A Publication of the
National Wildfire Coordinating Group

Interagency Airtanker Base Operations Guide

PMS 508 **May 2015**

Interagency Airtanker Base Operations Guide

PMS 508
May 2015

The National Wildfire Coordinating Group (NWCG) has approved this information for the guidance of its member agencies and is not responsible for the interpretation or use of this information by anyone except the member agencies.

Sponsored for NWCG publication by the National Interagency Aviation Committee. This guide is updated triennially by the Interagency Airtanker Base Subcommittee (IABS). Suggestions and comments should be directed to the Subcommittee Chair.

This 2015 edition replaces the 2011 edition, the initial NWCG-sponsored edition. Prior editions were sponsored by an interagency aviation council.

This document is posted at http://www.nwcg.gov/pms/pubs/pubs.htm

Table of Contents

Table of Exhibits

I. INTRODUCTION

A. Objectives

Define and standardize national interagency operating procedures at large airtanker bases to ensure safe and efficient operations.

Support fire policy through interagency coordination.

Facilitate the exchange of personnel from all wildland fire suppression agencies during periods of high fire activity through standardization.

Provide a common, interagency approach in the State, Federal, and Tribal Government's contract related responsibilities.

Provide common forms, checklists, orientation outlines, and special instructions for both contractor employees (retardant supplier personnel, pilots, mechanics) and government employees at airtanker bases.

Provide a framework which allows each airtanker base to provide a local base supplement with site specific guidance.

B. Authority

The *Interagency Airtanker Base Operations Guide*, PMS 508, is published through the authority of the National Aviation and Fire Executive Board with the oversight of the NWCG National Interagency Aviation Committee (NIAC). Agencies may incorporate the *Interagency Airtanker Base Operations Guide* into their manual directives system by reference.

C. Revisions

This guide is updated and published triennially by the NWCG Interagency Airtanker Base Subcommittee (IABS) by charter. The IABS shall be responsible for maintaining the content of the IABOG in accordance with current and accepted standards of interagency procedures. Suggestions and comments should be directed to the Subcommittee Chair.

NWCG Interagency Airtanker Base Subcommittee (IABS)

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Revisions are the responsibility of the National Aviation Operations Officer (FS/BLM). Other contributors:

- USDA - Forest Service
- DOI - Bureau of Land Management
- CA - CAL-FIRE
- AK - Alaska Division of Forestry

The committee shall solicit changes from field managers, review, and revise the guide; facilitate the publications and implementation to the guide; and maintain communication with appropriate Federal and State agency program managers for concurrence with proposed changes.

At the biennial National Airtanker Base Managers Workshop, Airtanker Base Managers will meet and recommend updates for this guide. These recommendations will be circulated for comment among state, area, regional, and geographic representatives and submitted to the Interagency Airtanker Base Subcommittee for review and approval.

D. Distribution

The *Interagency Airtanker Base Operations Guide*, PMS 508, is no longer printed.

It is posted at http://www.nwcg.gov/pms/pms.htm and http://www.fs.fed.us/fire/aviation/av_library/index.html/

E. Base Supplements

1. Local Airtanker Base Operations Guide Supplement

a) Each Airtanker Base *shall develop and annually update* an Airtanker Base Operations Guide Supplement. The Supplement *should not repeat* policy and procedures contained in this guide, agency manuals or handbooks; but should provide local operational procedures and information. Supplements developed for BLM airtanker bases shall not be more or less restrictive than policy set forth by either State or National Aviation Plans.

b) To achieve the objectives of standardization and interagency support of non-local personnel during periods of high activity, the local Airtanker Base Operations Guide Supplement and this guide shall be incorporated into each airtanker base organization and operation. Appendix F provides an outline of a local area supplement.

2. Pilot Orientation Briefing

The Base Supplement shall be included as part of the Pilot Briefing and Orientation Guide for aircrews.

F. Interagency Airtanker Base Directory

The Interagency Airtanker Base Directory, PMS 507 (NFES 002537), is sponsored for publication by the NWCG National Interagency Aviation Committee. The directory is updated and published annually.

Copies are ordered through the Great Basin Cache at the National Interagency Fire Center (NIFC). Please check the current Part 2 Publications Catalog for price and ordering instructions. http://www.nwcg.gov/pms/pubs/catalog.htm

G. Interagency Retardant Base Planning Guide

This guide is updated and published by the US Forest Service.
http://fsweb.sdtdc.wo.fs.fed.us

II. AIRTANKER BASE PERSONNEL

A. General

Personnel working at an airtanker base shall receive training in base operations and specific training for the position(s) to which they are assigned. Exhibit II-1 depicts the various positions within the Airtanker Base Organization. During periods of high fire activity this organization should be expanded as required to meet the expected activity level.

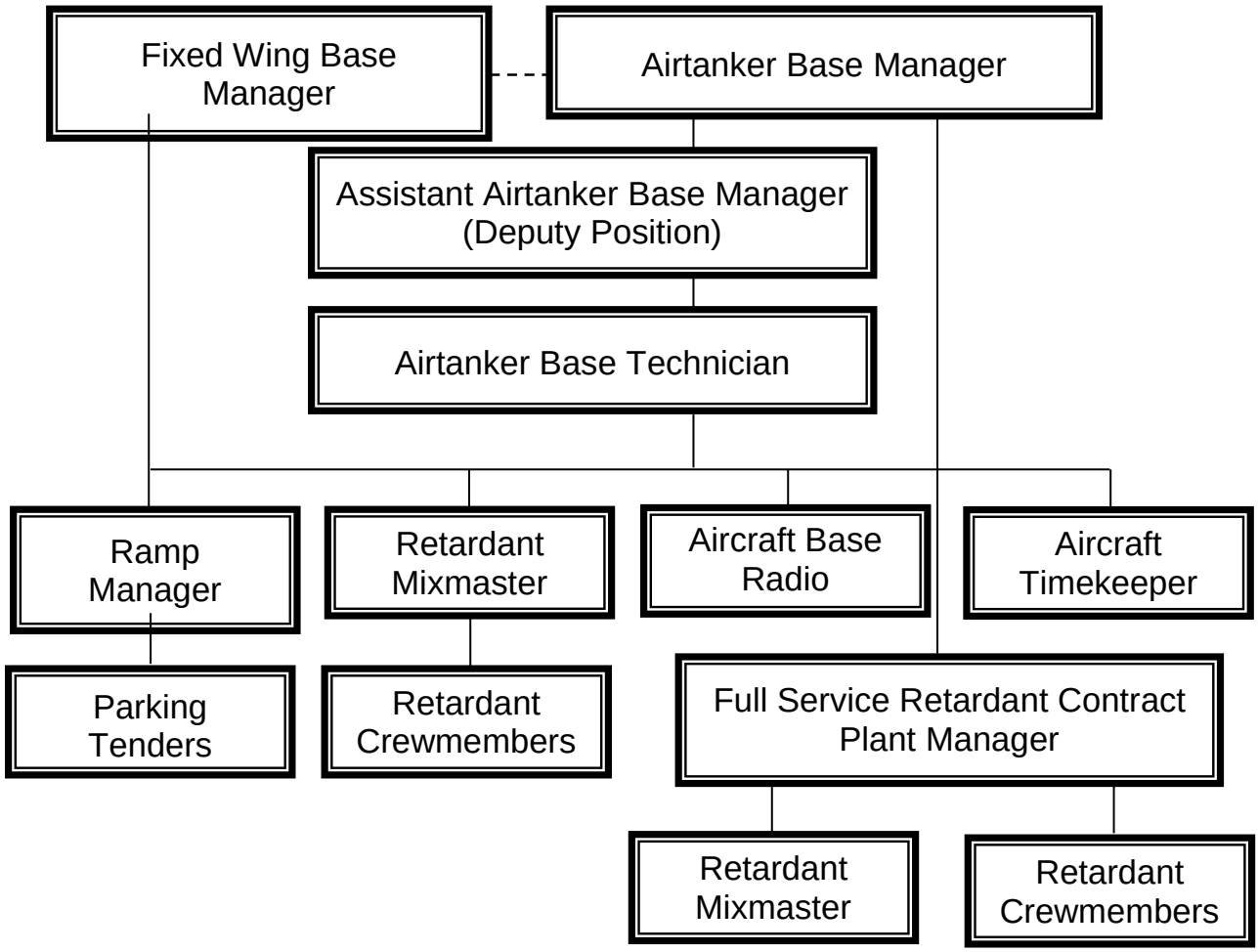


Exhibit II- 1 Airtanker Base Organization

1. Personnel may be assigned to more than one position in the base organization dependent on the level of activity. This does **not** relieve the managing agency from ensuring that the individual is both trained and qualified to fill the position(s) to which he/she is assigned. Airtanker Base Managers must anticipate the need for and request additional personnel during periods of high activity and/or complexity. Refer to Appendix M for Most Efficient Level staffing matrix.

2. An ATBM meeting the qualifications standards stated in Chapter II Airtanker Base Personnel, C. Qualifications and Training will be on site to oversee the base and operations whenever an airtanker under state or federal contract is on base and available for dispatch or whenever a retardant vendor operating under contract is in ready delivery status. Three people are required to load an airtanker. In addition to the manager and ramp position at least one more individual who is properly trained to load the type of airtanker being used is required.

3. The Assistant Airtanker Base Manager position is to assist the Airtanker Base Manager and to serve as their Acting when the Base Manager is away from the base. Under the deputy concept, the assistant must serve with full authority as the Acting Base Manager and be fully qualified and accepted by the agency in the capacity in which they serve.

Note: All statements above also apply to reload and temporary bases when active.

B. Airtanker Base Personnel: Duties and Responsibilities

1. Airtanker Base Manager (ATBM)

a) Introduction

The Airtanker Base Manager is a technical specialist functioning under coordination and support. The ATBM may report to an Air Support Group Supervisor, Air Center Manager, Fire Management Officer or other appropriate Aviation Manager.

b) Major Duties

(1) Obtains mobilization information, reports to and obtains briefing from appropriate supervisor.

(2) Conducts initial and daily or more frequent briefings with pilots, contract personnel and agency employees assigned to the base.

(3) Develops and/or implements local airtanker base operations plans providing for and enforcing accountability, safety and security measures for personnel and resources.

(4) Maintains and updates reference library. Consults agency policies and guidance such as the Interagency Airtanker Base Operations Guide in decision making and planning.

(5) Ensures adequate staffing of all positions at the base by trained and qualified individuals. Supervises and assigns specific duties to assigned base personnel.

(6) Ensures that all personnel have been trained in their positions and in specific operations that are conducted at the base including procedures such as retardant hot loading, single engine airtankers operations, etc.

(7) Ensures all training is documented for base personnel and identifies deficiencies in need of correction.

(8) Orders, secures, and maintains all necessary ground facilities, communications, supplies and services required at the base. Ensures pilot and aircraft needs are met.

(9) Serves as liaison to the agency with airport management, federal, state and local officials, the military, aircraft vendors, and fixed based operators (FBO).

(10) Obtains and maintains accurate information and records on all aircraft and aircrews assigned to the base. Verifies agency pilot and aircraft mission approvals.

(11) Secures a priority list of air missions and flight schedules. Coordinates with dispatch to receive overhead, crews and supplies and verify arrangements for transportation to destination.

(12) Ensures all personnel are adequately supported and arranges for transportation and lodging of transient flight crews as appropriate.

(13) Coordinates all tactical aircraft missions with local dispatch, the Air Tactical Group Supervisor, Airtanker Coordinator, and/or the Air Support Group Supervisor. Obtains daily or more frequent briefings from one or all of these

positions regarding mission priorities, operational and tactical briefings, quality of retardant, and performance issues.

(14) Coordinates with Incident management team aviation operations staff during large incidents to facilitate duty start-up time, costs, and safety issues.

(15) Keeps informed on predicted weather, fire behavior, and incident action plans to ensure an adequate supply of mixed and concentrate, or bulk retardant is available.

(16) Plans and regulates movement of assigned aircraft, motor vehicles and personnel on the airbase.

(17) Ensures that fire, medical, emergency and security procedures and equipment are provided.

(18) Is thoroughly familiar with and enforces compliance with all agency, local, and state health safety requirements of the operation. Responsible for the maintenance and update of the Base Safety, Emergency, Security, Crash-Rescue, and Incident/Accident Actions Plans. Requests and receives updated aerial hazard maps from the area Forest District, Unit, or Land Managers. Submits agency Incident/Accident Reports and SAFECOMs in a timely manner.

(19) In conjunction with the agency representative, establishes and maintains base and retardant plant safety plans as required as compliant with OSHA regulations.

(20) Maintains time and use records on aircraft, equipment, retardant, and personnel assigned to the base. Provides aircraft use and cost information to the using unit, Incident Command Teams, and dispatch organization.

(21) Understands and administers aircraft, retardant and other base operation contracts in order to assist the Contracting Officer's Representative, or to serve as the Contracting Officer's Representative (when qualified).

(22) Ensures that IABOG, Occupational Safety and Health Administrations, Environmental Protection Agency (EPA) Reports, and agency forms and reports are completed according to agency requirements.

(23) Supervises the demobilization of unit personnel, equipment and supplies.

2. Airtanker Base Technician

a) Introduction

Generally on a day to day basis the positions listed at an airtanker base are not individually filled unless it's warranted by the amount of activity. The Airtanker Base Manager and Assistant Airtanker Base Manager maintain proficiency in and perform the duties of multiple positions when activity is light.

An Airtanker Base Technician position is filled locally to provide an entry level position into the airtanker base organization and to assist in daily activities. The Airtanker Base Technician acquires the skills, experience and qualifications to perform all the functions under the Base Manager.

There is no Incident Command System position code mnemonic for this position. The Airtanker Base Technician is essentially an Assistant Airtanker Base Manager Trainee. The Airbase Technician reports to the ATBM.

b) Major Duties

The duties and responsibilities of the Airtanker Base Technician may include all those listed in the positions under the Base Manager as directed or as qualified. Additional duties generally include:

(1) Planning and conducting maintenance activities and projects at the base.

(2) Operating tools as necessary in the upkeep of buildings, grounds and equipment systems

(3) Assuring equipment is in proper condition and ready for use.

(4) Informing the Base Manager of needed supplies, repairs or service.

(5) Providing input in the development of base operational and safety planning.

(6) Providing informational briefings and tours.

(7) Taking appropriate actions to always assure safe operations at the base.

3. Fixed Wing Base Manager (FWBM)

a) Introduction

The Fixed Wing Base Manager is a technical specialist functioning under Air Operations. The FWBM reports to either the local Aviation Officer, incident Air Operations, Center Manager or Airtanker Base Manager as appropriate.

b) Major Duties

(1) Orders and secures all necessary ground facilities, supplies and services required at the operating base. Requests communications and operations support through the air support group supervisor.

(2) Ensures adequate staffing, supervises and assigns specific duties to assigned base personnel including Ramp Manager, Parking Tenders, Drivers, and other base help.

(3) Develops and implements accountability, safety and security measures for personnel and resources and is thoroughly familiar with and enforces all safety requirements for their work area.

(4) Is responsible for compliance with agency and state safety and health requirements for the work area.

(5) Serves as a liaison to airport management, federal, state, and local officials and fixed base operators.

(6) Conducts briefings with base personnel and contractors.

(7) Secures a priority list of air missions and schedule of flights.

(8) Obtains pertinent information on each aircraft assigned to the base.

(9) Coordinates all flights with the dispatch office.

(10) Maintains records on aircraft, equipment, and personnel assigned to the base.

(11) Receives overhead, crews, and supplies and verifies arrangements for transportations to assigned destination.

(12) Regulates movement of assigned aircraft, motor vehicles, and personnel on the airfield.

(13) Supervises the demobilization of Unit personnel equipment and supplies.

4. Ramp Manager (RAMP)

a) Introduction

The RAMP is a technical specialist functioning under Air Operations. At an airtanker base the RAMP may report to the ATBM or FWBM.

b) Major Duties

(1) Reports to the Fixed Wing or Airtanker Base Manager, who provides daily or more frequent briefings.

(2) Supervises the Parking Tender(s).

(3) Briefs pilots and fuel contractors on parking areas, movement on the ramp, etc.

(4) Coordinates all movement on the ramp of all aircraft, vehicles, and personnel. Maintains the safety of ramp operations. If the base is approved for hot-loading of airtankers, ensures that all personnel have been trained in those procedures.

(5) Coordinates eye/skin protection and PPE use. Participates in hearing conservation program.

(6) Establishes emergency ramp procedures, trains personnel in these procedures and ensures that all personnel working on or around the ramp are trained and knowledgeable in these procedures. Ensures that safety hazards are reported and corrective action taken. Reports all hazards and incidents/accidents immediately to supervisor.

(7) Establishes fueling areas, loading pits, repair areas, overnight parking areas, day(s) off parking areas, and general parking areas. Ensures map detailing these areas is posted prominently.

(8) Responsible for the cleanliness of the ramp. Reports all fuel and retardant spills and ensures that they are promptly cleaned according to established environmental and/or hazardous materials procedures. Monitors and ensures the safety of all fueling operations by requiring fuelers to adhere to established regulations and procedures.

5. Parking Tender (FWPT)

a) Introduction:

The Fixed Wing Parking Tender is a technical specialist functioning under Air Operations. At an airtanker base the FWPT reports to the RAMP.

b) Major Duties:

(1) Reports to the Ramp Manager, who provides daily or more frequent briefings.

(2) Directs all movement within assigned area of all aircraft, vehicles, and personnel.

(3) Verifies airtanker-loading restrictions for each aircraft in consultation with the captain.

(4) Supervises the retardant loading crew in loading retardant into airtankers. If the base is approved for retardant hot-loading, is trained in hot-loading and ensures mixing crew follows appropriate procedures.

(5) Knows and is proficient in the use of both hand signals (see Appendix A) and radio communications procedures in order to direct airtankers to their loading and parking areas safely. Maintains constant visual or audio communication with pilot(s). Has final responsibility for clearing the aircraft for taxi.

(6) Observes and ensures the safety of both retardant loading and fueling operations. Keeps pit(s) clear of all non-essential personnel and vehicles. Directs retardant loading crew in maintaining the cleanliness of the ramp. Ensures that personnel stay clear of propellers and propellers are not damaged by foreign objects (FOD) on the ramp. Ensures proper PPE use by ramp personnel and flight crews.

(7) Knows and ensures compliance with base emergency safety procedures and the use of required PPE, chock blocks, fire extinguishers, etc. Reports all hazards and incidents/accidents to the Ramp Manager; ensures that corrective action is taken.

(8) Relays pilot needs (retardant, fuel, meals, rest, etc.) to appropriate personnel.

6. Radio Operator (RADO)

a) Introduction:

The Radio Operator is a Logistics position. At an airtanker base the RADO may report to the ATBM or FWBM.

b) Major Duties:

(1) Reports to the ATBM or FWBM, who provides daily or more frequent briefings.

(2) Establishes communications needs at the base and ensures communications equipment is maintained and in working order. Verifies radio frequencies on a daily basis.

(3) Answers the telephone and radio; receives and relays orders for dispatch of tactical aircraft. Relays messages, and logs calls.

(4) Maintains communications with aircraft assigned to the base until takeoff and after landing. Notifies the Airtanker Base Manager immediately of any overdue or missing aircraft.

(5) Notifies the Ramp Manager of incoming aircraft and relays pertinent information.

(6) Maintains a log of all aircraft takeoffs and landings, estimated times of arrival (ETAs) and estimated times of departure (ETDs).

(7) Establishes and enforces proper radio use procedures.

(8) Trained in emergency procedures and incident/accident action plan; reports all hazards and incidents/accidents immediately to supervisor.

7. Aircraft Timekeeper (ATIM)

a) Introduction

The Aircraft Timekeeper is a technical specialist position. At an airtanker base the ATIM may report to the ATBM or FWBM.

b) Major Duties:

(1) Reports to the ATBM or FWBM, who provides daily or more frequent briefings.

(2) Obtains information for aircraft assigned to the base. Distributes information (flight/load limits, etc.) to Airtanker Base personnel.

(3) Records on/off times for tactical aircraft.

(4) Ensures landing fees are properly documented.

(5) Ensures retardant use is properly documented.

(6) Records all timekeeping information for each Airtanker.

(7) May enter Airtanker Base Log information to agency flight use reports for aircraft; relays information from Base Log to airtanker administrative bases. Responsible for documenting aircraft and retardant use to the proper incident(s) using appropriate agency coding.

(8) Maintains and summarizes tactical aircraft use and cost information and relays this information daily to the incidents air operations staff.

(9) Completes required agency reports and Aircraft Contract Daily Diary information after each operational period for airtanker and submits to the COR.

8. Retardant Mixmaster (MXMS)

a) Introduction

The Retardant Mixmaster is a technical specialist providing coordination and support of the retardant operation. The MXMS reports to the ATBM.

b) Major Duties:

(1) Reports to the Airtanker Base Manager, who provides daily or more frequent briefings.

(2) Supervises the mixing Crew during mixing operations. (See important note under Mixing Crew duties and responsibilities).

(3) Ensures chemical fire retardants and suppressants are provided to airtanker(s) at the rate specified and for the expected duration.

(4) Checks all accessory equipment such as valves, hoses, pumps, and tanks for operation and ensures agency and OSHA safety measures are in place (pump shaft guards, fan belt shields, splash guards, wiring integrity, sealed switch boxes, safety signs and placards, etc).

(5) Takes immediate steps to obtain personnel and equipment to perform operations safely and efficiently.

(6) Plans the specific layout of the plant to conduct operations; is responsible for the cleanliness of the plant area.

(7) Maintains quality control program for the retardant.

(8) Logs and reports pounds and gallons of retardant loaded to the Aircraft Timekeeper. Maintains retardant and equipment records.

(9) Ensures the safety and welfare of personnel working around the plant.

(10) Reports all hazards and incidents/accidents immediately to the Airtanker Base Manager who documents the event.

(11) Maintains records of all equipment, replacement parts, catalogs, technical manuals, and Material Safety Data Sheets (MSDS).

(12) Ensures OSHA regulations for plant safety are in place, properly documented, and monitored under the direction of the Airtanker Base Manager.

(13) Ensures compliance with State and Federal EPA regulations for storage and handling of fire retardants, waste, and wash water under the direction of the Airtanker Base Manager.

9. Retardant Crewmember (RTCM)

a) Introduction:

The retardant crewmembers are technical specialists assigned to the airtanker base. The crewmembers report to the MXMS.

Note: The retardant mixing crewmembers are often one and the same as the retardant loading crewmembers hence the single designation. The Mixmaster supervises the Retardant Crewmembers when the loading operation commences, and is directed and monitored by the Parking Tender.

b) Major Duties:

(1) Reports to the Mixmaster during mixing operations, who provides daily or more frequent briefings.

(2) Mixes retardant.

(3) Maintains all retardant equipment.

(4) Obtain samples of retardant for quality control.

(5) Loads retardant into airtanker(s); reports pounds of retardant loaded from mass flow meter hose read-out to the Mixmaster after each load. If the base is approved for retardant hot-loading, must be trained in hot-loading procedures.

(6) Verifies that the pounds of retardant loaded into the airtanker does not exceed the placarded maximum load weight on side of aircraft, current agency policy or downloaded weight as designated by the pilot in command.

(7) Keeps ramp clean from all spilled retardant.

