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Interagency Smokejumper Operations Guide



Revised February 2017

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Interagency Smokejumper Operations Guide Revised February 2017



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Approvals

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03/09/2017

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Date

Revision Summary

This list summarizes the latest revisions made to the Interagency Section of the ISMOG. It does not include formatting changes; minor edits such capitalization, punctuation, and/or spelling corrections; or rewording for clarity that does not change meaning or intent.

Section	Description of Change/Revision
Cover	Cover redesigned and updated for 2017.
Title Page	Added title page.
Approvals	Updated names/titles of approving officials.
Revision Summary	Revision Summary added to list revisions made to the Interagency Smokejumper Operations Guide since the reformatted version created in February 2016.
1.1	Objectives updated.
1.2	Explanation of different sections of ISMOG added.
1.4	Interoperability section added, including agency-specific needs and equipment development, and change process for Interagency ISMOG.
1.6	Updated title of FS approving official to match approval page.
2.1.3	Base Review Schedule updated.
3.0	Interagency Training and Qualification Standards section updated.
4.0	Interagency Equipment Standards section updated.
Spotter Training	Spotter Training significantly modified. Previous Sections 5.1.1 and 5.1.2 combined and updated based on 2012 Proposed Mixed-Load Spotter Training and Currency Requirements, and then moved to 3.1 under Interagency Training and Qualifications.
Interagency Equipment	Accessories and Parachute Rigging sections moved from Interagency Operations to Interagency Equipment.
Smokejumper Incident Reporting	Smokejumper Incident Reporting moved from Interagency Operations to Administration.

Section	Description of Change/Revision
Emergency Procedures	<p>Emergency Procedures moved from Interagency Operations to a new section 6.0 Interagency Emergency Procedures.</p> <p>Added reference to agency-specific training manuals/guides at the beginning of the Interagency Emergency Procedures section.</p> <p>Moved Jump Injury Procedures from Interagency Operations to Interagency Emergency Procedures.</p> <p>Added Cargo-in-Tow section.</p> <p>Added “Bailout, Bailout, Bailout” callout language to Critical Emergency Exit in 6.2.</p>
Appendices	<p>Removed previous Appendix 6.2 “Training Syllabus for BLM Spotters on FS Round Canopy” from document. It is more pertinent for inclusion in training manuals/guides.</p> <p>Created new Appendix 7.2: Interagency Smokejumper Interoperability.</p> <p>Created new Appendix 7.3: Interagency Ram-Air Equipment Checklists.</p>
References	<p>Added list of references cited.</p>
Glossary	<p>Added a glossary of terms.</p>
Misc.	<p>Changed “round” parachute terminology to “FS-14” throughout.</p>

1.0 Introduction

1.1 Objectives

Guidance in the Interagency Smokejumper Operations Guide (ISMOG) is based on the following objectives:

1. Ensure safe and efficient interagency smokejumper operations.
2. Provide seamless interagency smokejumper support to fire management customers.

1.2 Scope

The ISMOG consists of three different sections: (1) a section specific to the BLM, (2) a section specific to the Forest Service, and (3) a section that applies to both agencies.

The standards and procedures established in the “Interagency Section” (this section) of the ISMOG apply to smokejumper operations conducted by both the USDA Forest Service (FS) and the USDI Bureau of Land Management (BLM).

1.3 Authority

In addition to the authorities outlined in each agency’s section of the ISMOG, the following agreements provide guidance for this document:

1. Interagency agreement among the U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Bureau of Land Management; U.S. Department of Labor, Occupational Safety and Health Administration for the Joint Operations of Smokejumper Parachute Delivery Systems (2016).
2. Memorandum of Understanding between the U.S. Department of Interior and U.S. Department of Agriculture (January 28, 1943).
3. Interagency Agreement between the U.S. Department of Interior, Bureau of Land Management and U.S. Department of Agriculture, Forest Service for the Joint Operation of Smokejumper Resources (April 12, 1985).

1.4 Interoperability

The interagency smokejumper program strives to maintain a high standard of operational support to fire management through the concept of total mobility and the seamless exchange of personnel regardless of agency or home base. To achieve this goal, the Forest Service and BLM shall work in a collaborative manner to ensure

operating procedures and equipment are **at least** compatible for smokejumpers to operate with interagency mixed loads.

The agreed-upon level of interoperability will be identified in the attached operating plan (see ISMOG, Appendix 7.2, Table 7.2.2). Changes or amendments to the operating plan will be agreed upon by the Interagency Base Managers and ratified by the Chief, Preparedness and Suppression Standards (BLM); AFS Fire Operations Branch Chief (BLM); and Assistant Director, Aviation Management (FS).

