U.S. Forest Service
Smokejumper
Ram-Air Canopy
Evaluation Plan

Photo Courtesy of Missoula Smokejumpers

February 2017

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Revision and Amendment Log

The following chart tracks revisions and amendments made to the USFS Smokejumper Canopy Evaluation Plan. As the Plan is implemented, this chart may also serve as a place where users can track their own suggestions or recommendations for future updates of the Plan.

Tracking No.	Section No.	Revision/Amendment Summary	Date

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0.0 Objective and Overview

The U.S. Forest Service (FS) Smokejumper Program's transition to a ram-air parachute system and ram-air canopy has provided an opportunity to evaluate ram-air canopies manufactured by the parachute industry which may provide a better platform for smokejumpers in operational situations. This document details a systematic approach for FS smokejumpers to evaluate ram-air parachute canopies for potential future use.

0.1 Evaluation Roles and Responsibilities

Roles and responsibilities of evaluation personnel are as follows. Some positions are required during certain phases of the evaluation. Additional positions may be added as needed.

Positions will be filled as needed by the Evaluation Director based on the number of participating evaluation jumpers and the phase of the evaluation. For more complex evaluations with numerous evaluation jumpers, more evaluation positions will be filled to allow adequate span of control.

0.1.1 Evaluation Director

A designated Evaluation Director is a required position for Phases I through III.

The Evaluation Director has overall responsibility for conducting the evaluation, including planning, implementing Agency safety protocols, coordination, scheduling, personnel selection, and logistics. The Evaluation Director is responsible for briefing all evaluation personnel on their duties and responsibilities. The Evaluation Director has final authority to modify, extend, or terminate any evaluation.

0.1.2 Assistant Evaluation Director

In the absence of the Evaluation Director, the Assistant Evaluation Director is responsible for conducting the evaluation as described in this document. Other responsibilities that may be delegated to the Assistant Evaluation Director include:

1. Briefing evaluation jumpers, spotters, pilots, drop zone personnel, photographers, and other personnel at the beginning of the evaluation and as needed before each flight.
2. Ensuring all FAA notifications required by FAR Part 105 have been obtained.
3. Evaluating weather conditions that may affect the evaluation.
4. Ensuring procedures, schedules, and communications required by the Evaluation Plan are followed.

5. Assigning individuals to collect data called for by the Evaluation Plan.

The Assistant Evaluation Director has the authority to immediately stop or postpone any phase of the evaluation for safety reasons.

0.1.3 Project Aviation Safety Officer

A designated Project Aviation Safety Officer is a required position for Phases I and II.

Duties of the Project Aviation Safety Officer include:

1. Ensuring all pilots are briefed before the evaluation and as needed before each flight. Briefing topics must include air safety, air-to-air and air-to-ground communications, air speeds, flap settings, as well as any other topic pertinent to the safety of the evaluation flight.
2. Monitoring the air safety aspects of the evaluation through all evaluation flights.
3. Ensuring a Project Aviation Safety Plan (PASP) is in place.
4. Ensuring the SMS risk assessment has been completed and is signed by the appropriate authority.
5. Identifying any additional safety issues.

0.1.4 Pilots

Designated Pilots are required positions for Phases I and II.

Pilots are responsible for flying the aircraft in accordance with the Evaluation Plan. Duties include:

1. Attending briefings and debriefings.
2. Complying with all standard procedures and requirements for designated flights and with special evaluation requirements.
3. Aircraft communications.

0.1.5 Drop Zone Manager

A designated Drop Zone Manager is a required position for Phases I and II.

Duties of the Drop Zone Manager include:

1. Procuring and preparing standard drop zone equipment, marker panels, radios, retrieval equipment, and any other supplies or equipment needed for the drop zone.

2. Monitoring drop aircraft radio frequency during all drops.
3. Providing transportation to and from the drop zone for evaluation personnel and observers.
4. Procuring standard EMT kit and EMT personnel.

0.1.6 Smokejumper Spotters

Designated Smokejumper Spotters are required positions for Phases I and II.

Duties of the Smokejumper Spotter(s) include:

1. Attending briefings prior to each flight.
2. Dropping jumpers as prescribed by the Evaluation Plan.
3. Complying with other standard policies and procedures related to spotting that are not covered by the Evaluation Plan.

0.1.7 Smokejumpers

Designated Smokejumpers are required positions for Phases I and II.

Duties of the Smokejumpers include:

1. Following procedures determined and described by the Evaluation Director for each jump.
2. Following all standard smokejumper safety procedures and/or procedures specified in 0.5.2 Specific Safety Controls listed later in this document.
3. Attending briefings and debriefings.
4. Complying with standard policies and procedures related to jumping that are not covered by the Evaluation Plan.