(8) Knows the load limitation of the airtanker and ensures it is not exceeded.

(9) Trained and knowledgeable in emergency crash-rescue and base safety procedures; reports all hazards and incidents/accidents immediately to supervisor.

(10) Complies with OSHA plans and good housekeeping methodology.

C. Qualifications and Training

Airtanker base positions function to support wildland fire incidents. Whether the position is assigned locally or mobilized beyond the unit, airtanker base personnel must always be certified in their position through their agencies incident qualifications review and certification process.

Airtanker base personnel must always meet the fire and aviation qualifications and training standards required by their respective agencies. Where no agency standard exists the Interagency Airtanker Base Operations Guide provides standards for airtanker base positions.

1. Qualifications

There are three primary sources for policy regarding the qualification and certification standards for airtanker base positions.

a) Wildland Fire Qualifications System Guide PMS 310-1

All member agencies of the NWCG adhere to the qualification standards outlined in the Wildland Fire Qualifications System Guide PMS 310-1. All airtanker base positions are Technical Specialists. The Interagency Wildland Fire Qualifications System Guide (PMS 310-1) establishes minimum requirements for training, experience, physical fitness level, and currency standards for wildland fire positions. When criteria for inclusion in the PMS 310-1 (http://www.nwcg.gov/pms/docs/docs.htm) are not met for a position, wildland fire agencies have the option to establish agency-specific positions and standards for those positions based on unique missions and needs. Agencies that utilize positions not contained in the PMS 310-1, broadly referred to as Technical Specialists, typically establish minimum standards for these positions in agency-specific manuals or guides. NWCG maintains no minimum qualifications for technical specialist positions. Agencies must establish standards for these positions.

b) Fire and Aviation Management Qualifications Handbook FSH 5109.17 (Forest Service Fire & Aviation Qualifications Guide - FSFAQG)

The Forest Service provides standards for technical specialist positions through the Fire and Aviation Qualifications Guide (FSFAQG) as referenced in FSH 5109.17. Forest Service personnel must meet the training and experience standards required in the handbook for the airtanker base positions covered.

c) Interagency Airtanker Base Operations Guide PMS 508

Where no specific agency standards exist for an airtanker base position, the Interagency Airtanker Base Operations Guide, (IABOG), establishes qualifications, certification and currency requirements for agencies that have adopted the IABOG as policy.

2. Certification / Evaluation

The completion of a position task book is the primary criterion for evaluation for most airbase positions as referenced in Appendix L Position Task Books. ***Only current Agency personnel may complete the Final Evaluator portion of the PTB.***

Some agencies may provide and require agency specific task books for some air base positions. Where they exist, follow your agencies policy on their use.

Where agency specific task books do not exist, the Interagency Airtanker Base Operations Guide (IABOG) provides and requires the completion of task books for positions located in Appendix L.

Where task books do not exist, evaluations of airtanker base personnel must be conducted based on the duties and responsibilities and other criteria within the IABOG.

3. Position Requirements

The following are the interagency requirements for each airtanker base technical specialist position.

a) Airtanker Base Manager (ATBM)

Required Training:
National Incident Management System (IS-700.a)
Introduction to ICS (ICS-100)
Basic Aviation Safety (A-100)
Aviation Transport of Hazardous Materials (A-110); triennial requirement Mission Planning and Flight Request Process (A-112)
Automated Flight Following (A-115)
Interagency Aviation Organizations (A-202)
Aircraft Capabilities and Limitations (A-204)
Basic Incident Command System (I-200)
Interagency Incident Business Management (S-260)
Airtanker Base Managers Workshop (N-9057); triennial requirement

Required Experience:
Satisfactory performance as a Ramp Manager (RAMP)
Successful position performance as an Airtanker Base Manager (ATBM)

Physical Fitness:
None Required

Other Position Assignments That Will Maintain Currency:
Fixed Wing Base Manager (FWBM)
MAFFS Airtanker Base Manager (MABM)
ADDITIONAL TRAINING WHICH SUPPORTS DEVELOPMENT OF KNOWLEDGE AND SKILLS:
Geographic Area Airtanker Base Manager Training
Contracting Officer Representative Training
Aviation Business System Training

Task Book:
Task book for this position is located in Appendix L or online:
www.nwcg.gov/pms/taskbook-agency/index.htm

b) Fixed Wing Base Manager (FWBM)

REQUIRED TRAINING:
National Incident Management System (IS-700.a)

Introduction to ICS (ICS-100)
Basic Aviation Safety (A-100)
Aviation Transport of Hazardous Materials (A-110); triennial requirement
Mission Planning and Flight Request Process (A-112)
Automated Flight Following (A-115)
Mishap Review (A-200)
Interagency Aviation Organizations (A-202)
Basic Airspace (A-203)
Aircraft Capabilities and Limitation (A-204)
Basic Incident Command System (I-200)
Interagency Incident Business Management (S-260)

REQUIRED EXPERIENCE:
Satisfactory performance as a Ramp Manager (RAMP)
Successful position performance as a Fixed Wing Base Manager (FWBM)

PHYSICAL FITNESS LEVEL:
None

OTHER POSITION ASSIGNMENTS THAT WILL MAINTAIN CURRENCY:
Airtanker Base Manager (ATBM)
MAFFS Airtanker Base Manager (MABM)

ADDITIONAL TRAINING WHICH SUPPORTS DEVELOPMENT OF KNOWLEDGE AND SKILLS:
Geographic Area Fixed Wing Base Manager Training
Geographic Area Intermediate Air Operations
Aviation Business System Training

Task Book:
Task book for this position is located in Appendix L or online:
www.nwcg.gov/pms/taskbook-agency/index.htm

c) Ramp Manager (RAMP)

REQUIRED TRAINING:
National Incident Management System (IS-700.a)
Introduction to ICS (ICS-100)
Basic Aviation Safety (A-100)
Aviation Policy and Regulations I (A-107)
Basic Air Operations (S-270)

REQUIRED EXPERIENCE:
Satisfactory performance as a Fixed Wing Parking Tender (FWPT)
Successful position performance as a Ramp Manager (RAMP)

PHYSICAL FITNESS LEVEL:
None

OTHER POSITION ASSIGNMENTS THAT WILL MAINTAIN CURRENCY:
Fixed Wing Base Manager (FWBM)
Airtanker Base Manager (ATBM)
MAFFS Airtanker Base Manager (MABM)
Fixed Wing Parking Tender (FWPT)

ADDITIONAL TRAINING WHICH SUPPORTS DEVELOPMENT OF KNOWLEDGE AND SKILLS:
Aviation Transport of Hazardous Materials (A-110)
Aircraft Capabilities and Limitations (A-204)

Task Book:
Task book for this position is located in Appendix L or online:
www.nwcg.gov/pms/taskbook-agency/index.htm

d) Fixed Wing Parking Tender (FWPT)

REQUIRED TRAINING:
National Incident Management System (IS-700.a)
Introduction to ICS (ICS-100)
Basic Aviation Safety (A-100)
Overview of Aircraft Capabilities and Limitations (A-104)
Aircraft Radio Use (A-109)

REQUIRED EXPERIENCE:
Successful performance as a Fixed Wing Parking Tender (FWPT)

PHYSICAL FITNESS LEVEL:

None

OTHER POSITION ASSIGNMENTS THAT WILL MAINTAIN CURRENCY:
Airtanker Base Manager (ATBM)
Fixed Wing Base Manager (FWBM)
MAFFS Airtanker Base Manager (MABM)
Ramp Manager (RAMP)

ADDITIONAL TRAINING WHICH SUPPORTS DEVELOPMENT OF KNOWLEDGE AND SKILLS:

Local Ramp Orientation

Task Book:
Task book for this position is located in Appendix L or online:
www.nwcg.gov/pms/taskbook-agency/index.htm

e) Aircraft Timekeeper (ATIM)

REQUIRED TRAINING:
National Incident Management System (IS-700.a)
Introduction to ICS (ICS-100)
Aviation Policy and Regulations I (A-107)

Required Experience:
Successful position performance as an Aircraft Timekeeper

Physical Fitness:
None Required

Other Position Assignments That Will Maintain Currency:

Airtanker Base Manager (ATBM)
Fixed Wing Base Manager (FWBM)
Helicopter Crewmember (HECM)

f) Mixmaster (MXMS)

REQUIRED TRAINING:
National Incident Management System (IS-700.a)
Introduction to ICS (ICS-100)
Basic Aviation Safety (A-100)
Overview of Aircraft Capabilities and Limitation (A-104)
Basic Air Operations (S-270)

REQUIRED EXPERIENCE:
Satisfactory performance as a Retardant Crewmember (RTCM)
Successful position performance as a Mixmaster (MXMS)

PHYSICAL FITNESS LEVEL:
None

OTHER POSITION ASSIGNMENTS THAT WILL MAINTAIN CURRENCY:
Airtanker Base Manager (ATBM)
MAFFS Airtanker Base Manager (MABM)

ADDITIONAL TRAINING WHICH SUPPORTS DEVELOPMENT OF KNOWLEDGE AND SKILLS:
Geographic Area Mixmaster Training

g) Retardant Crewmember (RTCM)

REQUIRED TRAINING:
Introduction to ICS (ICS-100)
Basic Aviation Safety (A-100)
Overview of Aircraft Capabilities and Limitations (A-104)

REQUIRED EXPERIENCE:
Successful position performance as a Retardant Crewmember (RTCM)

PHYSICAL FITNESS LEVEL:
None

OTHER POSITION ASSIGNMENTS THAT WILL MAINTAIN CURRENCY:
Airtanker Base Manager (ATBM)

Mixmaster (MXMS)

MAFFS Airtanker Base Manager (MABM)

ADDITIONAL TRAINING WHICH SUPPORTS DEVELOPMENT OF KNOWLEDGE AND SKILLS:
Geographic Area Mixmaster Training

h) Radio Operator (RADO)

Radio Operator is not a technical specialist position. The certification requirements for this position are located in the Wildland Fire Qualifications System Guide PMS 310-1 and the Forest Service Fire and Aviation Qualification Guide (FSFAQG). They are not repeated or supplemented in this guide.

i) Assistant Airtanker Base Manager

The Assistant Airtanker Base Manager serves as a deputy and must meet the same training requirements as Airtanker Base Manager.

j) Airtanker Base Technician

The Airbase Technician position is a developmental position on the unit. The Airtanker Base Technician is striving to obtain certification in all positions at an airtanker base.

4. NIMS IS-700 / NRP IS-800

The courses; National Incident Management System (NIMS), An Introduction, IS-700, and/or National Response Plan (NRP), An Introduction IS-800, may be required by your agency for incident qualification certification. Consult you agency policy.

5. Training

The required training courses listed for above for each position represent the courses that are currently available from an interagency fire and aviation curriculum that are the most relevant to aviation safety and operations pertaining to airtanker bases.

Specialized course training in airtanker, fixed wing and retardant positions is occasionally offered and available on a local or geographic area level.

6. Workshop Refresher Training

The Airtanker Base Managers (ATBM) position requires triennial attendance at an airtanker base manager's refresher training. The requirements for this training follow.

AIRTANKER BASE MANAGER REFRESHER TRAINING REQUIREMENTS
Triennial 16 hrs

Course Description
The Airtanker Base Manager (ATBM) workshop is designed to provide the attendee with current policy revisions, technical updates, changes in reference materials and operational procedures as well as an overall review of safety and security issues associated with the airtanker program.

Objectives
- Review the duties and responsibilities of the Airtanker Base Manager.
- Review risk management techniques to perform tasks safely.
- Update and maintain ATBM skills.
- Understand changes in aviation policy and how they relate to ATB management.
- Review changes in airtanker and retardant contracts.

Target Group
Qualified and Trainee Airtanker Base Managers

Minimum Instructor Qualifications
Lead instructors must be current or previously qualified Airtanker Base Managers.

Course Prerequisites
Qualified or trainee as an Airtanker Base Manager (ATBM)

Course Level
Local, geographic or national

Core elements of an ATBM workshop will include the following:

National Season Review:
This section generally covers year end statistical information like total flight hours, gallons delivered, contract activity, highlights of what went well during the season and areas needing improvement.

New Year Outlook:
This section generally covers any new technical updates, new contract information, new long and short term program changes.

National Contracts Updates:
This section goes over changes to the national airtanker and retardant contracts.

Retardant Review:
This section covers ant information about new technology or developments with the retardant industry, reviews the approved products list and provides updates about the quality assurance program.

IABOG Updates:
This section covers revisions to the Interagency Airtanker Base Operations Guide.

Reference Materials Updates:
This section covers any new updates, changes additions to any of the reference materials designed for or related to the airtanker program

Safety Review:
This section covers a summary of Safecoms that were filed pertaining to ATB operations, any safety alerts or bulletins issued related to the program and highlights of any safety concerns or issues that surfaced within the season.

Security Review:
This section covers any new developments with security and airspace issues that were identified within the previous season.

Additional Suggested Topics:

- Local updates concerns or issues.
- Geographic updates concerns or issues.
- Individual agencies or base reviews.

Flexibility should be encouraged within these topics to meet geographic and audience needs. This workshop shall be designed to provide discussion and information sharing based on the identified topics. The agenda should be revisited annually and be dynamic. Presenters should include but not be limited to Interagency, National, Regional, State and Local instructors involving aviation positions such as Aviation Managers, Dispatch, Training Officers and Technical Representatives.

III. ADMINISTRATION

A. Introduction

Certain administrative procedures are common to all airtanker bases. They include general documentation for directory information, cost reporting, tracking and safety as well as aircraft and retardant contract administration. Standardization helps to encourage common procedures to meet safety, efficiency, fiscal management and contract administration objectives.

B. General Procedures

Refer to Appendix B for an outline of the common documentation requirements for airtankers bases including the specific information on the purpose, applicability, completion responsibility and instructions and routing.

A standardized set of forms applicable to each reporting or documentation procedure is also provided in Appendix B.

The general administrative procedures for airtanker base documentation and reporting are outlined in the table in Appendix B, Summary of Airtanker Base Forms and Reports Chart.

C. Contract Administration

1. Joint Responsibility

Administration of the contract is a joint responsibility of the requesting unit and the office with contracting authority with the ultimate responsibility vested in the Contracting Officer. Administrative functions are generally delegated to a local level.

One party to any Government aircraft contract will be the United States of America, the sovereign political entity on behalf of which the contract is entered into. Contracts for aircraft and services for State agencies most likely list the State as political entity.

All airtanker base personnel must understand that only the Administrative Contracting Officer or Contracting Officer may alter the terms and conditions of the contract. In addition, Government employees must understand that the contractor and company employees are bound only by the conditions as outlined in the contract.

Base personnel should be familiar with all applicable aviation contracts, as well as the National Retardant Contract. Copies of these contracts should be maintained in the base Reference Library (see Chapter 4, Base Facilities, Operations and Dispatch). Airtanker bases which utilize CAL Fire aircraft, or any other State entity contracting aircraft services, should maintain a current copy of the contract.

The Airtanker Base Manager is responsible for reviewing the contract with the pilot of each Federal and State airtanker assigned to the base. The Manager must be familiar with the contract as there may be conditions or modification items unique to a particular contractor or aircraft, which differs from standard contract provisions.

Note: The Contractor is only bound by the contract and operates on behalf of the contracting agency regardless of incident jurisdiction or land ownership.

Refer to the current contract Schedule of Items for COR contact information.

Personnel administering contracts within their delegated authority should document all actions taken with respect to the contract. The Aircraft Contract Daily Diary (see Exhibit B-13) can be used to provide this information. In addition, the other forms whose use is outlined in, Appendix B Forms and Reports will provide an Airtanker Base Manager with the means to maintain an accurate record of airtanker base operations.

Each federal agency has a Contract Administration Guide that explains the use of various forms employed in contract administration by each agency. These guides should be part of each Airtanker Base reference library and kept current. In addition, appropriate state contract guides should be included in the reference library.

2. Types of Contracts

Exclusive Use and Call When Needed contracts are those awarded for a specific time period (e.g., 30-day, 90-day etc.), during which the government has exclusive use of the aircraft and retardant services. States may have similar exclusive-use type contracts or agreements, which are unique to that entity. Consult with the appropriate state contract specialist for assistance. In addition, during periods of high incident activity aircraft from provinces in Canada may be used within the United States. Contacts for these contracts may be found in the *National Interagency Mobilization Guide,* or at the national contracting site http://www.fs.fed.us/fire/contracting/index.htm

3. Authority of Government Personnel

Before any person takes an action on behalf of the United States, they need to ascertain whether authority to act has been delegated to them in writing. Consult with state agency representatives for their policy on contract administration.

4. Disputes with Vendors

Disputes that cannot be readily resolved at the local level by the Project Inspector and/or COR will be referred to the Administrative Contracting Officer or Contracting Officer. Documentation of the resolution of actions taken in any dispute is important to assure that the interests of the government are maintained.

D. Generic Duties and Responsibilities

1. Contracting Officer (CO)

The Contracting Officer 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. Consult with state agency representatives for assistance with state contracts. The Contracting Officer, (DOI/USFS) for all federal airtanker contracts is located in Boise, Idaho.

Note: The CO is the only individual who may modify or change a contract provision.

USFS Administrative Contracting Officers may be located at the Regional /Geographic Area office, Refer to the current "Interagency Aviation Technical Assistance Directory", NFES# 2512, for additional information.

2. Contracting Officer's Technical Representative (COTR)

The Contracting Officer's Technical Representative (COTR) is directly responsible to the Contracting Officer for assuring compliance with the ***technical*** provisions of the contract. The COTR conducts initial inspections and approves the Vendor's equipment, facilities, and personnel prior to, and periodically during the performance period.

Note: The COTR may discuss changes or modification in equipment or other requirements of the contract, but may not commit the Government to such changes, modifications, or adjustments without going through the Contracting Officer.

a) Interagency Technical Assistance

Generally speaking, COTRs from both DOI-OAS and USFS can assist with technical support for both agencies, particularly when dealing with maintenance issues and inspections.

3. Contracting Officers Representative (COR DOI- OAS/USFS)

The Contracting Officers Representative (COR) is directly responsible to the Contracting Officer (CO) for monitoring contract performance.

The COR is primarily responsible for assuring compliance with the provisions of the contract. The COR maintains communications with the vendor concerning day-to-day operation, though this may be further delegated to the project Inspector (see below). ***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 personnel and telephone numbers. Consult with state agency representatives for personnel that may be assigned this responsibility.

a) Contract File

The Contracting Officers Representative should maintain a contract file. This file should consist at a minimum of the following:

1. A copy of the contract with all contract modifications
2. Delegations of authority
3. A bid price summary that specifies contract costs for all pay items
4. Copies of flight payment documents
5. Copies of all contract daily diaries

6. Correspondence to or from the CO/PI and vendor

Note: The COR may recommend to the CO proposed changes and adjustments to the contract in order to meet the demands of the work project. The COR may discuss changes or modifications in equipment or other requirements of the contract, but may not commit the Government to such changes, modifications, or adjustments without going through the Contracting Officer.

b) Assignment and/or Location

(1) U.S. Department of Agriculture-Forest Service

For Airtanker contracts, the Contracting Officers Representative is usually the Airtanker Base Manager.

(2) U.S. Department of Interior

For all Airtanker contracts and, unless otherwise stated by agreement, the Contracting Officers Representative (COR) is assigned at the Bureau's or Office's option. For example, the State Aviation Manager in the Bureau of Land Management is usually the COR.

4. Project Inspector (PI)

The PI is designated by the COR to assist in implementing the COR's instructions as required. Responsibilities of the PI generally include:

a) Verifies services performed by the vendor

b) Ensures vendor's compliance with the contractor specifications and provisions

c) Discusses daily work assignments and ordering service within the contract provisions.

d) Discusses problems that occur with the vendor and recommending proposed solutions to the COR.

e) Maintains Daily Diary (see Exhibit B-13) with documentation of his/her administration of the contract. Any problems of a serious nature are brought immediately to the attention of the COR.

a) Assignment and/or Location

(1) U.S. Department of Agriculture-Forest Service

For all Airtanker contracts, the Project Inspector is usually assigned at the local (Forest or District) level to the Airtanker Base Manager, or Assistant Airtanker Base Manager.

(2) U.S. Department of Interior

For all Airtanker contracts and, unless otherwise stated by agreement, the project Inspector is assigned at the Bureau's or Office's option. For example, the District Aviation Manager in the Bureau of Land Management is usually assigned Project Inspectors duties. These may

also be delegated to the Airtanker Base Manager for day-to-day administration.

E. Administrative Payment Forms and Instructions

The proper completion of flight payment documents (e.g., AMD-23e, USFS 6500-122) is critical to the correct and timely payment of vendors. Follow the processes and procedures outlined in the references listed below.

This information provides the means for agencies to meet the statutory requirements and federal policy of OMB Circular A-123 “Internal Control Review” and OMB Circular A-126, “Improving the Management and Use of Aircraft.” Consult with state agency representatives for the appropriate payment forms and instructions for their contract aircraft.

1. USFS/FS Flight Use Record

a) Aviation Business System (ABS)

The **Aviation Business System (ABS)** is a web based application used by the Forest Service to electronically document and process all contract aviation costs currently documented on the Flight Use Invoice.

All Airtanker Base Managers should be familiar with the ABS application to record flight leg data and other pertinent cost information to the Contracting Officers Representative for airtankers working from their base. Information and training is located at: http://www.fs.fed.us/business/abs/index.php

2. Other U.S. Department of the Interior Agencies

Other DOI agencies may utilize the generic AMD-23e.

F. Incident Cost Reporting

Cost reporting is a significant congressionally mandated requirement for airtanker bases. Specific direction for local procedures should be addressed in the base supplement.

G. Landing Fees

When weight-based landing fee payments are required by an Airport Authority use the contract operating weight for the aircraft type listed in Exhibit B-8. Use the maximum gross landing weight if the contract operating weight exceeds it.