1.4.1 Agency-Specific Needs and Equipment Development

While recognizing that agency-specific needs may preclude standardization of all procedures and equipment, the interoperability of the two agencies' smokejumper programs shall be maintained. To ensure safe and efficient smokejumper operations, both agencies agree to work in a collaborative manner to ensure operating procedures and equipment remain compatible for interagency smokejumper operations. This is accomplished by adhering to the following:

1. The BLM will provide a copy of MODOC proposals to the FS National Smokejumper Program Manager. MODOC proposals will be sent upon the BLM Base Managers' initial approval to proceed to the MODOC Review Board. The FS National Smokejumper Program Manager will provide BLM Base Managers comment on any interagency impacts within seven days.
2. The FS will provide a copy of equipment or procedural change proposals to BLM Base Managers during or immediately after FS Smokejumper Base Managers Council (SBMC) review, but prior to smokejumper functional area tasking. Proposals that reach testing or implementation phases will be provided to the BLM for comment on the risk analysis. BLM Base Managers will provide comment on any interagency impacts within seven days.

1.4.2 Change Process for Interagency ISMOG

Agency proposals to revise or modify contents of the ISMOG will be shared with the respective agency by November 1 each year. The Interagency Base Managers group shall review the proposal(s) by December 15 with adoption of proposals contingent on both agencies' agreement.

Annually, Interagency Base Managers shall review the past season's significant events, and affirm or re-assess the status of interoperable procedures and equipment. Affirmation or change in status will be annotated in the meeting's minutes and Appendix 7.2.

1.5 Key to Acronyms

The following table explains acronyms used in the ISMOG.

Table 1.5: Acronyms Used in ISMOG

Acronym	Definition
AAD	Automatic Activation Device
AFS	Alaska Fire Service
AGL	Above Ground Level
BLM	USDI Bureau of Land Management
BLMS	BLM Section of the ISMOG
FS	USDA Forest Service
FSS	FS Section of the ISMOG
IRPG	Incident Response Pocket Guide
ISMOG	Interagency Smokejumper Operations Guide
MARS	Malfunction Abnormality Reporting System
MODOC	Smokejumper Modification Document System (BLM)
MTDC	Missoula Technology and Development Center
RATG	FS Ram-Air Parachute Training Guide
RATM	BLM Ram-Air Parachute Training Manual
RSL	Reserve Static Line
SAFECOM	Aviation Safety Communique
SASES	Smokejumper Aircraft Screening and Evaluation Subcommittee
SBMC	Smokejumper Base Managers Council (FS)

1.6 Review and Revision

The standards and procedures outlined in the Interagency Section of the ISMOG will be reviewed annually at the Interagency Smokejumper Base Managers Meeting.

Recommendations from this meeting for updating, amending, and making additions to this section of the ISMOG shall be forwarded to the following officials for approval: FS – Deputy Chief for State & Private Forestry, Washington Office, and BLM – Director of Fire and Aviation, National Office.

2.0 Administration

2.1 Smokejumper Base Reviews

Annually a minimum of two smokejumper bases shall receive a thorough review. Each smokejumper base shall be reviewed at least once every five years. The focus of the review is to ensure that smokejumper operations are being conducted safely and efficiently and in accordance with national and interagency standards. Organizational structure, operational procedures, equipment, training, facilities and record keeping systems shall be reviewed and assessed. Examples of checklists that may be used to accomplish base reviews are the Smokejumper Base Review Checklist (see ISMOG, FSS, 3.1.5) and BLM Preparedness Review Checklist.

2.1.1 Coordination

1. FS base reviews will be coordinated by the FS National Smokejumper Program Manager.
2. BLM base reviews will be coordinated by the BLM National Office.

2.1.2 Team Composition

Base review teams shall include the following:

1. The FS National Smokejumper Program Manager.
2. The designated BLM National Office official.
3. A Line Officer from the agency of the base being reviewed.
4. A Missoula Technology and Development Center (MTDC) Smokejumper Equipment Specialist.
5. A Smokejumper Base Manager from outside the administrative region of the base being reviewed.

The review team leader should strongly consider augmenting the review team with an additional Smokejumper Base Manager, preferably from an agency different from that of the other Base Manager previously assigned, and a local Fire Management Officer who is a customer of the base being reviewed.

2.1.3 Base Review Schedule

Quality assurance reviews by the Washington Office on FS bases will occur annually.

Table 2.1.3: Base Review Schedule

Base	Agency/ Region	Last Review	Next Scheduled Review	5-Yr Review Required By
Alaska	BLM	2016	2020	2021
Boise	BLM	2015	2019	2020
Grangeville	FS – Region 1	2013	2017	2018
McCall	FS – Region 4	2015	2018	2020
Missoula	FS – Region 1	2014	2018	2019
North Cascades	FS – Region 6	2016	2020	2021
Redding	FS – Region 5	2014	2017	2019
Redmond	FS – Region 6	2016	2019	2021
West Yellowstone	FS – Region 1	2016	2019	2021

2.2 Smokejumper Incident Reporting

Each smokejumper base shall report smokejumper accidents, incidents, and injuries according to their agency’s policies. Smokejumper operations are conducted in an intense, high-risk environment requiring attention to detail, standards, and accident/incident prevention.

Base Managers shall utilize the Mission Incident Worksheet to notify other smokejumper bases when an incident occurs that involves an immediate risk to other bases. If a MARS and/or SAFECOM is submitted, this should be noted on the Mission Incident Worksheet. Circumstances of incidents or hazardous conditions which could be repeated should be promptly shared with other bases to prevent others from suffering the same or similar misfortunes.

