

Region 1 and Region 4 Forest Health Protection

FY2016 Aerial Detection Survey

Project Aviation Safety Plan



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LEANNE MARTEN
R1 Regional Forester

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R4 Regional Forester

1. Supervision:

Project Aviation Manager: Kathleen Matthews, R1/R4 Aerial Survey Coordinator, cell 208-859-2653 or office 208-373-4239.

2. Project Name and Objectives:

Name: Regions 1 and 4, Forest Health Protection 2016 Aerial Detection Survey.

Objectives: Aerially map forested lands across all ownerships in the Northern and Intermountain Regions for disturbances to forest ecosystems. Report the information to land managers to provide early detection of infestations, provide current and historical documentation of insect and disease impacts, and provide important information about forest health symptoms and conditions.

3. Justification

Forest Health Protection (FHP) uses aerial detection surveys as an economical and efficient method of detecting, monitoring and evaluating aerially recognizable insect, disease and other disturbances to forest ecosystems.

Forest Service Manual (FSM), Chapter 3400, provides direction for detection survey responsibilities.

3411 – Detection and Monitoring. *“The Directors for region,...having forest health protection responsibilities shall ensure that surveys used to detect and monitor forest health conditions and trends on National Forest System land and in cooperation with other Federal, tribal, and non-Federal land managers, are conducted, as necessary.”*

4. Project Dates

The overview aerial survey season occurs between late June to late September, with the survey timed to capture overlapping biological windows of insect and disease "signatures" (visible foliage discoloration). This provides a one-time survey of each area during the summer. Additional or special aerial surveys may be conducted within or outside the overview flying season as needed or requested.

5. Location

Aerial surveys are conducted across all forested ownerships in designated core areas throughout Regions 1 and 4 and across requested areas as time and budget allow.

1. Before the aerial surveys are conducted, a proposed aerial survey schedule will be sent to each Forest FHP contact, Forest Aviation Officer and Forest Dispatch Center. This schedule will include such information as the dates each Forest will be flown,

the aircraft tail number, the requested flight following dispatch center, and the name and cell phone number of the observer. It should be understood that this schedule is tentative and can easily change due to weather, fire or other scheduling challenges. Each observer will attempt to be on the Forest as scheduled throughout the summer and if necessary fly incomplete areas at the end of the flight season. Respective Forest Dispatchers will be notified of survey schedule changes.

2. Prior to actual flight, the observer will confirm with the appropriate Dispatch Center by phone of their intent to aerially survey areas on their Forest. Survey dates, survey time, location, radio frequencies, aerial hazards and other aviation activities will be discussed. Notification of scheduled aerial surveys will be made in a timely manner so the dispatch center can accommodate their flight following schedule.
3. Daily, prior to flight, the observer will notify the appropriate Dispatch Center/s by phone of their expected flight area, “souls-on-board”, and to confirm radio frequencies. Mid-flight changes to planned itinerary will be relayed to the flight-following dispatch center by radio as they occur.
4. Daily, upon landing after each leg of flight, the observer will notify the flight following Dispatch Center by phone that they have landed safely and their intentions such as “refueling will return to flight” and give estimated time to take-off, or “done for the day”.

6. Projected Cost of Aviation Resources

All cost information is estimated based upon previous year’s actual costs. Weather, smoke, and other unexpected scheduling changes can affect these costs. Costs will not exceed total budget allowances.

R1: Two exclusive use aircraft - total annual budget \$200,000.

R4: Two exclusive use aircraft - total annual budget \$200,000.

	Projected Flight Hours	Projected Flight Cost	Projected Misc. Exp.
Region 1	580 hours	\$187,000.00	\$13,000.00
Region 4	400 hours	\$194,000.00	\$6,000.00

7. Aircraft

Aerial surveys conducted during the contract mandatory availability period will use FHP fixed-wing contracted aircraft. Other aerial survey aircraft needs may be addressed by Call-When-Needed (CWN) contract aircraft if FHP contract aircraft are unavailable or unsuitable. Occasionally mission objectives require procurement of a helicopter and

qualified personnel for a specific aerial survey. Helicopter procurement assistance will be requested from the Forest Dispatch where the special survey will occur. An amendment to this document will be completed before participating in a helicopter mission.

All aircraft used to conduct FHP aerial surveys are inspected and approved by an authorized Forest Service or Office of Aircraft Services (OAS) Aircraft Inspector. The Aircraft Data Card will document mission type for Forest Health Reconnaissance flights as Forest Health Protection or Forest Surveillance/ Reconnaissance (CWN aircraft). Pilots must show Aircraft Data Card to government employees upon request.

Region 1

FHP has one exclusive-use contract for two single-engine, fixed-wing aircraft administered by Acquisition Management, Incident Support Branch in Boise, ID. All requests for aircraft from this contract will go through Scott Sontag, Chris Hayes, Kathy Matthews or Northern Rockies Coordination Center, Logistics Coordinator/Aircraft desk, also referred to as AFD.