Exhibit III- 1 U.S. Department of Agriculture-Forest Service Contract Administration Table of Organization

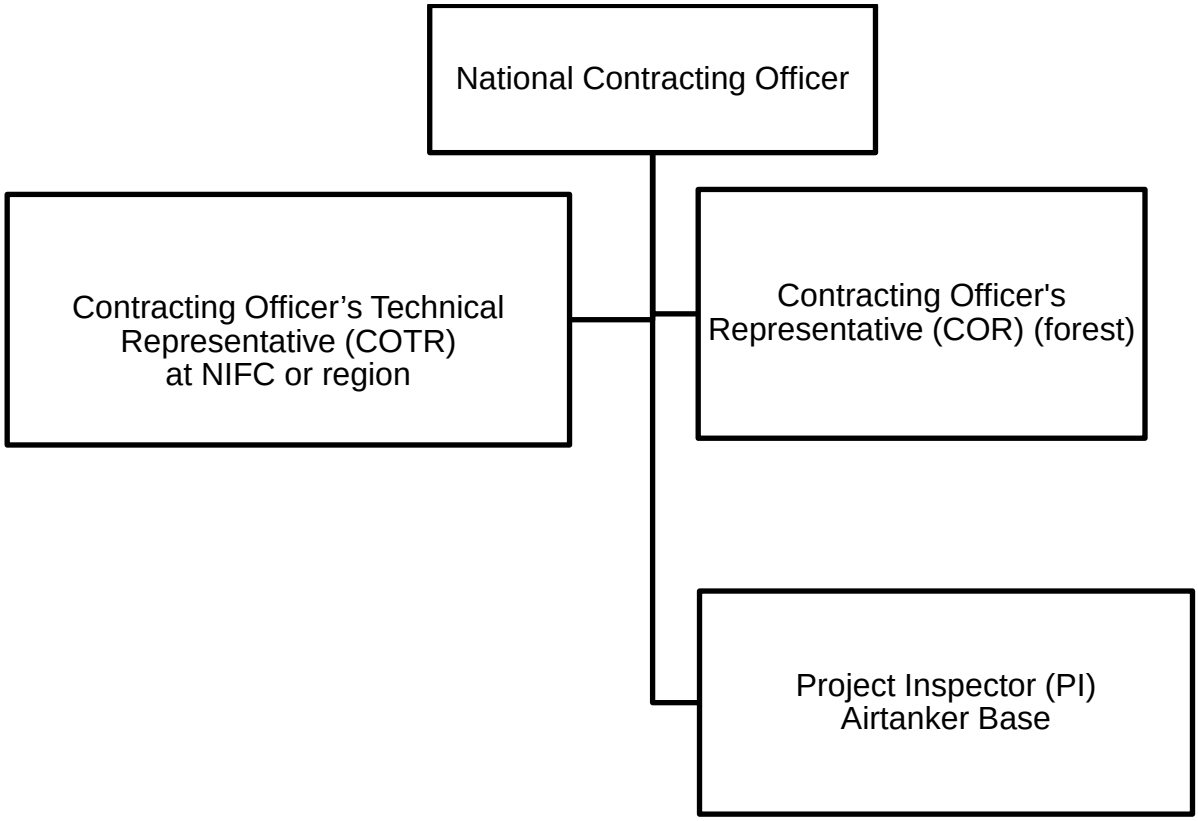
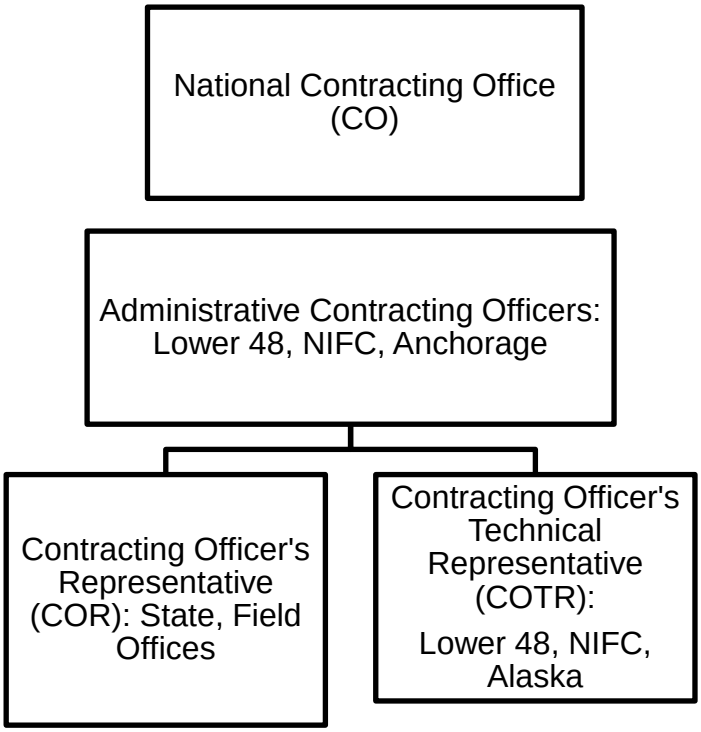


Exhibit III- 2 U.S. Department of the Interior Contract Administration Table of Organization



IV. BASE FACILITIES, OPERATIONS, AND DISPATCH

A. Facilities

Airtanker Base Managers and other subject matter experts should be consulted concerning any construction of new facilities or improvements to existing ones.

Note: National design standards exist for Forest Service Bases. Contact Washington Office Engineering Staff at San Dimas, California prior to any base remodeling, design work, or construction. See *Interagency Retardant Base Planning Guide* for additional information.

1. Minimum Equipment Needs

Appendix C contains a list of minimum *required* and *recommended* equipment for airtanker bases and a list of recommended spare parts.

2. Communications

a) Plan

A Communication Plan shall be displayed prominently at each base. All aircrews shall be briefed on communications procedures as contained in each base's supplement to this guide. Airtanker Base Managers are responsible for assuring that the information is current.

b) Frequencies

A separate channel on an appropriate and authorized frequency shall be established for communications with tactical aircraft both on the ramp and inbound/outbound. Agency radio networks and air network radios shall be in service at each airtanker base.

i. Base / Ramp Frequency

The correct frequencies for each airtanker base and administering agency can be found in the *Interagency Airtanker Base Directory*, PMS 507, NFES # 2537, which is updated annually. Airtanker Base Managers are responsible for assuring that frequency information is correct in the Directory.

c) Telephones

Commercial telephones shall be in service at each airtanker base. Primary airtanker bases (i.e., non-reload) must have a minimum of two telephone lines. Reload bases, used on an occasional basis, must have a minimum of one telephone however; local management should have a contingency plan for the timely expansion of phone capability during periods of heavy use.

d) Audio System

An outside audio system (public address type) shall be provided at each base.

e) Ramp Communications

The Ramp Manager and Parking Tender(s) must be furnished with communication headsets (push to talk or voice activated) with which they can communicate both directly with pilots and with the Airtanker Base Radio Operator on the local VHF-AM or VHF-FM frequency. These headsets shall meet the requirements of the Base Agency/Occupational Safety and Health Administration (OSHA) Hearing Conservation Compliance Plan.

3. Lighting

Lighting may be provided as necessary for normal base operations such as off-loading, mixing, and site maintenance. Ramp lighting should be incorporated into base designs. In cases where ramp lights are not installed by the agency, the contractors will provide their own lighting kits and generator for night time aircraft maintenance.

4. Electrical System

The electrical system at the base must provide adequate electrical power and outlets to meet both routine and emergency needs. This includes battery-powered radios, gas driven retardant pumps, or availability of electrical generators (rental source or owned). **Outlets should be provided on the ramp/pit area. If fueling is done in this area the electrical service must be CLASS A EXPLOSION PROOF.**

5. OSHA and Hazardous Material Requirements

Agencies are responsible for assuring that facilities meet local, State, and Federal laws pertaining to workplace safety for employees and do not impact the welfare of the surrounding community. Refer to Appendix H for information that pertains to OSHA hazardous material compliance.

6. Safety Equipment

Refer to Chapter 5, *Safety* for safety equipment requirements.

7. Flight Crew Accommodations

a) Transportation and Lodging

Housing, subsistence, ground transportation, and other expenses will be the responsibility of the Contractor or its employees at the AWL. On a time available basis, the Government may assist with this process.

b) Standby

Adequate standby facilities for retardant and aircrews must be provided to ensure a safe operation. ***Use of FBO facilities/lounges for this purpose is not considered adequate.*** *(*See Appendix E, *Airtanker Base Evaluation).* Base managers should also have a contingency plan that allows for expansion of the standby area during periods of high fire activity.

c) Food and Drink

Airtanker base managers may need to provide food and drink as required by the Large Airtanker Contract. Consult with State agency manuals or directives for their respective policy. See specific agency contract.

8. Reference Library

In addition to the latest update of this guide, each airtanker base should have a Reference Library that includes the publications below. NFES numbers are provided for ease of ordering through the National Fire Cache System. Airtanker Base Managers are responsible for maintaining the most current versions of any of the documents listed.

The most current Federal manuals and handbooks are the electronic versions maintained by the National Offices of the respective agency. They can be accessed through internal mail systems or the internet. Many of these publications may be accessed on the internet. If they are not maintained in hardcopy at the base they must be easily accessible to all personnel assigned.

1. 10 Principles of Retardant Application Cards, NFES # 2048
2. Airport/Facility Directory, U.S. Department of Commerce, F.A.A.
3. Airtanker Washdown Systems
4. Applicable Drivers Operator Manual(s)
5. Aviation Management Manuals and Handbooks (all cooperators)
6. Contract Administration Manual or Guide for appropriate agency
7. Federal Aviation Regulations/Aeronautical Information Manual
8. Federal National Airtanker Contract
9. Fire Retardant Storage Tank Recirculation Systems Vol.1 and 2
10. First Aid Treatment Guide
11. Five Steps to Safe Flight Card, NFES # 1399 (Maintain multiple copies for CWN Administrative Flights originating from Airtanker Bases)
12. Geographic Area Mobilization and local plans from appropriate agencies
13. Health and Safety Codes for appropriate agency
14. Hearing Safety at Airtanker Bases 9957-1205-SDTDC
15. Hot Loading Video
16. Incident/Accident (Aircraft Emergency Response) Action Plan
17. Interagency Airspace Coordination Guide
18. Interagency Airtanker Base Directory, NFES #2537
19. Interagency Aerial Supervision Guide
20. Interagency Aviation Pocket User Guides, NFES # 1373 (Maintain multiple copies for use for Flight Manager CWN Administrative Flights originating from Airtanker Bases)

21. Interagency Aviation Technical Assistance Directory
22. Interagency Call-When-Needed Helicopter Contract
23. Interagency Helicopter Operations Guide
24. Interagency Incident Fire Business Management Handbook
25. Interagency Retardant Base Planning Guide
26. Interagency Single Engine Airtanker Operations Guide
27. Interagency Standards for Fire and Aviation Operations NFES # 2724
28. Interagency Transport of Hazardous Materials Guide, NFES # 1068
29. Janes World Aircraft
30. Local Flight Hazard Maps
31. (Globally Harmonized System) Safety Data Sheets
32. Military Use Handbook
33. National Interagency Mobilization Guide
34. National Long Term Retardant Contract
35. National Road Atlas
36. National/Regional/State/Unit Aviation Plans
37. NFPA 407 Standards for Aircraft Fuel Servicing
38. NFPA 408 Standard for Aircraft Hand Portable Fire Extinguishers
39. NFPA 412 Standard for Evaluating Aircraft Rescue and Firefighting Foam Equipment
40. NFPA 422 Guide for Aircraft Accident Response
41. North American Emergency Response Guidebook
42. OSHA Field Guide, Manual, and Handbooks
43. Retardant Health Risk Assessment (MTDC)
44. Retardant Meter Manual
45. Training Course Material (including applicable videos)
46. Twelve Standard Aviation Questions that Shout Watch Out Cards, NFES #1129
47. US Forest Service MAFFS Guide
48. VLAT Operating Plan
49. NextGen Operating Plans
50. Base supplement Concurrent Loading and Fueling Plan
51. Hotloading Plan
52. Implementation Guide for Aerial Application of Fire Retardant

B. Operations

1. General

Good communications, daily briefings, on-the-job training, and a demonstrated concern for safety are key factors in ensuring the safety and efficiency of airtanker base operations. The following operational procedures should be followed at all airtanker bases.

2. Environmental Concerns

a) Base Operations

Special precaution must be taken to contain potential spills while the airtankers operate on the ground. Retardant loading pits must have containment and treatment systems to handle leaks, spills, and/or wash down water used to wash aircraft that may contain metals from the aircraft, fuel, hydraulic fluid, and oils. Additionally, mixing and pump areas and storage tanks must have containment systems in place if spills or leaks will impact the surrounding airport environment, storm drains, or mineral soil.

Note: Assure that all aircraft are in compliance with environmental precautions and requirements as stated in aircraft contracts.

In areas where retardant deliveries are received, aircraft maintenance is performed, or on the tarmac where loaded airtankers are staged for dispatch, a containment system or barriers should be in place. At a minimum, storm drains should be sealed with commercial containment rubber mats or straw bales. Mineral soil surfaces should be protected from potential retardant releases, leaks or wash down water by concrete collection structures, curbing or temporary barriers. Spills in these areas must be collected and disposed of by an environmental hazardous waste disposal company.

Warning: Pre-season briefings with city or airport crash/rescue/fire units must be conducted and documented to inform them that fuel or retardant spills will not be washed into storm drains, wetlands, or Threatened and Endangered Species habitat. Spills must be contained.

In all areas, retardant; petro-hydrocarbons (fuels, oil, cleaning liquids, etc.) spills or waste must be cleaned up as soon as they occur. A pre-season contact should be established with a certified hazardous material disposal service to mitigate any spills on the airport. Many state and federal agencies already have national and local contracts in place that can be accessed through your agency engineering, environmental, or health and safety office.

Warning: City and airport employees may consider spills, run-off, and wash down liquid are acceptable to the facility and can be dispersed into storm drains or sprinkled on the ground. However, federal/state regulations, and agency policies dictate that airtanker bases comply with proper spill prevention, collection, treatment, and disposal. For local procedures refer to the base supplement.

b) Retardant Dropping in Sensitive Areas

Follow guidelines indicating that retardant or foam should not be applied within 300 feet of a waterway or riparian area and provisions regarding compliance with the Threatened and Endangered Species Act. Reference the Interagency Standards for Fire and Aviation Operations, and the local base supplement for additional guidance.

c) Retardant Jettison Areas

Establishing a retardant jettison area to accommodate the enhancement of an airtankers performance or ability to land is critical. Coordinate with the Unit Resource Advisor to determine acceptable locations of retardant jettison sites. Indicate the location of jettison sites on aerial hazard maps and include the latitude and longitude of the sites in base operations plans, pilot orientation guide, and the Interagency Airtanker Base Directory NFES #2537.

d) References

Retardant operations shall be governed by those standard operating requirements and procedures found in:

1. Lot Acceptance, Quality Assurance, and Field Quality Control for Fire Retardant Chemicals, NWCG Publication, PMS-444-1, National Interagency Fire Center, NFES # 1245
2. Interagency Retardant Base Planning Guide, USDA FS San Dimas

   Technology and Development Center, San Dimas CA.
3. Local Airtanker Base Supplements
4. Wildland Fire Chemical System

e) Retardant Testing

Follow direction given in Lot Acceptance, Quality Assurance, and Field Quality Control for Fire Retardant Chemicals as listed above.

3. Parking

a) The Airtanker Base Manager should assign the designated parking areas. Appropriate tie downs and chocks should be provided for aircraft.

b) Provisions should be made with local authorities to obtain adequate parking space to accommodate additional aircraft during periods of high fire activity. Parking for out-of-service or days-off airtankers should also be identified.

c) Nose wheel and/or main gear markings should be painted in loading positions for longest aircraft commonly in use. FAA standards for

markings on the ramp shall be adopted. Regardless of whether markings are painted, the Parking Tender shall use standard hand signals (see Appendix A) to park aircraft.

4. Pre-flight Checks

The flight crew is expected to conduct checks as appropriate. Run-up areas should be identified in the local base supplement.

5. Retardant Metering

Retardant metering is required to ensure safety and efficiency while loading airtankers with retardant. To ensure meter function annual verification check is required. Knowing the actual weight of the retardant payload placed on an airtanker is critical. Mass flow metering equipment provides the actual weight of the retardant in pounds regardless of the mix ratio of the product. For this reason mass flow meters have been chosen as the most accurate means of measuring the payload placed on the aircraft.

Each airtanker load should be measured individually by a metering system to determine the precise weight placed on the aircraft. Loading more than one airtanker at a time through the same meter does not provide an accurate measurement of the weight of each aircrafts payload.

If the mass flow meter becomes inoperative, the airtanker can still be loaded using the visual indicators on the retardant tank coupled with close attention to the quality control procedures outlined for the product. This procedure should only be used temporarily until the meter can be repaired or replaced.

Note: Mass flow meters will be calibrated annually as required by the Large Airtanker Contract. A mass flow meter tutorial can be found at http://www.emersonprocess.com/micromotion/tutor/default.html

6. Loading

a) Only the Loading Crew, Ramp Manager, Parking Tender(s), Base Manager, Flight Crews and other **authorized** personnel are ***permitted*** on the ramp during aircraft operations.

WARNING: ALWAYS NOTIFY THE PILOT IF THE AIRCRAFT IS OVERLOADED WITH RETARDANT!
It is critical to flight safety that airtankers are not overloaded with out-of-specification retardant that exceeds the per gallon weight limitations. Overloaded aircraft crash, it is that simple. Always determine the total weight in pounds (not gallons) loaded onto an airtanker. Always notify the pilot if you have verified, or even think the aircraft may be overloaded!
WARNING: LOADING HOSE SHOULD NOT BE CONNECTED TO THE LOADING PORT, ON THE AIRCRAFT, UNTIL THAT SPECIFIC AIRTANKER IS TO BE LOADED!

b) During loading and fueling operations and prior to taxi, an overall visual safety check is to be conducted by mixing, loading, and parking personnel to identify anything out of the ordinary.

c) The Retardant Loading Crew shall wear appropriate personal protective equipment as outlined in OSHA regulation, local base supplements and job hazard analysis.

d) Retardant loading with engines running shall ***NOT*** be permitted except when all personnel involved have been trained in the hot-loading procedures and an appropriate hot-loading plan is included in the base supplement.

7. Fueling

The Airtanker Base Manager will ensure that all aircraft fueling operations comply with NFPA 407, Standard for Aircraft Fuel Servicing.

a) Visual Safety Check

During loading and fueling operations and prior to taxi, a visual safety check of the airtanker is to be conducted by loading and parking personnel.

b) Simultaneous Loading and Fueling

Certain airtankers may allow simultaneous loading and fueling. Fixed-base operators and other fuelers should be made aware of this authorization prior to the season start.

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

- The aircraft has been evaluated and approved by the Aviation Maintenance Inspector (AMI) during the Pre-Use inspection for this purpose.
- The contractor will provide documentation of a risk assessment and operating practices for their particular airtanker and comply with those policies during this activity. The risk assessment will be provided to the Contracting Officer and reviewed by the National Airtanker Program Manager and the Branch Chief, Aviation Safety.
- Each airtanker base that intends to conduct Simultaneous Loading will develop an amendment 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)/State Aviation Manager (SAM).
- Base personnel who will participate in this operation will be trained using the Simultaneous Loading supplement and a record maintained at the base.
- Simultaneous Loading shall be requested as needed by the government (Base Manager) on a case by case basis.
- 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.
- Only the Auxiliary Power Unit may be running, no propulsion engines are allowed to run.
- Simultaneous Loading shall be requested as needed by the government on a case by case basis.

c) Hot Fueling

Certain aircraft operations may allow for hot fueling. Refer to agency guidelines, contracts, and local base supplement before commencing such operations.

d) Obtaining Fuel Services

The Airtanker Base Manager shall work with the vendor, airport officials, fixed-base operators, and local distributors to ensure the best possible fueling services. Managers should perform contingency planning for extreme, high-activity situations.

e) High-Density Operations

When working a large number of aircraft, consider using alternate bases for reloading/refueling aircraft. This will avoid congestion and resultant delays.

f) Bonding Procedure

Bonding procedures shall be enforced by all personnel. Bonding involves connecting two or more metallic objects together by means of a conductor that equalizes the electrostatic potential between the objects. Bonding aircraft to the fuel nozzle prior to removing the fuel cap is a required safe practice.

Warning: Static electricity builds up on an aircraft as the aircraft moves through the air. Static electricity also builds up on the refueling equipment when the fuel is pumped through the hoses. The aircraft, fuel nozzle, and pump assembly must be bonded to prevent sparks and explosions. Static electricity buildup is greater in cold, dry air than in warm, moist air.

g) Wash-Down of Ramp

The Ramp Manager should ensure that all oil, fuel, and other material is washed from ramp areas according to environmental requirements and constraints on a daily, or as needed basis. Use of biodegradable or environmentally acceptable cleaners or solvents is required.

8. Starting the Aircraft Engines

Do not start aircraft engines without the authorization of a Ramp Manager/Parking Tender.

9. Releasing the Aircraft

a) The Parking Tender is responsible for releasing the aircraft.

b) Before releasing aircraft, Parking Tender shall ensure retardant loading crew have installed retardant tank cap and overflow plug and have pulled loading hose completely clear of ramp.

c) The Parking Tender will direct all movement of aircraft, personnel, and vehicles in assigned area to ensure safe operation regarding prop/jet blast hazards are mitigated.

10. Miscellaneous

a) Vehicles

1. Vehicles in the ramp/pit area must be kept to the minimum necessary for the operations.
2. The Airtanker Base Manager shall determine which vehicles are authorized on the ramp.

b) Visitors

1. Before being allowed onto the ramp, visitors must obtain permission from the Airtanker Base Manager or his/her representative and be given a safety briefing. Visitors shall be escorted by agency or contractor personnel. Where airport security requires it, visitors will be provided a visitor ramp pass.

Note: Follow agency security guidelines. Refer to base supplement.

2. Visitors will be provided appropriate safety equipment, including hearing protection.
3. If possible, members of the media shall be escorted by a Public Information Officer.
4. Visitors will remain clear of parking ramps, aircraft, pits, and retardant plant during aircraft operations.
5. Visitors and the public shall be directed to and confined to a secure designated public viewing area while visiting the base to observe operations.

11. Retardant Offloading and Reloading

Airtanker bases should maintain the capability of offloading and reloading retardant. Most airtankers no longer land loaded. Retardant that is not delivered to a fire is often jettisoned. Some circumstances may dictate the need to offload retardant to avoid wasting it. Airtankers should be offloaded prior to repositioning (ferry) flights, proficiency flights or prior to any maintenance that would require removing the retardant from the tank. Retardant should be reloaded as long as it remains within specification.

C. Dispatch Procedures

1. Pre-Dispatch Briefings and Orientation

Each Airtanker Base Supplement should address the areas outlined in Appendix G. The Airtanker Base Manager is responsible for covering these areas of safety.

2. Dispatch/Reaction Times

Fifteen minutes is the standard reaction time as specified in the federal airtanker contract. The 15 minute standard is not applicable for delays caused by the agency, local air traffic, planning for extended dispatches, flights to be made under Instrument Flight Rules (IFR), crews released for lunch by base managers, proficiency flights, and **other causes beyond the pilot's control**. Local, state, and regional procedures may further influence reaction times. For other aircraft follow local, regional contract procedures.

3. Standard Flight Resource Order Information

All aircraft flights for fire and repositioning purposes will be supported by a resource order. Upon initial dispatch, tactical aircraft crews (airtanker, ASM/lead plane, and air attack pilots) will be provided with the following minimum required information from the resource request:

- Confirmed latitude and longitude/ distance and bearing
- Correct frequencies
- Known hazards
- Ground contact, if known
- Other aircraft

*This information will be verified by Airtanker Base Manager.

Note: Pilot must have a hard copy of the information above, on initial dispatch. The dispatch office will provide this information to the Airtanker Base Manager or Radio Operator. Procedures should be reviewed with dispatch prior to the start of each fire season. Information from the dispatch form can be transmitted by radio in case of divert.

4. Communications

a) Appropriate frequencies will be monitored and used for initial dispatch, and for contact with airtankers, Airtanker bases, ASM/ leadplanes, air attack, Incident Commanders, and dispatchers.

b) If available, Automated Flight Following (AFF) may be used according to approved procedures provided in the National and in Geographic Mobilization Guides

c) When dispatched to a local incident, airtankers shall maintain positive communication with the Airtanker Coordinator, the Air Tactical Group Supervisor, airtanker base, FAA air traffic control, or dispatcher.

d) Information on the Base Aircraft Communications Plan should be fully discussed at pre-dispatch briefings. Frequencies in use shall be clearly posted for both dispatcher and pilot reference. Frequency changes shall be relayed immediately to Flight Crews.

