

Large Airtanker Operations Plan



Forest Service



March 2017

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer and lender.

Preparation, Review, and Approval (Signatures)

The following signatures designate leadership roles in preparing, reviewing, and approving the Large Airtanker Operations Plan.

Prepared by:

/s/ James Fa'asau

Date: 4/11/2017

Name

National Airtanker Program Manager

Reviewed by:

/s/ Paul Linse

Date: 4/11/2017

Name Paul Linse

Branch Chief, Aviation Operations

/s/ [Signature]

Date: 4/11/2017

Name

Branch Chief, Airworthiness

/s/ Thomas A. Kati

Date: 4/11/2017

Name

Branch Chief, Pilot Standardization

/s/ E. M. [Signature]

Date: 4/11/2017

Name

Branch Chief, Aviation Safety

Approved by:

/s/ [Signature]

Date: 4/11/2017

Arthur W. Hinaman

Assistant Director, Aviation



This is a Forest Service Fire and Aviation Management Aviation Division sponsored publication.

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

The use of trade, firm, or corporation names in this publication is for the information and convenience of the reader and does not constitute an endorsement by the USDA Forest Service of any product or service to the exclusion of others that may be suitable.

This publication is posted at https://www.fs.fed.us/fire/aviation/av_library/index.html

Previous Edition: None.

Review and Revision Schedule: The appropriate Program Manager and Branch Chief will review and publish the Operations Plan on a 3-year cycle, with a change option annually. Changes made during the cycle 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 (Operations Plans) or the Deputy Chief, State and Private Forestry (Guides).

Digest

The table below provides a list of approved significant changes made to the current approved version of the operations plan or guide. *Note:* This list is not inclusive of all changes made in the Operations Plan or Guide.

[illegible]

Contents

1.0 Introduction	1
1.1 Background	1
1.2 Objective	1
1.3 Scope	2
1.4 Policy	2
2.0 Program Management	3
2.1 Contract Administration	3
2.2 Program Management	4
3.0 Interagency Airtanker Board (IAB)	4
3.1 Approval Process	4
4.0 Aircraft Inspection and Approval	5
4.1 Airtanker Return to Contract Availability Process	5
5.0 Conduct and Ethics	6
6.0 Communications	6
7.0 Airtanker Operations	6
7.1 Airtanker Bases	7
7.1.1 Airtanker Base Types	8
7.1.2 Airtanker Base Staffing	8
7.1.3 Temporary Airtanker Base Equipment: Portable and Mobile	8
7.2 Concept of Operations	9
7.3 Airtanker Flight Profile	10
7.4 Mobilization	11
7.5 Dispatching Procedures	11
7.6 Flight Following Procedures	12
7.6.1 National Flight Following Frequency (168.6500 MHz)	12
7.6.2 Flight Following Script	12
7.7 Airtanker Use In Optional and Post Season Periods	12
7.8 Specialty Airtankers	13
7.8.1 Very Large Airtankers	13
7.8.2 Flight Operations Considerations	14
7.9 Modular Airborne Firefighting Systems (MAFFS)	15
7.10 MAFFS Ordering Criteria	15
7.11 Single Engine Airtankers (SEAT)	16
7.12 Airtanker Rotation	16
7.13 Exceptions	16
7.14 Rotation of State Airtankers	17
7.15 Approved Cooperator Airtankers	17
7.16 Operations in Low Light/Adverse Flight Conditions	17
7.17 Retardant Operations during Low Light Conditions	18

7.18 Loading Retardant.....	18
7.19 Retardant Hot Loading.....	19
7.20 Simultaneous Fueling and Retardant Loading.....	20
7.21 Contract Airtanker Deployments to Canada.....	20
8.0 Aerial Supervision.....	21
8.1 Retardant Drops.....	21
8.2 Tactical Flight Profiles	23
8.2.1 Show Me Profile	23
8.2.2 Chase Position Profile.....	24
8.2.3 Lead Profile.....	25
9.0 Pilot Proficiency.....	26
10.0 Flight Hour and Duty Limitations	26
11.0 Risk Management.....	27
11.1 Hazards	27
11.2 Operational Risk Management	28
11.3 Risk Refusal	28
12.0 Large Airtanker Information.....	30
12.1 Aircraft: Boeing (McDonnell Douglas) MD-87 Next Gen Large Airtanker	30
12.2 Aircraft: British Aerospace BAe-146	31
12.3 Aircraft: Avro RJ85	32
12.4 Aircraft: Boeing (McDonnell Douglas) DC-10.....	33
12.5 Aircraft: Lockheed C-130H/Q and L-382G	35
12.6 Aircraft: Lockheed HC-130H, MAFFS C-130H/J.....	36
12.7 Aircraft: Boeing 747-400.....	37
Appendix A: Aircraft Dispatch Form.....	39
Appendix B: National Directory of Airtanker Bases	40
Appendix C: National Airtanker Base Radio Frequencies	41
Appendix D: Day of Risk Assessment (DORA)	42

Tables

Table 1. Types of Airtankers.....	11
Table 2. Aerial Supervision Requirements	22

Figures

Figure 1. Airtanker Mission Profile Example	10
Figure 2. Multi-engine Airtanker Startup and Cutoff Regulations	18
Figure 3. Show Me Profile	23
Figure 4. Chase Profile.....	24
Figure 5. Lead Profile.....	25

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 fire spread rates increase, 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 retardants is often the only available method to slow the growth of wildfires until ground firefighters can establish containment and/or control lines.

In February 2012, the Forest Service released the Large Airtanker Modernization Strategy (https://www.fs.fed.us/fire/aviation/airtanker_modernization_strategy.pdf) outlining a broad plan to modernize the airtanker fleet with a more mission capable and cost-effective mix of next-generation aircraft better suited to the complex wildland fire environment of the 21st century. The transition from reciprocating engine airtankers to newer turbine airtankers is a significant aspect of modernization and current airtanker operations.

For simplicity, when this document refers to Large Airtankers (LAT), Type 1, 2 and Very Large Airtankers (VLAT) are included. Single Engine Airtankers (SEATs) are contracted by the Bureau of Land Management and are not part of this operational plan. Forest Service SEAT operations shall be governed by the Interagency Single Engine Airtanker Operations Guide.

Multi-engine water scoopers are not considered airtankers. Operationally they operate and are used more like type 1 helicopters. Refer to the Amphibious Water Scooper Aircraft Operations Plan for water scooper planning, safety and operations, available at <https://gacc.nifc.gov/nrcc/dispatch/aviation/ApprovedScooperOpsPlan.pdf>.

1.2 Objective

The Forest Service Large Airtanker Operations Plan references or supplements policy and connects contract requirements with policy for all aspects of the planning, management and operations of large airtanker operations.

Large airtankers (3000- 5000 gallons) are the primary and core part of the Forest Service's airtanker fleet.

The objective of this operating plan is to identify standardized processes and procedures for utilization by staff, supervisors, specialists, and managers for planning, administering and conducting large airtanker operations.

The USDA Forest Service (FS) will primarily use Exclusive Use (EU) contract Large Airtankers (LAT) and one agency owned LAT for the 2017 fire season. Call When Needed

(CWN) airtankers, Modular Airborne Firefighting System (MAFFS), and cooperator airtankers are available to supplement the EU fleet should operational necessity require additional LATs. The airtankers being used are multi-engine fixed-wing airplanes that carry a minimum of 2,000 gallons of retardant, providing sufficient coverage level for any terrain. The current LAT fleet consists of the following aircraft: P-2V, RJ-85, MD-87, DC-10, BAe-146, and C-130 variants.

1.3 Scope

The scope of large airtankers is positioning and utilization to meet existing and anticipated incident, preparedness, severity, and wildland fire needs regardless of geographic location or agency affiliation. This is known as Total Mobility. Large airtankers are a “national resource” in terms of national utilization, high demand, limited availability and unique status. To maintain total mobility and effectiveness, Forest Service contracted large airtankers are expected to carry the contract retardant payload and 2.5 hours of fuel.

Airtankers 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 large airtanker operations shall comply with the applicable provisions of:

- Title 14 Code of Federal Regulations (14 CFR). Parts 91, 137 and 145.
- FS Manual (FSM – 5700)
- FS Handbook (FSH - 5709.16)
- Interagency Airtanker Base Operations Guide (IABOG)
- FS Fire and Aviation Management Qualifications Guide (FSH - 5109.17)
- Interagency Standards for Fire and Fire Aviation Operations (Redbook)
- Interagency Aerial Supervision Guide (IASG current version)
- National Interagency Mobilization Guide
- FS Procurement Documents (contracts, Blanket Purchase Agreements, contract modifications)
- Interagency Single Engine Airtanker Guide

Airtanker operations require regulations, manuals, guides, and checklists to execute and coordinate operations in a safe and effective manner. Where the terms “shall” and “must” are used in manuals, handbooks, 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 aircraft and flight crews are performing operations for other agencies or cooperators where policy may differ, the contracting agency'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 deviations to contract specifications shall be vetted through the assigned Contracting Officer and/or the National Airtanker Program Manager prior to execution. The large airtankers program requires regional management and oversight in addition to national program management.

2.1 Contract Administration

Contracted large airtankers are procured through the Washington Office (WO) Acquisition Management (AQM) Incident Support Branch (ISB). Mandatory Availability Periods (MAP) and Call-When-Needed activation of airtankers will be coordinated with national fire requirements and needs.

EU contracts are those awarded for a specific time period (e.g., 120 day, 160, day etc.), during which the government has exclusive use of the aircraft and retardant delivery services.

CWN contracts do not guarantee placement of orders, days or flight hours. States may have similar contracts or agreements, which are unique to that entity. Consult with the appropriate Regional Aviation Officer for assistance with state airtankers. In addition, during periods of high fire activity airtankers from Alaska State and/or provinces in Canada may be used within the United States. Airtanker contract and cooperator information is available by contacting the National Airtanker Program Manager in Boise, Idaho.

The Contracting Officer (CO) is responsible for all contracting actions including contracting procedures, contract legality with existing laws, regulations, contract administration, and termination. In the contract administrations function, decisions on claims and disputes are final and can only be appealed to the Board of Contract Appeals or Court of Claims. The COs, for all FS LAT contracts are located in Boise, Idaho.