3.0 Interagency Training and Qualification Standards

For interagency training and qualification standards, refer to the BLM Ram-Air Parachute Training Manual (RATM), FS Ram-Air Parachute Training Guide (RATG), and/or the FS National Smokejumper Training Guide (for the FS-14 parachute).

Each agency shall accept the other agency's training and qualification standards on the condition that they do not impede compatible operations.

3.1 Mixed-Load Spotter Training

1. Spotters from both agencies will maintain proficiency to allow them to spot smokejumpers using the FS-14 and ram-air parachute systems.
2. The FS will provide FS-14 spotter training to BLM bases annually. All spotters will be trained in ram-air operations annually by a qualified ram-air check spotter. Check spotter(s) will train and certify spotters in FS-14 or ram-air spotting procedures as appropriate, including static line monitoring, mock-up, and gear familiarization. Training will follow the appropriate syllabus.
3. For a spotter to be initially qualified as a mixed-load spotter, he/she shall successfully spot a minimum of a two-person stick of FS-14 or ram-air smokejumpers, as appropriate. This will be under the supervision of a current check spotter for that parachute system. "Successful" spotting will be determined by the check spotter who will ensure that all spotting procedures are followed. This may be accomplished on training or fire missions.
4. There will be a two-year currency period. If a spotter goes a full season without spotting FS-14 or ram-air smokejumpers, that spotter will again be required to "requalify" by spotting FS-14 or ram-air smokejumpers under the supervision of a check spotter for that parachute system. Currency may be regained by demonstrating proficiency during a ground mock-up under the supervision of a current check spotter for that parachute system.
5. Assistant spotters shall also be trained annually in mixed-load procedures; this training may be provided by their home agency. Training will include static line monitoring, gear familiarization, and mock-ups.

4.0 Interagency Equipment Standards

For interagency equipment standards, refer to equipment standards in the Interagency Smokejumper Operations Guide (ISMOG, FSS) and/or the BLM Smokejumper Equipment List.

Each agency shall accept the other agency's equipment standards on the condition that they do not impede compatible operations.

4.1 Accessories

MTDC will maintain drawings and specifications for smokejumper aircraft accessories.

4.2 Parachute Rigging

Parachute rigging shall be conducted in accordance with each agency's policies, manuals, and guides.

5.0 Interagency Operating Procedures

The management of safe and efficient smokejumper delivery missions is the responsibility of all personnel involved and is enhanced through standardized procedures.

This section provides guidance for the following interagency smokejumper operations:

1. “Mixed loads” in which both FS-14 and ram-air parachute systems are used on the same smokejumper flight.
2. “Mixed sticks” in which both BLM and FS smokejumpers using a ram-air parachute system are on the same smokejumper flight and may exit the aircraft on the same pass (same “stick”).

A copy of the "Interagency Spotter Command Checklist" (see Appendix 7.1) shall be posted near the jump door of all smokejumper aircraft. When visiting smokejumpers arrive at another base, the receiving base will conduct a refresher (to include mock-up) with all pilots and spotters from both agencies.

Spotting parameters are outlined in each agency’s section of the ISMOG.

5.1 Dual Agency Spotters on Mixed-Load Aircraft

A BLM spotter and a FS spotter may be used on the same aircraft.

5.2 Pre-Jump Equipment Checks

5.2.1 Ram-Air Smokejumpers

Smokejumpers using a ram-air canopy will receive pre-jump equipment checks by other ram-air smokejumpers, either on the ground or in-flight. See Interagency Ram-Air Equipment Check in Appendix 7.3 which includes an Equipment Checklist and Secondary Equipment Checklist.

5.2.2 FS-14 Smokejumpers

Smokejumpers using the FS-14 canopy will receive pre-jump equipment checks (buddy checks) on the ground by other FS-14 or otherwise qualified smokejumpers and verification by the spotter. FS spotters will be authorized to check the systems they have jumped.

5.3 Drop Criteria

1. BLM jump/no jump decisions shall be made using BLM spotting criteria outlined in agency policy documents.

2. FS jump/no jump decisions shall be made using FS spotting criteria outlined in agency policy documents.

5.4 Ram-Air Flight Techniques

For ram-air flight techniques, refer to the latest versions of the FS Ram-Air Parachute Training Guide (RATG) and BLM Ram-Air Parachute Training Manual (RATM).

5.5 Number of Smokejumpers per Stick

Smokejumpers per stick will range from one to four based on agency policy and spotter discretion.

5.6 Streamer Dropping

Standard 20-foot drift streamers will be dropped at 1,500 feet AGL.

5.7 Drop Altitudes

1. Smokejumpers using a ram-air parachute system will be dropped at a minimum of 3,000 feet AGL.
2. Smokejumpers using a FS-14 parachute will be dropped at a minimum of 1,500 feet AGL.

5.8 Slap Procedures

1. Smokejumpers using a ram-air parachute system will receive a slap to signal exit and are spaced a minimum of three seconds apart.
2. For smokejumpers using the FS-14 parachute, only the first smokejumper in each stick will receive a slap to signal exit.