5. Sterile Cockpit Procedures

a) ***Sterile cockpit procedures will be maintained at all times when within 5 mile radius of the airport. Airtanker bases, dispatch offices, or other personnel will initiate no radio or cockpit communication, which is not directly related to safe flight of the aircraft until after landing and clearing the runway.***

Note: Sterile Cockpit Procedures means NO COMMUNICATIONS between an aircraft and the airtanker base, dispatch office, or ramp managers while the aircraft is in the Airport Traffic Area unless it involves the safety of flight. Fire dispatching or reload instructions are NOT emergencies.

6. Dispatch Rotation and Priority of Large Federally Contracted Airtankers.

To ensure a fair and equitable rotation of airtankers, the following policy will be followed by airtanker bases when operating federally contracted large airtankers. This policy is to ensure that contractors are treated uniformly regardless of the work site (Federal, State of jointly operated airtanker bases). ***When assigned to incidents managed by other agencies or state cooperators, federally contracted aviation resources remain under the direction of the Federal Contracting Officer,*** and are bound only by their contract with the Forest Service. Hence, federally contracted aviation resources will be treated fairly and equitability during their assignment with other Federal or State agencies.

a) Federal Airtanker Rotation Policy

All airtankers shall be dispatched in rotation (first in/first out), regardless of the location of the incident, except when:

1. There is no Lead Plane or Aerial Supervision Module (ASM) available and the aircrew is not approved for independent IA response.

2. Incident commanders / aerial supervision determine the appropriate resource; VLAT, LAT, SEAT.

3. The on-scene aerial supervision determines that the use of a specific make/model airtanker is not conducive based on factors such as risk, maneuverability in terrain, and/or effectiveness.

4. The next airtanker in rotation has an operating restriction at the base where it is being assigned. Operating restrictions may include fuel and retardant availability and airtanker base or airport restrictions.

5. Realignment of an airtanker is prudent to locate them closer to where their maintenance crews or supplies are available. NICC will facilitate in coordination with the GACC.

6. A benefit to the using agency would be realized by changing the rotation. This will be facilitated at the GACC or NICC with consideration to days off, mission requirements, and/or anticipated need.

7. Airtankers are returning to contract availability after day(s) off, in which case these airtankers begin at the end of the rotation line at their assigned base. Airtankers that work a seven day schedule do not rotate out of their position.

8. MAFFS and Canadian airtankers are brought on for the purpose of supplementing the commercial airtanker fleet. They will begin rotation at that base after the contracted airtanker(s) at the beginning of each day.

Note: Under the National Large Airtanker Services Contract there is no differentiation between Type I and Type II airtankers. Large airtankers under the contract are rotated fairly under this policy at the airtanker base regardless if they are Type I or II. Type III (such as the CAL FIRE S-2T) and IV (SEATS) are not part of the Forest Service's National Large Airtanker Services Contract.

b) 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 federal contract items (large airtankers) on an incident primarily on federal lands, airtankers shall be rotated per the national policy with the State resources being added to the rotation after the Federal resources ***at the beginning of each day.***

7. Airtanker Dispatch Limitations

To reduce the hazards of airtanker retardant drops in the early morning and late afternoon hours, comply with the limitations on times when airtankers may drop retardants on fires. The following limitations apply to the time the aircraft arrives over the fire to conduct the drop, not to the time the aircraft is dispatched from a base. Pilots, Aerial Supervision, and Airtanker Base Managers, are ***mutually responsible*** for ensuring these limitations are not exceeded. The following shall apply (refer to Exhibit IV-1).

a) Start-up and Cut-off Limitations

Normally, airtankers are dispatched to arrive over a fire not earlier than 30 minutes after official sunrise (start-up) and not later than 30 minutes before official sunset (cut-off).

b) Exceptions

Airtankers may arrive over a fire as early as 30 minutes prior to official sunrise and may drop as late as 30 minutes after official sunset provided that a qualified Air Tactical Group Supervisor (ATGS), Airtanker coordinator (ATC) or ASM/Leadplane Pilot is on the scene and has done the following.

- Determined with concurrence with the pilot in command that visibility and other safety factors are suitable for dropping retardant.

- Notifies the appropriate dispatcher of this determination

c) Determination of Official Sunrise, Start-up, Cut-off, and Sunset Times

Each Airtanker Base and dispatch office shall have tables showing the official sunrise, start-up, cut-off, and sunset times at those locations.

d) Determinations for Airtanker Dispatch

Official sunrise should be used for each airtanker dispatch, start-up, cut-off, and sunset times of the airtanker base nearest the fire, and should comply with the limitations in the preceding paragraphs.

e) Internet Address: http://aa.usno.navy.mil/aa/data

Exhibit IV- 1 Aerial Supervision Limitations

30 Minutes Prior to Sunrise	Until	30 Minutes After Sunrise	30 Minutes After Sunrise to 30 Minutes Prior to Sunset	30 Minutes Prior to Sunset	Until	30 Minutes After Sunset
ATGS or ASM or ATC ***REQUIRED***			**Normal Agency Policy on Supervision Applies**	ATGS or ASM or ATC ***REQUIRED***		

D. Single Engine Airtankers (SEAT's)

In general, the procedures for handling all fixed wing airtankers are similar regardless of size and number of engines. The Airtanker Base Manager (ATBM) may manage SEATs at their airtanker base without a Single Engine Airtanker Manager (SEMG) present. For specific guidance regarding SEAT's refer to the Interagency Single Engine Airtanker Operations Guide, NFES # 1844, for information necessary for local operations planning.
http://aviation.blm.gov/airops.htm

When operated at larger bases in conjunction with Type-1 and Type-2 airtankers a few common considerations should be addressed.

- Adequate separation should always be considered between light and heavy aircraft. The lighter weight and smaller size of SEAT aircraft may increase the base's options for establishing operating areas.
- Loading the SEAT aircraft as close as possible to the retardant plant to help to ensure retardant quality may better accommodate smaller retardant loads. In addition pumping rates may need to be varied.
- The presence of a SEAT manager on site and additional vendor personnel make it important to establish roles and responsibilities early on.
- Additional vendor equipment may need to be considered in planning.
- A variety of factors may influence SEAT use and rotation with other airtankers at the airtanker base. Factors could include incident needs, distance to the fire, fuel types, etc

All airtanker bases will have an approved plan for operating SEAT's incorporated into the bases supplemental operations plan.

V. SAFETY

Safety at airtanker bases and around aircraft is a cooperative effort between pilots, mechanics, fixed-base operators, contract personnel, and agency employees assigned to the base. Safety is also an individual responsibility for which each person is accountable. In *no* circumstance will safety be compromised.

A. Safety Briefings

Daily safety briefings are conducted for the following reasons:

- To address specific issues, such as previous day's activity or to convey or exchange pertinent information.
- Tactical, prior to or during mission.
- After Action Review (AAR).

Remember: Any briefing or training must be documented or "it never happened". Documentation should include the facilitator's name, attendees PRINTED and SIGNED name, date and topics discussed.

*More information and templates can be found in Appendix I. Also see Lessons Learned www.wildfirelessons.net "Risk Assessment Workbook."

B. Airtanker Base Evaluations

All airtanker bases should be evaluated on an annual basis using the Airtanker Base Readiness Evaluation. (See Appendix E)

1. Use of the Evaluation

The Airtanker Base Readiness Evaluation is used for both pre-season and as needed spot evaluations of airtanker bases. The results of the inspection should be reviewed with the fire staff of the agency(ies) operating the airtanker base. Deficiencies in training should be corrected within a reasonable time frame. Deficiencies in critical areas of safety must be corrected immediately. Evaluations will be provided to forest, state, and regional offices for review and line officer accountability.

2. Evaluation Team

Where possible, the evaluation team should be interagency in nature. Technical specialists with expertise in the areas of retardant operations and airtankers should be part of the team.

C. Aerial Hazard Maps

Each airtanker base shall have a map noting "Known Aerial Hazards" within its zone of influence posted prominently for use by aircrews.

1. The map shall be updated annually and as needed with the last revision date indicated on the map.

2. The Hazard Map shall include the following:

- Power lines and towers. If aeronautical charts are being used (e.g., Sectionals), then these hazards should be highlighted on these charts.
- Wires and power lines not marked on standard aeronautical charts.
- Military Training Routes (MTRs), Military Operation Areas, Restricted Areas, Sensitive Areas, and other Special-Use Airspace.
- Identifiable areas of known turbulence.
- Other known information including Threatened and Endangered Species habitats, dip sites, etc.
- Additional hazards specific to your area such as hang-gliding, sky-diving, soaring, etc.
- A key to identify the type of hazard; date of the map's last revision.

3. The Airtanker Base Manager is responsible for ensuring that briefings concerning local known hazards are posted daily for all assigned crews.

D. Airspace Coordination

Information about Temporary Flight Restrictions (TFRs) and Military Training Routes (MTRs), Notification to Airmen (NOTAM), Fire Traffic Area (FTA), and additional information should be posted at the airtanker base and made available to flight crews. Additional information may be found in the Interagency *Airspace Coordination Guide*. Web address can be found in the Reference section in the back of this guide.

E. Crash-Rescue Planning and Equipment

1. Aviation Incident/Accident Response Plans

a) Each base shall develop and annually update an Aviation Incident/Accident Response Plan. Local airfields and community capability to respond to aircraft accidents and/or fuel fires should be built into the plan.

b) The plan shall be prominently posted in the airtanker base office.

c) Airtanker base personnel shall be familiar with and trained in how to contact emergency services in the event of an emergency on or off the airfield.

2. Crash-Rescue Equipment

a) Fire Extinguishers

The purpose of portable fire extinguishers located on an aircraft ramp is to:

1. Provide "First Aid" firefighting only. The capability and knowledge to activate trained emergency response personnel quickly should be a top training priority.

2. Assist the crew at their exit point from the aircraft.

3. Extinguish any small fire on the exterior of the aircraft. This would typically be brake or engine fires. An external fire extinguisher should never be used on an engine fire while the engine is running. The pilot in command may elect to either blow out an exhaust stack fire, or extinguish an intake fire through the use of on-board aircraft system fire extinguishers. The Ramp Manager and/or Fixed Wing Parking Tender will signal the pilot when an engine fire occurs and standby with a fire extinguisher to be used only at the discretion of the pilot in command.

b) National Fire Protection Association

The National Fire Protection Association (NFPA) has developed standards to establish reasonable minimum fire safety requirements for procedures, equipment, and installations for the protection of persons, aircraft, and other property during ground fuel servicing and basic operations that involve liquid petroleum fuels. Reference current editions:

1. NFPA 10 is the 'Standard for Portable Fire Extinguishers" as it applies to the selection, installation, inspection maintenance and testing of portable extinguishers.

2. NFPA 407 is the "Standard for Aircraft Fuel Servicing" and includes fire extinguisher requirements during aircraft refueling operations.

3. NFPA 408 is the "Standard for Aircraft Hand Portable Fire Extinguishers"

4. NFPA 412 is the "Standard for Evaluating Aircraft Rescue and Fire Fighting Foam Equipment"

5. NFPA 410 is the "Standard on Aircraft Maintenance". Chapter 8 includes aircraft ramp operations and protection general requirements.

c) Extinguisher Sizing

NFPA 410, 10.2.11 standards require each aircraft operations ramp have a wheeled fire extinguisher with a rating of not less that 80-B at intervals of 200 feet (61m). NFPA 407, 5.13.4 requires a rating of 80 B:C and a minimum capacity of 125 pounds (55kg) of agent where fueling occurs at an open hose discharge capacity of 200 gpm.

d) Training

The Occupational Safety and Health Administration (OSHA) under 29CFR 1910.157, Portable Fire Extinguishers, sets requirements for use, testing, and maintenance for fire extinguishers provided from employers to employees.

e) Maintenance

NFPA 10, Portable Fire Extinguishers, sets the inspection and maintenance standards.

3. Local Crash-Rescue Organization

Local crash-rescue equipment and procedures for activation shall be included in the Incident/Accident Action plan and in the local Base Supplement. The plan should also address the responsibility and chain of command in the event of an on-field accident or fueling mishap.

Supplemental crash-rescue equipment, if not available on the airfield or if it is needed to supplement local fire departments, should be ordered through the dispatch system during periods of high activity. Local military base Aircraft Rescue and Fire Fighting (ARFF) Units can be ordered under the National Memorandum of Understanding with the military through the National Interagency Coordination Center (NICC). Managers may also utilize emergency equipment rental agreement (EERA) through local fire agency. Place an order with your local agency dispatcher for an ARFF Unit whenever multiple airtankers operate from the base for extended periods of time.

F. Hazard, Incident, and Accident Reporting

All occurrences shall be reported promptly per agency specific notification requirements. The SAFECOM system is the method for reporting. Refer to local base supplement.

The process for reporting aircraft accidents, incidents, or hazards is defined and outlined in the Forest Service Manual, FSM 5720, and in the Department of Interior, DOI 352 DM 6.

Airtanker base personnel must remember that the hazard, incident, or accident is ***officially reported*** by the agency ***with operational control*** of the aircraft at the time of the occurrence.

There are situations when the agency with operational control of the incident and incident aircraft may not be aware that an incident or malfunction has occurred.

EXAMPLE: A Nevada BLM airtanker flies on a USFS incident in California, makes a successful drop, but develops an engine malfunction when returning for another load. Since the USFS had operational control at the time of the aircraft incident, the report should be filed by the USFS utilizing the SAFECOM reporting form.
However, the Forest Service may not be aware that a malfunction occurred, since it was reported upon arrival back to a BLM Airtanker Base. In this case, the BLM Nevada Airtanker Base Manager gathers the information using the SAFECOM and routes it to the appropriate Forest Service office.

If doubt exists as to whether or not an occurrence should be classified as an aircraft incident or accident, treat it as an accident. The final determination shall be made by the appropriate agency Aviation Safety Officer.

G. Proficiency Flights

In order to maintain aircraft readiness for flight and crew proficiency during operation under the contract, the government may order flights in accordance with Forest Service Handbook 5709.16 or other agency policy. The applicable policy will be made available to the contractor for reference at the airtanker base. These

flights will be paid as ordered flights when authorized by the government. These flights may include:

1. Water drops in an area designated by the managing agency.

2. Instrument proficiency (IFR approaches should be considered during proficiency flights when the airport has a published approach).

H. Landing With Full or Partial Load

Reference the contracting agency's policy and airtanker contract. ***The final decision on landing with a full or partial load will be made by the pilot-in-command.***

I. Base Retardant Plant Safety Requirements

Base requirements should be covered extensively during the inspection process. OSHA's "General Duty Clause" standards will be followed in all cases. These include, but are not limited to:

1. A permanent ladder and safety railings shall be on all walkways on tanks.

2. Skid-proof paint shall be applied to all walkways on tanks.

3. Pump shafts shall have guards.

4. All electrical equipment shall be properly grounded.

5. Cautionary signs (no smoking, hazardous area, no entry, etc.) shall be posted in appropriate places on the base and ramp.

6. Wash retardant off the ramp area as soon as possible after the aircraft has been loaded.

7. Eyewash and emergency shower facilities must be provided. The OSHA standard is within 50 feet of the hazard.

J. Personal Protective Equipment

It is the Airtanker Base Manager's responsibility to train personnel in use of protective equipment. If respirators are used at a base during mixing operations, then an OSHA Respirator Plan must be in place.

1. Ramp Personnel

Personnel working on the ramp should wear ear and eye protection, as well as high-visibility clothing differing in color from that of the Parking Tender or Ramp Manager. PPE for skin protection against sun burn, prop blast, and blowing rocks/sand should be worn. This is usually long sleeve, lightweight shirt or jump suit. Footwear with non-skid soles should be worn while working on the ramp or in wet areas.

2. Parking Tender

The Parking Tender shall wear a high-visibility vest in addition to the above-mentioned PPE.

3. Audio Levels

Audio levels in the base dispatch office and other office areas should be evaluated. If OSHA standards are exceeded, additional protective measures must be taken. See Hearing Safety at Airtanker Bases, US Forest Service, Technology and Development Center, San Dimas, California, 5700 Aviation September 1999-9957-1205 SDTDC.

Exhibit IV-1 Audio Levels.

Source of Sound and Noise	Level (dB)
Whispered Voice	20-30
Urban Home, Average Office	40-60
Average Male Conversation	60-65
Noisy Office, Low Traffic Street	60-80
Jet Transports (Cabins)	60-88
Small Propeller Plane (Cockpit)	70-90
Public Address (PA) Systems	90-100
Busy City Street	80-100
Single Rotor Helicopter (Cockpit)	80-102
Power Lawn Mower, Chainsaw	100-110
Snowmobile, Thunder	110-120
Rock Concert	115-120
Jet Engine (Proximity)	130-160

Noise Level (dBA)	Exposure Limit (hours per day)
90	8
92	6
95	4
97	3
100	2
102	1.5
105	1
110	.5
115	.25

K. Fuel Spills

The information in this section is consistent with NFPA Publication 407-90, *Aircraft Fuel Servicing.*

Fuel spills are often the result of improper or careless operation of fueling equipment, or due to a lack of preventive maintenance of the fueling equipment. Self-discipline on the part of every person responsible for fueling is required to prevent fuel spills. Personnel shall follow the guidelines listed below.

Note: Report all spills to appropriate authority (refer to local base supplement) immediately. Do not attempt to hide the fact that a spill occurred.

Procedures for handling fuel spills are subject to the regulations and procedures established by the authority having jurisdiction over airport operations.

Every fuel spill involves several variables: the size of the spill, terrain, equipment, weather conditions, flammable liquid, aircraft occupancy, and emergency equipment and personnel available. Therefore, each incident may be somewhat unique but certain general principles apply in all cases.

1. Prevention

a) Devote full attention to the fueling operation.

b) Never leave any fuel nozzle unattended.

c) Never tie or wedge the nozzle trigger in an open position.

d) Pumps, hand or power operated, shall be used when aircraft are fueled from drums.

e) Kinks and short loops in fueling hose should be avoided.

f) At remote refueling locations using portable fueling equipment, sandbags should be used to elevate the fitting to facilitate pre-operational checks and detection of fuel leaks.

g) At remote refueling locations using portable fueling equipment, construct a berm around the fuel bladder to contain fuel in the event of a rupture for both temporary and semi-permanent systems.

2. Mitigation and Procedures in the Event of a Spill

If a fuel leak develops or a fuel spill occurs during aircraft servicing, initiate the following emergency procedures ***without delay.***

Warning: During any spill or leak, extreme caution must be exercised to avoid actions that could provide ignition of the fuel vapors.

a) Maintain, keep current, and post a spill contingency plan. The procedures outlined below, with the addition of local specific material, will be adequate.

b) If the leak continues or the spill is a large one, all nonessential personnel should leave the area immediately until the hazard is neutralized, repairs are made, and the area is safe.

c) Alert the airport fire crews or follow established emergency procedures applicable to a remote fueling operation.

d) Stop the flow of fuel and the fueling operation immediately upon discovering leakage or spillage.

- If fuel is leaking or spilling from a fuel servicing hose or equipment, the emergency fuel shut-off valve must be activated immediately.

- If the fuel is leaking or spilling from an aircraft at the filler opening, vent line, or tank seam, fuel delivery must be stopped immediately.

e) All electrical power to the aircraft should be shut down and the aircraft should be evacuated.

f) Before the aircraft is put back into service it must be thoroughly checked for damage and flammable vapors that may have entered concealed wing or fuselage areas.

g) Small spills involving an area less than 18 inches in any plane dimension normally involve minor danger. However, personnel staffing fire extinguishers during start-up procedures should stand by until the aircraft departs the area of the spills because engine exhaust could ignite the spill. These spills contain such a small amount of fuel that they may be absorbed, picked up, and place in an approved container.

Warning: Never operate an electric truck or cart near a fueling operation or fuel spill. The speed controller can be an ignition source. Cell phones should not be used near fueling operations.

h) During small or medium static spills (not over 10 feet in any dimension or over 50 square feet in area) a fire watch should be posted. The fire watch should have one or more fire extinguishers with at least a 20: BC rating. Local regulations and procedures must be followed. However, in most cases absorbent materials or emulsion compounds should be used to absorb the spilled fuel, especially if aviation gasoline (AvGas) or low flash point fuels are involved. The contaminated absorbent should be picked up and placed in an approved container to await disposal.

Note: Aircraft fuels will damage some types of ramp surfaces. Spilled fuel should be contained and picked up as quickly as possible.
Keep in mind that the government is responsible for the collection and proper disposal of contaminated materials.

i) Large spills (over 10 feet in any dimension or over 50 square feet in area) or smaller spills continuing to enlarge should be handled by the fire department, or if in a remote location, by a ground engine.

Anyone in the area of a large spill should move upwind of the spill immediately.

j) All fuel spills occurring as a result of a collision should be blanketed with foam to prevent ignition and to prevent damage to the aircraft or additional exposure.

3. Fuel Spillage on Personnel

If the fuel handler's clothing becomes wet with fuel, the individual should follow the instructions listed below.

a) The individual affected should leave the refueling area immediately.

b) The act of removing clothing creates static electricity; wet the clothes with water before removing. Use emergency eyewash/shower if available. If water is not available, they should hold onto a grounded grounding rod to prevent sparks when they remove their clothes.

c) Wash fuel off skin with soap and water as soon as possible.

d) Seek medical attention immediately.

Warning: Entering a warm room wearing fuel-soaked clothing can be dangerous. Chances of a fire starting because of static electricity are increased.

VI. Security

A. Security Planning:

Airtanker Bases shall develop a plan based on information and direction regarding security measures and planning addressed within FSH 5709.16, Flight Operations Handbook Ch. 50 or DOI 352 DM 10 as appropriate based on your own agency. Airtanker bases should also reference TSA Security Guidelines for General Aviation Airports Information Publication A-001 and appropriate individual state guidelines. This program should reflect the needs of the geographic area and the type of operation in which you are engaged. Review with local Law Enforcement as needed.

Appendix A: Hand Signals for Airtanker Base Ramp Operations.

A. Discussion of Hand Signals for Airtanker Base Ramp Operations

The Parking tender is ***an essential position on the ramp***. The proper taxiing of aircraft by hand signals at an airtanker base is a critical element of safety and efficiency. If done properly hand signals provide personnel and aircraft safety on the ramp, ease of ground operations of all types of equipment on the ramp, and keep radio frequencies clear for emergency traffic.

All airtanker base personnel whose job description requires, or who ***may*** be required to taxi aircraft due to fluctuating personnel demands during operations, must be proficient at taxi direction signals. It is equally important that taxi signals be standard at all airtanker bases since pilots understand the same signals. Hand signals universally understood by pilots are those used by the military. There is a tendency to "personalize" signals. However, this must be avoided since it leads to confusion. See Exhibit A-1 for a depiction of all standard hand signals.

Parking tenders should be equipped appropriately for easy identification and safety. Chapter 5 specifies required personal protective equipment. Additional insert-in-ear plugs are also recommended for all those working around the ramp, since a radio headset/microphone may not be sufficient hearing protection from the noise levels generated by some turbine aircraft.

Due to the loss of depth perception at night, these signals should be the same for day and night taxiing, with the addition of lighted wands for night operations.