The Contracting Officers Representative (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 Airtanker Program Manager 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 Contracting Officer and are generally, airtanker base managers or other regional and WO aviation personnel. The COR is primarily responsible for assuring compliance with the provisions of the contract. The COR maintains

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

communications with the vendor concerning day-today operation, though this may be further delegated to the Project Inspector. 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 Schedule of Items for specific COR personnel and telephone numbers.

COR certification information regarding training requirements, external training opportunities, and the Federal Acquisition Institute Training Application System (FAITAS) is located at: <http://fsweb.wo.fs.fed.us/aqm2/wo/pros/cor.php>

2.2 Program Management

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

- Regional Aviation Officers (RAO)
- Regional Airtanker Program Managers
- Regional Aviation Safety Managers (RASM)
- Regional Aviation Maintenance Inspectors (AMI)

The National Aircraft Coordinator and staff coordinate operational and strategic movement of LATs with the National and Geographic Area Coordination Centers to optimize response efficiency and effectiveness.

The Washington Office, in cooperation with Regional Office Aviation Staff and Airtanker Base Managers, continue to adapt and develop operations and equipment to ensure a stable, efficient and safe program. This is accomplished with quality assurance review of the current management approach for effectiveness to include program funding, permanent positions, contract specifications, contract length, facilities, specialized training, placement of resources, and operations.

Communication between the regions, airtanker bases, and Washington Office will be important to achieve an effective and efficient program to support aviation and land management operations.

3.0 Interagency Airtanker Board (IAB)

The purpose of the IAB is to promote the safety, effectiveness, and efficiency of airtankers through approval of water and retardant delivery systems and recommendations to the contracting agencies. IAB evaluates delivery systems and drop performance. IAB criteria shall apply to fixed-wing airtankers intended for interagency use.

3.1 Approval Process

The Board has established a step-by-step criteria and process of evaluation and approval of the retardant delivery systems. All aircraft and delivery systems proposed as airtankers

shall be submitted by the Proponent to the IAB chairperson for processing through the Board. The Board reviews material submitted at each step and must be satisfied that all requirements of a step are met before the Proponent will be allowed to proceed to the next step.

New large airtankers, and older airtankers with newly modified tank and gate systems may be operated under the IAB “Interim Approval” while field evaluations are conducted. The Interim Approval shall have an expiration date. Once the Interim Approval has expired, the Proponent must reapply for another Interim Approval or full IAB approval to continue operating for the government.

To view the most current IAB policy, visit

<http://www.fs.fed.us/fire/contracting/airtankers/iab.htm>

4.0 Aircraft Inspection and Approval

Each year prior to use of large airtankers and flight crews on Forest Service contracts, the Forest Service will conduct pre-use inspections of aircraft for compliance with the contract specifications and conditions. Pre-use inspection shall be scheduled by the Contractor with the appropriate Forest Service airworthiness or pilot inspector to occur approximately 21-days prior to the MAP. When the airtanker has met contract inspection criteria it will be issued an aircraft approval card. If the pilots meet contract evaluation criteria, they will be issued a pilot qualification card. Once carded (airtanker and pilots) the airtanker is available to operate as specified in the contract. The cards are valid through the expiration date and can only be changed by the appropriate Forest Service airworthiness or pilot inspector.

4.1 Airtanker Return to Contract Availability Process

1. The pilot and/or the agency Project Inspector notifies contractor Director of Maintenance of the discrepancy
2. The pilot and/or the agency Project Inspector notifies the appropriate Forest Service Washington Office or Regional Aviation Maintenance Inspector (AMI) assigned to the specific make and model of airtanker.
 - a. P-2Vs – Primary John Farro, Secondary Kevin Bailey
 - b. BAe-146/RJ85 & MD87 – Primary Kevin Bailey, Secondary Gil Elmy
 - c. DC-10 – Primary Gil Elmy, Secondary Jon Curtis
 - d. C-130 – Primary Gil Elmy, Secondary Cory Noordermeer
3. The pilot and/or the agency Project Inspector notifies the COR that the aircraft is “Unavailable”
4. Maintenance action is taken by the contractor to correct the discrepancy
5. The AMI monitors progress of contractor’s maintenance action

6. The aircraft is approved for “Returned to Service” in accordance with 14 CFR by the contractor’s maintenance personnel and the maintenance log is signed off
7. Once the aircraft is approved for “Return to Service” by the contractor, the AMI approves the aircraft to “Return to Contract Availability”
8. The COR documents and tracks “Unavailability”
9. Once the agency Flight Manager/Project Inspector has completed all the above steps, the aircraft is “Available.”

5.0 Conduct and Ethics

All airtanker personnel employed or contracted by the Forest Service are accountable to the public for their actions. Professional conduct is expected at all times 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. They will continue to educate themselves in order to improve and advance their qualifications and performance.

6.0 Communications

Lines of communications are established to keep all parties informed of pending or potential issues that may arise. National and Regional personnel and airtanker crew or company representative are responsible for:

- Resolving problems/issues at the lowest level possible.
- Early and proactive communication to anticipate issues or problems that could be a safety issue or affect the availability of an airtanker.
- Notify the Contracting Officer Representative (COR), with all contract compliance questions and/or concerns, major maintenance or mechanical issues, disputes, etc.
- The COR will notify the Contracting Officer or National Airtanker Program Manager if the concerns or issues are outside the scope of his/her COR designation.
- Notify the appropriate national or regional personnel such as maintenance inspectors, inspector pilots, aviation safety managers, operations specialists, etc. depending on the nature of the issue.
- Notify the appropriate dispatch center of aircraft status, i.e. available/unavailable.

7.0 Airtanker Operations

The Forest Service large airtanker mission is primarily focused on wildfire suppression dropping retardant in support of ground firefighters. The primary mission is initial attack of new and emerging fires. Large airtankers can also be effective on large fires when

supporting ground firefighters. Large volumes of retardant from aircraft can help contain and suppress fires. The mission profiles for large 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. The Forest Service expects to fly approximately 250 flight hours per airtanker during an above average wildfire season.

Airtankers are not assigned to bases to 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, Aviation Business System. 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 Forest Service policy, Interagency Airtanker Base Operations Guide (IABOG) and the Occupational Safety and Health Administration (OSHA) standards. Airtanker Base Managers (ATBM) are responsible for development of a base operations plan based on regional direction.

All airtanker bases, permanent, call-when-needed, or temporary, shall have an operations plan as outlined in the Interagency Airtanker Base Operations Guide. Approval of the actual airport in terms of large airtanker performance shall be pre-approved by the Washington Office Airtanker Program Manager in coordination with regional aviation staff.

All airtanker bases, permanent, call-when-needed, and temporary, will have overweight authorizations or waivers if large airtanker exceed the published weight bearing capacity. The written authorization or waiver shall come from the airport authority and be in place prior to large 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 Forest Service shall not be held liable for airtanker operations unless the Forest Service or the airtanker vendor cause damage due to operator error or negligence.

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

Airtanker Base facilities, base operations, procedures, ramp operations, aircraft maneuvering, emergency procedures, ATB job descriptions, and dispatch information can be found in the Interagency Airtanker Base Operations Guide (IABOG), or at <http://www.nwcg.gov/sites/default/files/products/pms508.pdf>.

Airtanker Base and fixed-wing base ramp operations are currently undergoing review and evaluation with the intent to standardize these operations across the entire FS airtanker and fixed-wing base system. A beta test of these base, ramp and hanger processes and procedures will occur in 2017.

7.1.1 Airtanker Base Types

There are three basic types of airtanker bases, permanent, call-when-needed and temporary.

Permanent Base: A base that has permanent infrastructure installed in an identified area to service airtankers and support aircraft. In addition, the base will have permanent personnel whose main role is to act as management for the base and its facilities.

Call When Needed Base: A base that has permanent infrastructure installed in an identified area to service airtankers and support aircraft. The base does not have permanent personnel whose main role is to act as management for the base but could have personnel identified at the local level who have collateral duties to the base.

Temporary Base: When an airport that could serve the need of loading airtankers has been identified and approved. The airport would have little if any infrastructure to support the loading of airtankers and the corresponding equipment would have to be delivered and set up. 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 of the temporary base or personnel from outside of the area may be utilized in the management of the base.

7.1.2 Airtanker Base Staffing

There are three configurations for staffing an airtanker base, full time, seasonal and call when need.

Full Time: The base is at least minimally staffed in a configuration that allows a very short to immediate availability to provide support year round.

Seasonal: The base is minimally staffed in a configuration that allows very short to immediate availability and support only during a “season” based on local historic need.

Call When Needed: The base is staffed only when fire severity or activity occurs.

None of the terms is descriptive of an airtanker base. These terms are only descriptive of the staffing. Seasonal and Call-When-Needed staffing are generally used at temporary bases.

7.1.3 Temporary Airtanker Base Equipment: Portable and Mobile

There are two type of retardant mixing and loading equipment, Portable and Mobile.

Portable Airtanker Base (PAB): currently refers to operations, standby facilities and retardant mixing equipment that can be transported to a location and set up. Currently there are two maintained in Region 8.

Mobile Retardant Base (MRB): currently refers to a portable retardant mixing plant available through the national retardant contract.

Neither term is descriptive of an airtanker base. These terms are only descriptive of the types of equipment and facilities that may be in use at a temporary airtanker base. A base is not identified by the method that equipment and facilities are procured or obtained.

7.2 Concept of Operations

The Forest Service, using historical data, estimates the average annual retardant delivered by each LAT to be approximately 500,000 gallons on approximately 200 missions.

Forest Service contracted next generation large airtankers are expected to carry the contract retardant payload and 2.5 hours of fuel (Airtanker contract, Section B-4, (a),(5),(2)). If an airtanker cannot operate from an airtanker base with the contract retardant payload and 2.5 hours of fuel airtanker operations from that ATB shall cease at that point. An alternate base should be pre-planned and used that can support contract retardant payload and 2.5 hours of fuel.

Note: The above downloading requirements supersedes the August 12, 2015 Airtanker Download Documentation and Reporting Requirements Letter signed by the Assistant Director, Aviation.

Exception: Airtankers on a load and return order to the same fire are not required to maintain 2.5 hours of fuel for each recurring load and return flight.