5.9 Exit Technique

1. Smokejumpers using a ram-air parachute system will use a sitting exit on all aircraft.
2. Smokejumpers using an FS-14 parachute will use a “step” exit in small door aircraft and a standing exit in large door aircraft.

5.10 Ground Procedures

Maintaining safe, efficient, and effective incident operations and post-fire operations is imperative. Prior to taking action on any incident, the smokejumper-in-charge shall ensure a thorough briefing is conducted using the components of the briefing checklist in the IRPG.

5.10.1 Radio Communications

1. The smokejumper-in-charge shall have a radio. It is recommended that all smokejumpers be issued a radio.
2. On landing, if conditions have substantially changed, the first smokejumper should immediately contact the aircraft and inform the spotter. If jump conditions differ from those originally anticipated, the spotter will reevaluate the conditions.
3. The smokejumper-in-charge should ensure that the spotter is informed when all smokejumpers are safely on the ground and ready to receive cargo.
4. As soon as possible, the smokejumper-in-charge shall establish communication with the local dispatch authority.

5.10.2 Ground-to-Air Signaling Techniques

1. Each smokejumper shall carry a streamer to signal the aircraft when radio communication is not possible. In the absence of radio contact with the smokejumper aircraft, smokejumpers landing outside the established jump spot will place an individual “L” signal streamer to signal safety.
2. Each smokejumper should also carry a streamer to hold aloft as a wind indicator. The first smokejumper in the jump spot, or their jump partner, should hold a streamer aloft until all smokejumpers are on the ground.

5.11 Booster Aircraft, Pilots, and Smokejumpers

To facilitate the mobility and use of smokejumpers, aircraft, and pilots, the following procedures shall be followed:

5.11.1 Aircraft Familiarization

Smokejumpers shall receive an operational briefing on aircraft types they have not had training on during the current season. This briefing shall include, but not be limited to the following items:

1. Personnel loading and restraint.
2. Hook-up and exit procedures.
3. Aircraft ground evacuation procedures.
4. Aircraft in-flight emergency hook-up and exit procedures.
5. Aircraft safety and emergency procedures briefing from pilot.

5.11.2 Pilot Orientation and Operational Familiarization

All new pilots shall receive a briefing before conducting flight operations from any given base. The briefing shall include, but not be limited to the following items:

1. Base organization, staffing, and operations.
2. Dispatching, communications, and operational controls.
3. Aircraft loading, restraint, and manifest requirements.
4. Spotter coordination, cargo dropping commands, and communications.
5. Operating area familiarization, including local hazards and flight safety information.
6. Requirements and limitations on using backcountry airfields.

5.11.3 Smokejumper Orientation and Operational Familiarization

Each base shall prepare an orientation package. Smokejumpers shall receive a briefing before being assigned to any incident. The briefing shall include information about the following:

1. Base organization, staffing, and operations.
2. Current fire situation and status, and fire weather forecasts.
3. Smokejumper aircraft.
4. Fire call procedures.
5. Jump procedures.
6. Radio systems and communications procedures.
7. Fire management procedures and standards.
8. Equipment return procedures.
9. Work and physical training (PT) schedules.
10. Timekeeping procedures.
11. Meals, lodging, and transportation arrangements.
12. First aid equipment and procedures.
13. General policies.

6.0 Interagency Emergency Procedures

The Interagency Section of the ISMOG shall be the “source” document for emergency procedures. If these procedures are duplicated in training materials, other manuals, or guides, care should be taken that they align with this document.

Situations that require an emergency exit vary. The spotter-in-charge shall be responsible for maintaining control during an emergency. Detailed instructions on emergency procedures are specified in agency-specific training manuals/guides, including the BLM Ram-Air Parachute Training Manual (RATM), FS National Smokejumper Training Guide, and FS Ram-Air Parachute Training Guide (RATG).

6.1 Non-Critical Emergency Exit

The pilot shall inform the spotter on the nature of the emergency and the course of action. If an emergency exit is necessary, the spotter shall be responsible for maintaining control over the smokejumpers and for ensuring that the emergency exit is orderly and timely. Emergency exit procedures in a non-critical emergency are usually the same as those for an operational jump. In some cases, the spotter may even select a jump spot.

6.2 Critical Emergency Exit

The spotter must assume control in a critical emergency to ensure that exits proceed as smoothly and quickly as possible. The following are considerations and procedures for an emergency exit in a critical emergency:

1. **Center of Gravity Limitations.** A pilot cannot maintain adequate control of an aircraft with an aft center of gravity; therefore, a spotter must not allow smokejumpers to rush toward the aircraft door if they anticipate an emergency exit.
2. **Decision to Initiate Emergency Exit.** The pilot shall be the primary authority in matters pertaining to the aircraft's condition and the necessity for an emergency exit. The pilot shall notify the spotter to initiate an emergency exit. Before initiating an emergency exit, the spotter must be certain that a crash is imminent and that the aircraft is high enough for a parachute to open. During a critical emergency exit from a smokejumper aircraft, gloves, helmets, and other protective equipment may be left behind. The standard callout for an emergency bailout is **“BAILOUT, BAILOUT, BAILOUT.”**
3. **Critical Emergency Exit Procedures with Main Parachute.** If smokejumpers are wearing main parachutes when the pilot or spotter orders an exit, the smokejumpers shall use the designated emergency cable. They must not attempt to fasten the static line safety pin. Depending on the aircraft accessories,

smokejumpers may need to keep one hand on the static line snap to guide it along the cable while moving toward the door. This prevents the main parachutes from opening accidentally in the aircraft.