0.1.8 Audio/Video and Data Coordinator

A designated Audio/Video and Data Coordinator is a required position for Phases I and II.

Duties of the person responsible for coordinating audio/video and flight data include:

1. Identifying photo/video personnel and supplying photographic equipment called for by the Evaluation Plan.
2. Attending all briefings and advising participants of special photo needs and considerations.

3. Editing all video.
4. Tracking and archiving Flight Data Recorder (FDR) results.

0.1.9 Rigging Supervisor

A designated Rigging Supervisor is a required position for Phases I and II.

Duties of the Rigging Supervisor include:

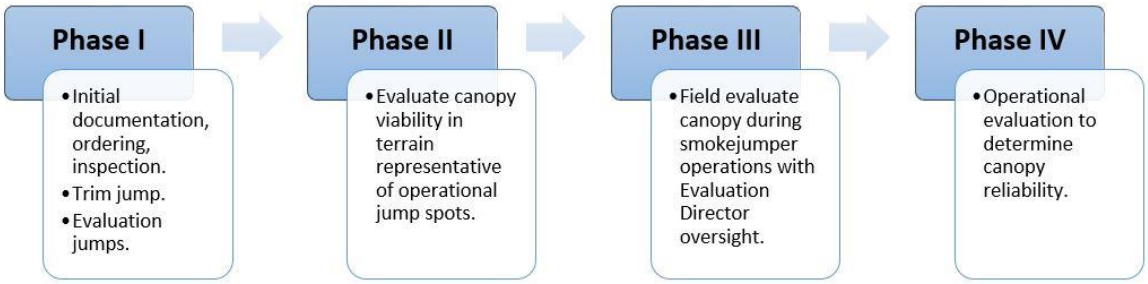
1. Identifying and assigning the appropriate number of qualified riggers.
2. Ensuring all rigging is done according to manufacturer's instructions.
3. Ensuring adequate rigging facilities and supplies are available.
4. Ensuring Loft Procedures (see Section 0.6 of this plan) are followed.

0.2 Evaluation Phases

The Ram-Air Canopy Evaluation Process consists of four phases:

1. **Phase I**
    a. Initial documentation, ordering, and inspection.
    b. Trim jump (to ensure the canopy is set up correctly for evaluation jumps).
    c. Evaluation jumps (in which smokejumpers perform specific maneuvers and compare the canopy to current "baseline" canopies in use).
2. **Phase II** -- Evaluate canopy viability in terrain representative of operational jump spots.
3. **Phase III** -- Field evaluate canopy during smokejumper operations with Evaluation Director oversight.
4. **Phase IV** -- Operational evaluation to determine canopy reliability.

Figure 1: Evaluation Phases



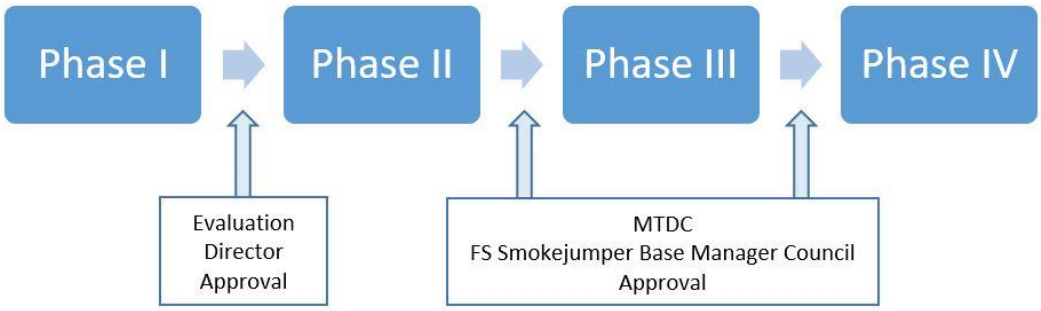
0.3 Evaluation Approval Process

At the completion of each phase, the Evaluation Director will submit an evaluation of the canopy. This report will include a recommendation to proceed with or discontinue evaluating the canopy.

The decision to move from Phase I to Phase II will be made by the Evaluation Director, and a report will be submitted for informational purposes to Missoula Technology and Development Center (MTDC).

Transition from Phase II to III and from Phase III to IV must be approved through the FS Smokejumper Base Manager Council.

Figure 2: Canopy Evaluation Approval Process



0.4 Communications Requirements

FM radio communications will be used for all air-to-ground communications. This frequency will be established prior to evaluation jumps. The following topics should be addressed as appropriate prior to evaluation:

1. Agree on standard terminology to eliminate potential misunderstandings.
2. Assign primary and back-up radio frequencies.
3. Establish drop patterns and radio contact points.
4. Explain emergency procedures and terminology.
5. Explain lost communications procedures, emergency procedures, and drop zone exit procedures for each aircraft.