The Pilot in Command (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 Airtanker Flight Profile

The following Forest Service Airtanker Mission Flight Profile and Example Segment Parameters and Conditions (figure 1) collectively illustrate the diverse nature of the airtanker flight environment. Table 1 lists the types and capacities of airtankers.

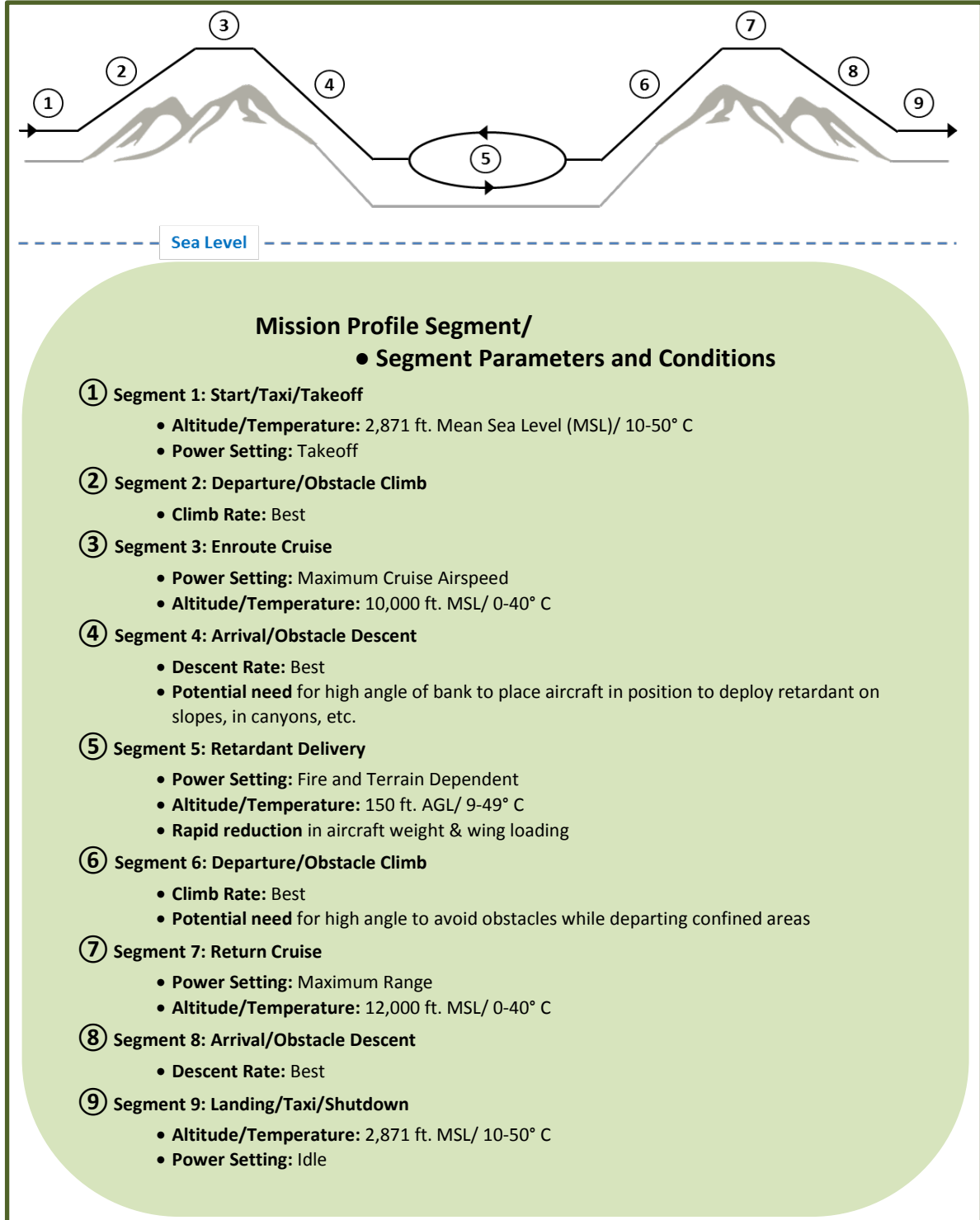


Figure 1. Airtanker Mission Profile Example

Table 1. Types of Airtankers

TYPE	CAPACITY GALLONS	EXAMPLES
VLAT	> 8,000	DC-10
1	3,000 – 7,900	BAe-146, RJ85, MD-87, C-130
2	1,800 – 2,999	P-2V
3	800 to 1,799	S-2T, AT-802F
4	Up to 799	Thrush SEAT

7.4 Mobilization

Based on national priorities, the National Interagency Coordination Center (NICC) will allocate federal large 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 wildland fire 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 (i.e. Airtankers, Lead Planes, Aerial Supervision Modules, and Type 1 and 2 Helicopters) are staffed and maintained to support mobilizations. GACCs will coordinate standby release and shutdown times with airtanker bases and dispatch centers.

When a Geographic Area has depleted available LATs, request(s) will be placed with the NICC. LAT initial attack agreements between neighboring unit level dispatch centers are valid only where proximity allows the airtanker to respond loaded direct to the incident.

Mobilization will occur through the NICC, then to the GACC where the airtanker is located. All LAT resources are required to have a resource order generated through the Resource Order and Status System (ROSS) 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.

Note: Prepositioning may require a job code for the flight. The National Aircraft Coordinator has an assigned prepositioning code for this use. The job code will be provided to a requesting GACC.

Note: ASM/Lead planes shall be ordered and mobilized immediately with airtankers that require a lead plane. If an airtanker is not capable of or qualified to do initial attack, it shall not be dispatched. Reference Airtanker Rotation below.

7.5 Dispatching Procedures

Airtankers shall be dispatched using an Aircraft Dispatch Form, either the one generated by ROSS or GACC. Reference Appendix A Aircraft Dispatch Form. ROSS order forms are not an acceptable aircraft dispatch information format.

When ordered for Initial Attack an Aircraft Dispatch form is acceptable both within Geographic Area (GA) boundaries and when responding to a neighboring GA within a direct load carrying proximity—followed by a ROSS order.

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-00.

7.6 Flight Following Procedures

7.6.1 National Flight Following Frequency (168.6500 MHz)

The National Flight Following Frequency is used for flight following, dispatch, or redirection of interagency and contract aircraft. No other use is authorized.

Airtankers will establish/terminate flight following, and confirm Automated Flight Following (AFF) on the National Flight Following frequency. All dispatch centers/offices will monitor the National Flight Following frequency at all times. A CTCSS tone of 110.9 must be placed on the transmit and receive sides of the National Flight Following frequency. Refer to the National Interagency Mobilization Guide, Chapter 50, Flight Management Procedures for detailed flight following procedures and requirements.

7.6.2 Flight Following Script

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

- Call Sign (Airtanker/ Tanker 36)
- 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

Note: Need for large airtankers should be anticipated through use of Predictive Services at least 24-48 hours in advance. This allows for a much quicker response to

actual large airtanker orders. Orders shall be communicated to NICC through the GACC.

Note: 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 Contracting Officer (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 NICC
2. Regional or GACC personnel will not directly contact Contracting Officers or vendors for nationally contracted aircraft to inquire about aircraft availability.
3. NICC will notify the National Airtanker Program Manager (NATPM) or National Fixed-wing Coordinator (FWC) of the order. Alternate to the PM or FW Coordinator would be the National Aircraft Coordinator.
4. Informal inquiries to the NATPM or FWC regarding airtanker availability or other mobilization issues is appropriate, but the NATPM or FWC will also notify NICC to maintain communications.
5. NICC will notify the CO and the NATPM or FWC of request(s).
6. The CO and the NATPM will determine the availability of airtankers and will notify the national airtanker inspector(s) and pilot inspectors if needed. The CO will modify the contract as needed to activate the airtanker.
7. The NATPM or FWC will notify NICC of the available airtankers, inspection timing if necessary and other activation issues.
8. NICC will notify the GACC of the airtanker activation.

7.8 Specialty Airtankers

7.8.1 Very Large Airtankers

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

VLAT airtanker base operations will not limit or restrict the capacity of an airtanker base to load large airtankers. Large airtankers are the primary airtankers in the fleet, 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 must be planned for and implemented.

7.8.2 Flight Operations Considerations

- 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.

Each region/GACC will designate airports and/or airtanker bases where VLATs will operate. In most cases, these locations will not be existing airtanker bases, but separated from an existing airtanker base on a pre-designated ramp area of an airport supported by a temporary retardant base.

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

- Airport overweight agreements. Airport overweight agreements shall be current and provide the appropriate weight allowances for the applicable VLAT. The only VLAT on contract at this time has dual tandem main landing gear and fully loaded can weigh almost 400,000 pounds.
- VLATs using existing airtanker bases will not impact LAT access to the pits or loading to include mixing and loading capacity.
- Maneuvering space during taxi into and out of the airtanker ramp and pit area. A minimum of 30 feet clearance (nose, wing tips and tail) from any other aircraft and obstacles.
- Foul line/boxes will be established for ground support equipment (GSE) to be relocated to prior to aircraft movement.
- Air stairs appropriate for the VLAT(s) on contract. The only VLAT on contract at this time cannot deplane easily. The VLAT contractor is responsible for hiring or leasing air stairs. The company (FBO or other) offering the air stairs is responsible to maneuver and place the air stairs. Forest Service personnel shall not operate or maneuver air stairs.
- Aircraft tug appropriate for the VLAT(s) on contract. The only VLAT on contract at this time will weigh almost 400,000 pounds fully loaded. Forest Service personnel shall not operate or maneuver tugs for contract aircraft.
- Retardant mixing and pump capacity to sustain continued VLAT operations for one day with resupply available for current or expected operations.
- Retardant off-load capability for the contracted retardant payload. The only VLAT on contract at this time will require approximately 11,000 gallons of off-load liquid capacity.
- Defense Logistics Agency Aviation Into-plane Reimbursement (AIR) Card fuel on airport.

7.9 Modular Airborne Firefighting Systems (MAFFS)

MAFFS is a joint Forest Service and Department of Defense (Air Force) program governed by an interagency agreement. The Forest Service provides eight (8) MAFFS retardant delivery units. Three Air National Guard wings and one Air Force Reserve wing 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 nationally 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 Understanding (MOU).