Make sure your signals are clear at all times. When one wishes to expedite the movement of an aircraft, one should speed up the motions described in Exhibit A-1. However, the movement of aircraft in close quarters usually dictates that an aircraft be moved slowly since they are hard to stop. Remember, until a pilot knows the difference between your "slow" and "fast" motions, keep motions slow and apply this to all pilots.

Note: If in doubt as to a pilot's intentions or understanding of your signals, or if the pilot does not follow your directions, stop the aircraft in position. If the pilot is unsure about your directions, he/she will stop the aircraft in position.

ommunicate Through Accurate, Visible Hand Signals.

EXHIBIT A-1: AIRTANKER BASE RAMP OPERATIONS HAND SIGNALS

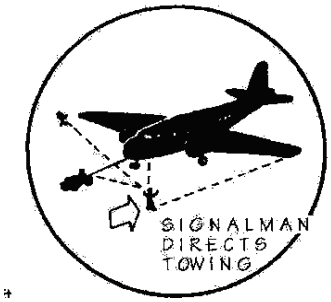
Park Facing Me

When aircraft needs to be directed to a particular parking spot, such as a loading pit or overnight parking spot, the Parking Tender will be stationed so that he/she faces the aircraft's final intended parking position indicating such as by pointing straight up to straight down with both arms at full extension slowly in the vertical plane towards the front of one's body.

If necessary, look over one's shoulder to ensure the pilot is continually proceeding to the parking spot and to maintain eye contact.

When taxiing aircraft, it is important that the Parking Tender establishes and maintains eye contact with the pilot. One must remember that as a "tall" aircraft approaches the Parking Tender, that person passes below the cockpit horizon. ***Move back*** as the aircraft gets closer so that eye contact is maintained.

Two Parking Tenders During Towing, Congested Operations, Etc.



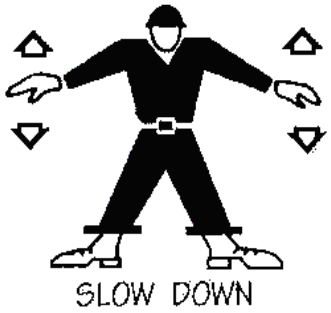
Use of an additional Parking Tender to guide an aircraft to the parking spot is highly recommended when there is considerable moving traffic, a crowded ramp, extensive taxiing is required, visibility is restricted, this is the first visit for the aircraft at the particular base, or a towing operation is being conducted.

Moving An Aircraft Straight Ahead

The hand signal for moving an aircraft straight ahead is the raising and lowering of both hands in the vertical plane at the same time, arms bending at the elbows, upper arms held parallel to the ground and pointed from the sides of one's body.

Slowing an aircraft's speed is done by moving one's hands up and down slowly, from shoulder height to hip height, palms held downwards, until the aircraft is moving slowly enough for one to safely direct. At night, palms held downwards are difficult to see so one must point the wands towards the ground while performing this signal.

Slowing An Aircraft Down

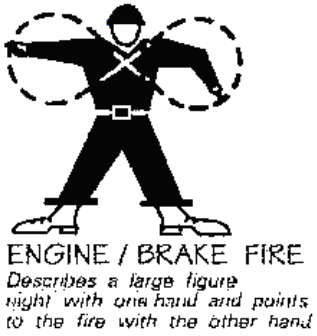


Hot Brakes

Occasionally quick stops on the runway and/or fast taxiing to the ramp result in hot brakes which are indicated by brake squeal, smoke from the main landing gear wheel assembly, or flames in the same area. The last two indications ***dictate that this aircraft not be moved into the pit*** if there is a possibility of the aircraft being disabled in the pit.

Instead, direct the aircraft to a clear parking area. If the aircraft is to be taxied into the pit, be alert to fire and tire explosion danger. Indicate to the pilot the hot brake condition by pointing a hand/wand at the hot brake and fanning one's nose with the other hand/wand.

Brake (or Engine) Fire



If the condition worsens and a fire results, point a hand or wand at the now burning brake assembly and wave large, quick figure "8" motions in front of one's chest. Be alert to any emergency. Stop the aircraft in position if necessary. Note that this indication is the same for any fire.

Taxi or parking guidelines delineating the normal path to a spot should be painted on the ramp. This is not always possible, requiring that the Parking Tender be able to turn the aircraft with hand signals. The signal for a turn is pointing with one hand/wand to one main landing gear wheel and moving the other hand/wand, arm bending at the elbow, upper arm held horizontally and to one's side, slowly in the vertical
plane.

Turn Left

To turn the aircraft left, point to the left main landing gear wheel with the right arm and move the left hand as described above.

Turn Right

To turn the aircraft right, point to the right main landing gear wheel with the left arm and move the right arm as described above.

Emergency Stop

Normal Stop is indicated by crossed hands/wands overhead.

Emergency Stop should this be necessary, is indicated by the stop signal moved rapidly up and down in front of one's face and shoulders. At night, crossed wands mean stop. If the aircraft does not respond to the emergency stop signal, ***evacuate*** the immediate area expeditiously.

Cut Engines

Upon stopping the aircraft in the desired spot, indicate to the pilot that he may shut down the engines by "cutting one's throat' with on hand/wand, the other hand/wand held behind one/s back.

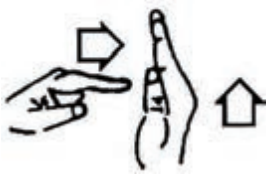
Insert Chocks

Also indicate at this time that chocks are now or soon to be inserted under the wheels by moving the closed fist with thumb extended (hitchhiking signal)/wand pointing towards one's hips at hip height.

All Clear

The "All Clear" signal will indicate to the pilot that the area is clear. Raise the right hand and hold steady above and out from the head.

Connect APU

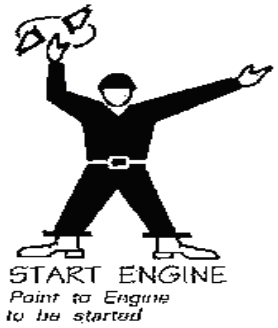


When starting aircraft, an auxiliary power unit (APU) is sometimes required. To indicate APU connection, one points repeatedly with an index finger to a raised, flat palm of the other hand until the pilot acknowledges.

DISCONNECT APU

To indicate an APU disconnect at the end of the start sequence, one uses a fist with extended thumb (the hitchhiking signal) moving away from the raised, flat palm of the other hand. At night, pointing one wand and held vertically will be used for each respective signal.

Start Engines



The indicator to start engines is made by raising one hand above one's head at full extension and moving it in small circles slowly. The other arm is positioned behind one's back. At night a lighted wand will be raised and moved in small circles, the second wand held behind one's back. Pilots will acknowledge with a blinking taxi light or flashlight from the cockpit and starting will commence. To indicate clearance to start a particular engine, one points to an engine (it does not matter which one since the pilot will choose) and waves the other hand in small circles. The waving arm will be bent at the elbow with the upper arm held horizontally and to the side of one's body. Add a wand at night.

Appendix B: Administration Forms and Reports

A. Introduction

This appendix provides standardized Airtanker Base Operations Forms. Standardization helps to implement common procedures to meet safety, efficiency, fiscal management, and contract administration objectives. Standardized forms also provide a common basis for training development and presentation.

B. Applicability

Forms described in this chapter are used to ensure uniformity of information for internal and external transmission. Select forms are for optional use (see Chart 3-1). For standardization between agencies, the mandatory forms should be used whenever they would benefit the agency or state in the compilation of information or when data or information will be transmitted to another office or agency.

These forms cover a broad range of contract administration and operational requirements relating to the management of an airtanker base and airtankers. The use and applicability of other contracting forms such as Contract Instruction, Notice to Proceed, etc., are discussed in agency contract administration guides.

Chart 3-1 summarized the ATB-series forms; the NFES number, and responsibility for completion and routing. The Airtanker Base Manager can use the chart as a quick-reference guide to form requirements.

The pages following Chart 3-1 provide specific information on the purpose, applicability, completion responsibility, instructions for completion, sources for inputs, and routing requirements.

It is recommended that Airtanker Base Managers obtain sets of all forms so that they may respond to different management requirements encountered.

Summary of Airtanker Base Forms and Reports Requirements for Completion & Submission of Airtanker Base Management Forms, Chart 3-1

Form Name	Purpose	Form #	Individual Responsible for Completion	Frequency	Remarks
Airtanker Base Information Sheet	To provide information on each Airtanker base for inclusion in the Interagency Airtanker Base Directory	ATB-1	Airtanker Base Manager	Updated at end of each season	Forwarded to Regional, State, or Area Aviation Management for review and routing to project leader USFS Washington Office 11/1 annually. ***Required*** at NIFC to go to print on 12/1
Tactical Fixed-Wing Information Sheet	To provide Airtanker Base Managers with information concerning pilots and aircraf.	ATB-2	Airtanker Base Manager	Immediately after contract start. Multiple copies to Pilots for distribution to ATB Managers on arrival.	To be completed for all contract and agency-owned tactical aircraft (Airtankers, Air tactical, ASM/Leadplanes, Jumpships) at the start of the season. It should also be completed for transient aircraft and crews remaining overnight who have not previously supplied a copy to the Airtanker Base Manager.
Incident Information: Tactical Fixed-Wing	To allow the Airtanker Base Manager to document information relayed by Dispatch off ROSS/ Aircraft Resource Order, and to allow copies to be distributed to tactical aircraft pilots.	ATB-3	Airtanker Base Manager (usually by Radio Operator or Aircraft Timekeeper)	Upon dispatch of tactical Fixed-Wing aircraft	Information in the bold boxes (see ATB-3) to the pilot or aircraft manager prior to entry into the area of operations.

Summary of Airtanker Base Forms and Reports Requirements for Completion & Submission of Airtanker Base Management Forms, Chart 3-1, continued

Form Name	Purpose	Form #	Individual Responsible for Completion	Frequency	Remarks
Airtanker Crew Flight Record	To allow the Airtanker pilot to document on/off times for later reconciliation with the Airtanker Base Manager's record for the eventual entry onto the agency flight payment document.	ATB-3a	Airtanker Pilot	Each time aircraft is on/off; Diverts to other incidents.	This form is the last part of the multiple-part set of Form ATB-3 Flight Resource Order: Tactical Fixed-Wing
Individual Airtanker Flight Record	To document departure and arrival times (on/off). The form is ***hard card-stock*** for entry of on/off times in ***automatic-punch clocks.*** The form is completed (manually from a UTC Clock or by Punch Clock) in its entirety. This information is ***key*** to maintaining accurate flight time and dispatch/reaction time records	ATB-4	Airtanker Base Manager (usually by Aircraft Timekeeper)	Each time aircraft is on/off.	One Flight Record is to be completed for each airtanker operating to and from the base. This form is used at bases utilizing a punch card clock and is supplemental to the ATB-8 Log.
Pilot Flight Time/Duty Day Cumulative Log	To provide the Airtanker Base Manager with a means of tracking pilot duty day and flight time, thus ensuring that limitations are not exceeded.	ATB-5	Airtanker Base Manager (usually by Aircraft Timekeeper)	Daily at end of operations	
Fixed-Wing Base Landing Fee Record	To summarize landings made by airtankers and is used to support payment made to airports by the Government.	ATB-6	Airtanker Base Manager (usually by Aircraft Timekeeper)	Each landing	Form should be completed from information contained on individual Aircraft / Airtanker Daily Operations and/or flight payment documents.
Retardant Use Record	To provide the Airtanker Base Manager with a record of daily retardant use to support billing, payment and reporting documents.	ATB-7	Airtanker Base Manager (usually by Mixmaster)	Each load of retardant	Information is obtained from the from metering devices and operations logs

Summary of Airtanker Base Forms and Reports Requirements for Completion & Submission of Airtanker Base Management Forms, Chart 3-1, continued

Form Name	Purpose	Form #	Individual Responsible for Completion	Frequency	Remarks
Aircraft / Airtanker Daily Operations Log	To provide a summary of all Airtanker/Pilot Duty Day/Availability/Unavailability, Flight Time, Retardant Use, and applicable cost coding for later entry to flight and retardant payment documents. It also provides information for the Contract Daily Diary. Additionally, it is used to complete the Airbase Daily Incident Cost Summary for individual fires.	ATB-8	Airtanker Base Manager (usually by Radio Operator or Aircraft Timekeeper	As events, (dispatches, takeoff, landing and loading of retardant, etc.) occur	This form is the primary source document for information used to create most other forms. One copy is created for each airtanker working from the base. It is used to report information on airtanker use.
Airbase Daily Incident Cost Summary	To fulfill reporting requirements of the Air Operations Branch on incidents to which a Type I or II Incident management Team has been assigned.	ATB-9	Airtanker Base Manager (usually by Aircraft timekeeper)	Nightly when base has been supporting a Type I or II Incident Management Team, or as requested.	Flight time costs are available off the Tactical Fixed-Wing Information Sheet(s) submitted by transient Airtanker pilots. Actual use is available from form ATB-8,or ATB-4
Airtanker Base Readiness evaluation	To identify and correct any safety or operational deficiencies related to the airtanker base or crew.	N/A.	Regional, Area, or State Aviation Management	Annually	Completed for all contract airtankers and crews stationed at permanent airtanker bases.
Agency Flight Payment Record	To document flight and other charges for payment to the vendor, or to document utilization of agency-owned aircraft.	OAS-23 or FS 6500-122, or State Agency format	Airtanker Base Manager or Agency Pilot	Daily	

Exhibit B-1: **Example of Form ATB-1Airtanker B**

<table>
<tr><td colspan="4">Base Name & FAA Identifier
Geographic Region and FS Region</td></tr>
<tr><td colspan="4">Base Address
Fax Number
Email Address
County for Federal Travel Regulation</td></tr>
<tr><td colspan="4">BASE LOCATION ON FIELD – N, S, E, W, QUADRANT
Elevation</td></tr>
<tr><td colspan="2">Base Operations</td><td colspan="2">Phone Number at Airport</td></tr>
<tr><td colspan="2">Dispatch Office</td><td colspan="2">Controlling Dispatch</td></tr>
<tr><td colspan="2">Manager</td><td colspan="2">Airtanker Base Manager</td></tr>
<tr><td colspan="2">COR</td><td colspan="2">Contracting Officers Rep</td></tr>
<tr><td colspan="2">Agency Contact Frequency</td><td colspan="2">Agency FM frequency</td></tr>
<tr><td colspan="2">Airtanker Base Frequency</td><td colspan="2">Base VHF Frequency</td></tr>
<tr><td colspan="2">Large Airtanker Operation Authorized?</td><td colspan="2">Large AT Ops plan in place?</td></tr>
<tr><td colspan="2">SEAT Operations Authorized?</td><td colspan="2">SEAT Ops plan in place?</td></tr>
<tr><td colspan="2">Hot Reloading Program Authorized?</td><td colspan="2">Agency Approved plan in place?</td></tr>
<tr><td colspan="2">MAFFS Authorized?</td><td colspan="2">MAFFS Approved (# A/C)</td></tr>
<tr><td colspan="4">Single and Dual Overweight Information. This section lists the agency overweight agreement limits – or – if the agency does not have an agreement, the published Airport Facility directory runway bearing strength.</td></tr>
<tr><td>Runway Weight Limits Single</td><td>Runway Weight Limits Dual</td><td>Pit Total</td><td>Parking Total</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Known Hazards: Self Explanatory</td></tr>
<tr><td colspan="4">Retardant Jettison Area: Name/ coordinates, drop elevation</td></tr>
<tr><td colspan="4">Remarks: Self Explanatory</td></tr>
<tr><td colspan="2">Rev Date:</td><td colspan="2">UPDATES OR CORRECTIONS</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
</table>

Exhibit B-2: **Example of Form ATB-2**

Tactical Fixed Wing Information Sheet, ATB-2

Submit to Airtanker Base Manager upon arrival.

Order Information

Date	Make/Model
Order No.	N #
Request No.	T#
Arrived	

☐ Airtanker	☐ Leadplane	☐Air Tactical	☐Loaded ☐Unloaded
Reg. Number			
Cruise Speed			
Fuel Type			
Contract Load			

Contractor
Phone
Administrative Base
Agency
Daily Avail.
Hour Av.
Ext. Av. Pilots
Ext. Av.

Position	Name	Duty Day	Cumulative Flight Time Last 5 Days
Pilot			
Co-Pilot			
Engineer			
Mechanic			
Other			
Other			

If RON, Pilots/Mechanics Prefer: ☐ Single rooms ☐Male ☐Non-Smoking

Exhibit B-3: Aircraft Dispatch Form, ATB-3

DATE:	**TIME:**	**SUNSET +30:**	**UNIT ID:**
INCIDENT NAME:		**INCIDENT #:**	
DESCRIPTIVE LOCATION:		**ELEVATION:**	
T:	**R:**	**S:**	**¼:**
LAT:		**LONG:**	
BEARING (DEG):		**DISTANCE (NM):**	**VOR:**
FLIGHT FOLLOWING:		**F/F FREQUENCY:**	**TONE:**
AIR CONTACT:		**A/A FREQUENCY:**	**TONE:**
GROUND CONTACT:		**A/G FREQUENCY:**	**TONE:**
OTHER AIRCRAFT:			
HAZARDS:			
MTR/SUA: ☐ **YES** ☐ **NO**			
TFR: ☐ **YES** ☐ **NO**			
COMMENTS:			
RELOAD BASE:			

DISPATCH CENTER:
DISPATCH PHONE NUMBER:
DATE, TIME, INITIALS:

Exhibit B-4: Example of Form ATB-4: Individual Airtanker Flight Record

Individual Airtanker Flight Record Card, ATB-4		
Tanker No.		
Make/Model		
Airtanker Base and Agency Name		
Order No.	Incident Project No. Date and Time	
Gallons	Airport Identity	Time Flown

Hourly Flight Rate	Agency Fire No.	Cost-Gallon	From-To	Elapse Hours (Hundredths)	Cumulative Hours (Hundredths)	On and Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off
						On
$						Off

Remarks:

Exhibit B-5: Example Form ATB-6

Fixed-Wing Based Landing Fee Record, ATB-6	
Airtanker Base Name and Agency	Agreement #
	Payment #
	Page #

Date	Incident Order No.	Billing Code	A/C No.	No. of Landings	Cost of Landing	Total Cost

Account Summary

#	Agency Billing Code	Amount
Total		

Aircraft Rates

Aircraft Landing Weights @:		1000 LBS
S2F		
DC-4		
S2-T		
P2V		
DC-6		
P3A		
DC-7		
C130 (MAFFS)		
CL-415		
CL-215		

Signature and Title		**Date**
Approving Agency Office:		
Vendor or Agent		

Exhibit B-6: Example of Form ATB-7

Retardant Use Record, ATB-7

Airtanker Base Name and Agency	Date	
	Page	
	Name	

Load #	Time	Tanker No.	Incident Order No.	Billing Code	Spec. Grav.	Refr.	LBS.	GAL.	Sheet Total	Comments

Summary

Agency	Loads	Gallons	Comments
Grand Total			

Exhibit B-7: Example Form ATB-8

Date: **Aircraft / Airtanker Daily Operations Log, ATB-8** **Aircraft / Airtanker ID:**

Airbase	Contract No:	Vendor:	A/C Type:
Address1:	Agency:	Pilot	Reg. No.
Address2:	Admin Base:	Pilot Phone:	Day Off:
Manager:	COR:	Copilot:	Availability:
Phone:	Phone:	Mechanic1	Flight Rate:
Fax:	Fax:	Mechanic2	Ext. Standby:
Email:	Email:	Phone2:	Landing Fee:

Leg	Incident Name	Pay Code	Depart	Arrive	Time	Time	Flight	Flight	Accum.	Flight	Retardant	Rate /	Retardant	Landing
#	Order Number	User Unit	From	To	Off	On	Hrs (FT)	Hrd (FT)	Time	Cost	Gallons	Gallon	Cost	Fee
	----------	----------												
----------		----------												
----------		----------												
----------		----------												
----------		----------												
----------		----------												
----------		----------												
----------		----------												
----------		----------												
Leg Totals:														

Availability	Extended Standby	Non Availability	RON Per Diem	Misc. Costs	Day Off Total time since last day off.
Start:	Start:	Start:	Location:	Desc:	Total
Stop:	Stop:	Stop:	Rate:	**Cost**	36hrs
	Total Hrs:	Total Hrs:	Total Hrs:		
Cost:	No. of Crew:	**Cost:**	No. of Crew:	Diary Remarks:	
	Cost:		Cost:		

Exhibit B-8: Example of Form ATB-9

Airbase Daily Incident Cost Summary, ATB-9

Date:			
Incident:			
AIRBASE:	Phone:	Incident Name:	Incident Dispatch:
Address1:	Fax:	Order Number:	Incident Contact:
Address2:	Email:	User Unit:	Incident Phone:
Manager:		Pay Code:	Incident Fax:

Aircraft / Retardant Costs

Aircraft	Type	Mission	Hours	Rate/ Hour	Flight Cost	Retardant Gallons	Rate / Gal.	Retardant Cost	Landing Fees	Ext. Hours	Extended Cost	RON # Crew	RON Cost	Misc. Cost	Aircraft Total
Aircraft Totals															

Mission = (Airtanker, ATGS, Lead, Etc.)