0.5 Safety Controls

0.5.1 General Safety Controls

1. Briefings will be conducted by the Evaluation Director or Assistant Evaluation Director for all personnel at the beginning of each day and prior to each flight.

2. All jump operations will be done in accordance with smokejumper standard operating procedures.

3. Radio communications will be established between the drop zone and the jump ship prior to dropping jumpers.

4. Evaluation plans may be modified or terminated by either the Evaluation Director or Project Aviation Safety Officer during the evaluation for reasons they feel constitute a safety hazard to evaluation jumpers, flight crews, and/or ground crews.

0.5.2 Specific Safety Controls

1. Jumpers will read and be familiar with literature provided by the manufacturer on the evaluation canopy prior to their first jump with the canopy.

2. In the event of a parachute malfunction, standard malfunction and emergency procedures will be used. Discuss special situation malfunctions and emergency procedures which would apply.

0.5.3 Safety Management Systems (SMS) Plan

A Canopy Evaluation Safety Management Systems (SMS) Plan shall be completed for each canopy evaluation. It should be revisited during each phase of the evaluation and updated as needed.

An electronic template (Microsoft Excel spreadsheet) is available for the Canopy Evaluation SMS Plan. This spreadsheet includes auto-fill functionality for the "Outcome" rating based on the values manually entered for "Probability" and "Severity." To facilitate record keeping, there are separate tabs for each phase of the evaluation process. The latest version of this template is available from the MTDC Smokejumper Equipment Project Leader.

The Canopy Evaluation Severity vs. Probability Matrix and SMS Plan template are pictured below.

Figure 3: Canopy Evaluation SMS Plan Severity vs. Probability Matrix

Severity vs. Probability					Severity				
			Personnel Impact		No Effect	Precautionary Report	Minor Injury	Serious Injury	Death or Permanent Disability
			Equipment Impact		No Damage	Minor damage	Maintenance ≤ 3 days	Major Damage	Loss of Aircraft
			Mission Impact		No Impact	Minor Impact	Mission Degradation	Cancelled Mission	National Stand-down
	Total Time	Jumps	Probability		Very Low	Low	Moderate	High	Extreme
					1	3	9	12	15
Prob. or Sign.	25+ yrs	200,000	Very Low	1	2	4	10	13	16
	12 yrs	96,000	Low	2	3	5	11	14	17
	3 yrs	24,000	Moderate	3	4	6	12	15	18
	1 year	8,000	High	4	5	7	13	16	19
	1 mo.	1,300	Extreme	5	6	8	14	17	20

Score	Rating
17-20	Extreme
12-16	High
7-11	Moderate
5-6	Low
2-4	Very Low

Figure 4: Canopy Evaluation SMS Plan Template

System: Canopy Evaluation								
		Pre Mitigation			Mitigation	Post Mitigation		
Sub-systems	Hazards	Probability	Severity	Outcome		Probability	Severity	Outcome
Parachute								
Rigging								
Malfunctions								
Data Recording								

0.6 Loft Procedures

1. All loft activities will be supervised by qualified personnel.
2. Each canopy used in the evaluation will be assigned to a jumper during Phase I and II and may also be assigned to a rigger.
3. Evaluation canopies will be rigged according to manufacturer's instructions.
4. Each canopy will be inspected following each jump.

1.0 Phase I: Initial Research, Trim and Evaluation Jumps

1.1 Initial Documentation

The following information will be collected on each canopy being evaluated:

1. Phone log. All conversations with the manufacturer should be documented.
2. Any documentation provided by the manufacturer about the canopy, rigging instructions, manual, invoice, etc.
3. Placing the canopy in service document. See Canopy Evaluation Initial Inspection Checklist in 5.0 Evaluation Forms.
4. Completed jump evaluation forms. See Phase I Canopy Evaluation Form in 5.0 Evaluation Forms.
5. Final Phase I Evaluation Report.

1.2 Ordering Canopies

When ordering a canopy from a manufacturer, give the following information:

1. The canopy will be evaluated using an exit weight of between 200 to 285 lbs.
2. The canopy will fit the current FS Drogue Deployed System.
3. The exit speed of the jump ship is between 90 and 110 knots.

Maintain a wing loading of 1.0 or less. Wing loading is calculated by dividing the exit weight by the square footage of canopy. For example: 275 lbs. / 360 sq. ft. = 0.764.

Wing Loading = Exit Weight / Square Footage of Canopy

1.3 Initial Inspection

All evaluation canopies will undergo an initial inspection by trained loft personnel. See Canopy Evaluation Initial Inspection Checklist in 5.0 Evaluation Forms.

1.4 Evaluation Objectives

Three to five jumpers are needed for Phase I of the evaluation. A minimum of 15 total jumps are needed on the evaluation canopy in Phase I before proceeding to Phase II. Experience level needed and evaluation jumper assignments are determined by the Evaluation Director.