Geographic Areas are responsible for ascertaining all suitable commercial airtankers are assigned to wildland fires or committed to initial attack before placing a request for a MAFFS mission to NICC. For additional information, see the MAFFS Operating Plan.

The NICC is responsible for ascertaining that all suitable commercial 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 his/her acting, or in his/her 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, and North Carolina 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 this activation.

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.

7.10 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 Geographic Area needs to order the following support:
 4. 1 each MAFFS Liaison Officer (MLO aka MAFF) and 1 each MLO trainee
 5. 1 each Airbase Radio Kit (NFES 4660)
 6. 1 each MAFFS Communications Specialist (THSP)

7. 1 each Assistant MAFFS Liaison Officer
8. 1 each MAFFS Airtanker Base Manager (MABM) and 1 each MABM trainee
9. Logistics, Finance, and Information personnel
10. MAFFS Operations must also include a MAFFs qualified Lead Plane.

The Receiving Unit must be prepared to provide administrative support (procurement, motel 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.

7.11 Single Engine Airtankers (SEAT)

Single engine airtankers are primarily the responsibility of the Bureau of Land Management. The Forest Service has one SEAT on contract in John Day, Oregon.

SEAT use, management, operations and administration are addressed in the Interagency Single Engine Airtanker Operations Guide (ISOG).

7.12 Airtanker Rotation

The national interagency airtanker fleet is composed of Exclusive Use (EU), Call When Needed (CWN), Forest Service (FS) owned Large Airtankers (LATs), and Single-Engine Airtankers (SEATs). All Very Large Airtankers (VLAT), LATs and SEATs operating from the same base shall be dispatched in rotation based on the type of airtanker requested (VLAT, LAT or SEAT), on a first in/first out basis regardless of contract type (EU, CWN, SEATs or FS owned), or the location of the incident.

First in/first out also applies to airtankers that are requested for a load/return. When an incident requires multiple loads of retardant, Aerial Supervisors/Incident Commanders will notify the appropriate dispatch center of the need for additional retardant and any operational retardant delivery requirements. Dispatch will provide any restrictions or limitations in the order to the airtanker base. To ensure timely and effective retardant delivery, the next available airtanker in rotation that can fill the order, is available and located at the load and return airtanker base will be dispatched.

7.13 Exceptions

1. Airtankers that are not Initial Attack (IA) qualified will not be dispatched to a fire unless a Lead Plane or Aerial Supervision Module (ASM) is on scene upon the arrival of the non-IA qualified airtanker.
2. Incident commanders and/or aerial supervisors determine aircraft use based on operational necessity or safety.
3. The next airtanker in rotation has an operating restriction at the base where it is being assigned. Operating restrictions include but are not restricted to: fuel and retardant availability, significant downloading, performance degradation, incident

proximity negates effectiveness, daylight remaining, and airtanker base or airport restrictions.

4. Repositioning of an airtanker closer to where their maintenance crews or supplies are available. The National Interagency Coordination Center (NICC) will facilitate in coordination with the Geographic Area Coordination Center (GACC).
5. A benefit to the government would be realized by changing the rotation. This will be facilitated by the GACC or NICC with consideration to days off, mission requirements, and/or anticipated need.
6. Airtankers are returning after day(s) off. Upon returning to availability, these airtankers will be at the end of the rotation at the airtanker base. Airtankers that work a seven day schedule retain their position in the rotation.
7. MAFFS and Canadian airtankers supplementing the commercial airtanker fleet will begin rotation at the base after the contracted and FS owned airtankers at the beginning of each day.

Water scoopers will not be included in airtanker base rotations.

7.14 Rotation of State Airtankers

Rotation of State resources on State incidents at a state airtanker base is established by their agency. In cases where State resources are operated in conjunction with federally contracted airtankers on an incident primarily on federal lands, the State airtankers are added to the rotation after the federal airtankers at the beginning of each day.

Additional Information: FS/Department of Interior (DOI) contracted airtankers, when assigned to incidents managed by other agencies or state cooperators remain under the direction of the Contracting Agency. FS and DOI contracted airtankers are bound only by their contract and will be treated fairly and equitably during their assignment with other federal or state agencies.

7.15 Approved Cooperator Airtankers

Airtankers procured/owned by cooperating agencies (state, local, and International) may be utilized on federally managed fires only when federal cooperative agreements are in place and the airtankers have been approved by letter nationally or regionally.

7.16 Operations in Low Light/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 safely and effectively conduct aerial operations. Aerial supervision may be provided by a Leadplane, ASM, ATGS or HLCO. Dispatchers and Airtanker Base Managers, in consultation with aerial supervisors, are mutually responsible for ensuring that policies are applied and limitations not exceeded.

7.17 Retardant Operations during Low Light Conditions

Retardant operations will only be conducted during daylight hours. Multi-engine airtankers may be dispatched to arrive over a fire (with no aerial supervision scene) not earlier than 30 minutes after official sunrise and not later than 30 minutes before official sunset. Retardant operations are permitted after official sunset, but must have concurrence by the involved flight crews. In addition, aerial supervision (Lead, ASM, or ATGS) must be on scene. Daylight hours are defined as 30 minutes prior to sunrise until 30 minutes after sunset as noted in figure 2 below. Flights by multi-engine aircraft to assigned bases may occur after daylight hours.

1. In Alaska an airtanker pilot shall not be authorized to drop retardant during periods outside of civil twilight.
2. SEATs and helicopters are limited to flight during the official daylight hours.
3. Flight crews might experience late dawn or early dusk conditions based on terrain features and sun angle, and flight periods should be adjusted accordingly. Daylight hours may be further limited at the discretion of the pilot, aviation manager, ATGS, ASM, or Leadplane because of low visibility conditions caused by smoke, shadows or other environmental factors.

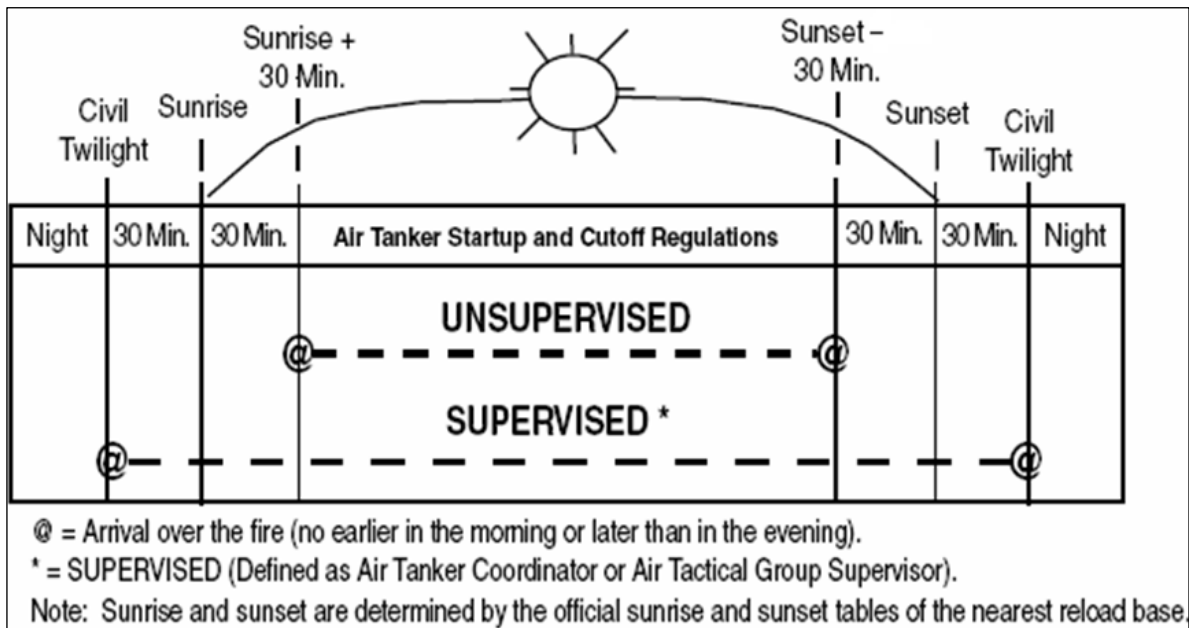


Figure 2. Multi-engine Airtanker Startup and Cutoff Regulations

7.18 Loading Retardant

All Federal Airtankers shall be loaded with retardant measured in pounds by a Mass Flow Meter regardless of which agency owns or manages the airtanker base. Airtankers may only carry tank loads less than or equal to their Interagency Airtanker Board approved max tank volume at nine (9) pounds per gallon of retardant. Neither limit may be exceeded

without approval from the National Airtanker Program Manager. Loading ceases once the first limit is reached.

The retardant load total weight shall be reported to the airtanker pilot-in-command. The retardant load total weight shall be used in the preflight completion of the aircraft's weight and balance computation.

7.19 Retardant Hot Loading

Retardant Hot Loading (RHL) is the loading of retardant with one or more propulsion engines running.² Retardant Hot Loading can save turnaround time during reloading operations while responding to ongoing fires. It also significantly reduces maintenance times on turbine engine components. Both contractors and cooperators may be approved for RHL.

Retardant Hot Loading for turbine airtankers is authorized with the following actions:

1. Cooperator airtankers will have been evaluated and approved by the appropriate Regional Aviation Officer in a Cooperator Letter for this purpose.
2. The contractor or a cooperator will document a risk assessment and operating practices for their particular airtanker and comply with those policies during this activity.
 - a. For contractors, the risk assessment and operating practices will be provided to the Contracting Officer and reviewed by the National Airtanker Program Manager and the Branch Chief, Aviation Safety.
 - b. For cooperators, the risk assessment and operating practices will be provided to the appropriate RAO and reviewed by the RASM.
3. Each airtanker base that intends to conduct Hot Retardant Loading will develop an annex or supplement to the local Base Operating Plan which will describe the training and practices to be used. The supplement will be reviewed by the Regional Aviation Officer (RAO).
4. Base personnel who will participate in this operation will be trained using the Hot Retardant Loading supplement. A record of this training will be maintained at the base.
5. Retardant Hot Loading shall be requested by the government (Base Manager) on a case by case basis.
6. A documented pre-operational briefing shall occur between the flight crew and base personnel prior to any Retardant Hot Loading operations. This briefing will include a review of the local Retardant Hot Loading Operations supplement, contractor procedures, and airport procedures.

