operational limitations.
- The MD-87's normal operating weight is approximately 128,000 lbs. in contract configuration. For weight bearing purposes it has a dual wheel configuration.
- The jet engines may create more thrust as they begin rolling than prop aircraft so consideration should be given for items placed both behind the aircraft while parked and objects that may be affected by the thrust as the aircraft turns during taxi.
- Operations of the MD-87 may need to be more closely monitored with other aircraft types for nose tail spacing and wing tip clearance. Wing walkers are essential near obstacles as the wing tips are less visible from the flight deck. Break away thrust as they begin their taxi should be considered in all parking arrangements.
- Loading and servicing the MD-87 can be accomplished on either side of the aircraft. A connector allows for extension of the port during loading.
- The cruising speed of the MD-87 is around 320 knots true airspeed (TAS) on fire response and 420 knots for reposition flights.
- The AeroAir MD-87s have full IAB approval for 3,000 gallons of retardant.

13.2 Aircraft: British Aerospace BAe-146

Vendor(s): Neptune Aviation Services

Air Spray has not produced an airtanker that meets the current contracts to date.

Key Points:

- The BAe-146 has a retardant capacity of 3,000 gallons and/or 27,000 pounds.
- The BAe-146 has operational limitations at airtanker bases which have short runways or high elevations and higher temperatures.
- The BAe-146 normal operating weight is approximately 88,000 lbs. in contract configuration. For weight bearing purposes it has a dual wheel configuration.
- The jet engines may create more thrust as they begin rolling than prop aircraft so consideration should be given for items placed both behind the aircraft while parked and objects that may be affected by the thrust as the aircraft turns during taxi.
- Loading and servicing the BAe-146 can be accomplished on either side of the aircraft. A door on either side provides access to loading port, control switches, lights, and readouts. A short adaptor hose is used to facilitate loading due to the recessed nature of the loading port.
- The cruising speed of the BAe-146 is approximately 340 knots (TAS) on fire response and 380 knots for reposition flights.
- The Neptune BAe-146s have full IAB approval for 3,000 gallons of retardant.

13.3 Aircraft: Avro RJ85

Vendor: AeroFlite inc.

The airframe is very similar to the BAe-146 but has upgraded avionics, improved engines, has a higher max gross weight, and is generally 10 years newer than the BAe-146.

Key Points:

- The RJ85 has a retardant capacity of 3,000 gallons and/or 27,000 pounds.
- The RJ85 has operational limitations at airtanker bases which have short runways or high elevations and higher temperatures.
- The RJ85's normal operating weight is approximately 92,000 lbs. in contract configuration. For weight bearing purposes it has a dual wheel configuration.
- The jet engines may create more thrust than propeller aircraft as they begin rolling so consideration should be given for items placed both behind the aircraft while parked and objects that may be affected by the thrust as the aircraft turns during taxi.
- Loading and servicing the RJ85 can be accomplished on either side of the aircraft. An access panel on either side of the aircraft open to reveal the loading port and load indicator. Lights and switches located next to the access panels in the fuselage assist in loading.
- The cruising speed of the RJ is around 340 knots (TAS) on fire response and 380 knots for reposition flights.
- The RJ85 has full approval from the IAB for 3,000 gallons of retardant.

13.4 Aircraft: Lockheed C-130

Vendor: Coulson Aviation USA

Key Points:

- The C-130 has a retardant capacity of 4,000 gallons and/or 36,000 pounds.
- The C-130 can operate from most existing airtanker bases with no operational limitations.
- The C-130 has a normal operating weight of 150,000 pounds. For weight bearing purposes C-130 has a Single Tandem configuration
- Operations of the C-130 may need to be more closely monitored with other aircraft types for spacing and wing tip clearance. While there is good visibility from the flight deck, wing walkers are essential for taxi and ground maneuvering.
- Loading the C-130 can be accomplished on either side of the aircraft. Fueling is only on the right side of the aircraft.

- The cruising speed of the C-130 is approximately 300 knots (TAS) on fire response and 360 knots for reposition flights.
- The C-130 has full approval from the IAB for 4,000 gallons of retardant.

13.5 Aircraft: Lockheed C-130H/J MAFFS

Operator: Department of Defense

Key Points:

- The C-130H has a max operating weight of 155,000 pounds. For weight bearing purposes the C-130s have a Single Tandem configuration. It will be deployed to and from MAFFS approved airtanker bases within a 500NM radius as requested by ordering agency, (See most current USAF AEG-WFF/CC MAFFS Airtanker Base List).
- Operations of the HC-130H/J may need to be more closely monitored with other aircraft types for spacing and wing tip clearance. While there is good visibility from the flight deck, wing walkers are for essential taxi and ground maneuvering.
- Retardant loading and servicing of the HC-130H/J can only be accomplished on the right side of the MAFFS aircraft.
- A Leadplane/ASM is required for this aircraft.
- The cruising speed of the HC-130H/J is approximately 300 knots (TAS) on fire response and 360 knots for reposition flights. Users and/or dispatchers will need to plan for LP/ASM arrival when responding on longer dispatches.
- This airtanker is not authorized to land loaded and must jettison the load.
- Crews have significant experience both in the aircraft and as Captains in the MAFFS program.