Evaluation jumps will be performed for each evaluation canopy to determine suitability for smokejumper operations, and to assess flight characteristics and performance.

Flight characteristics will be determined through a series of jumps using standard parachuting maneuvers, comparing these maneuvers against the baseline ram-air canopy and measuring flight performance. Flight performance data will be measured using a Flight Data Recorder (FDR). The FDR will measure airspeed and descent rate throughout the Phase I evaluation jumps.

The objectives of these evaluation jumps are to:

1. Determine flight characteristics of the evaluation canopy.
2. Gather flight performance data on the evaluation canopy.
3. Compare flight characteristics of and flight performance data from the evaluation canopy with the baseline ram-air canopy.
4. Determine if the evaluation canopy is potentially viable for smokejumper operations.

1.5 General Evaluation Procedures

1. Each canopy will be rigged according to manufacturer's instructions.
2. Each evaluation canopy should be assigned to an individual jumper for evaluating flight characteristics.
3. Canopies being evaluated will be jumped by three different jumpers.
4. Jumpers assigned to an evaluation canopy will read the manufacturer's information on flight characteristics prior to first jump.
5. Each jumper will fall within the wing loading range of 1.0 or less.
6. In the event of a parachute malfunction, standard malfunction and emergency procedures will be used. Discuss special situation malfunctions and emergency procedures which would apply.
7. To help capture important parachute performance data, consider using a Flight Data Recorder, an altimeter, optional radio, and/or optional tape recorder. (A tape recorder may be used for the jumper to describe maneuvers which can later be correlated with the Flight Data Recorder.)
8. Phase I jumps will be between 4,000 to 6,000 feet above ground level (AGL). Jump altitude will be determined by the Evaluation Director.
9. Each jump will have specific maneuvers to be completed by the jumper.

10. Jump objectives as well as specific maneuvers will be covered prior to each flight. Jumpers, spotters, pilots, and ground crews will attend these briefings.

11. Jumpers will complete a Phase I Canopy Evaluation Form (see 5.0 Evaluation Forms) after each jump.

12. A debriefing will be conducted following each jump.

13. Following completion of the evaluation jumps, each jumper should be interviewed by the Evaluation Director to clarify what the jumper has written on the form and to consolidate the jumper's opinion on how well the canopy performed.

1.6 Trim Jump(s)

The first jump on each canopy is called the "trim" jump and should be made by an experienced jumper to ensure the canopy is trimmed correctly. If the trim needs to be adjusted, consider a second trim jump before proceeding with evaluation jumps.

Trim jump objectives include:

1. Thorough opening check and control check. What is the opening shock like? Does the slider descend or does it hang up? Are there any abnormalities?

2. Check the tail of canopy at full run to ensure the brakes are adjusted properly and **not** deflecting the tail. If the tail is being deflected at full run, adjust trim to allow full run.

3. Stall check. Does trim need to be adjusted in order to stall?

4. Half brake approach with half brake flare landing.

1.7 Evaluation Jumps

Initial evaluation will be done using a standard series of jumps that will gather data to compare the performance of the evaluation canopy against the specified approved canopy. Maneuvers to be performed are listed in 1.7.1 below. All jumpers assigned to an evaluation canopy must review and be familiar with these maneuvers.

1.7.1 Description of Maneuvers

All maneuvers will be compared against the specified approved "baseline" canopy.

Figure 5: Description of Maneuvers

No.	Maneuver	Task(s)
1	**Toggle Pressure/ Toggle Turn** The amount of force needed to manipulate the toggles as compared to the baseline canopy. The rate at which the canopy responds to toggle inputs. Compare off-hand turns to full toggle turns.	
2	**Front Riser Turns** Can the jumper effectively steer the canopy using the front risers?	Steer the canopy using the dive loops on the front risers.
3	**Front Riser Bomb Turns** Effectiveness of a front riser bomb turn to get vertical separation.	Pull one riser connector link down to the face mask and hold for multiple revolutions.
4	**Planing** Can the jumper increase vertical descent using the dive loops on the front risers?	Pull both dive loops down to the face mask and hold for 500 feet.
5	**Rear Riser Steering** Are the rear risers effective in steering the canopy? Can the canopy be flared using rear risers?	Maneuver the canopy using only the rear risers. Attempt to flare or stall the canopy using rear risers.
6	**Half Brake Approach and Landing** Can the canopy make a stable, safe approach and landing at half brakes?	Set up and maintain a half brake approach for landing.
7	**Sink Stability** Does the canopy have a sink? Sink is defined as the time between slow flight and stall in which the canopy's vertical descent increases, but has not developed a full stall.	From three-fourths brakes, slowly bring the toggles down until it sinks.
8	**Stall Warning** Can the jumper predict the onset of a stall?	From three-fourths brakes, slowly bring the toggles down until the canopy stalls.