4. **Exit Procedures with Reserve Parachute.** Smokejumpers shall jump with their emergency parachute when it is impractical to hook their static lines to the emergency cable or if they are not equipped with backpack parachutes.

6.3 Aircraft Crash on Takeoff

1. All personnel shall be prepared for an aircraft crash on takeoff. Smokejumpers and spotters shall use proper seating arrangements for the model aircraft used in the operation and must know where all the emergency exits are located and how to use them.
2. If the aircraft crashes on takeoff, personnel shall evacuate the aircraft as soon as the aircraft stops moving.
3. Be alert to smokejumpers and crewmembers who may have been hurt or incapacitated in the crash, and get them out quickly.
4. Evacuate away from any fire that exists, depart the crash upwind, and account for all personnel.

6.4 Crash Landing Procedures

Whenever possible, follow the procedures below when a crash landing is imminent:

1. Put on helmet and gloves. Assume a fetal position, arms close to the body, with seat belt or restraint device snugly attached. Occupants of side-facing seating shall attempt to face 45 degrees to the front of the aircraft.
2. Because the pilot's control of the aircraft may be very limited in an emergency, restrict unnecessary movement in the aircraft.
3. Locate emergency escape hatches and equipment.
4. After a crash, vacate the aircraft quickly and in an orderly manner. Be alert to smokejumpers or crewmembers who may have been hurt or incapacitated in the crash, and get them out quickly. Evacuate and depart the aircraft upwind, and account for all personnel.

6.5 Aircraft Fire in Flight

The spotter and pilot shall make a coordinated decision concerning appropriate action if a fire occurs in flight. The spotter must maintain control of the situation and take aggressive action to control the fire. If the fire becomes uncontrollable, begin emergency evacuation procedures.

6.6 Cargo-in-Tow

Unless briefed otherwise prior to cargo operations, cargo-in-tow will be cut away and the pilot immediately notified.

6.7 Other In-Flight Emergencies

Although the potential for a smokejumper-in-tow or an inadvertent parachute opening is extremely remote, procedures are addressed in the FS National Smokejumper Training Guide, BLM Ram-Air Parachute Training Manual (RATM), and FS Ram-Air Parachute Training Guide (RATG).

6.8 Jump Injury Procedures

If a jump injury occurs, the spotter will assess the situation and take appropriate action. Responsibilities are outlined in the following table. In addition to compliance with agency policies and procedures, all smokejumper jump injuries shall be reported to MTDC for inclusion in their jump injury database.

Table 6.8: Jump Injury Responsibilities¹

Smokejumper-in-Charge	Spotter	Medical Personnel
Notify spotter.	Maintain communication with smokejumper-in-charge, dispatch, and medevac transport.	Assess patient.
Coordinate patient care, helispot construction, and incident activities.	Aircraft will remain on scene as appropriate.	Render patient care.
Utilize protocols for medical response listed in the IRPG.	Drop all requested emergency medical supplies and medical personnel.	
	Direct medevac transport to scene.	

¹ The jump injury responsibilities outlined in the above table are also included in the Forest Service Section of the ISMOG. Any updates to this table should be made in both sections.

7.0 Appendices

7.1 Interagency Spotter Command Checklist

- The spotter in charge of each mission should be clearly identified.
- Note: Prior to dropping ram-air smokejumpers, spotter should request from pilot any noticeable wind changes at 3,000 feet AGL. Adjust exit point accordingly. Although rarely necessary, streamers thrown from 3,000 feet AGL are always an option.
- Spotter signals to the smokejumpers the number in the stick.