Other Retardant Contract Costs

Service Provided	Retardant Crew Ext	Retardant Offloads	Retardant Reloads	Water Loads	Daily Extension	Totals
# or Hrs						
Cost						

Base Personnel Costs

Position						Totals
Hours						
Cost						

Total Incident Costs: $

Remarks:

Exhibit B-9: Example of FS 6300-49

US Forest Service

CUMULATIVE USE/PAYMENT SUMMARY

(Reference FSH 6308.11)

1. Forest/Unit	2. Base	3. Aircraft No.	4. Contract No., bid item

5. Contractor	6. Inclusive dates this payment period

7. Availability Earnings

a. Mandatory Period _____ Hours At $_____ Total $_____

b. Pre/Post _____ Hours At $_____ Total $_____

c. Optional Period _____ Hours At $_____ Total $_____

d. Extended Standby _____ Hours At $_____ Total $_____

e. Unavailable _____ Hours

8. Flight Hour Earnings

Number of Hours _____ At $_____ Total $_____

9. Overnight Allowances for this period

No. Crew-nights _____ At $_____ Total $_____

10. Other Contract Allowances for this period

Service Truck _____ Miles At $_____ Total $_____

_____ At $_____ Total $_____

11. Deductions this period

(excluding time discount) _____ - $_____

_____ - $_____

12. TOTAL PAYMENTS THIS INVOICE $

13. Summary of Accumlated Totals To Date	Previous Total Hours	Previous Total Dollars	This Period Hours	This Period Dollars	Total To Date Hours	Total To Date Dollars
a. AVAILABILITY (7)						
b. EXTENDED STANDBY (7)						
c. UNAVAILABILITY (7)						
d. FLIGHT (8)						
e. OVERNIGHT (9)						
f. MISC. ALLOWANCE (10)						
g. MISC. DEDUCTIONS (11)						

14. GROSS TOTAL PAID TO DATE $

15. Approved for the United States of America Contracting Officer Representative (Signature/Date)	16. Approved for the Contractor Signature and Date (Optional)

Previous edition is obsolete (over) **FS-6300-49 (3/1994)**

17. Mo.	18. Day	19. Avail.	20. Extended Standby			21. Flight Hour Information					22. Gal Retard	23. RON	24. Remarks
			Hours (a)	Rate (b)	Total (c)	USFS (a)	Other (b)	Fuel Price (c)	Flight Photo Per Hr (d)	Total (e)			

26. Summary	Region	Location	Hours Flown	Flight Amount	Get Rstrd
	Other				
	TOTAL				

Exhibit B-10: Aircraft Contract Daily Diary

Page of

	1. FOREST
	2. CONTRACT NO.
3. PROJECT	
4. CONTRACTOR	**5. CONTRACTOR REPRESENTATIVE ON SITE**
6. GOVERNMENT OFFICIALS ON SITE	

7. DATE	8. DAY OF WEEK	9. TIME ARRIVED	10. TIME DEPARTED	**11. WEATHER**

12. TEMPERATURE °F. *Min. Max.*	13. GROUND CONDITION	14. CONTRACT TIME	**15. DAYS USED**	**16. COMPLETION DATE**

17. TIME USED *(%)*	18. WORK COMPLETED *(%)*	19. WORK ON SCHEDULE	**20. CONTRACTOR'S WORK - *(X Appropriate Box)***
		☐ YES ☐ NO	☐ Acceptable ☐ **Unacceptable - *Explain in narrative***

21. CHANGE ORDERS/AMENDMENTS ISSUED	**22. WORK ORDERS ISSUED *(Include SUSPEND/RESUME)***

23. MATERIALS FURNISHED TO JOB SITE *(Furnished By: G-Govt.; C-Cont.; S-Subcont.)* → →

24. LIST EQUIPMENT ON SITE *(Furnished by G-Govt.; C-Cont.; S-Subcont.)* →→→

Type	**Contract Item Number and Location of Use**	**Hours Used**

25. LIST CONTRACT PAYMENTS, REPORTS, CORRESPONDENCE, ETC.

Item	Prep	Submit

26. WORKERS ON SITE Number

Classification	**PRIME**	**SUB**

27. GOVERNMENT PROVIDED SERVICES ADEQUATELY AND TIMELY

☐ YES ☐ NO - Explain in narrative

28. NARRATIVE REPORT

29. SIGNATURE	30. TITLE	**31. ADDTL SPACE NEEDED** ☐ *(continued on 6300-21)*

Distribution: Original - CO *(weekly)*; COR, SO, PROJ ENG
Previous editions of this form are obsolete.

FS-6300-20 (12/85)

Exhibit B-11: SAFECOM

Safety Communiqué Form

OAS-34 / FS 5700-14

SAFECOM Aviation Safety Communique'	**REPORTED BY: (optional)** **Name:** **E-Mail:** **Phone:** **Cell Phone:** **Pager:** **Organization:** **Organization Other:** **Date Submitted:** mm/dd/yyyy

EVENT

Date: mm/dd/yyyy	**Local Time:** hhmm	**Injuries:** Y/N	**Damage:** Y/N
State:	**Location:** (Airport, City. Lat/Long or Fire Name)		

Operational Control:
Agency:
Region:
Unit:

MISSION (* see look-up tables)

Type: *	Other:	
Procurement: *	Other:	
Persons Onboard:	Special Use: Y/N	Hazardous Materials: Y/N
Departure Point:	Destination	

AIRCRAFT (* see look-up tables)

Type: *	Tail #	Manufacturer: *	Model:
Owner/Operator:		Pilot:	

NARRATIVE: (A brief explanation of the event)

CORRECTIVE ACTION: (What was done to correct the problem)

SAFECOM FORM INSTRUCTIONS

The Aviation Safety Communique (SAFECOM) database fulfills the Aviation Mishap Information System (AMIS) requirements for aviation mishap reporting for the Department of Interior agencies and the US Forest Service. Categories of reports include incidents, hazards, maintenance, and airspace. The system uses the SAFECOM Form OAS-34/FS-5700-14 to report any condition, observation, act, maintenance problem, or circumstance with personnel or aircraft that has the potential to cause an aviation-related mishap. The SAFECOM system is **not** intended for initiating punitive actions. Submitting a SAFECOM is **not** a substitute for "on-the-spot" correction(s) to a safety concern. It is a tool used to identify, document, track and correct safety related issues. A SAFECOM **does not** replace the requirement for initiating an accident or incident report.

These instructions and helpful hints are intended to make the process of submitting a SAFECOM as easy as possible. If you need assistance, please don't hesitate to call the Forest Service at (208) 387-5285 or the Aviation Management Directorate, Aviation Safety (formerly OAS) at (208) 433-5070. After the completion and submission of your SAFECOM, your data will be stored in a central database that is shared on an interagency basis. Therefore, you only have to submit one SAFECOM per event.

The **REPORTED BY section** is associated with the person submitting the SAFECOM. All of these fields are optional. However, this contact information is extremely helpful if it becomes necessary to follow-up with the submitter on a particular issue. This section asks for the name of the person reporting the event, their contact information and the organization they work for. If you choose to submit your name or any other information in this section, it will not appear on the SAFECOM that is available to the general public.

The **EVENT** section asks for the "when" and "where" in addition to damage or injuries. Enter the **Date** in the **mm/dd/yyyy** format, and then enter the **Time** using the 24-hour time format **hhmm.** Note that the date is a required field and both the date and time fields will only accept numeric characters. Were there any **Injuries**? **Yes** or **No**. If you select **Yes**, please explain in the narrative. Was there any **Damage**? **Yes** or **No**. If you select **Yes,** please explain in the narrative. The next field in this section is the **State**, which applies to the state where the event occurred. Note that the **State** field is a required entry. In the **Location** field enter the airport, name of the fire or lat and long. The next three selections identify the Agency, Region or State for USDI and the Unit that had operational control of the mission at the time of the event. These selections determine which organization(s) will receive initial notification that a SAFECOM has been entered into the database. From the look-up table select the **Agency**. From the next look-up table select the **Region** for USFS or **State** for USDI. Next, select the **Unit** from the look-up table if it applies. See examples below:

Agency: Bureau of Land Mgt	**Region**: Alaska State Office	**Unit**: Glenallen FO
Agency: Forest Service	**Region**: Region 2	**Unit**: San Juan NF

The **MISSION** section asks for information that describes the mission at the time of the event. In the **Type** field, use the look-up table to make a selection that best describes the mission that was being performed. Use the **Other** field if you need to further identify the mission or if nothing is available from the look-up table that actually describes the mission. In the **Procurement** Field, enter how the aircraft you were utilizing was procured from the look-up table. Use the **Other** field to further identify procurement if necessary. Under **Persons**

Onboard, enter the total number of people on the aircraft, which includes the pilot(s), all flight crew personnel and passengers. Was the mission **Special Use, Yes** or **No?** Many of our missions are special use. In fact, almost all fire missions are considered special use as well as animal counting, herding, eradication, etc. Were there **Hazardous Materials** onboard, **Yes** or **No**? In **Departure Point**, enter where you departed from, an airport or helibase for example and under **Destination**, enter the intended destination, which could be an airport, fire name or helispot.

The **AIRCRAFT** Section generally applies to the aircraft you are utilizing. However, in the event of an airspace intrusion, conflict or near mid-air, enter as much information as possible about the other aircraft. If there are multiple aircraft involved, list the other aircraft in the narrative section. In the **Type** field, enter the aircraft type from the look-up table. In the **Tail #** field enter the tail number of the aircraft beginning with **N** for US Registered and **C** for Canadian Registered aircraft. Please do not enter the Tanker, Jumper or Helicopter number unless that is all you have. In the **Manufacturer** field, select the manufacturer from the look-up table. In the **Model** field, enter the model number without any spaces or hyphens for example, 206L3, DC6, PB4Y2. In the **Owner/Operator field**, enter the name of the agency if the aircraft is an agency fleet aircraft (ie USFS, USDI, etc) or the name of the vendor operating the aircraft if it is contracted. In the **Pilot** field enter the pilot's name, first name then last name.

In the **NARRATIVE** section give a brief description of the event with the facts and outcome of the event. Elaborate on any previous blocks above as necessary.

In the **CORRECTIVE ACTION** section give a brief description of the corrective action that was taken in an effort to prevent the event from reoccurring. Remember, submitting a SAFECOM is not a substitute for resolving the problem and taking on the spot corrective action. SAFECOMS are for tracking and trending purposes.

Accidents and Incidents-With-Potential (IWP) must be reported immediately via the most expeditious method in accordance with the Interagency Aviation Mishap Response Plan. A SAFECOM should be completed later, but it is not to be used as an initial notification method.

The SAFECOM should be routed through the local unit aviation officer or can be faxed to Aviation Management Directorate, Aviation Safety at (208) 433-5007 or USFS at (208) 387-5735 ATTN: SAFETY or entered directly on the internet at www.safecom.gov

https://www.safecom.gov/

Appendix D: Retardant Hot-Loading Procedures

A. Objectives

The objective of this appendix is to provide safe and viable reference procedures for loading aircraft with fire retardant chemicals without fully shutting down all of the aircraft's engines.

B. Definition

Hot-loading is the loading of an aircraft with retardant with one or more engines running.

C. Purpose

The hot-loading procedure requires an approved base plan, trained personnel, and concurrence by both the flight crew and base personnel. If either the flight crew or base personnel elect not to hot-load, the procedure is not done. Hot-loading is an approved procedure, and if used must be done properly, safely, and addressed in the base supplement specific to the base that is performing the hot-loading. These procedures may be applied to the other aircraft listed below provided necessary authorizations are in place.

D. Applicability

In order for a specific airtanker to be hot-loaded, the local Base Supplement must contain an operations plan and authorization to do so from an appropriate level of an agency's aviation management.

E. Responsibility

Each agency's aviation staff remains responsible for implementing a safe and effective hot-loading procedure for each authorized airtanker. Responsibility for compliance with the requirements and procedures outlined within this plan rests with each agency, including the personnel in these procedures. Airtanker loading operations are hazardous under normal conditions. Hot-loading intensifies the degree to which personnel must adhere to these procedures.

Training may be accomplished utilizing the *Turbine-Engine Aircraft Hot-Loading Video* along with the part of the Base Supplement that addresses hot-loading training and safety procedures.

F. Procedures

This procedure should be used for all loading operations for approved airtankers. The Parking Tender/Engine Guard is not necessary during loading operations if ***all*** engines are shut down.

1. Initial Shut-Down

The airtanker should be shut down for the first loading at an airtanker base from which this airtanker has not previously operated in the current season. At the discretion of the Base Manager airtankers may be required to shut down to train

personnel unfamiliar with the aircraft or procedure. Flight crews, Airtanker Base Manager, Ramp staff and loading crew will review procedures and equipment specific to that aircraft with the retardant ramp personnel including:

- Hot-loading procedures
- Ramp traffic flow
- Base safety considerations

2. Procedures Common to Airtanker Hot Loading

- ***Prior to the airtanker entering the loading area(s)***, the pilot will contact the Parking Tender/Ramp Manager on the appropriate Airtanker Ramp Frequency for loading pit assignment.
- The Parking Tender will be properly equipped with a high-visibility vest, PPE, and a hand-held VHF radio. When radio communication is established with the airtanker pilot, the Parking tender/Ramp Manager will direct the aircraft to the appropriate loading pit.

Note: At contract retardant loading bases, the Ramp Manager/Parking Tender must be an agency employee trained in parking tender procedures, and not a retardant contractor employee.
There may be hot-loading situations where radio communications between the Pilot and Parking tender cannot be established. Hot-loading can be accomplished by the Parking Tender establishing eye contact with the Pilot and utilizing standardized hand signals (see Appendix A).

- Entry into the loading pit will be in full compliance with the applicable turning radius of the make/model of the airtanker being directed. Parking of the aircraft must include consideration for unloading the forces on tandem wheels and tires.
- Flight Crew Parking Action. With the airtanker positioned in the loading pit, the pilot places the propellers in “ground idle” (flat pitch), then shuts down the two engines on the side from which the aircraft’s being loaded

Note: These actions apply to all aircraft approved for hot-loading. Both engines on the S2 remain running during hot-loading is so approved.

3. Parking Tender Action

- The Parking Tender/Ramp Manager will take up a position to the front and side of the running engine(s) within a safe area in the vicinity of the running engine providing the maximum view of the engine(s) and cockpit, and will remain in communication (radio or hand signals) with the pilot.

- The Parking Tender/Ramp Manager must establish that the area is clear and receive a positive signal from the pilot to begin loading. The Parking Tender/Ramp Manager will then signal the reloading crew to begin. The signal may be given by an established hand signal, or by VHF radio on the appropriate ramp frequency.

- If personnel or equipment is observed approaching the running engines(s), the Parking Tender/Ramp Manager will immediately instructs the pilot to shut down the engine(s).

- Loaders will remain clear of the aircraft until the Parking tender/Ramp Manager signal has been given to commence loading.

4. Loading of Retardant

a) General

- Radio communications or eye-to-eye contact and hand signals between the pilot and Parking Tender/Ramp Manager will be maintained throughout the retardant loading operations.

- The Parking Tender/Ramp Manager ***must not*** allow anyone to approach the aircraft until after the props have stopped wind milling on the engines that are shutdown.

- Loaders will approach and depart the aircraft from the rear of the wing.

b) S2-T Specific Procedures

The following are general procedures; refer to the CAL Fire 8300 Aviation Handbook for more specific guidance.

- During loading, the ramp Manager/Parking Tender will remain on station near the left or right wing tip in full view of the Pilot and Loader.

- The Ramp Manager/Parking Tender obtains permission from the pilot to load when the aircraft is ready.

- The Ramp Manager/Parking Tender signals the Loader when ready, so that the Loader can activate loading port levels.

- When the load reaches within 200 gallons of the pilot's requested load or the warning horn sounds the loader reduces the flow if possible.

- The loader observes the loading lights at the tail of the aircraft and if a mass flow meter is present, monitors the total pounds.

- When the load weight is reached the top light illuminates, the aircraft is full and the loader stops the flow.

c) SEAT Specific Procedures

The following are general procedures. Refer to the Interagency Single Engine Airtanker Operations Guide for more specific information.

- The Pilot usually determines when the appropriate load has been reached and will indicate when to cease loading.

5. Releasing the Aircraft

a) General

- After the loading is complete and/or the pump is shut down the loading crew will close the loading valve, disconnect the loading hose, and move it and themselves to the designated safe area. Then the Loaders will signal that the hose is clear.

- The Parking Tender/Ramp Manager will notify the pilot by radio or hand signal when the hose and loading crew are clear of the aircraft.

- The Parking Tender/Ramp Manager will take up a position that will allow a view of both sides of the aircraft and be in clear view of the pilot. The Parking Tender/Ramp Manager will then either use hand signals or communicate by the VHF radio that the engines on the loading side are clear to start.

- The airtanker will be cleared to exit the loading pit after the Parking Tender/Ramp Manager has determined that all obstructions and hazards are clear of the aircraft and the loading crew is in the designated safe area free from propeller blast.

6. Emergency Procedures

a) Fire

The Parking Tender will notify the pilot by radio that there is a fire. If the radio fails, the Parking Tender will face aircraft and point to the fire with one hand while drawing a figure-eight in the air with the other (see Appendix A). Fire extinguishers will be discharged to extinguish an engine fire only at the direction of the pilot or flight crewmember. If a fire persists, follow established base emergency procedures.

b) Communications Loss

The Parking Tender will secure eye-to-eye contact with the pilot and pat earphones followed by thumbs down signal. The Parking Tender will continue to use hand signals if no radio is available. If the aircraft radio is inoperable, the aircraft will be shut down until repairs are made.

c) Situation Requiring Engine Shut-Down

If a situation requiring engine shutdown occurs, the Parking Tender will notify the pilot by radio or hand signal drawing index finger across the throat.

7. Safety Awareness

a) General Precautions

- Only qualified persons will perform aircraft and loading operational functions.
- Only essential personnel will be allowed in the loading area during hot-loading procedures.
- No personnel are to be involved in activities on the side of the aircraft adjacent to the operating engines. This might require preplanning at bases with wing tip to wing tip loading pits.
- ***Never*** walk beneath, between, or in close proximity to aircraft propellers – turning or stopped.
- ***Do not*** approach aircraft until the engines have been shut down on the loading side, and the Parking Tender/Ramp Manager has signaled the aircraft clear for loading.
- When possible *avoid* the area to the rear of the aircraft while the engines are running due to hazards such as propeller blast, dust, debris and fumes except for the S-2T.
- ***Be aware*** that fumes from raw fuel can ignite

b) S-2T Precautions

- Exhaust from running engines
- High noise levels
- Lack of prop blast
- Prop blast and flying debris when aircraft pulls out of the pit.
- Always stay behind the wing (except for ramp parking)

8. Safety Equipment

The protective equipment outlined in Chapter 5 section J, Interagency Airtanker Base Operations Guide will be worn at all times.

Appendix C: Minimum Equipment Required or Recommended at an Airtanker Base

I. Equipment

QUANTITY	ITEM
-	Fire Extinguishers as called for in V. E. 2.C.a.
1	Outside Audio System (public address)
1	Telephone System with a minimum of two lines – not required in Alaska
2	Handheld radios with headsets for ramp personnel – ANR or noise canceling
1	Dispatch radio system – VHF-AM and VHF-FM
1	Gasoline powered backup retardant pump
1	Chock blocks for each aircraft
1	First Aid Kit – 10 person minimum
2	Body fluids barrier kit
2	High visibility vests for each Parking Tender
1	VCR/DVD with monitor for training
1	Organizational chart board
1	FAX machine – plain paper type
1	Computer and printer with Internet access to obtain critical safety information, agency/incident mail, and SAFECOMs.
1	Safety signs as required to meet OSHA/State regulations
1	OSHA and NFPA 30 certified flammable liquids storage cabinet
1	Labor/Civil Rights/OSHA poster to meet Federal/State regulations
1	Safety Data Sheets and binder to meet OSHA/State regulations
1	Wash down water/retardant collection containment or collection system
1	Spill containment kit for fuel and other chemical spills
1	Current Flight Hazard Map
1	Refractometer, labels, and packaging to meet LA/QA for fire retardant
1	Hazard Communication Standard station
1	Eye/Shower wash stations
1	Atomic clock

QUANTITY	ITEM
1	Copy machine
1	Programmable scanner
1	Microwave oven
1	Air compressor
1	Pressure washer
1	Forklift and/or hand truck
1	Refrigerator
1	Vacuum cleaner
1	Ice maker (Forest Service may use bagged ice locker minimum 500 pounds)
1	Large capacity coffee maker
1	Battery charger
1	Ladder (6 foot minimum)
1	Washer and dryer
1	Erasable briefing board
1	Easel and paper
1	Electrical outlets (for each loading pit). Class A installation or as required by local code
1	Assorted automotive type tool kit
1	Bicycle
1	Lock out, tag out kit
1	Mass flow meter for each loading pump with LCD readout at each nozzle that reports in pounds and switches to turn the pump on and off.

II. Miscellaneous Parts and Supplies

QUANTITY	ITEM
1	Aircraft loading valve (3 inch camlock)
1	Pipe wrench (36” aluminum)
6	3 inch gaskets
6	4 inch gaskets
2	3 inch female to-female camlock- thread fittings
2	3 inch female -to-male camlock thread fitting
2	3 inch male -to-female camlock thread fittings
2	4 inch female -to-female camlock thread fittings
2	4 inch female -to-male camlock thread fittings
2	4 inch male -to-female camlock thread fittings
2	4 inch female -to-male camlock thread fittings
2	3 inch sections of loading hose
1	4 inch section hose (for non permanent plumbed bases)
1	Jar petroleum jelly
1	Spare refractometer
1	Banding tool kit
5	Hose carts

Appendix E: Airtanker Base Fire Readiness Review

I. Introduction.

An evaluation of airtanker base personnel and designated airtanker bases should be conducted as part of pre-season readiness. The local unit should have adequate time, as identified by the evaluators, to respond to the evaluation and to identify corrective action planned or already taken.

II. Purpose.

The purpose of the Preparedness Review is to evaluate the general readiness of the airtanker base, and identify and correct any safety or operational deficiencies related to the air base or personnel. It should be stressed that the evaluation process is meant to be a constructive process.

III. Applicability.

The format as contained in the Preparedness Review is optional, and agencies/regions may have specific checklists. However, individual agency manual or handbook direction may require completion through reference to the IABOG.

IV. Responsibility and Instructions for Completion.

Aviation management at the Regional, State, or Area level is responsible for facilitating the evaluation. Conducting the evaluation can be delegated to the unit Aviation Manager. Annual evaluations are recommended. The crew and vendor should be allowed sufficient time (for example, 1-2 weeks) between contract start and the evaluation.