No.	Maneuver	Task(s)
9	**Stall Recovery** How did the canopy react when recovering from a stall? Did it surge, turn off heading, etc.?	From three-fourths brakes, slowly bring the toggles down until the canopy stalls. Once the canopy has stalled, bring the toggles up until full flight is achieved.
10	**Full Run Approach and Dynamic Flare** How effective is a full run flare for landing?	Full run dynamic flare on landing.
11	**Deep Brake Approach with No Flare** Can the canopy make a stable, safe approach and landing in deep brakes?	Set up and maintain a deep brake (three-fourths brakes) approach for landing.
12	**Overall Rating**	

1.7.2 Overall Rating

Jumpers rate the overall performance of the canopy by circling one value on the following scale, where 0 is equal to baseline canopy performance, -5 is much worse than baseline canopy performance, and +5 is much better than baseline canopy performance.

Figure 6: Canopy Rating System

Worse than Baseline Canopy					Comparable to Baseline Canopy	Better than Baseline Canopy					Unable to Rate
-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A

1.7.3 Evaluation Jump #1: Familiarization Jump/Toggle Turns

1. This jump is to allow the jumper to become familiar with the canopy.
2. Thorough opening check and control check. Identify stall point.
3. Toggle turns (full glide vs. off-hand).
4. Half brake approach, half brake flare (consider half brake landing if data from trim jump supports acceptable landing forward speed and descent rate).

1.7.4 Evaluation Jump #2: Riser Turns

1. Front riser turns (left turn, right turn, bomb turn).

2. Planing.
3. Rear riser controllability and flare.
4. One-quarter brake approach with staged flare landing.

1.7.5 Evaluation Jump #3: Stall Characteristics

1. Sink stability.
2. Stall warning.
3. Stall recovery.
4. Full run approach with dynamic flare landing.

1.7.6 Evaluation Jump #4: Deep Brake Approach.

Make up for something missed on previous jump.

1. Toggle turns.
2. Front riser turns.
3. Rear riser turns.
4. Planing.
5. Off-hand turns.
6. Three-fourths deep brake approach.
7. Sink stability.
8. Stall warning.
9. Stall recovery.
10. Three-fourths deep brake final with no flare (only consider deep brake landing if data supports an acceptable descent rate).

1.8 Documentation

1. The Phase I Canopy Evaluation Form (see 5.0 Evaluation Forms) will be filled out after each evaluation jump. These forms will be collected by the Evaluation Director.
2. The Evaluation Director will complete a Phase I Evaluation Report that summarizes results and makes a recommendation on whether to pursue further evaluation. This report will be submitted to MTDC for informational purposes, but does not need approval to progress to Phase II.

2.0 Phase II: Representative Terrain

Phase II consists of evaluation in terrain representing operational jumps. Utilize the same jumpers from Phase I. A minimum of 12 additional jumps are required in this Phase before proceeding to Phase III.

2.1 Evaluation Objectives

The intent of Phase II is to evaluate the viability of the canopy in terrain representing operational fire jumps of various shapes and sizes. Ridgetops, side hills, and spots surrounded by timber are considered typical. Only canopies that have successfully completed Phase I jumps and have been determined to be potential smokejumper canopies will be evaluated in Phase II.

2.2 Evaluation Procedures

Jumping will occur under the following guidelines:

1. The canopy must have completed Phase I evaluation.
2. The Evaluation Director will identify Phase II jumpers.
3. Jumpers will be briefed on the specific Evaluation and Safety Plan for the evaluation canopy.
4. Jumpers will receive a briefing on the canopy's flight characteristics.
5. Jump spots will be selected by the Evaluation Director and agreed upon by the jumpers.

2.3 Documentation

1. A Phase II/III Canopy Evaluation Form (see 5.0 Evaluation Forms) will be filled out after each jump. These forms will be collected by the Evaluation Director.
2. The Evaluation Director will complete a Phase II Evaluation Report that summarizes results and makes a recommendation on whether to pursue further evaluation. This report will be submitted to MTDC and approved through the FS Smokejumper Base Manager Council.

3.0 Phase III: Field Evaluation

1. A minimum of 20 fire jumps are required before proceeding to Phase IV.
2. Consider a canopy workshop for the jumpers being added at this phase to adequately prepare them for operational jumping.

3.1 Evaluation Objectives

Phase III evaluates canopies in the field during smokejumper operations with Evaluation Director oversight. Phase III provides input on canopy viability in operational terrain, under varied wind conditions.