Spotter Command	Details
1. “Are you ready?” & “Leg straps tight?”	These two questions are asked of the first smokejumper in each stick, who then answers for the entire stick. Being ready means you have been checked, PG bag is hooked up, and helmet is on.
2. “Hook up.”	This command is given to the entire stick. FS-14 smokejumpers hook up to the appropriate cable (vertical/horizontal/floor). Ram-air smokejumpers hook to appropriate extender handed them by the spotter.
Pre-Jump Briefing End the briefing by asking, “Any questions?”	Should include as a minimum : jump spot confirmation, jump spot hazard identification (if any), estimated streamer drift, type of drop pattern, jump spot elevation, and pertinent wind info at 3,000 feet AGL (ram-air smokejumpers only).
3. “We are at 3,000 ft. Activate your AAD.”	This command is for ram-air smokejumpers only and will always be given prior to the smokejumper getting in the door. This command prompts ram-air smokejumpers to activate their AADs. (The spotter, before giving this command, will confirm with the pilot that the aircraft has leveled off at 3,000 feet AGL.)
4. “Get in the Door.”	This command is given before or after the pre-jump briefing for FS-14 smokejumpers, and after the briefing for ram-air smokejumpers, to the first smokejumper in the stick. This command also prompts the ram-air smokejumper’s 4-point check. All ram-air exits will be sitting. FS-14 exits will be using the step or standing, depending on the type of aircraft.
5. “Turning final 1,500/3,000 ft. Static Lines Clear.”	Confirmation given so that each smokejumper in the stick can hear. The spotter may have notified the smokejumper that their static line is clear and confirmed the jump altitude, but this is a final check. Pilot confirms “On Final, 1,500/3,000 feet” with spotter. Minimum FS-14 altitude is 1,500 feet AGL. Ram-air drop altitude is 3,000 feet AGL.
6. “Get Ready.”	Command given just prior to slapping first smokejumper out the door. FS-14: Slap only the first smokejumper in the stick. Ram-air: Slap each smokejumper, spacing smokejumpers a minimum of three seconds apart. Drogue static lines can be cleared for the next smokejumper in the stick by sliding it toward the upper left corner of the door, after the drogue has deployed from the deployment bag.

7.2 Interagency Smokejumper Interoperability

7.2.1 Intent

The interagency smokejumper program strives to maintain seamless operational support to fire management entities through the concept of total mobility and the interchange of personnel regardless of agency or home base.

7.2.2 Operating Plan

Interoperability is achieved through mixed-load operations with round and ram-air jumpers and through mixed-stick operations with FS and BLM ram-air jumpers.

The two agencies will adhere to the standards of (1) mixed-load operations for round and ram-air jumpers and (2) mixed-stick operations with FS and BLM ram-air jumpers, unless otherwise amended by the Interagency Smokejumper Base Managers and ratified by the Chief, Preparedness and Suppression Standards (BLM); AFS Fire Operations Branch Chief (BLM); and Assistant Director, Aviation Management (FS).

Table 7.2.2: Interoperability Levels

Interoperability Level	Criteria
<p>MIXED-LOAD</p> <ul style="list-style-type: none"> • Currently ram-air/round operations. • Ram-air/ram-air operations. 	<ol style="list-style-type: none"> 1. Adherence to Interagency Spotter Command Checklist. 2. Functionally similar aircraft emergency procedures. 3. Standard streamer dropping altitudes. 4. Operationally manageable equipment checks.
<p>MIXED-STICK</p> <ul style="list-style-type: none"> • Jumpers from both agencies able to jump in the same “stick.” 	<ol style="list-style-type: none"> 1. All mixed-load criteria. 2. Compatible equipment check and secondary equipment check procedures. 3. Compatible jump count procedures ensuring equal deployment altitudes. 4. Identified protocols for jumpers on differing canopy types. 5. Functionally similar flight techniques (i.e., vertical and horizontal separation techniques, patterns, and approaches).

Interoperability Level	Criteria
<p>CROSS TRAINING</p> <ul style="list-style-type: none"> • Jumpers from both agencies may conduct or receive training from either agency. 	<ol style="list-style-type: none"> 1. All mixed-load and mixed-stick criteria. 2. Identical malfunction procedures. 3. Standardized interagency equipment check procedures. 4. Similar initial training of rookie and transition personnel. <ol style="list-style-type: none"> a. Same canopy type. 5. Interagency process for change proposals to training, and operational guides. 6. Annual assessment of training practices/effects.
<p>EQUIPMENT SHARING</p>	<ol style="list-style-type: none"> 1. Mutually established rigging procedures. 2. Interagency process for change proposals to approved SJ equipment and rigging procedures. 3. Compatible harness fitting standards. 4. Interagency canopy evaluation process.

7.2.3 Mixed-Load Operations: Round and Ram-Air Jumpers

Mixed loads consist of round and ram-air jumpers operating on the same aircraft.

Interagency components include:

1. Adherence to the procedures and protocols in the ISMOG.
2. Adherence to the Interagency Spotter Command Checklist (see Appendix 7.1.)

7.2.4 Mixed-Stick Operations: BLM Ram-Air and FS Ram-Air Jumpers

Mixed sticks consist of BLM ram-air jumpers and FS ram-air jumpers operating on the same aircraft with the capacity to jump in the same parachute stick.

Interagency components include:

1. Adherence to the procedures and protocols in the ISMOG.
2. Adherence to the Interagency Spotter Command Checklist (Appendix 7.1).
3. Adherence to the Interagency Ram-Air Equipment Check and Secondary Equipment Check procedures (Appendix 7.3).
4. Annual training will include: (1) stick sorting tactics to mitigate differences in body weight, canopy types, and jump experience; and (2) parachute flight training incorporating compatible vertical and horizontal separation techniques, flight patterns, and approaches.

7.3 Interagency Ram-Air Equipment Checklists

7.3.1 Ram-Air Equipment Checklist

Begin by asking the jumper if he or she is ready for a check.

Start at the bottom and work up, touching each item as you go. If you find a mistake, fix it, then return to the previous item and begin again.