Exhibit E-1 Airtanker Base Fire Readiness Review

Airtanker Base Fire Readiness Review

Team conducting this evaluation:

Name	Agency	Phone / Email

Sections

Section A General
Section B Base Facilities and Communications
Section C Planning and Administration
Section D Ramp Operations
Section E Retardant Operations
Section F Airtankers
Section G Personnel
Section H Safety and Security
Section I Summary
Evaluators Signatures

Routing as Required by Agencies

Title	Signature

Section A: General

Base Name:

Managing Agency:

Types of Operations Conducted

- Large Airtanker ☐
- SEAT ☐
- Helitanker ☐
- Air Tactical ☐
- Smokejumper ☐
- Other ☐

Has the information for this base been updated in the *Interagency Airtanker Base Directory* for this year? ☐Yes ☐No

Position	Name	Contact Number
FEDERAL AGENCY	**USFS**	
Airtanker Base Manager		
Asst. Airtanker Base Manager		
Airtanker Base Technician		
Airtanker Base Technician		
Federal Airtanker Contract COR		
Federal Airtanker Contract Inspector		
Retardant Contract COR		
Retardant Contract Inspector		
Mixmaster		
Mixing Crew Member		
Ramp Manager		
Parking Tender		
Retardant Loader		
Aircraft Timekeeper		
Aircraft Base Radio Operator		
Other Position		
Unit Aviation Officer		
Unit Fire Management Officer		
STATE AGENCY		
Airtanker Base Manager		
Asst. Airtanker Base Manager		
Airtanker Base Technician		
State Airtanker Contract Inspector		
Mixmaster		
Mixing Crew Member		
Ramp Manager		
Parking Tender		
Retardant Loader		
Aircraft Timekeeper		
Aircraft Base Radio Operator		
Other Position		

Section A: General, continued

Position	Name	Contact Number
RETARDANT VENDOR		
Base Foreman		
Asst. Foreman		
Mixing Crew		
Mixing Crew		
Loading Crew		
Loading Crew		
Loading Crew		

AIRTANKER VENDOR		
Pilot in Command		
Second in Command		
Relief Pilot in Command		
Engineer		
Relief Engineer		
Mechanic		
Relief Mechanic		

AIRTANKER VENDOR		
Pilot in Command		
Second in Command		
Relief Pilot in Command		
Relief Second in Command		
Engineer		
Relief Engineer		
Mechanic		
Relief Mechanic		

NOTES

Section A: General, continued

Item	Evaluation Criteria	YES	NO	Remarks
A1	Does the base have on site staffing 7 days a week during fire season? If yes how many persons?	☐	☐	
A2	If the base is not normally staffed when an airtanker is not on site how much lead-time is needed to open the base?	✖	✖	
A3	Are there persons designated as “on call” to open the base? What options are planned if they cannot be contacted?	☐	☐	
A4	Does the base manager have collateral duties during fire season?	☐	☐	
A5	Is there an assistant base manager? How is the base staffed when the base manager is away (days off, sick or vacation)	☐	☐	
A6	How are the Mixmaster and loader positions filled? Vendor or Agency?	✖	✖	
A7	How are the ramp oversight and timekeeping positions filled? CWN or day-to-day staff?	✖	✖	
A8	Are adequate personnel available to meet the requirements of base staffing?	☐	☐	
A9	Do detailers staff the management of the base?	☐	☐	

NOTES

Section: B: Base Facilities and Communications

	Evaluation Item/Criteria	Yes	No	Remarks
B1	Does the base's operations area have adequate space for the number of personnel working there and for intended operations?	☐	☐	
B2	Does the operations area provide adequate visibility of arriving and departing aircraft?	☐	☐	
B3	Is the operations area well organized (materials and references accessible and labeled, maps on wall, etc.)?	☐	☐	
B4a	Is there a backup power system at the base for the operations office?	☐	☐	
B4b	Is there a backup power system for the retardant plant?	☐	☐	
B5	Is a Communications Plan posted in both Operations Office and Pilot Ready Room, and are frequencies (Initial Call-in, Airnet, Forest/Field office Net, Ramp) posted on this plan?	☐	☐	
B6	Does the base have VHF-AM equipment?	☐	☐	
B7	If VHF-AM frequencies are being used are appropriate, authorized frequencies assigned?	☐	☐	
B8	Access to AFF and viewing monitor?	☐	☐	
B9	Does the radio operator know proper radio use procedures?	☐	☐	
B10	Is the telephone system adequate for intended activity (numbers of lines and phones)?	☐	☐	
B11	Are instructions for use of phone system posted, including warning on use of government phones for personal business?	☐	☐	
B12	Are appropriate phone numbers clearly posted (local dispatch, crash-rescue, FBO, etc.)?	☐	☐	
B13	Is there a public address system at the base?	☐	☐	

B14	Is the Pilot Ready Room Standby area adequate?		
	• Air conditioning available?	☐	☐
	• Heating available?	☐	☐
	• Hot and cold potable water?	☐	☐
	• Shower?	☐	☐
	• Restroom facilities?	☐	☐
	• Lounge area?	☐	☐
	• Adequate lighting?	☐	☐
	• Lockers?	☐	☐
	• Desks?	☐	☐
	• Telephone line/internet access?	☐	☐
	• Flight planning area?	☐	☐
	• Eating facilities?	☐	☐
	• Sleeping and resting facilities?	☐	☐
	• Refrigerator?	☐	☐

Section C: Planning and Administration

Evaluation Item/Criteria	Yes	No	Remarks
C1. Are the following references available at the base and easily accessible (electronic or hard copy)?	☐	☐	
• Aviation Management Manuals and Handbooks (all cooperators)?	☐	☐	
• Contract Administration Manual or Guide for appropriate agency?	☐	☐	
• Health and Safety Codes for appropriate agency?	☐	☐	
• Current Airtanker Contracts, USFS and **DOI**?	☐	☐	
• Aircraft Communications Plan and Frequency Users Guide?	☐	☐	
• Interagency Retardant Base Planning Guide	☐	☐	
• NFPA 407 Standards for Aircraft Fuel Servicing?	☐	☐	
• Geographic Area Mobilization Plans and Local Plans from appropriate agencies?	☐	☐	
• Interagency Airspace Coordination Guide?	☐	☐	
• Incident/Accident (Aircraft Emergency Response) Action Plan?	☐	☐	
• Training course material (including applicable videos)?	☐	☐	
• Interagency SEAT Operations Guide?	☐	☐	
• Interagency Helicopter Operations Guide?	☐	☐	
• Interagency Aerial Supervision Guide?	☐	☐	
• Is the Interagency Airtanker Base Operations Guide available and up-to-date? (Check revision page)	☐	☐	

C2a	Has the Interagency Airtanker Base Operations Guide been discussed with aircrews and base personnel?	☐	☐	
C2b	Are contractor and base personnel aware of the national policy concerning provision of lunches to contract crews by the government?	☐	☐	
C3	Have leadplane, ASM and ATGS policy and procedures been discussed with aircrews?	☐	☐	
C4	Are aircrews and base personnel aware of the national policy concerning airtanker rotation?	☐	☐	
C5	Are aircrews and base personnel aware of dispatch requirements as contained in the aircraft contract?	☐	☐	
C6b	Are they aware of the exceptions to the 15 minute dispatch/reaction time clause?	☐	☐	
C7a	Are aircrews and base personnel aware of the policies concerning startup/cutoff times and requirements for aerial supervision?	☐	☐	
C7b	Is the sunrise/sunset chart posted?	☐	☐	
C8	Are aircrews aware of the national policy concerning dropping of retardant in congested areas (exemptions)?	☐	☐	
C9	Has the base provided adequately for transportation of aircrews to and from lodging/eating facilities?	☐	☐	
C10	Are personnel aware of local policy concerning transportation of aircrews to and from lodging and eating facilities?	☐	☐	
C11	Is an atomic UTC clock located in the dispatch office?	☐	☐	
C12	Have aircraft timekeeping procedures been established, reviewed with base personnel and aircrews and are they adequate to ensure accuracy?	☐	☐	

Section C: Planning and Administration, continued

Item #	Evaluation Item/Criteria	Yes	No
C13	Does the base have established procedures for flight following (AFF)?	☐	☐
C14	Is a map of known local flight hazards posted?	☐	☐
C15	Is the hazard map accessible to both dispatch and pilots?	☐	☐
C16	Has the map been updated? Date of last revision?	☐	☐
C17	Is there a key on the map that identifies type of hazard?	☐	☐
C18	Are Military Training Routes and Special Use Airspace (Military Operations Areas, Restricted Areas, etc.) clearly marked?	☐	☐
C19	Are transmission wires and other hazards clearly marked?	☐	☐
C20	Has a safety briefing been held with all aircrews concerning local known hazards?	☐	☐
C21	Are aircrews aware of the use of Form ATB-3, Incident Information Tactical Fixed Wing?	☐	☐
C22	Are aircrews aware of the use form ATB-3a, Crew Flight Time Log?	☐	☐
C23	Has the Local Supplement been updated this year?	☐	☐
C24	Does the Supplement depict or discuss the following:		
•	A current organization chart for the airtanker base?	☐	☐
•	A current organization chart for the local air attack organization?	☐	☐
•	A current organization chart for the agency's contracting organization?	☐	☐
•	A current organization chart for the dispatch organization?	☐	☐
•	A map or the local area with prominent landmarks?	☐	☐
•	A map with zones of influence/exchange/initial attack areas?	☐	☐
•	A map with local airfield hazards/jettison areas?	☐	☐
•	A road map of local area?	☐	☐
•	A list of equipment and parts at the base?	☐	☐
•	Description of fuels and fire behavior common to the area?	☐	☐
•	Agency responsibilities (especially at interagency bases)?	☐	☐
•	Duties and responsibilities of airtanker base personnel (as they differ from those in the Interagency Guide)?	☐	☐
•	Local aircraft contract administration procedures?	☐	☐
•	Use of forms and reports (aside from those outlined in the IABOG)?	☐	☐
•	Local procedures for payment of landing fees and airport use costs?	☐	☐
•	Procedures for submission of payment documents?	☐	☐
•	Retardant contract administration procedures?	☐	☐
•	Retardant billing procedures?	☐	☐
•	Local airfield management (procedures/regulations)?	☐	☐
•	Use of night lighting equipment?	☐	☐
•	Base electrical system (normal and emergency)?	☐	☐
•	Base security plan?	☐	☐
•	Aircraft Operating Plans that base is approved for?	☐	☐
•	Use of mass flow metering system for safety and or payment?	☐	☐
•	Wash down / spill recovery and waste disposal procedures?	☐	☐

REMARKS:

Section D: Ramp Operations

Item #	Evaluation Item/Criteria	Yes	No	Remarks
D1	Location acceptable?	☐	☐	
D2	Ramp is capable of accommodating how many airtankers? (VLATs, Large Airtankers, and SEATs)			
	• In the pits:			
	• Load simultaneously:			
	• Parking:			
	• Space for unavailable aircraft:			
D3a	Is ramp surface in good condition?	☐	☐	
D3b	Are taxi lanes and ramp adequately marked and visible?	☐	☐	
D4	Are wind indicator(s) properly placed?	☐	☐	
D5	Are foreign object damage avoidance/dust control measures in place?	☐	☐	
D6	Are the following warning signs posted appropriately	☐	☐	
	No Smoking	☐	☐	
	Hazardous Areas	☐	☐	
	Authorized Parking Signs	☐	☐	
	Signing and marking for Ramp Security	☐	☐	
	Vehicle control signs designated to restricted areas	☐	☐	
D7	Is ramp fenced and can the ramp be secured?	☐	☐	
D8	Are aircraft-type fire extinguishers where appropriate?	☐	☐	
D9	Are extinguishers the proper type and have they been inspected?	☐	☐	
	Number			
	Type			
	Capacity			
	Condition			
	Dates of last inspection			
D10	Have appropriate airtanker base personnel received annual training in crash-rescue procedures and use of extinguishers?	☐	☐	
D11	Are there a sufficient/serviceable number of chock blocks for aircraft and are personnel aware of their proper use?	☐	☐	
		☐	☐	
D 12	Are there sufficient tie downs for light aircraft and SEATS, etc?	☐	☐	
D13	Is there a night lighting kit available for night maintenance, etc.?	☐	☐	
D14	Is there a first-aid kit readily available at the ramp?	☐	☐	
	Is the kit well maintained?	☐	☐	
D15	Are fueling procedures being followed?	☐	☐	
D16	Does the base simultaneously fuel/load authorized airtankers? If so is there a base specific plan in the local supplement?	☐	☐	

Section D: Ramp Operations, continued

Item #	Evaluation Item/Criteria	Yes	No	Remarks
D17	Are catwalks and ladders adequate to meet OSHA standards?	☐	☐	
D18	Are walkways on tanks painted with non-skid type paint?	☐	☐	
D19	Do pump shafts have guards?	☐	☐	
D20	Is all electrical equipment properly grounded?	☐	☐	
D21	Are eyewash and emergency shower facilities provided?	☐	☐	
D22	Is there adequate personal protective equipment and is its use known?	☐	☐	
D23	Does the base have Parking Tender-to aircraft communications? (push-to-talk headsets or other)?	☐	☐	
D24	Are the Parking Tenders knowledgeable of the hand signals for airtankers?	☐	☐	

Notes:

Section: E. Retardant Operations

Item #	Evaluation Item/Criteria	Yes	No	Remarks
E1	Contractor operated retardant base?	☐	☐	
	Government operated retardant base?	☐	☐	
E2	Is the retardant mixing and storage equipment owned by the retardant company?	☐	☐	
	Is the retardant mixing and storage equipment owned by the government?	☐	☐	
E3	What type(s) of retardant are used at this base?			
E4	How much storage capacity exists at the base?			
	Wet:			
	Dry:			
E5	Is there adequate covered storage area for retardant?	☐	☐	
E6	Is there an adequate supply of retardant available and are personnel aware of procedures for reorder?	☐	☐	
E7	Are retardant testing equipment and charts available and are personnel knowledgeable in their use?	☐	☐	
E8	Is mass flow meter in use and is it being used properly?	☐	☐	
	Last calibration date:	☐	☐	
E9	How many aircraft can be loaded simultaneously:	☐	☐	
	Is this loading capability adequate to the level of activity for the base's zone of influence?	☐	☐	
E10	Is there an adequate water supply?	☐	☐	
	Gallons available for immediate use:	☐	☐	
E11	Does the base have off-loading capability?	☐	☐	
E12	Does the base have adequate washdown capability and facilities?	☐	☐	
E13	Are retardant spills and washdown areas being drained properly?	☐	☐	
E14	Is pumping system (hoses, caps, lines, pumps) in working order?	☐	☐	
E15	Does the base "hot-load" airtankers?	☐	☐	
	If yes, have all personnel received the required training for that	☐	☐	
	operation and is there supporting documentation?	☐	☐	
E16	Are retardant samples being sent to Missoula, MT as required?	☐	☐	
E17	Is feedback on samples being received from Missoula, MT and are corrective actions being taken in a timely manner?	☐	☐	

Section F: Airtankers

Item #	Evaluation Item/Criteria	Yes	No	Remarks
F1	Frequency and tone list readily available to the pilot?	☐	☐	
F2	Is the airtanker contractor in contractual compliance with environmental concerns?	☐	☐	
F3	Are there any major or imminent component changes since arrival on base?	☐	☐	
F4	Is fuel load being reported to the base manager for weight and balance?	☐	☐	
F5	Has the retardant application in sensitive T&E species areas and waterways been reviewed?	☐	☐	

Notes:

Section G: Personnel

Complete the following information for *each individual assigned* to the base: Airtanker Base Manager, *Assistant Airtanker Base Manager,* Airtanker Base Technician, Ramp Manager, Mixmaster, Radio Operator, Aircraft Timekeeper, Retardant Loader(s), and Parking Tender. In evaluating personnel qualifications, knowledge and training, refer to Chapter 2 of the Interagency Airtanker Base Operations Guide.

Employee Name:

Current Position:

Past Experience

Position Held	Agency Unit	Period From/To	# Seasons

Fire, Aviation, and Airtanker Base Management Training Courses Attended.

Course	Year	Where Attended

Section G: Personnel, continued

Item #	Evaluation Item/Criteria	Yes	No	Remarks
	Does Individual meet training requirements for position filled? ☐	☐		

Knowledge of job duties and responsibilities (reference Chapter 2 of the Interagency Airtanker Base Operations Guide and review individual's knowledge and proficiency).

Comments

Section H: Safety and Security

Item #	Evaluation Item/Criteria	Yes	No	Remarks
H1	Are local, Regional and National Security Plans on file and current?	☐	☐	
H2	Are regular safety/security briefings being conducted and documented?	☐	☐	
H3	Are facilities safety inspections being conducted and documented?	☐	☐	
H4	Are background security checks being performed?	☐	☐	
H5	Is there an adequate security operations plan in place?	☐	☐	
H6	Are facilities security/surveillance systems in place?	☐	☐	
H7	Is the local airport authority included in the base security plan? Noted Security Deficiencies: 1. 2. 3.	☐	☐	
H8	Are required OSHA plans in place (Lock Out Tag Out, Hazardous Energy, Right to Know, Injury Illness Prevention Plan, SDS Station, Materials Identification, Confined Space, etc.)?	☐	☐	
H9	Are JHAs or Systems Safety up to date and on file?	☐	☐	
H10	Training documentation up to date? (First Aid, Fire Extinguisher, Forklift, Crash Rescue, etc.)	☐	☐	
H11	Flammable Materials Storage Lockers in place and in use?	☐	☐	

Section I: Summary

Identify the major deficiencies and corrective action to be taken below.

1. General Readiness of the Airtanker Base Facility

Recommendations and Follow Up

Due Date	Reference Evaluation Section	Recommendations	Completion Date

Section I: Summary, continued

Identify the major deficiencies and corrective action to be taken below.

2. General readiness of the Airtanker (Vendor) Personnel

Recommendations and Follow Up

Due Date	Reference Evaluation Section	Recommendations	Completion Date

Section I: Summary, continued

Identify the major deficiencies and corrective action to be taken below.

3. General readiness of the Airtanker Base; Agency; and if applicable, the Retardant Vendor Personnel

Recommendations and Follow Up

Due Date	Reference Evaluation Section	Recommendations	Completion Date

Section: J: Evaluators' Signatures

Evaluator Name	Signature	Agency	Date

Appendix F: Recommended Outline for a Local IABOG Supplement

The following is recommended as an outline for each base to develop its required Supplement.

CHAPTER 1 – INTRODUCTION

- A. Objectives
- B. Authority
- C. Revisions / Updates
- D. General Information
  1. State/Regional organization
  2. Airtanker Base location in State/Region
  3. Air tactical organization
  4. Fuels and fire behavior common to area
  5. Prominent landmarks in area
  6. Local area orientation flight
  7. Local Airfield Management

CHAPTER 2 – ORGANIZATION AND RESPONSIBILITIES

- A. Agency (or Interagency) responsibilities
- B. Airtanker Base personnel
  1. Organization chart
  2. Duties and responsibilities
  3. Plan for Expanding Complexity
- C. Training
  1. Local Training
  2. Training Documentation

CHAPTER 3 – ADMINISTRATIVE PROCEDURES

- A. Forms and reports
  a) Incident cost reporting
- B. Contract administration
  1. Aircraft contracting organization
  2. Retardant contract
     b) Responsibility and procedures
  3. Aircraft payment procedures
     a) Verification of flight times
     b) Schedule for submission of flight use reports
     c) Payment of subsistence
     d) Payment of landing fees and airport use costs
  4. Availability and standby requirements
     a) Pilot standby/availability hours
     b) Off-duty scheduling and means of contact
  5. Dispatch reaction time requirements
- C. Facilities
  1. Lease Agreements
  2. Maintenance scheduling
  3. Liquidated damages

CHAPTER 4 – BASE FACILITIES, OPERATIONS AND DISPATCH

A. Facilities
   1. Equipment at the base
      a) Parts and equipment storage
      b) Maintenance responsibility
      c) Ramp Vehicles, Forklift and Fueling
   2. Base/Ramp/Dispatch communications
   3. Lighting equipment
   4. Electrical system
   5. Flight crew accommodations and facilities
   6. Flight Crew Transportation
   7. Vehicle Parking Plan
   8. Reference library
   9. Local airfield management
      a) Regulations
      b) Procedures
   10. Inspections and evaluations

B. Operations
   1. General
   2. Environmental considerations
      a) Base operations
      b) Retardant dropping in sensitive areas
      c) Recall drop area for retardant disposal (jettison area map)
      d) Wash down, Spill and Waste Management Systems
   3. Retardant operations
      a) Types of retardant in use
      b) Retardant testing schedule and procedures
   4. Parking procedures (with map)
      a) Aircraft (Loading, Day Off, Maintenance, Fueling)
      b) Vehicles
   5. Preflight checks
      a) Safe engine operation (run-up procedure)
   6. Loading
      a) Pumping equipment (diagram)
      b) Maintenance responsibility and requirements
   7. Fueling
      a) Local vendor
      b) Procedures
      c) Equipment inspection
   8. Releasing the aircraft
      a) Local procedures
   9. Air tactical/ASM/leadplane organization and procedures
   10. Procedures for Specific Tactical Aircraft
      a) Airtankers
      b) SEAT Plan
      c) Helitanker Plan
      d) Smokejumper
      e) MAFFS Plan
   11. Fixed Wing Base Operations
      a) Crew Transport
      b) Overhead Transport
      c) Cargo
      d) IR

C. Dispatch procedures
   1. Briefing and orientation
      a) Geographic area and local dispatch organization
      b) Zones of influence/exchange areas
   2. Use of the Flight Resource Order: Tactical Fixed-Wing
      a) Local dispatch procedure from initial report to dispatch of aircraft
   3. Communications
      a) Local system
         i. Map showing base stations, repeaters, and VOR navigational aids
         ii. Airfield and base communications
         iii. Frequencies, call signs and identifiers
         iv. ATGS/ASM/leadplane communications and communication procedures
         v. Large fire communication plan
      b) Flight Following / Flight tracking and check-in requirements
   4. Dispatch priority
   5. Start-up and cut-off times
   6. Termination of drop activities

CHAPTER 5 – SAFETY

A. Airtanker Base Evaluations
   1. Elements and schedule
      a. Unit inspections
      b. Airport inspections
      c. Regional reviews
      d. Others (base specific)
B. Aerial hazard maps
   1. Responsibility and procedures for update
   2. Briefings on airport hazards
   3. Turbulence, wind and time of day limitations on flight activity
C. Temporary Flight Restrictions/Military Training Routes
   1. Local procedures
   2. Map
D. Crash-rescue planning and equipment
   1. Local Incident/Accident Action Plan
   2. Local crash-rescue equipment
      a) Fire extinguishers: inspection and location
      b) Local organization and responsibility
   3. Single engine/engine out procedures
   4. Emergency fields
E. Emergency Response Plan
      a) Fire
      b) Medical
      c) Evacuation Plan
      d) Other Emergencies
F. Hazard Communication Plan
      a) Hazard Identification
      b) Confined Space
      c) Job Hazard Analysis / Risk Assessment Worksheet
G. Hearing Conservation
H. Hazard, incident, and accident reporting
      a) Local procedures
      b) Routing

I. Proficiency flights
J. Dropping on or near congested areas
    1. Local Procedures
K. Landing with full or partial load
    1. Local contract specifications
    2. Runway and ramp wheel-loading capability
        a) Allowable takeoff performance chart
L. Base safety items
    1. Inventory
    2. Maintenance responsibility

CHAPTER 6 – SECURITY

A. Security planning per agency guidelines

Note: See Appendix K for pilot briefing outline.

Appendix G: OSHA and Hazardous Material Compliance Information

OSHA operates a Website on the Internet, which provides extensive information on workplace safety and compliance. The web address is www.osha.gov/index.html

The following is a listing of OSHA Regional Offices that service various parts of the country. In addition, there are area offices within each region. States marked with an (*) operate their own OSHA approved job safety and health programs (CT and NY plans cover public employees only). States with approved plans must have a standard that is identical to, or at least as effective as the federal standard. Addresses for state agencies can be found in the OSHA Website.

Region I
(CT*, MA, ME, NH, RI, VT*)
JFK Federal Building
Room E340
Boston, MA 02203
(617) 565-9860
(617) 565-9827 FAX

Region II
(NJ, NY*, PR*, VI*)
201 Varick Street
Room 670
New York, NY 10014
(212) 337-2378
(212) 337-2371 FAX

Region III
(DC, DE, MD*, PA, VA* WV)
US Dept. of Labor / OSHA
The Curtis Center, Suite 740W
170 S. Independence Mall Wes
Philadelphia, PA 19106-3309
(215) 861-4900
(215) 861-4904 FAX

Region IV
(AL,FL,GA,KY*,MS,NC*,SC*,TN*)
61 Forsyth Street, SW
Room 6T50
Atlanta, GA 30303
(404) 562-2300
(404) 562-2295 FAX

Region V
(IL, IN*, MI*, MN*, OH, WI)
230 South Dearborn Street
Room 3244
Chicago, IL 60604
(312) 353-2200
(312) 353-7774 FAX

Region VI
(AR, LA, MN*, OK, TX)
525 Griffin Street
Room 602
Dallas, TX 75202
(972) 850-4145
(972) 850-4149 FAX

Region VII
(IA*, KS, MO, NE)
Two Pershing Square
2300 Main Street
Suite 1010
Kansas City, MO 64108
(816) 283-8745
(816) 283-0547 FAX

Region VIII
(CO, MT, ND, SD, UT*, WY*)
1999 Broadway
Suite 1690
Denver, CO 80202
(720) 264-6550
(720) 264-6585 FAX

Region IX
(AZ*, CA*, HI*, NV*)
90 7th Street
Suite 18100
San Francisco, CA 94103
(415) 625-2547
(415) 625-2534 FAX

Region X
(AK*, ID, OR*, WA*)
1111 Third Avenue
Suite 715
Seattle, WA 98101-3212
(206) 553-5930
(206) 553-6499 FAX

The following information provides some of Title 29, Code of Federal Regulations that may pertain to OSHA compliance at airtanker bases. State agencies may have jurisdiction over regulating workplace safety standards. ***The information provided is not a complete listing of all regulations.*** Consult your agency technical specialist or the regulating agency for assistance.