² Retardant Hot Loading is also known as Hot Retardant Loading. The 2015 Washington Office letters regarding contract and cooperator Hot Retardant Loading will be considered to be referring to Retardant Hot Loading.

7. No engines on the side of the retardant loading activity may be running.

7.20 Simultaneous Fueling and Retardant Loading

Simultaneous loading (SRL) is the concurrent loading of fuel and retardant with propulsion engines stopped. An onboard Auxiliary Power Unit (APU) may be in operation.

Simultaneous loading can save turnaround time during reloading operations while responding to ongoing fires. In some cases with very large turbine aircraft this can be as much as 30 minutes. Both contractors and cooperators may be approved for SRL.

Simultaneous loading for turbine airtankers is authorized with the following actions:

1. The contractor or a cooperator will provide documentation of a risk assessment and operating practices for their particular airtanker and comply with those policies during this activity.
 - a. For contractors, the risk assessment and operating practices will be provided to the Contracting Officer and reviewed by the National Airtanker Program Manager and the Branch Chief, Aviation Safety.
 - b. For cooperators, the risk assessment and operating practices will be provided to the appropriate RAO and reviewed by the RASM.
2. Each airtanker base that intends to conduct Simultaneous Loading will develop an annex or supplement to the Base Operating Plan which will describe the training and practices to be used. The supplement will be reviewed by the Regional Aviation Officer (RAO).
3. Base personnel who will participate in this operation will be trained using the Simultaneous Loading supplement and a record maintained at the base.
4. Simultaneous Loading shall be requested as needed by the government (Base Manager) on a case by case basis.
5. A documented pre-operational briefing shall occur between the flight crew, Base Manager, and local airport fuelers prior to any simultaneous loading operation. This briefing will include a review of the Simultaneous Loading Operations supplement, contractor procedures, and airport procedures.
6. Only the Auxiliary Power Unit may be running, no propulsion engines are allowed to run.

7.21 Contract Airtanker Deployments to Canada

On occasion Forest Service contracted airtankers may be ordered for more than initial response through agreement for use in Canadian provinces.

When ordered and deployed for more than two operational periods, an airtanker COR approved by the National Airtanker Program Manager will be ordered and deployed with the contract airtanker to administer the contract and be a liaison with the province and the Canadian Interagency Forest Fire Center.

8.0 Aerial Supervision

8.1 Retardant Drops

1. Qualified Initial Attack Airtanker Pilots (AKI) are authorized to drop retardant on fires without the supervision of a Leadplane (LP)/ASM, or Air Tactical Group Supervisor (ATGS).
2. Non-AKI qualified pilots are not authorized to drop retardant on fires unless an LP or ASM is over the fire and supervises the drop.
3. Retardants shall be dropped as accurately as possible on the designated target areas of the fire. Minimum drop height is 150 feet above the ground or canopy cover (whichever is higher).
4. To reduce the hazards of airtanker retardant drops in the early morning and late afternoon hours, the following limitations shall apply. These limitations apply to the time the aircraft arrives over the fire, NOT to the time the aircraft conducts retardant drops.

Aerial supervision resources must be launched together with the airtanker on the initial order to maximize safety, effectiveness, and efficiency of incident operations. Incidents with 3 or more aircraft over/assigned should have aerial supervision over/assigned the incident. Federal policy dictates additional requirements listed as follows in table 2.

Table 2. Aerial Supervision Requirements

SITUATION	LEAD/ASM	ATGS
Airtanker not IA rated	Required	****
MAFFS	MAFFS endorsed LEAD/ASM	****
VLAT	VLAT Endorsed Lead/ASM	****
Requested by airtanker, ATGS, Lead, or ASM	Required	Required
Foreign government airtankers	Required if no ATGS	Required if no Lead/ASM
Multi-engine airtanker: Retardant drops conducted between 30 minutes prior to, and 30 minutes after sunrise, or 30 minutes prior to, or 30 minutes after sunset	Required if no ATGS	Required if no Lead/ASM
Retardant drops in congested/urban interface areas	Order	May use if no Lead/ASM
Periods of marginal weather, poor visibility or turbulence	Order	Order
Single engine airtanker (SEAT) – Must have landed sunset + 30 min	See level 2 SEAT requirement	See level 2 SEAT requirement
Level 2 SEAT requirements: Level 2 rated SEAT operating over an incident with more than one other tactical aircraft on scene	Required if no ATGS	Required if no Lead/ASM

Source: 2016 Interagency Aerial Supervision Guide.

8.2 Tactical Flight Profiles

8.2.1 Show Me Profile

A Show Me Profile (figure 3) is a low level pass made over the target using the physical location of the aircraft to demonstrate the line and start point of the retardant drop. The Show-Me Profile is normally used for the first airtanker on a specific run or when an incoming airtanker has not had the opportunity to observe the previous drop. A Show-Me can be used alone or before other profiles. The pilot begins the run when the airtanker crew can visually identify the aircraft, hazards, line, start and exit point of the drop.

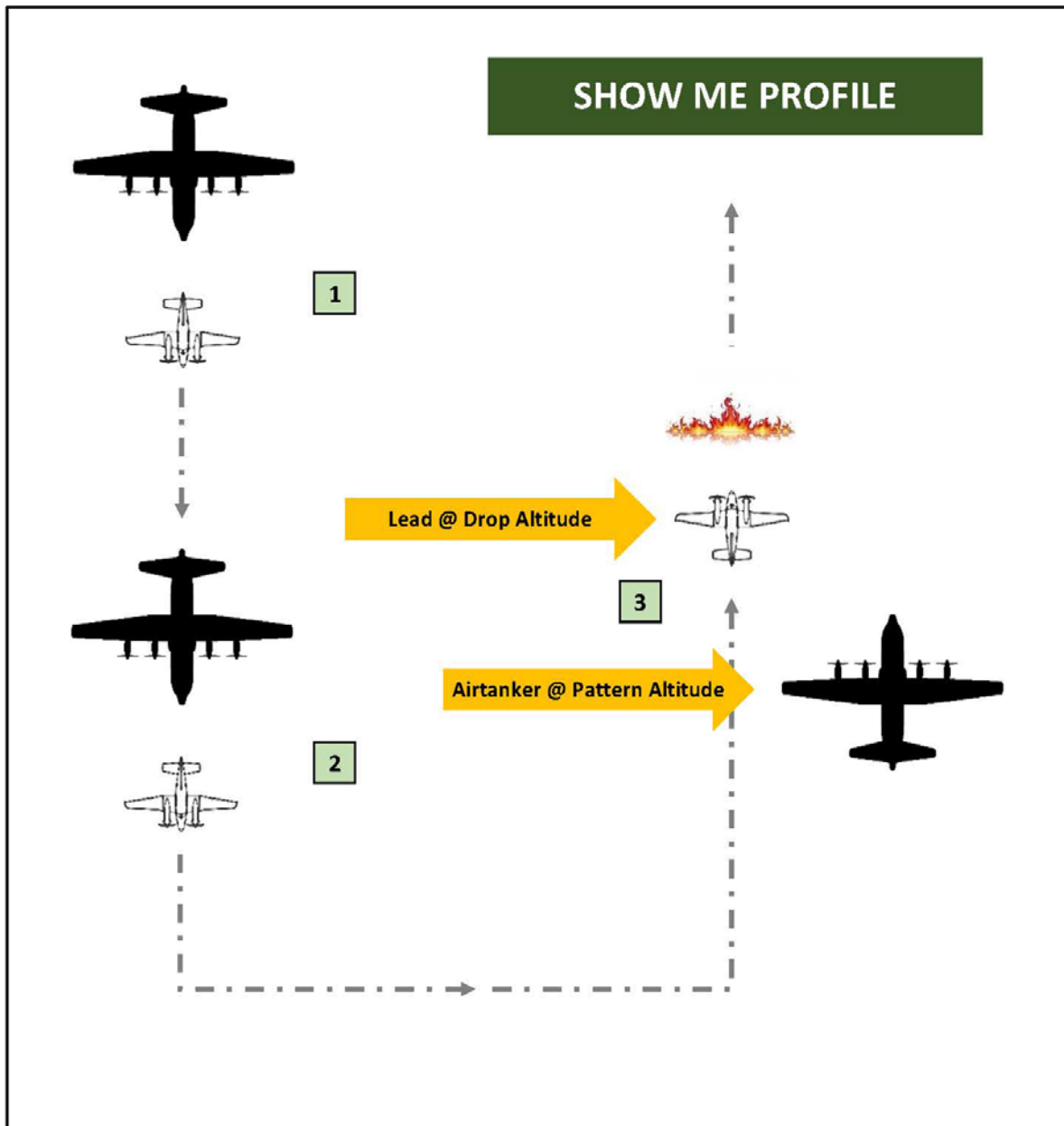


Figure 3. Show Me Profile

8.2.2 Chase Position Profile

The Chase Position Profile (figure 4) is an observation position in trail of and above the airtanker at a position of 5 to 7 o'clock. The Chase Position Profile is used to verbally confirm or adjust the position of the airtanker when on final, and to evaluate the drop.