1. Jump pant stirrups under boot.
2. Zippers on jumpsuit pants down.
3. Leg pockets cinched with no excess cargo hanging out.
4. Harness leg straps over crotch protector, untwisted, and snapped, metal to metal.
5. All 3 PG bag straps clear and routed correctly.
6. Main container belly bands routed through belly band loops, attachment hardware snapped into reserve.
7. Good due date on reserve.
8. Reserve handle properly seated.
9. Curved reserve locking pins properly seated and sealed.
10. Lower RSL properly routed from locking pins to lower snap shackles and closed.
11. Upper RSL properly routed to upper snap shackle and closed.
12. AAD is off. (switch)
13. Have you done a self-test? (AAD)
14. Reserve knife blade good? (Snapped in place facing away from jumper.)
15. Carabineer through harness droop risers, barrels fully closed with light pressure.
16. Chest strap properly routed through buckle and seated on Velcro if equipped, otherwise chest strap is routed through elastic keeper.
17. Drogue release handle properly seated.
18. Main release/cutaway handle properly seated.
19. Left and right 3-ring release assemblies properly attached to parachute risers. Lightly pull cable housing to verify proper connection and routing. (*Inboard, medium ring through large ring, small ring through medium ring, soft loop through small ring,*

through grommet, through ring terminal, cable through soft loop and stowed.) Verify assemblies are free from any debris and are not wet.

20. Drogue release 3-ring assembly properly attached to drogue bridle. (*Large ring up, medium ring through large ring, small ring through medium ring, soft loop through small ring, through grommet, cable through soft loop and stowed*). Verify assembly is free from any debris and is not wet.
21. Rubber band keeper is connected correctly to drogue bridle and drogue 3-ring assembly is in proper alignment.
22. Pull-the-dot snaps attaching main container to harness are connected and routed correctly.
23. Curved locking pin properly seated on main container.
24. Drogue bridle below pin extends to bottom of pin cover flap.
25. Static line in good condition.
26. Static line weak link in good condition.
27. Static line clip is functional.
28. Give static line clip to jumper; ask if he or she has at least the following items: helmet, gloves, and letdown rope.

7.3.2 Ram-Air Secondary Equipment Checklist

Start at the bottom and work up, touching each item as you go. If you find a mistake, fix it, then return to the previous item and begin again.

1. PG bag straps routed correctly and hardware connected.
2. Main container belly band through belly band loops, attachment hardware snapped into reserve.
3. Left and right 3-ring release assemblies properly attached to parachute risers. Lightly pull cable housing to verify proper connection and routing. (*Inboard, medium ring through large ring, small ring through medium ring, soft loop through small ring, through grommet, through ring terminal, cable through soft loop and stowed.*) Verify assemblies are free from any debris and are not wet.
4. Drogue release 3-ring assembly properly attached to drogue bridle, large ring up. (*Large ring up, medium ring through large ring, small ring through medium ring, soft loop through small ring, through grommet, cable through soft loop and stowed.*) Verify assembly is free from any debris and is not wet.
5. Rubber band keeper of the harness is connected correctly to drogue bridle and drogue 3-ring assembly is in proper alignment.
6. Curved locking pin properly seated on main container.
7. Drogue bridle below pin extends to bottom of pin cover flap.

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Glossary

Additional definitions may be found in the FSS and BLMS of the ISMOG and Smokejumper Program training manuals/guides.

AAD – Automatic Activation Device.

Accessory -- For a parachute, the part of a parachute assembly necessary to complete the unit as designed by the manufacturer; for example, a parachute pack retaining belt. For an aircraft, a device that smokejumpers use, such as a step or static line cable, to facilitate the delivery mission.

AFS – Alaska Fire Service.

AGL – Above Ground Level.

Buddy Check -- A pre-jump equipment safety check performed for each smokejumper by another appropriately qualified smokejumper. If performed by appropriately qualified spotter it is referred to as a “Spotter Check.”

Canopy -- The part of a parachute assembly that opens up and fills with air. Two canopy styles are currently in use by the interagency smokejumper community: (1) FS-14 “round” canopies and (2) ram-air “square” canopies.

Check Spotter -- An experienced smokejumper spotter who is designated annually by their Base Manager to train and qualify smokejumper spotters in the FS-14 and/or ram-air parachute systems.

Container -- The part of a parachute assembly that contains a folded canopy and suspension lines.

Critical Emergency -- An emergency requiring immediate action to prevent or reduce the loss of life, limb, or property.

Deployment Bag -- A container that provides sequential parachute deployment, retaining the canopy until the suspension lines are fully deployed.

Drift Streamer -- A weighted device dropped from an aircraft to predict wind drift and to estimate aircraft altitude above the drop zone. Also referred to as a “streamer.”

Drogue – A small parachute designed to stabilize the body position of a jumper during the exit from the aircraft and then to act as a pilot chute to extract the main from the container when the drogue release handle is pulled.

Emergency Parachute -- A parachute intended for emergency use only.

Exit Point -- A point determined by the spotter where the smokejumper receives the signal to exit the aircraft. It is sometimes referred to as the “Release Point.”