13.6 Aircraft: Boeing 737

Vendor: Coulson Aviation USA

Key Points:

- The B-737 has a retardant capacity of 4,000 gallons and/or 36,000 pounds.
- The B-737 can operate from most existing airtanker bases with no operational limitations.
- The B-737 has a normal operating weight of 123,454 pounds. For weight bearing purposes B-737 has a dual wheel configuration.
- Operations of the B-737 may need to be more closely monitored with other aircraft types for spacing and wing tip clearance. Wing walkers are essential for taxi and ground maneuvering.
- Loading and servicing the B-737 can be accomplished on either side of the aircraft.
- The cruising speed of the B-737 is approximately 430 knots (TAS).
- The B-737 has full approval from the IAB for 4,000 gallons of retardant. The dispensing system can select all required coverage levels.

13.7 Aircraft: De Havilland Canada-8 (Q-400-AT)

Vendor: AeroFlite Inc.

Key Points:

- The Q-400 is a Type 2 airtanker.
- The Q-400 has a retardant capacity of 2,640 gallons and/or 23,760 pounds.
- The Q-400 can operate from all existing airtanker bases with no operational limitations.
- The Q-400 has a normal operating weight of 68,400 pounds. For weight bearing purposes the Q-400 has a dual wheel configuration.
- Loading the Q-400 can be accomplished on either side of the aircraft but fueling is only on the right side.
- The cruising speed of the Q-400 is approximately 365 knots (KTAS).
- The Q-400 has full approval from the IAB for 2,640 gallons of retardant. The dispensing system can select all required coverage levels.

14.0 Very Large Airtanker Information

14.1 Aircraft: Boeing (McDonnell Douglas) DC-10

Vendor: 10 Tanker LLC

Key Points:

- The DC-10 weight in contract configuration of 9,400 gallons and/or 84,600 and has a normal operating weight of approximately 315,000 lbs. For weight bearing purposes it has a Dual Tandem configuration.
- Regions have designated several VLAT base locations, which in most cases are not part of the existing airtanker bases. Regions will have planned for facilities and logistical support including runway, ramp and taxiway limits, water, electricity, and operational space for a separate VLAT base away from the existing airtanker base.
- Airtanker bases, runways, taxiways, and parking ramps must have a weight bearing capacity sufficient to support this airtanker. Local bases need to insure both the airport and agency engineering have data indicating ramp weight bearing capacity at the base.
- Letters documenting waivers for over-weight operations and drawings of the ramp structure must be on file at the airtanker base.
- A Mobile Retardant Base (MRB) may be requested thru the CO where operations from existing airtanker base are not prudent.
- Ground operations of the DC-10 will need to be more closely monitored with other aircraft types for thrust, spacing, and wing tip clearance. While there is good overall visibility from the flight deck, the wing tips are not visible from the flight deck, therefore wing walkers are essential during taxi and ground maneuvering.
- Simultaneous Loading and Fueling and/or Hot Retardant Loading (HRL) may be authorized. The contractor must have documented risk assessment and operations practices approved by the CO, National ATPM and the WO Branch Chief, Aviation Safety. The ATBM is delegated, by the RAO, the decision authority for these types of operations.
- Loading and servicing the DC-10 can be accomplished on either side of the aircraft.
- A Leadplane or ASM is required for this aircraft.

- The cruising speed of this VLAT is around 380 knots (TAS) on fire response and 480 knots for reposition flights. A leadplane/ASM should be on scene prior to arriving on the fire.
- The DC-10 has full approval from the IAB for 9,400 gallons of retardant.
- Cannot land loaded unless there is a failure in the drop system.
- The DC-10 can be used in moderately challenging terrain and are capable of splitting the load up or delivering it in one long line.
- Pattern speeds of 150 knots on final should be planned.
- The DC-10 drop height is a minimum of 250 feet above the ground or canopy whichever is higher. Generally, drop heights should increase when using higher coverage levels.

Appendix A: NWCG Airtanker Base Directory

The NWCG Airtanker Base Directory with ramp frequencies is available at: https://egp.nwcg.gov/

Appendix B: New Airtanker Base Checklist

The New Airtanker Base Checklist is meant to be used when identifying new locations, or when trying to determine which size airtanker the current airtanker base can support. The Region is responsible for completing the checklist, in conjunction with the local airtanker base and/or airport manager. Once completed, the checklist is then sent to the National Airtanker Program Manager who will review it and set up a site visit to confirm adequacy of size, location, facilities, and capacity. The checklist can be found at https://www.nwcg.gov/committees/interagency-airtanker-base-subcommittee under Useful Resources.

Appendix C: CO Approved Equivalency Process

The airtanker contracts require all pilots to attend a National Aerial Firefighting Academy (NAFA) session every 3 years. NAFA sessions are held in January making it impossible for 100% of the pilots to attend. Previously an Alternate Means on Compliance (AMOC) has been an option for those who couldn't attend a NAFA session. The AMOCs were approved on a case-by-case basis and could only be approved once per pilot. Due to the limitations of the NAFA sessions, the airtanker CO permits the airtanker vendors to submit a request which then gets reviewed and approved on a case-by-case basis.

The vendor must submit in writing to the CO each year they plan to utilize the CO Approved Equivalency option. They must include all agenda topics and curriculum taught at NAFA. One member of the cadre, or attendee must have been to a NAFA session in the previous 2 years. This is to ensure standardization between NAFA and the CO Approved Equivalency Courses. Also included will be a section for Agency updates. This section must be covered by an agency representative.

The Agency reserves the right to attend, either in person or virtual, part or in its entirety, the CO Approved Equivalency Courses.

If someone attends the CO approved equivalent, the Course will not count as NAFA. If an individual attends NAFA 1, and then CO approved for NAFA 2, and then wants to go to NAFA 3, they will have to attend NAFA 2.

Any questions or concerns, reach out to the National Airtanker Program Manager.