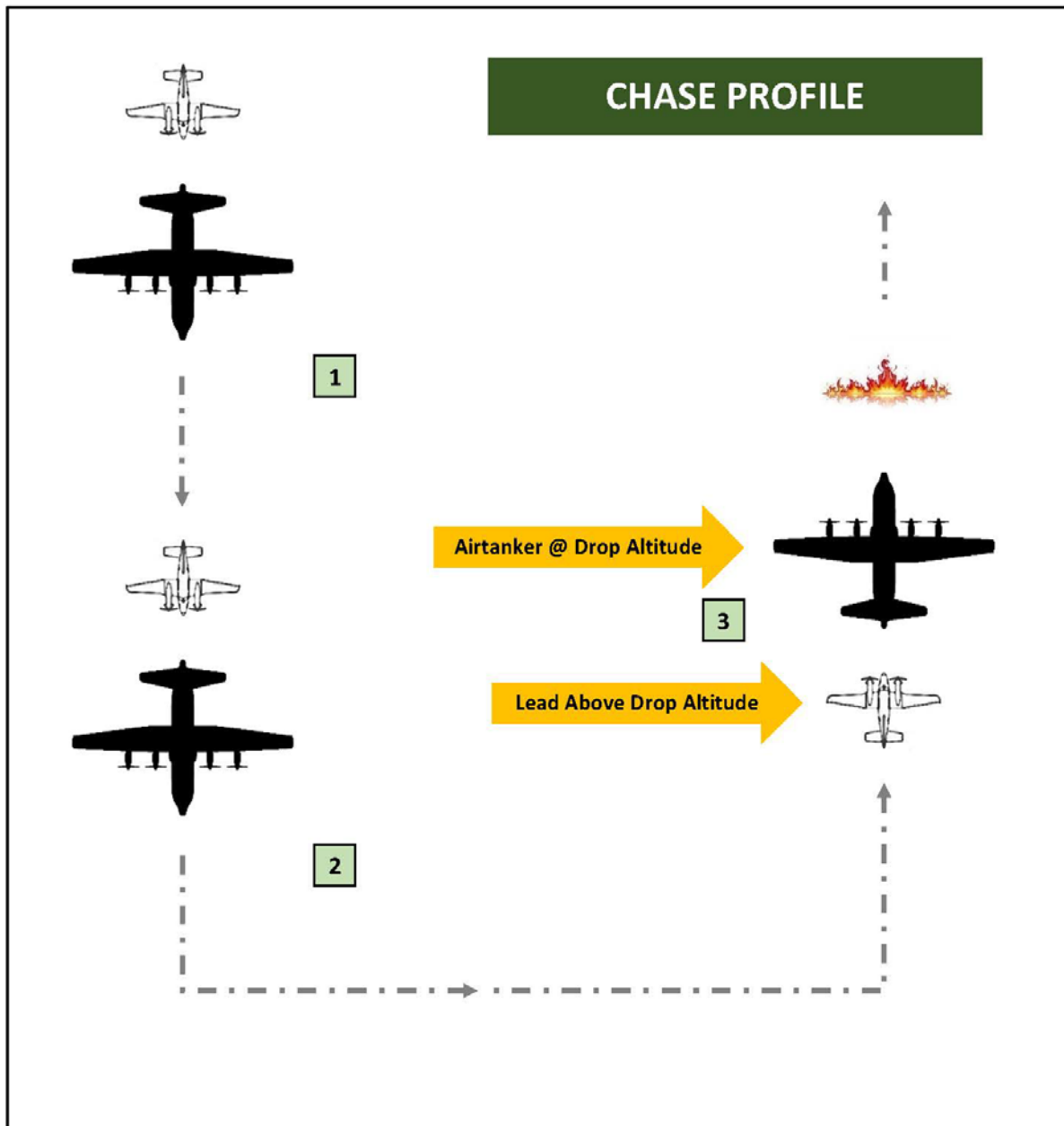


Figure 4. Chase Profile

8.2.3 Lead Profile

The Lead Profile (figure 5) is a low level (below 500' AGL) airtanker drop pattern, made with the Leadplane approximately 1/4 mile ahead of the airtanker. The Lead Profile is used at the request of the Airtanker Crew, or when the line or start point is difficult to see or to describe due to lack of visibility or references.

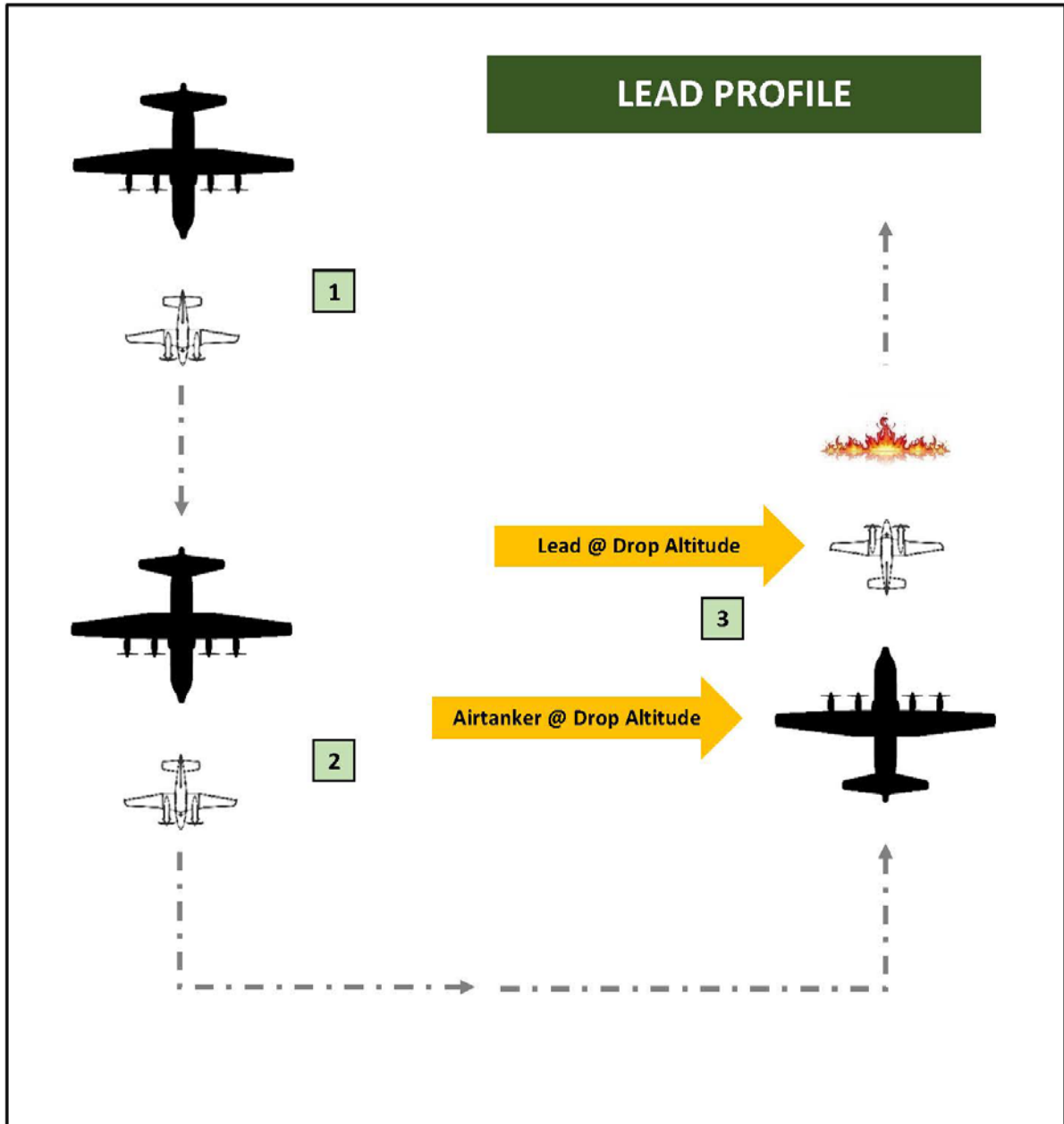


Figure 5. Lead Profile

9.0 Pilot Proficiency

Each year prior to use of pilots covered by this contract, the Government will conduct pre-use inspections of contract pilots for compliance with the contract specifications and conditions. Pre-use check flights shall be scheduled by the Contractor with the Government to occur approximately 21-days prior to the MAP. 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 government standardization authority.

10.0 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.

1. Pilots
 - a. Flight time will be measured using the information in G-2 of the airtanker contract.
 - b. Flight time shall not exceed a total of 8-hours per day
2. 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 for the purposes of this clause, providing during any 14-consecutive day period, each pilot shall have 2 full days off-duty. Days off need not be consecutive. The contractor may propose alternate schemes for crew days off (i.e. 12 on and 12 off, see B-7 of the airtanker contract).
3. 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
4. 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 afire, 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 flight time on a one-to-one basis toward flight time 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, proficient and approved in the special mission and FAA current in the aircraft.

11.0 Risk Management

11.1 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
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.

11.2 Operational Risk Management

An ORM assessment is required for every FS flight. It is recommended to use the Day of Risk Assessment (DORA) sheet during mission planning, and update as necessary (see Appendix D).

11.3 Risk Refusal

Every individual (government and contracted employees) has the right and obligation to report safety problems affecting his or her safety and has the right to contribute ideas to correct the hazard. In return, supervisors are expected to give these concerns and ideas serious consideration. When an individual feels an assignment is unsafe, he or she also has 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. In aviation, the pilot in command (PIC) of the aircraft has the final authority to fly or not to fly the mission.

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

A “turn down” is a situation where an individual has determined he or she 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. Individuals may turn down an assignment because of safety reasons when:

- There is a violation of regulations, aviation policy or safe aviation practices;
- Communication issues;
- Airspace congestion or inadequate management;
- Aircraft capabilities, performance and/or limitations;
- Environmental conditions make the work unsafe; or
- Pilot and crew lack the necessary qualifications or experience.

Individuals will directly inform the requestor that they are turning down the assignment as given. The most appropriate means of documented turn down criteria is using the Twelve Standard Aviation Questions That Shout “Watch Out” shown below.

Twelve Standard Aviation Questions That Shout **Watch Out!**

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Is this flight necessary? 2. Who is in charge? 3. Are all hazards identified and have you made them known? 4. Should you stop the operation on the flight due to change in conditions? <ul style="list-style-type: none"> <input type="checkbox"/> Communications <input type="checkbox"/> Weather <input type="checkbox"/> Confusion <input type="checkbox"/> Turbulence <input type="checkbox"/> Personnel <input type="checkbox"/> Conflicting Priorities 5. Is there a better way to do it? 6. Are you driven by an overwhelming sense of urgency? | <ol style="list-style-type: none"> 7. Can you justify your actions? 8. Are there other aircraft in the area? 9. Do you have an escape route? 10. Are any rules being broken? 11. Are communications getting tense? 12. Are you deviating from the assigned operations of flight? |
|---|--|

Anyone can refuse or curtail a flight when an unsafe condition may exist. Never let undue pressure (expressed or implied) influence your judgment or decisions. Avoid mistakes, don't hurry!

MFES 1129 (1998)

If the assignment has been turned down previously and the requestor asks another resource to perform the assignment, he or she is responsible to inform the new resource that the assignment had been turned down and the reasons why. The refusal and additional request will be documented in ROSS with any pertinent instructions. Furthermore, personnel need to realize that a “turn down” does not stop the completion of the assigned operation. The “turn down” protocol is an integral element that improves the effective management of risk, for it provides timely identification of hazards within the chain of command, raises risk awareness for both leaders and subordinates, and promotes accountability.