Exit Technique -- A standardized body position that the smokejumper assumes immediately before and when exiting the aircraft. Approved exit positions vary, depending on the type of aircraft, accessories used, and parachute system.

Harness -- The part of a parachute assembly designed to carry the body or object and to attach the canopy to its load.

“Hook up” -- A signal for smokejumpers to attach static line snap to the aircraft static line cable.

IRPG -- Interagency Response Pocket Guide.

Jump Spot -- A specified landing area in which personnel intend to land. Also referred to as the “Drop Zone.”

Jumpsuit -- Protective clothing worn by smokejumpers.

Malfunction -- Any parachute system abnormality that requires a reserve parachute activation.

Malfunction Abnormality Reporting System (MARS) – MARS is a database used to track any abnormality or malfunction in the equipment involved in getting a smokejumper from the airplane to the ground. There are actually two MARS databases, one maintained by the FS at MTDC, and another maintained by the BLM that is included in the Interagency Smokejumper Master Action Database.

MARS – Malfunction Abnormality Reporting System.

Missoula Technology and Development Center (MTDC) -- One of two Technology and Development Centers of the U.S. Forest Service. MTDC includes the U.S. Forest Service’s Parachute Technology Project.

Mixed Load -- Smokejumper flight that includes personnel equipped with a mix of FS-14 and ram-air parachute systems.

Mixed Stick – Smokejumper flight that includes BLM and FS ram-air jumpers with the capacity to jump in the same parachute stick.

Modification -- A change in a parachute assembly configuration.

MODOC -- Smokejumper Modification Document System (BLM).

National Smokejumper Program Manager – A U.S. Forest Service managerial position responsible for programmatic oversight of aerial delivery systems.

Non-Critical Emergency -- A situation that can be solved or mitigated without immediately resorting to extraordinary measures.

“On Final” -- A term used to describe the final leg of an aircraft pattern when dropping smokejumpers or paracargo.

PG Bag (Personal Gear Bag) -- A bag attached to a smokejumper's harness during parachute jumping that usually converts to a gear pack for operational use on the ground.

Pin Check -- A safety check performed on emergency parachutes to ensure they are in safe, usable condition. This includes checking the ripcord pins, re-pack date, and overall appearance of the parachute.

RATG – FS Ram-Air Parachute Training Guide. The BLM counterpart is the Ram-Air Parachute Training Manual (RATM).

RATM – Ram-Air Parachute Training Manual (BLM). The FS counterpart is the Ram-Air Parachute Training Guide (RATG).

Reserve (Auxiliary) Parachute -- The secondary parachute that a person making an intentional jump wears.

Reserve Knife -- A hook blade knife carried on top of the reserve parachute that a smokejumper uses for emergencies and letdowns.

Rigging -- The inspection, minor repair, and re-packing of parachutes, which includes fitting and adjusting harnesses.

Riser -- The part of a parachute assembly connecting the suspension lines to the harness. Risers usually are made from a length of webbing and are attached using connector links or canopy releases.

RSL – Reserve Static Line.

SAFECOM – Aviation Safety Communique used to report aviation mishaps or hazards.

Smokejumper Aircraft Screening and Evaluation Subcommittee (SASES) -- An interagency board of Forest Service and Department of the Interior aviation managers responsible for reviewing and recommending smokejumper and paracargo aircraft and aircraft accessories for evaluation and approval. Representatives from fire and aviation management organizations and smokejumper bases are on the board. Missoula Technology and Development Center (MTDC) personnel serve as technical advisors to the board.

Smokejumper Base Manager -- The person who oversees and is responsible for all phases of a local smokejumper program including; administration, operations, loft operations, training, fire operations, aircraft, etc.

Smokejumper Spotter -- An aircraft crew member responsible for selecting jump spots, drop zones, directing delivery of personnel and cargo, navigating, and managing smokejumper and paracargo delivery missions. The spotter must be an active smokejumper and hold a squad leader position or above.

Smokejumper-in-Charge -- The smokejumper designated to lead an activity or project, such as a practice jump, training activity, or work project.

Spotter Check -- A pre-jump equipment safety check performed for each smokejumper by an appropriately qualified spotter. If performed by another appropriately qualified smokejumper, it is referred to as a “Buddy Check.”

Spotter-in-Charge – When multiple spotters are on board a smokejumper aircraft during a mission, a spotter-in-charge is designated to lead spotting activities.

Spotting -- The act of determining wind drift, altitude, jump hazards, jump spot, exit point, and signaling the smokejumper to exit the aircraft.

Static Line -- A line attached to an anchor point or cable in an aircraft and to the parachute, which initiates deployment of the parachute as the load falls away from the aircraft.

Stick -- One to three smokejumpers who exit an aircraft during a single pass over the exit point.

Suspension Lines -- Nylon cord or webbing or other fabric that connects the parachute canopy to the risers or harness.

U.S. Forest Service National Smokejumper Training Guide – A guide used by the Forest Service in the training of smokejumpers and supervisory personnel in smokejumping operations, techniques, procedures, principles, and policies.