3.2 Evaluation Procedures

Jumping will occur under the following guidelines:

1. The canopy must have passed Phase II evaluation and been approved for Phase III evaluation through MTDC.
2. The Evaluation Director will identify Phase III jumpers.
3. The jumpers will receive a briefing on the flight characteristics of the canopy being evaluated and any additional rigging instructions.
4. Before making operational jumps, five satisfactory practice jumps will be made by each evaluation jumper.
5. All canopy-related Malfunction Abnormality Reporting System (MARS) reports will be immediately reviewed by the Evaluation Director.

3.3 Documentation

1. A Phase II/III Canopy Evaluation Form (see 5.0) will be filled out after each jump. These forms will be collected by the Evaluation Director.
2. Jumpers will report any anomalies through the Malfunction Abnormality Reporting System (MARS).
3. The Evaluation Director will complete a Phase III Evaluation Report that summarizes results and makes a recommendation on whether to pursue further evaluation. This report will be submitted to MTDC and be approved through the FS Smokejumper Base Manager Council.

4.0 Phase IV: Reliability Evaluation

Consider a canopy workshop for the jumpers being added at this phase to adequately prepare them for operational jumping. Jumpers added to this phase of the evaluation will have made a minimum of 50 jumps on an approved FS or BLM ram-air canopy.

4.1 Evaluation Objectives

Phase IV is to determine canopy reliability. The Forest Service recommends 1,000 jumps on each canopy type by FS and/or BLM smokejumpers with no malfunctions attributable to the canopy before designating a canopy as an approved smokejumper canopy.

At the discretion of the Evaluation Director or MTDC, any canopy-related MARS or flight characteristics that are linked to injury occurrences could extend Phase IV evaluation or terminate further evaluation.

4.2 Evaluation Procedures

Jumping will occur under the following guidelines:

1. The canopy must have completed Phase III evaluation and must be recommended by MTDC and approved by the FS Smokejumper Base Manager Council for Phase IV evaluation.
2. The jumpers will receive a briefing on the flight characteristics of the canopy being evaluated and any additional rigging instructions.
3. Before making operational jumps, any added jumpers will perform five satisfactory practice jumps.
4. All canopy-related MARS will be immediately reviewed by the Evaluation Director.

4.3 Documentation

1. Jumpers will report any anomalies using the MARS system. Total number of jumps will be tracked using the Master Action Data Base.
2. The Evaluation Director will complete a Phase IV Evaluation Report that summarizes results and makes a recommendation. This report will be submitted to MTDC and approved through the FS Smokejumper Base Manager Council.

5.0 Canopy Evaluation Forms and Templates

This section includes the standard forms required in the canopy evaluation process, including the following:

1. Canopy Evaluation Initial Inspection Checklist.
2. Phase I Canopy Evaluation Form.
3. Phase II/III Canopy Evaluation Form.
4. Canopy Evaluation Organizational Chart.
5. Canopy Evaluation Report Templates (to be developed).

These forms may be photocopied and filled out by hand, or PDF versions that can be filled out electronically are available by request from the MTDC Smokejumper Equipment Project Leader.

Canopy Evaluation Initial Inspection Checklist

Manufacturer Name: _____ **Canopy Type:** _____

1. Check the canopy pack volume, risers (if supplied), RSL location, reefing ring location, and drogue ring location for compatibility with the Forest Service deployment bag, container, and harness. With the manufacturers' permission, fit the evaluation canopy with Forest Service risers and crosstie.

   ☐ Check canopy for correct deployment brake settings to guarantee the same settings are achieved as with manufactures' risers.

   ☐ Check canopy for correct full run toggle setting.

2. All evaluation canopies will receive a standard inspection for placing canopies in service using this checklist and procedures. The inspection will be performed by a FAA licensed rigger. The parachute will be suspended in the tower and inspected as follows:

   ☐ General inspection of canopy for damage and flaws.

   ☐ Check all stitching for uniformity, damage, and flaws.

   ☐ Ensure all suspension line bar tacks or zigzag stitches are in the correct locations at canopy attachments and connector links.

   ☐ Check suspension and brake line continuity. Ensure there are no twists in suspension lines.

   ☐ Ensure that all suspension lines of each line group go through correct slider grommet and to the correct riser.

   ☐ Ensure the brake lines go through the appropriate slider grommet and reefing ring and tightly tied off to the toggle with figure eight knot.

   ☐ Check the riser for twist and the RSL is on the left side riser.

   ☐ Check that the slider is oriented correctly.

   ☐ Check that the Rapide links are tight.

   ☐ Ensure cross tie is routed correctly to the Rapide Link and the rear risers and is not twisted.

3. The canopy will be rigged according to manufacturer's instructions or suggestions based on the Forest Service Deployment System, opening speeds, altitudes, and exit weights.