If an unresolved safety hazard exists the individual needs to communicate the issue/event/concern immediately to his or her supervisor and document as appropriate and report in the SAFECOM system.

12.0 Large Airtanker Information

12.1 Aircraft: Boeing (McDonnell Douglas) MD-87 Next Gen Large Airtanker

Vendor: Erickson Aero Air (Aero Air)

Background: The MD-87 was awarded two line items Next Generation (NG) 1.0 Large Airtanker Exclusive Use contract. This aircraft can operate from most existing Airtanker Bases with little or no impact.



Note: Aero Air is in the process of receiving FAA approval. If they receive the approval, the Interagency Airtanker Board will issue an interim or full approval for 3,000 gallons.

Key Points:

- ▶ **Facilities:** The MD-87's weight is approximately 131,000 lbs. in contract configuration. For weight bearing purposes it has a dual wheel configuration.
- ▶ Tanker Base and parking ramps must have a weight bearing capacity sufficient to support the MD-87. 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.
- ▶ 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.
- ▶ 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, NATPM and the WO Branch Chief, Aviation Safety. The airtanker base manager (ATBM) is delegated the decision authority for these types of operations.
- ▶ Loading and servicing the MD-87 can be accomplished on either side of the aircraft. A telescoping connector allows for extension of the port during loading. A sample loading operation can be found here: http://youtu.be/3ho_R_ovd3Q
- ▶ **Response Time and Supervision:** Low level aerial supervision (a Leadplane) may be required for this aircraft.
- ▶ The cruising speed of the MD-87 is around 320 knots (TAS) on fire response and 420 knots for reposition flights. Users/dispatchers will need to plan for LP/ASM arrival if the

pilot is not initial attack qualified. Responses shorter than 150 nm will be similar to existing airtankers.

- ▶ **Terrain:** Large Airtankers (LATs), like the MD-87 can be used in challenging terrain, but care should be taken as the flight crews gain experience with this new equipment on actual fires.
- ▶ The MD-87 is relatively agile for its size and requires some planning by the supervising aircraft to provide a stabilized path for delivery. Flight paths for pattern speeds of 130 to 140 knots on final should be planned.
- ▶ The MD87 minimum drop height is the same as other airtankers; 150 feet above the top of the vegetation with a target height of 200 feet for most CLs.

12.2 Aircraft: British Aerospace BAe-146

Vendor(s): Neptune Aviation Services and Air Spray USA Ltd.

Background: There are three Neptune 146s the Exclusive Use Legacy Airtanker contract and 4 line items on the 2.0 Large Airtanker Exclusive Use contract and several line items on the Call-When-Needed (CWN) contract. This aircraft can operate from most existing Airtanker Bases with little or no impact.



Key Points:

- ▶ **Facilities:** The BAe-146 weight is approximately 87,000 lbs. in contract configuration. For weight bearing purposes it has a dual wheel configuration.
- ▶ Letters documenting waivers for over-weight operations and drawings of the ramp structure must be on file at the airtanker base.
- ▶ Operations in and out of existing pits have occurred for several years. 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.
- ▶ 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, NATPM and the WO Branch Chief, Aviation Safety. The airtanker base manager (ATBM) is delegated the decision authority for these types of operations.
- ▶ Loading and servicing the 146 can be accomplished on either side of the aircraft. For simplicity, a connector extends from both sides of the fuselage near the tail similar to Legacy aircraft. The two access doors on either side provide control switches, lights, and readouts.

- ▶ **Response Time and Supervision:** Low level aerial supervision (Leadplane) is not required for this aircraft unless the crews are not Initial Attack qualified.
- ▶ The cruising speed of the 146 is approximately 340 knots (TAS) on fire response and 380 knots for reposition flights. Responses shorter than 150 nm will be similar to existing airtankers.
- ▶ The Neptune 146s have full IAB approval for 3000 gallons of retardant. Air Spray has not performed any testing, nor have they submitted a request to the IAB for such evaluation and testing.
- ▶ This aircraft can land partially loaded but will normally require a jettison down to max landing weight.
- ▶ **Terrain:** Large Airtankers (LATs), like the 146 can be used in challenging terrain; however care should be taken as the flight crews gain experience with this equipment on actual fires.
- ▶ The 146 is relatively agile for its size and requires some planning by the supervising aircraft to provide a stabilized path for delivery. Flight paths for pattern speeds of 120 to 130 knots on final should be planned.
- ▶ The 146 minimum drop height is the same as other large airtankers; 150 feet above the top of the vegetation with a target height of 200 feet for most CLs.

12.3 Aircraft: Avro RJ85

Vendor: Aero Flite

Background: The RJ85 was awarded two line items on the NG 1.0 and two on the 2.0 Large Airtanker Exclusive Use contract and several line items on the CWN contract. It can operate from most existing Large Airtanker Bases with little or no impact. The airframe is very similar to the BAe-146 but has upgraded avionics, improved engines, and a higher max gross weight and is generally 10 years newer than the -146.



Key Points:

- ▶ **Facilities:** The RJs weight is approximately 97,000 lbs. in contract configuration. For weight bearing purposes it has a dual wheel configuration.
- ▶ Letters documenting waivers for over-weight operations and drawings of the ramp structure must be on file at the airtanker base.
- ▶ Operations of the RJ have occurred out of existing airtanker bases for several years. 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.

- ▶ 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, NATPM and the WO Branch Chief, Aviation Safety. The airtanker base manager (ATBM) is delegated the decision authority for these types of operations.
- ▶ Loading and servicing the RJ85 can be accomplished on either side of the aircraft. A pivoting connector allows for extension of the port beyond the fuselage door during loading operations. Lights and switches in the fuselage assist in loading to the proper volume.
- ▶ **Response Time and Supervision:** Low level aerial supervision (Leadplane) may be required for this aircraft.
- ▶ The cruising speed of the RJ is around 340 knots (TAS) on fire response and 380 knots for reposition flights. Users/dispatchers will need to plan for LP/ASM arrival when responding on longer dispatches if the pilot is not initial attack qualified. Responses shorter than 150 nm will be similar to legacy airtankers.
- ▶ The RJ85 has full approval from the IAB for 3000 gallons of retardant.
- ▶ This aircraft can land partially loaded but will require a jettison down to max landing weight.
- ▶ **Terrain:** Large Airtankers, like the RJ85 can be used in challenging terrain; however care should be taken as the flight crews gain experience with this equipment on actual fires.
- ▶ Flight paths for pattern speeds of 120 to 130 knots on final should be planned.
- ▶ The minimum drop height is the same as other large airtankers; 150 feet above the top of the vegetation with a target height of 200 feet for most CLs.

12.4 Aircraft: Boeing (McDonnell Douglas) DC-10

Vendor: 10 Tanker LLC

Background: With the capability of carrying over 8,000 gallons of retardant, the DC-10 is a Very Large Airtanker (VLAT). The DC-10 was awarded one line item each on the NG 1.0 and 2.0 Large Airtanker Exclusive Use contracts and several line items on the CWN contract. The VLAT because of its size and performance requires additional consideration for use.



Key Points:

- ▶ **Facilities:** The DC-10 weight in contract configuration of 11,600 gallons weighs approximately 400,000 lbs. For weight bearing purposes it has a Dual Tandem configuration.
- ▶ Regions have designated several VLAT base locations, which in most cases are not 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.
- ▶ 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 visibility from the flight deck, wing walkers are essential during taxi and base 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, NATPM and the WO Branch Chief, Aviation Safety. The airtanker base manager (ATBM) is delegated the decision authority for these types of operations. Loading and servicing the DC-10 can be accomplished on either side of the aircraft.
- ▶ The DC-10 tanks retain greater than the allowable amount of retardant in the current contract.
- ▶ There are only five ATBs that can offload the DC-10 if the retardant tanks are empty. The ATBs are: Mesa-Gateway, Moses Lake, San Bernardino, McClellan, and Castle.
- ▶ **Response Time and Supervision:** Low level aerial supervision (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 DC-10 shall not be dispatched to a fire unless a Leadplane or Aerial Supervision Module (ASM) is on scene. Initial responses shorter than 150 nm will be similar to legacy airtankers due to the time it takes to load the tank with retardant.
- ▶ The DC-10 has full approval from the IAB for 11,800 gallons of retardant.
- ▶ **Terrain:** The DC-10 can be used in moderately challenging terrain. Crews have gained significant experience in the aircraft and are capable of splitting the load up or delivering it in one long line.
- ▶ Flight paths for pattern speeds of 140 to 150 knots on final should be planned.

- ▶ The minimum drop height is higher than other airtankers; 200 feet above the top of the vegetation with a target height of 250 feet for most CLs.

12.5 Aircraft: Lockheed C-130H/Q and L-382G

Vendor: Coulson Aviation USA

Background: The C-130H/Q was awarded one line item on the NG 1.0 Large Airtanker Exclusive Use contract and the L-382G was awarded one line on the CWN contract. These aircraft can operate from most existing Airtanker Bases with little impact.



Key Points:

- ▶ **Facilities:** The C-130H/Q and the L-382G have a max operating weight of 155,000 pounds. For weight bearing purposes both have a Single Tandem configuration. Airtanker Bases, runway, taxiways 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.
- ▶ Operations of the C-130H and L-382G 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 taxi and base 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, NATPM and the WO Branch Chief, Aviation Safety. The airtanker base manager (ATBM) is delegated the decision authority for these types of operations. Loading and servicing the C-130H and L-382G can be accomplished on either side of the aircraft.
- ▶ **Response Time and Supervision:** Low level aerial supervision (Leadplane) may be required for this aircraft.
- ▶ The cruising speed of the C-130H is approximately 300 knots (TAS) on fire response and 360 knots for reposition flights. Users/dispatchers will need to plan for LP/ASM arrival when responding on longer dispatches if the pilot is not initial attack qualified. Responses shorter than 150 nm will be similar to existing airtankers.
- ▶ The dispensing system can select all required coverage levels. The dispensing system is currently rated at 4000 gallons.
- ▶ **Terrain:** Large Airtankers (LATs), like the C-130H can be used in challenging terrain. Crews have significant experience both in the aircraft and as Captains in the MAFFS program.