Accident Prevention and Signing	29 CFR 1910.145
Blood Borne Pathogens	29 CFR 1910.1030
Cabinet, flammable and Combustible Liquid Storage	29 CFR 1910.106 (d) (3)
Cleaning Compounds and Degreasers	29 CFR 1910.252 (c) (11) (i) (ii)
Clothing, Protective	29 CFR 1910.252 (b) (3), .132
Compressed Gas Cylinders	29 CFR 1910.253 (b)
Confined Spaces	29 CFR 1910.146, 252 (b) (4)
Ventilation	29 CFR 1910.94
Exits	29 CFR 1910.37
Portable Fire Extinguishers	29 CFR 1910.157
Fuel Handling and Storage	29 CFR 1910.178(f)
Emergency Actions Plans	29 CFR 1910.38
Machinery and Machine Guarding	29 CFR 1910.211, .212(a)
Guardrails	29 CFR 1910.22(c)
Handrails	29 CFR 1910.24(h)
Head Protection	29 CFR 1910.135
Hazard Communication, the Right to Know Law	29 CFR 1910.1200
Hazardous Waste Operations	29 CFR 1910.120
Hearing Conservation	29 CFR 1910.95(c)
Lockout/Tagout	29 CFR 1910.147
Material Safety Data Sheets	29 CFR 1910.1200(g)
Mechanical Handling Equipment	29 CFR 1910.176(a)
Medical Services and First Aid	29 CFR 1910.151
Occupational Noise Exposure	29 CFR 1910.95
Personal Protective Equipment	29 CFR 1910.Subpart I
Pits	29 CFR 1910.23(a) (5)
Powered Hand Tools, Standards and Sources	29 CFR 1910.Subpart P
Respiratory Protection	29 CFR 1910.134
Spill Containment	29 CFR 1910.106(d) (6) (iii)
Tanks, Storage	29 CFR 1910.106(b) (2)
Training, Personnel	29 CFR 1910.120 Appendix D
Trucks, Forklifts	29 CFR 1910.178
Ventilation for Welding, Cutting, or Brazing	29 CFR 1910.252(b) (4) (ii)
Walking and Working Surfaces	29 CFR 1910 Subpart D

A. **Procurement Source Information (Disclaimer)**

The following information is provided to assist with procuring equipment, supplies, and training materials to meet compliance with OSHA Regulations. ***The sources listed are not endorsements or recommendations of vendor products and services, but are offered as information only.***

When procuring any equipment and supplies, always check with the vendor and see if there are discounts for government agency purchases. Consolidations of orders within an administrative unit can result in savings when purchasing quantities. There are many companies that supply safety products through the GSA Federal Supply Schedule or Defense Supply Logistics Agency. Consult your agency purchasing personnel for assistance. Additional sources for procurement can also be accessed through the Internet.

Lab Safety Supply
P O Box 1368
Janesville, WI 53547-1368
Catalog Request.....1-800-356-0783
Technical Support.....1-800-356-2501
Safety Information by FAX.....1-800-543-9910
Internet Website .....http://www.labsafety.com/

J. J. Keller & Associates
3003 W. Breezewood Lane
P O Box 368 (Ordering)
Neenah, WI 54957-0368
Catalog Request and Product Ordering.....1-877-564-2333
FAX.....1-800-727-7516
Internet Website .....http://www.jjkeller.com

Ideal Environmental Products and Services
P O Box 307
Gilroy, CA 95021
Catalog Request and Product Ordering.....1-800-844-6998
FAX.....1-408-848-2579
Internet Website .....http://www.Chem-stor.com

Conney Safety Products
3202 Latham Drive
P O Box 44190
Madison, WI 53744-4190
Catalog Request and Product Ordering.....1-888-356-9100
FAX.....1-800-845-9095
Internet Website .....http://www.conney.com

Appendix I: Daily Aviation, Tactical and Safety Briefings

A. General

Aviation resources are often an integral part of fire suppression tactics and long-term strategies. In many cases, Airtanker Base personnel are seldom included in daily briefings due to being geographically removed from the ICP. We must ***ensure that aviation safety briefings are conducted prior to any aviation mission either by a person responsible for the mission or, in situations where the pilot may be the only official present, as part of the normal preflight activities, such as dispatch, weather, and flight plan briefings.*** It becomes the Airtanker Base Managers responsibility to provide information regarding tactics, planned use, and above all, a comprehensive safety briefing prior to work on a daily basis. Equally important is a daily debriefing to identify any safety concerns that may have developed through the operational period and to review what is and is not working operationally.

Military adherence to pre-and post-operations briefings has proven to be highly effective and we have adopted their example in this regard to strengthen our own operations. This has also been identified as a National Safety Council recommendation.

During ongoing fire support, all Airtanker Base Managers, Air Support Supervisors, Air Tactical Group Supervisors or Airtanker Coordinators identified as a part to a fire operation should provide the following:

1. A printed copy of Daily Incident Action Plans (IAP)

2. A pre-mission safety and operations briefing

3. A post-mission safety and operations debriefing

The person responsible for conducting these briefings and debriefings shall be clearly identified by position and relationship to the operation, assigned to the task, and held accountable for its completion as well as for insuring that aviation risk assessments are completed prior to conducting airtanker missions. Possible persons to be assigned this task are the Forest Aviation Officer (FAO), Airtanker Base Manager, Airtanker Base Assistant, Air Support Group Supervisor, Air Tactical Group Supervisors, Airtanker Coordinators or Air Operations Branch Director.

Personnel who are informed on tactics and strategies and supported by sound risk management decisions as well as having received timely safety reminders will add to the overall safety and effectiveness of an operation. We look to positive leadership roles to assure the briefings/debriefings and risk assessments are accomplished in a professional, effective manner.

Remember: Any briefing or training must be documented or "it never happened". Documentation should include the facilitator's name; attendees PRINTED and SIGNED name, date and topics discussed.

B. Formats:

Exhibit I-1: Daily Risk Assessment

Exhibit I-2: Daily Incident Airtanker Base Operation Briefing Checklist

Exhibit I-3: Daily Operational Airtanker Base Checklist

Exhibit I-4: Tactical Debriefing Form, Aerial Crews, Fixed and Rotor Wing

Exhibit I-5: Fixed-Wing Base Briefing Board

Exhibit I-1: Daily Risk Assessment

Daily Risk Assessment

Completed by Base Management in Conjunction with Flight Crews
Points (Risk Level)

Risk	1 (Low)	2 (Medium)	3 (High)
Fire Weather	No adverse forecast, Haines Index 4 or below.	Forecast T-Storms or Red Flag conditions, Haines Index 4-5	Active T-Storms in area, Haines Index 6, Red Flag in effect
Winds @ Base	<15 Knots	15-25 Knots	>25 Knots
Winds@Fire[1]	<15 Knots	15-25 Knots	>25 Knots
Gust Spread	0-5 Knots	5-10 Knots	10-15 Knots
Crosswinds	<10 Knots	10-15 Knots	>15 Knots
Visibility	>3 Miles	2-3 Miles	<2 Miles
Temperature (F)	<90°	90° - 100°	>100°
Density Altitude	<5000'	5000'-8000'	>8000'
T/O Distance[2]	<50%	50% - 80%	>80% [3]
Fatigue[4]	<15 Hours	15-25 Hours	>25 Hours

1 - If fire winds not available, use nearest airport / reporting station / launch base information
2 - T/O distance measured as a percentage of available runways
3 - Consider Aircraft Download
4 - Measured in hours of flight time over previous 5 days

Total Points	Risk Level	Action
10-16	**(Low)**	Pilot review of areas > 1 prior to flight.
16-23	**(Medium)**	Review conditions with a/c or airbase manager prior to dispatch.
>23	**(High)**	Notify local aviation manager or duty officer of conditions and potential delayed response until aerial supervision or on scene resources report on conditions or conditions improve.

Conditions must be monitored throughout the day
Wind limits:

- **SEAT 30 knots 15 knot gust spread**
- **Heavy Tanker generally ineffective in winds over 20-25 knots**
- **Type 3 helicopters 30 knots 15 knot gust spread**
- **Type 2 and 1 helicopters 40 knots 15 knot gust spread**

Exhibit I-2: Daily Incident Airtanker Base Operation Briefing Checklist

		Adequate Parking for Loading/ Overflow / Fixed and Rotor Wing
		Adequate Fuel and Oil / FBO Support
		Briefing Area Established / Briefing Information Collected
		Adequate Rest and Sanitation Facilities
		Adequate Logistic Support / Dispatch / Food / Transportation / Lodging
		Airbase Positions Briefed
		Check Security Facilities / Retardant Plant / Personnel
		Review of Incident Action Plan / Initial Attack Procedures
		Weather / Current / Expected
		Personnel Assignments / ATBM / MXMS / RAMP etc.
		Personal Protective Equipment Reviewed
		All Personnel Trained for Hot Loading if Applicable
		Communications Frequencies / Airport / Ramp / Incident
		Procedures Specific to the Base / Airport / Fueling / etc.
		Security Procedures
		Fire, Medical , Evacuation and Emergency Procedures
		Flight Following Procedures
		Airtanker Rotation
		Other Aircraft Assignments / Lead / SMJ / ATGS / Days Off
		Dispatch Procedures
		Communications Procedures / Air / Ramp
		Aerial Hazards
		Allowable Takeoff Charts Being Reviewed During Hot Days
		Weight and Balance and Airtanker Capacities Reviewed
		Airspace Restrictions / MOA’s / TFR’s / MTR’s
		Sensitive Areas / Wilderness / Wildlife / etc.
		Crew Comfort Items / Housekeeping
		Effectiveness of Air and Base Operations
		Ensure Feedback from AOBD / ATGS / ATCO / RAMP / MXMS / Pilots etc.
		Previous Days Operational Concerns
		Next Briefing
		Debriefing

Exhibit I-2: Daily Incident Airtanker Base Operation Briefing Checklist, continued

Daily Incident Airtanker Base Operation Briefing Checklist

Date and Time	Briefing Topics	
Personnel Conducting Briefing Name	Signature	Title

Personnel in Attendance	Signature	Title

Exhibit I-3: Daily Operational Airtanker Base Checklist

A. Site

☐	Adequate parking and projected numbers and types of airtankers
☐	Recommended wing tip to wing tip separation of type 1, 2, and 3 airtankers maintained
☐	Adequate parking for current and projected air attack and lead aircraft provided

B. Facilities

☐	Briefing area established, incident action plans, aircraft assignments, rotation, NOTAMS, TFR's and frequencies posted
☐	Rest and sanitation facilities are adequate for personnel assigned
☐	Adequate logistical support provided for personnel assigned to airbase (Food, transportation, and lodging)

C. Operations

☐	Previous day's safety problems discussed with assigned personnel and pilots and resolved
☐	Briefing held for all personnel
☐	All airbase positions have been assigned to qualified personnel
☐	Ramp procedures discussed and known
☐	Pilots are checking allowable takeoff performance charts in the heat of the day
☐	Personal protective equipment is being used by pilots and airbase personnel
☐	All personnel have received the required training for hot-loading
☐	Communication, flight paths, and airport procedures have been reviewed and are in place
☐	Military training routes, special use airspace considerations have been discussed with pilots
☐	Airbase capacity and operations limits are provided to appropriate dispatch facilities and Air Operations Directors on incidents
☐	Load calculation for each aircraft known and posted and airtankers are loaded accordingly

D. Fueling

☐	FBO can support fuel, oil, and other special requirements for projected number and types of aircraft
☐	Fueling areas and procedures are reviewed and identified

E. Administration

☐	End of Shift debriefing procedures established, including pilots, and made aware of requirement for constructive feedback and critique
☐	Provision made for debriefing of pilots and airbase personnel going off-shift early

Exhibit I-4: Tactical Debriefing Form, Aerial Crews, Fixed and Rotor Wing

Date	Pilots Name
Fire Name	Location
P#	

GENERAL INFORMATION

Number of Tactical Aircraft on Fire:
Altitudes
Fire Weather
Risks Involved

QUESTIONS	YES	NO
Was correct dispatch information given? If no, please explain in "comments"	☐	☐
Were you able to check weather?	☐	☐
Any delays launching aircraft?	☐	☐
Were you given a proper briefing? Hazards, altitudes and coverage levels?	☐	☐
Was there proper aircraft separation?	☐	☐
Was the fire operation organized?	☐	☐
Was safety implemented?	☐	☐
Were procedures followed?	☐	☐
Was activity effective?	☐	☐

COMMENTS

GENERAL INFORMATION CONTINUED

Date	
Fire Name	Fire Number
Pilot in Command	

Exhibit I-4, Tactical Debriefing Form, Aerial Crews, Fixed and Rotor Wing, continued

General Ground Conditions*

o Aircraft
o Altitudes
o Risks Involved
o Crew
o Fire Weather
o Ongoing Assessment

Was correct dispatch Information received?	**Yes**	**No**
Frequencies	☐	☐
Location	☐	☐
Contacts	☐	☐
Other	☐	☐
Other	☐	☐

If not, what information was missing?

Activity Highlights	**Yes**	**No**
Was the fire organized?	☐	☐
Was safety implemented?	☐	☐
Were procedures followed?	☐	☐
Was activity effective?	☐	☐

How did it go?

Optional Questionnaire

Exhibit I- 5: Fixed-Wing Base Briefing Board

Date	Base Manager	A/C Timekeeper	Ramp Manager	Mix Master

Frequencies	Base	Ramp	Airport Unicom	Local Dispatch

Incident Frequencies	I A/A A/G	2 A/A A/G	3 A/A A/G	4 A/A A/G
Incident Info: Location Flight Pattern Altitude	1	2	3	4

Airport/Local Flight Procedures/Safety Notes:

Aircraft	Time	D/O	Assignment

Safety Briefing:

Appendix J: Portable Bases

A. General

The current National Long-Term Fire Retardant Requirements Contract contains the Basic Ordering Agreements (BOAs) for the portable base operations offered by the retardant manufacturers. If there is a need for a portable retardant operation, these BOAs should be utilized. Mobile/portable retardant mixing bases (fixed-wing or helicopter) should be ordered directly from the companies by the local user agency. If required, the BOA under the National Retardant Supply Contract provision shall be utilized. When ordering a portable base, order the appropriate retardant base and type of retardant product by considering factors such as type of product generally used in the area and whether need is for fixed-wing or helicopters. Questions regarding the qualified and approved retardant types may be directed to the Missoula Technology Development Center (406) 329-3900.

An agency Plant Manager/Mix Master should be assigned to each portable operation. Agency Plant Managers/Mix Masters are responsible for contract administration functions such as:

1. Ensuring LA/QA (Lot Acceptance and Quality Assurance) functions are performed according to NWCG Publication PMS 444-1, Lot Acceptance, Quality Assurance, and Field Quality Control for Fire Retardant Chemicals (NFES 1245)

2. Verifying receipt of retardant quantities and maintaining agency records.

3. Communicating any safety and environmental concerns with the contractor that includes compliance with OSHA and EPA regulations.

Remember: It is the responsibility of the state or agency representative serving as a contract representative on a portable base, whether contractor or agency operated, to insure that OSHA and agency or state health and safety regulations are being complied with and that applicable EPA regulations are followed.

Since the equipment needs of the Government and availability of Contractor's equipment during the emergency cannot be determined in advance, it is mutually agreed that, upon request by the Government, the Contractor will furnish the equipment listed in the requirements contract to the extent the Contractor is willing and able at the time of the order. At the time of the dispatch, a resource order number will be assigned. The contractor must furnish this number upon arrival and check in at the incident. When such equipment is furnished to the Government, the clauses to manage the BOA, are within the requirements of the contract.

Appendix K: Pilot Briefing and Orientation

This is an outline for the Local Base Supplement that discussed the areas of operation and safety. The outline should be briefed to all Flight Crews upon their arrival at the beginning of the season. A package should also be put together to hand to the flight crews. This information may include:

Noise abatement procedures as they pertain to each particular base

Contact frequency maps, charts and lists for all local cooperators

Agency and response area maps

1. If Class B, current Class B Chart, NOAA
2. If military co-located, local procedures, discuss with local military units
3. Local Communications
   a) Local communications system base and repeaters

   b) Frequencies, call signs, and identifiers

   c) Aerial communications and communication procedures

   d) Incident communication plan

   e) Airfield and airtanker base communications

2. Dispatching Procedures
   a) Use of the incident information – Tactical Fixed-Wing Form (ATB3)

      i. Verification of flight times

      ii. Schedule for submission of flight use reports

   b) Prominent local landmarks

   c) Local radio navigational aids

   d) Local dispatch organizations and locations

   e) Geographic area dispatch organization and procedures

   f) Local dispatch procedures from initial report to dispatch of aircraft

   g) Flight following, check-in requirements

   h) Zones of influence and/or exchange areas

   i) Fuels and fire behavior common to the area

3. Contract Administration
    a) Payment procedures
    b) Contract administration procedures
    c) Contract administration Organization (CO, COTR, COR, PI)
    d) Pilot standby and availability hours, off-duty scheduling and means of contact
    e) Dispatch times, unavailability for failure to meet requirements
    f) Maintenance scheduling
    g) Meal policy
4. Base Operations
    a) Type of retardant in use
    b) Loading/pumping equipment capabilities
    c) Aircraft parking locations and procedures
    d) Local hazards with accompanying maps
    e) Military Training Routes and operations areas
    f) Airport hazards: ramps, runway, approach, and departure
    g) Pilot duty day and flight time limitations
    h) Safe engine operations (run-up procedures)
    i) Proficiency flights
    j) Weather, time of day limitations for flight activities, or military operations (if collocated)
    k) Flight plans, including check-in requirements
    l) Crash-Rescue Plan
        i. Engine out procedures
        ii. Emergency field and crash rescue equipment
    m) ASM/leadplane procedures and other operations
    n) Any other item that is specific to the base and its operations

Appendix L: Position Task Books

The position task books located in www.nwcg.gov/pms/taskbook-agency/index.htm are to be completed to demonstrate successful position performance on wildland fires, events, incidents, job activities and in simulated exercises' or classroom activities. The task books are to be used by agencies that have adopted the Interagency Airtanker Base Operations Guide as policy and have no other agency required task book for the position.

The task books should be administered following the process for a performance based qualification system as described in the Wildland Fire Qualification System Guide, PMS 310-1 located at http://www.nwcg.gov/pms/docs/docs.htm

Appendix M: Minimum Acceptable Staffing Levels to Safely Meet Initial Attack Operational Requirements

Staffing Configuration	Total ATB Personnel	Number of Airtankers	Results of Staffing Configurations
ATBM*	1	0	ATBM must function in multiple capacities
ATBM* + 1 RAMP	2	0	ATBM and RAMP must function in multiple capacities
ATBM* + 1 RAMP + 1 FWPT	3	1	Operational safety is not met(Requires ATBM in multiple positions) *However, could do this configuration if it was for 1 airtanker sustained operation
ATBM* + 1 RAMP + 2 FWPT	4	2	Operational safety is not met(Requires ATBM in multiple positions) *However, could do this configuration if it was for 2 airtanker sustained operation
ATBM + ATIM/ABRO + 1 RAMP + 1 FWPT	4	1	Does not meet the minimum IA Safety Complexity (2 Airtankers on run card) *However this configuration could support 1 airtanker in sustained operations
ATBM + ATIM/ABRO + 1 RAMP + 2 FWPT* assumes ATBM=ATBM + ATIM + ABRO	**5**	**2**	**Most Efficient Level (MEL) IA /daily staffing for airtanker base meets minimum requirements to safely operate**

References

Aircraft Rescue and Fire Fighting, 3rd Edition, International Fire Service Training Association, Oklahoma State University, 1992, ISBN No. 0-87939-099-9.

Aircraft Use Report, OAS-23E DOI-OAS.

Interagency Airtanker Base Planning Guide. USDA Forest Service, San Dimas Technology and Development Center, 444 E. Bomita Ave. San Dimas CA 91773
http://fsweb.wo.fs.fed.us/eng/atb/index.htm

SAFECOM, FS-5700-14, AMD-34. 205. https://www.safecom.gov/

Cumulative Aircraft Use/Payment Summary, FS-6300-49 (3/94). US Forest Service.

Initial Report of Aircraft Mishap, AMD-77 (5-93). DOI OAS, 300 East Mallard Drive, Suite 200 Boise, ID 83706-3991.

Interagency Airtanker Base Directory. National Interagency Fire Center, ATTN: Supply, 3833 S. Development Avenue, Boise, ID 83705. Order NFES #2537 (hardcopy only) annually updated.

Interagency Airspace Coordination Guide. Interagency Airspace Committee. DOI AMD. 300 E. Mallard Drive, Suite 200 Boise, ID 83706-3991

National Interagency Mobilization Guide, National Interagency Fire Center, National Incident Coordination Center. Revised annually. National Interagency Fire Center, ATTN: Supply, 3833 S. Development Avenue, Boise, ID 83705. Order NFES #2092

National Long Term Fire Retardant Requirements Contract. US Forest Service, National Contracting Office, 3833 S. Development Avenue, Boise, ID 83705. Revised annually.
http://www.fs.fed.us/fire/contracting/

US Forest Service Manual 5700. US Forest Service, National Aviation Operations, NIFC, 3833 S. Development Avenue, Boise, ID 83705

Interagency Aviation Mishap Response Guide and Checklist. 2011. NFES-2659

Websites

Aerial Delivery Systems (Drop guides and Retardant info.): www.fs.fed.us/rm/fire/delivery/index.htm

Aircraft Airworthiness Directives notes www.atp.com/ad

Aircraft contracts http://www.fs.fed.us/fire/contracting/

Aircraft database www.landings.com

Arts Aviation Website http://av8.home.comcast.net/~av8/

Associated Airtanker Pilots www.airtanker.com

Automated Flight Following www.aff.gov

Aviation Business Systems www.fs.fed.us/business/abs/

Aviation news www.aviationnow.com

Aviation Safety Homepage www.fs.fed.us/fire/av_safety/index.html

Aviation web news www.avweb.com

Aircraft database www.aviation.fs.fed.us/carding/index.asp

BLM Aviation www.aviation.blm.gov

Federal Aviation Administration www.faa.gov

Forest Service Fire & Aviation www.fs.fed.us/fire/aviation

ICL Performance Products www.astaris.com/

Interagency Airspace Coordination (AP/1B) www.fs.fed.us/r6/fire/aviation/airspace

Interagency Aviation Training https://www.iat.gov/

Multiple fire links www.wildlandfire.com

National Interagency Fire Center www.nifc.gov/

National Transportation Safety Board www.ntsb.gov

Neptune Aviation www.neptuneaviation.com

NOAA Weather www.noaa.gov

Office of Aviation Services http://www.doi.gov//aviation/index.cfm

OSHA Website www.osha.gov

Retardant Information www.fs.fed.us/rm/fire/wildlandchemicals

SAFECOM www.safecom.gov/

SEAT contracts, source lists http://amd.nbc.gov/apmd/cwn/cwn.htm

Temporary Flight Restrictions (try the map you will like it):

http://airspace.nifc.gov/mapping/nifc/index.cfm

Weather Channel www.weather.com