Date Manufacturer Contacted to Determine the Best Rigging Method: _____

Name of Person Contacted: _____

Inspector Name: _____ **Date Completed:** _____

Phase I Canopy Evaluation Form

Instructions: Fill out this evaluation immediately after each jump and BEFORE jumping again. Explain as necessary after each evaluation question, using additional paper as needed.

Canopy Number:	**Canopy Type:**
Rigger Name:	**Date:**
Any Rigging Problems?	
Rigging Methods (nose exposed, etc.):	
Was the Parachute Modified (toggles moved, etc.)?	

Jumper:	**Weight:**	**Date:**
Jump Spot:	**Temperature:**	**Jump No.:**
Wind Speed:	☐ Steady ☐ Burbles ☐ Gusts	
Opening Shock:	☐ Less than Baseline ☐ Same as Baseline ☐ Harder than Baseline	
☐ End cell closure ☐ Snivel ☐ Hung Slider ☐ Opened off heading		
Forward Speed at Full Run:	**Baseline Canopy:**	

Circle 1 Rating Each:	Worse than Baseline Canopy					Comparable to Baseline Canopy	Better than Baseline Canopy					Unable to Rate	Comments
Toggle Pressure	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	

Additional Comments:

JUMP #1: FAMILIARIZATION/TOGGLE TURNS

Toggle Turns: Are they effective?	☐ Yes	☐ No
Offhand Turns: Are they effective?	☐ Yes	☐ No

Circle 1 Rating Each:	Worse than Baseline Canopy					Comparable to Baseline	Better than Baseline Canopy					Unable to Rate	Comments
1/2-Brake Approach & Landing	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Overall Performance	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	

Additional Comments:

JUMP #2: RISER TURNS

Bomb Turns: Are they effective?	☐ Yes	☐ No
Front Riser Turns: Are they effective?	☐ Yes	☐ No
Planing: Did you get separation?	☐ Yes	☐ No

JUMP #2: RISER TURNS, CONTINUED													
Rear Riser Steering: Was it effective?	☐ Yes ☐ No												
Rear Riser Stall: Was it effective?	☐ Yes ☐ No												
Circle 1 Rating Each:	**Worse than Baseline Canopy**					**Comparable to Baseline**	**Better than Baseline Canopy**					**Unable to Rate**	**Comments**
1/4-Brake Approach & Staged Flare	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Overall Performance	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Additional Comments:													

JUMP #3: STALL CHARACTERISTICS													
Circle 1 Rating Each:	**Worse than Baseline Canopy**					**Comparable to Baseline**	**Better than Baseline Canopy**					**Unable to Rate**	**Comments**
Sink Stability	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
☐ Violent ☐ Turned Off Heading ☐ Didn't Stall													
Circle 1 Rating Each:	**Worse than Baseline Canopy**					**Comparable to Baseline**	**Better than Baseline Canopy**					**Unable to Rate**	**Comments**
Stall Warning	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Stall Recovery	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Full-Run Approach & Dynamic Flare	-5	-4	-3	-2	-1	0	1	2	3	4	4	N/A	
Overall Performance	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Additional Comments:													

JUMP #4: DEEP BRAKE APPROACH AND JUMPER'S DISCRETION *Note: Use this jump to make up for something you missed previously.*													
Toggle Turns: Are they effective?	☐ Yes ☐ No												
Front Riser Turns: Are they effective?	☐ Yes ☐ No												
Rear Riser Steering: Was it effective?	☐ Yes ☐ No												
Circle 1 Rating Each:	**Worse than Baseline Canopy**					**Comparable to Baseline**	**Better than Baseline Canopy**					**Unable to Rate**	**Comments**
Planing	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
3/4-Brake Approach	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Sink Stability	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
	☐ Violent ☐ Turned Off Heading ☐ Didn't Stall												
Stall Warning	-5	-4	-3	-2	-1	0	1	2	3	4	4	N/A	
Stall Recovery	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
3/4-Brake Final w/No Flare	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Overall Performance	-5	-4	-3	-2	-1	0	1	2	3	4	5	N/A	
Additional Comments:													

Phase II/III Canopy Evaluation Form

Canopy Number:	**Canopy Type:**	
Rigger Name:	**Date:**	
Any Rigging Problems?		
Rigging Methods (nose exposed, etc.):		
Jumper:	**Weight (Suited Up):**	**Date:**
Jump Spot or Fire #:	**Altitude:**	
Wind Speed (IMPORTANT):	☐ Steady ☐ Burbles ☐ Gusts	
Opening:	☐ Soft ☐ Normal ☐ Hard	
☐ End cell closure ☐ Snivel ☐ Hung slider ☐ Off heading		
Toggle Pressure:		