- ▶ The C-130H is highly agile for its size yet still requires a stabilized path for delivery. Flight paths for pattern speeds of 120 to 130 knots on final should be planned.
- ▶ The minimum drop height is the same as other airtankers; 150 feet above the top of the vegetation with a target height of 200 feet for most CLs.

12.6 Aircraft: Lockheed HC-130H, MAFFS C-130H/J

Operator: US Forest Service and Department of Defense

Background: The National Defense Acquisition Act of 2014 directed transfer of seven HC-130Hs from the USCG to the USFS. The USFS will operate one aircraft utilizing a MAFFS II unit during Initial Operating Capability (IOC) from Sacramento, CA, during the 2017 seasons.



MAFFS is a shared surge capacity airtanker program with the Department of Defense and three states. Wyoming, Nevada and California Air National Guard wings are trained in the MAFFS airtanker program. The Air Force Reserve wing in Colorado Springs also part of the MAFFS program. MAFFS uses a specially designed modular compressed air retardant delivery system. The current version is MAFFS II.

Key Points:

- ▶ **Facilities:** The HC-130H has a max operating weight of 155,000 pounds. For weight bearing purposes both have a Single Tandem configuration. It will be deployed from FSAS MCC to and from select airtanker bases within a 500NM radius as requested by ordering agency, (See most current USAF AEG-WFF/CC MAFFS Airtanker Base List). Aircraft may be deployed for weeks at a time with a maintenance crew, returning home for R&R or major maintenance.
- ▶ Airtanker Bases, runway, taxiways 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.
- ▶ Operations of the HC-130H 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 taxi and base maneuvering.
- ▶ Loading and servicing the HC-130H can be accomplished on either side of the aircraft.
- ▶ **Response Time and Supervision:** Low level aerial supervision (Leadplane) is required for this aircraft.

- ▶ The cruising speed of the HC-130H 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. Responses shorter than 150 nm will be similar to existing airtankers.
- ▶ The dispensing system can select all required coverage levels. The dispensing system is currently rated at 3,000 gallons.
- ▶ **Terrain:** Large Airtankers (LATs), like the HC-130H can be used in challenging terrain. Crews have significant experience both in the aircraft and as Captains in the MAFFS program.
- ▶ The HC-130H is highly agile for its size yet still requires a stabilized path for delivery. Flight paths for pattern speeds of 120 to 130 knots on final should be planned.
- ▶ The minimum drop height is the same as other airtankers; 150 feet above the top of the vegetation with a target height of 200 feet for most CLs.

12.7 Aircraft: Boeing 747-400

Vendor: Global SuperTanker Services, LLC

Background: Initially developed by Evergreen International Aviation, but never achieved operational capability. Global Supertanker (GST) Services, LLC, purchased all physical assets and intellectual property in August 2015. GST received Interagency Airtanker Board interim approval in January 2017. The interim approval is for 180 days.



Key Points:

- ▶ **Facilities:** The 747-400 has five sets of wheels: a nose wheel assembly and four sets of four-wheel bogies totaling eighteen wheels and tires. It has a max operational weight of approximately 700,000 pounds.
- ▶ Airtanker Bases, runway, taxiways 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.
- ▶ Operations of the 747-400 need to be more closely monitored with other aircraft types for spacing and wing tip clearance. Wing visibility from the flight deck is limited. Wing walkers are essential for taxi and base 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, NATPM and the WO Branch Chief, Aviation Safety. The

airtanker base manager (ATBM) is delegated the decision authority for these types of operations.

- ▶ Currently, there are no known airtanker bases that can support the 747 with all necessary loading, off-loading, ramp, runway, and other operational and logistical requirements. Several will be identified and approved prior to use on contract.
- ▶ **Response Time and Supervision:** The 747-400 has not been used operationally by the FS. Operating capability has yet to be determined.
- ▶ Low level aerial supervision (Leadplane or ASM) is required for this aircraft.
- ▶ The cruising speed of the 747-400 is approximately 400 knots (TAS) on fire response and 450 knots for reposition flights. A 747 shall not be dispatched to a fire unless a Leadplane or Aerial Supervision Module (ASM) is on scene. Users and/or dispatchers will need to plan for LP/ASM arrival when responding on longer dispatches. Responses shorter than 150 nm will be similar to existing airtankers.
- ▶ The dispensing system can select all required coverage levels. The dispensing system is currently rated at 18,000 gallons.
- ▶ **Terrain:** Very Large Airtankers (VLAT), like the 747-400 can be used in moderately challenging terrain. Crews have very limited experience in the airtanker mission in this aircraft.
- ▶ Flight paths for pattern speeds of 140 to 170 knots on final should be planned.
- ▶ The minimum drop height is higher than other airtankers; 200 feet above the top of the vegetation with a target height of 250 feet for most CLs.

Appendix A: Aircraft Dispatch Form

AIRCRAFT DISPATCH FORM			
INCIDENT NAME:		DATE:	TIME:
INCIDENT ORDER #:		CHARGE CODE:	
DESCRIPTIVE LOCATION:			
LATITUDE (Degrees, Decimal Minutes):		LONGITUDE (Degrees, Decimal Minutes):	
BEARING (DEG):	DISTANCE (NM):	FROM:	ELEVATION:
INITIAL POINT (IP) – Fixed Wing (Optional):			
IP LATITUDE:		IP LONGITUDE:	
CHECK POINT (CP) – Rotor Wing (Optional):			
CP LATITUDE:		CP LONGITUDE:	
FLIGHT FOLLOWING:	F/F FREQUENCY:	TONE:	
AIR CONTACT:	A/A FREQUENCY:		
GROUND CONTACT:	A/G FREQUENCY:		
COMMAND:			
HAZARDS/MTR/SUA:			
OTHER AIRCRAFT:			
RELOAD BASE(S):		TFR NOTAM #	
DISPATCH CENTER:			
DISPATCH MAIN PHONE LINE:			
AIRCRAFT DESK:			
FAX:			
DISPATCH EMAIL:			
COMMENTS:			

6/2016 Version

Appendix B: National Directory of Airtanker Bases

Note: Refer to the Interagency Airtanker Base Directory (PMS 507) for a list of current airtanker bases.

Appendix C: National Airtanker Base Radio Frequencies

Note: Refer to the Interagency Airtanker Base Directory (PMS 507) for current ATB frequencies.

Appendix D: Day of Risk Assessment (DORA)

Operational Risk Assessment

DRAFT - 5/31/12

Mission/Flight: _____

Date: _____

Version 4.0

MISSION (If multiple mission profiles are to be performed, score the one mission with the highest risk level)		
Personnel or Cargo Transport – Point-to-Point	1	
Personnel or Cargo Transport – Non Point-to-Point, to improved remote sites	2	
Landing(s) to occur at unimproved remote site(s)	3	
Low Level flight (below 500 ft. AGL)	4	
External Load/Longline (which includes bucket ops)	5	
Other	?	
Subtotal		0

PROJECT PLANNING (select one)		
Mission(s) to be conducted as planned	1	
Mission(s) Changed from plan	2	
Divert to New Mission(s)	3	
Unscheduled, No Plan	5	
Subtotal		0

PROJECT COMPLEXITY (select one)		
1 or 2 Mission Types necessary to complete project	1	
3 to 4 Mission Types necessary to complete project	2	
5 or more Mission Types to complete project	3	
Mission(s) are complex, unfamiliar, or challenge the skills and knowledge of Flight Mgr. and/or Pilot	5	
Subtotal		0

URGENCY (select one)		
No time constraints – conduct at next opportunity	1	
Needed ASAP – essential for crew work	2	
URGENT – before nightfall	3	
Life and Death situation	5	
Subtotal		0

AIRCRAFT PERFORMANCE (Select one)		
Density Altitude below 3,500 ft	1	
Density Altitude: 3,501 - 7,500 ft	2	
Density Altitude: 7,501-10,000 ft	3	
Density Altitude Greater than 10,000 ft	5	
Subtotal		0

AIRSPACE (Select all that apply)		
No known airspace conflicts	1	
Multiple Aircraft participating in project/mission	2	
Mission occurs along GA flight corridors or within controlled airspace	2	
Mission occurs within Military Operations Area (MOA) or transects Military Flight Route(s)	3	
Subtotal		0

PILOT REST (select one)		
Pilot has had day off w/in the last 7 days	1	
Pilot has had no day off w/in the last 7 days	2	
Pilot has had no day off w/in the last 10 days	3	
Subtotal		0

PILOT CURRENCY (select one)		
Pilot has flown this mission w/in the last 15 days	1	
Pilot has flown this mission w/in the last 30 days	2	
Pilot has flown this mission w/in the last 60 days	3	
Pilot last flew this mission over 60 days ago	4	
Subtotal		0

TERRAIN (select one that represents the majority of flight operations)		
Flat to rolling terrain w/ available suitable landing options	1	
Mountainous terrain/limited landing areas	3	
Flight requires crossing of waterbodies (Helis and Wheeled Aircraft)	3	
Subtotal		0

WEATHER (select all that apply)		
Fair, unchanging weather	1	
Ground Fog	2	
Rain/Snow showers	3	
Winds in excess of 25 knots	3	
Wind gust spread in excess of 10 knots	3	
Thunderstorms, erratic winds	3	
Moderate or greater turbulence	3	
Low, lowering ceilings	4	
Weather conditions forecast to degrade during mission	4	
Subtotal		0

VISIBILITY (select one)		
Visibility > 10 miles	1	
Visibility > 3 miles but < 10 miles	2	
Visibility > 1 mile but < 3 miles	3	
Visibility > ½ mile but < 1 mile	5	
Subtotal		0

CUMULATIVE SCORE		
Low Risk	0-16	
Moderate Risk	17-32	
Serious Risk	33-48	
High Risk	49+	

NOTE: Because the overall cumulative score is a composite of individual flight, environmental, and operational values, it may not fully emphasize a heightened level of risk that may be associated with an individual category. For example, extremely adverse weather in itself, exclusive of the other categories, may alone merit the suspension of operations. Conditions also change over time and distance, therefore, this tool should be used periodically throughout a mission as conditions change to assure that individual or overall risks have not measurably increased.

Pilot Signature: _____

Flight Manager Signature: _____