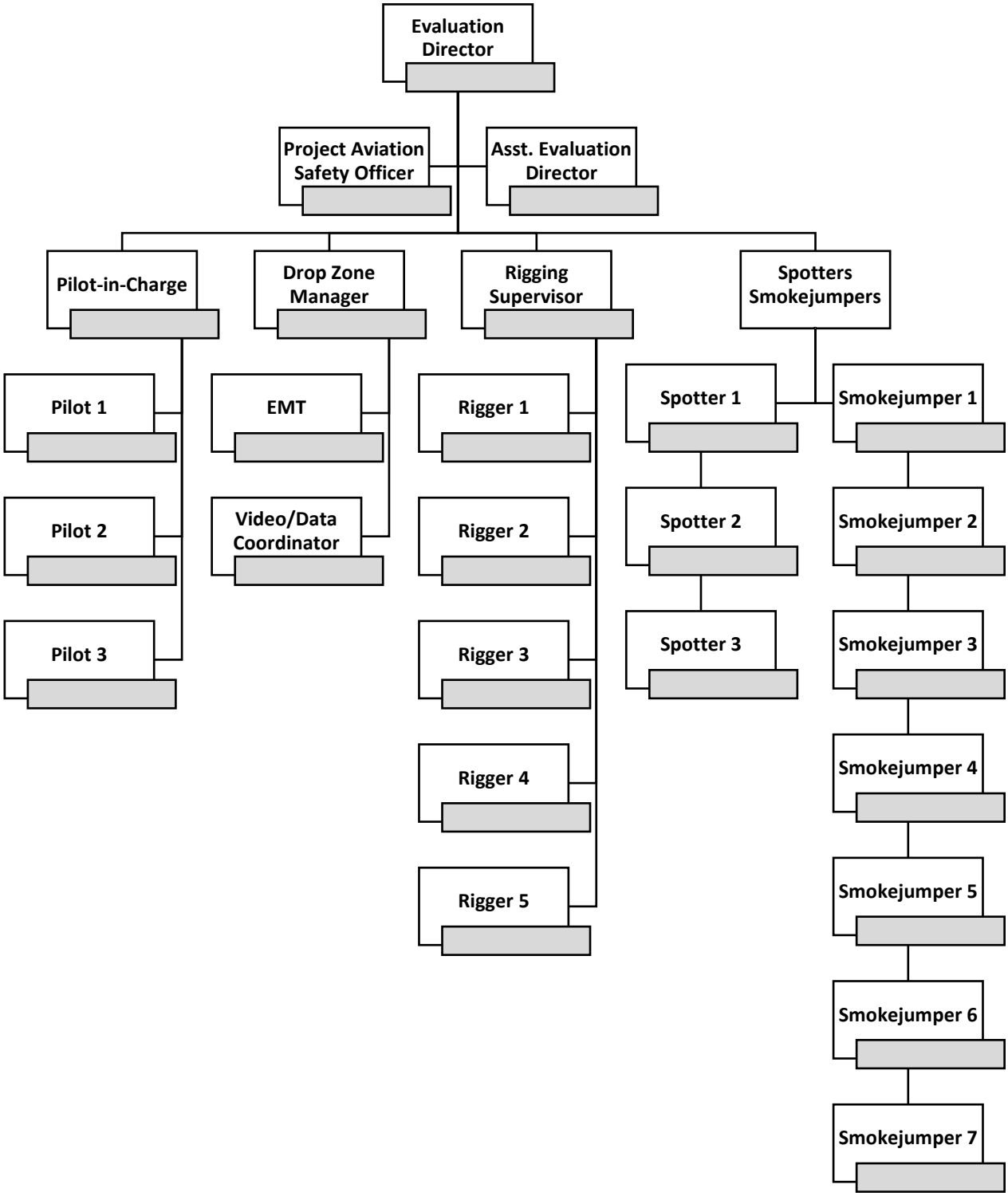
Were the following maneuvers effective? (Yes/No, Comment)

Maneuver	Effective?	Comments
Toggle Turns	☐ Yes ☐ No	
Front Riser Turns	☐ Yes ☐ No	
Planing	☐ Yes ☐ No	
Rear Riser Steering	☐ Yes ☐ No	
Stall Point	☐ Yes ☐ No	
Sink Stability	☐ Yes ☐ No	
Stall Warning	☐ Yes ☐ No	
Stall Recovery	☐ Yes ☐ No	
Flare and Landing	☐ Yes ☐ No	
Sink Stability:	☐ Smooth ☐ Violent ☐ Turned off Heading ☐ Didn't Stall	

Overall Performance:

Canopy Evaluation Organizational Chart

Fill out the following organizational chart for each canopy evaluation. Reference the Ram-Air Canopy Evaluation Plan for positions that are required for each phase.



Canopy Evaluation Report Templates

Templates for Canopy Evaluation Reports (Phase I, II, III, and IV) will be developed at a later date. These reports are completed by the Evaluation Director to summarize results and make a recommendation on whether to pursue further evaluation.