Western Montana Aviation, N6856R, Cessna 210T, AT3-TCAD & Forest Health Recon.
Western Montana Aviation, N103AS, Cessna TR182 Turbo, AT3 & Forest Health Recon.

Region 4

FHP has two exclusive-use contracts for single-engine, fixed-wing aircraft administered by Acquisition Management, Incident Support Branch in Boise, ID. One aircraft (Centurion) is based in Heber, UT. All requests for the Heber aircraft will go through Ben Meyerson, Kathy Matthews, or Northern Utah Dispatch Center. The other aircraft (Baker) is based in Boise, ID. All requests for the Boise aircraft will go through Chad Nelson, Kathy Matthews or Boise Dispatch Center.

Centurion Flight Services, N5538Y, Cessna T210N, AT3 & Forest Health Recon.
Baker Aircraft, N65N, Cessna T206, AT1 & Forest Health Recon.

8. Pilots

All contract pilots who fly FHP aerial surveys must be Forest Service/OAS approved for resource reconnaissance and mountainous terrain missions and will carry a current Pilot Qualification Card. For **non-emergency, preplanned** landings and take-offs on Forest Service mountain/remote air strips, pilots must meet the requirements listed in the Great Basin Mobilization Guide for mountainous/backcountry operations, be carded for Mountain/Remote Airstrips and receive pre-authorization from Project Aviation Manager identified in section 9 below. See section 12 of this document for backcountry operations. Also refer to the Regional Aviation Management Plan, Backcountry Mountain/Remote Airstrip Directory for airstrip classification.

9. Participants

The following personnel are contacts for FHP aerial surveys:

Project Aviation Manager & R1/R4 FHP Aerial Survey Program Coordinator:

Kathleen (Kathy) Matthews, phone (208) 373-4239 or cell (208) 859-2653

R1 FHP Aerial Observers & Fixed Wing Flight Managers (FWFM):

Located at the R1-Regional Office (Missoula FHP Field Office):

Name:	Qualifications:	Location:	Office Phone:	Cell Phone:
Scott Sontag	Observer-FWFM	Missoula	406-329-3323	406-370-0003
Chris Hayes	Observer-FWFM	Missoula	406-329-3130	Restricted

R4 FHP Aerial Observers & Fixed Wing Flight Managers:

Located at the Ogden or Boise Field Offices:

Name:	Qualifications:	Location:	Office Phone:	Cell Phone:
Ben Meyerson	Observer-FWFM	Ogden	801-476-9720 ext225	Restricted
Jason Neumann	Observer-FWFM	Ogden	801-476-9720 ext227	Restricted
Kathy Matthews	Observer-FWFM	Boise	208-373-4239	208-859-2653
Chad Nelson	Observer-FWFM	Boise	208-373-4169	Restricted

Additional Contacts with Supervisory Responsibilities:

Name	Position	Location	Office Phone	Cell Phone
Joel McMillin	Group Leader with ADS responsibility	Boise	208-373-4227	208-215-4089
Gregg DeNitto	Group Leader	Missoula	406-329-3637	406-396-8840
Steve Munson	Group Leader	Ogden	801-476-9728 ext219	801-725-3950
Gina Davis	Group Leader	Coeur d'Alene	208-765-7342	208-714-1173
Rob Cruz	FHM Coordinator	Ogden	801-625-5162	801-388-4828
Mike Dudley	S&PF Director	Ogden	801-625-5253	Restricted
John Shannon	S&PF Dep. Director	Missoula	406-329-3280	406-830-7150

FHM = Forest Health Monitoring

S&PF = State & Private Forestry

10. Flight Following and Emergency Search-And-Rescue

Flight following is a tracking system that provides an added level of safety for the aerial survey crew providing timely initiation of search and rescue operations. There are three participating team members in an FHP aerial survey mission: the aerial observer/s, the pilot, and ground personnel flight following the aircraft.

1. Flight following between the aerial survey aircraft and the Forest Dispatch Center, or designated alternate, will be performed for every aerial survey mission. Examples of designated alternatives could be a Forest Service Ranger Station, Bureau of Land Management office, Bureau of Indian Affairs office, or National Park Service office. On occasions, it may also be a State Forestry office, a wildlife refuge, a fire lookout or perhaps an individual with radio or AFF webtracker contact who also has contact with Forest Dispatch or other federal/state personnel that can to initiate search and rescue efforts.
2. Automated flight following (AFF) is the primary method for flight following. Use of AFF by FHP aerial observers will conform to National and Regional direction (see National and Regional Interagency Mobilization Guides). FHP aerial observers will contact Dispatch by radio or phone prior to take-off and immediately after landing for each flight leg to initiate or close flight following. Observer will notify dispatch of any deviation from flight following procedures and expected contact time, for example; fuel break return in 30 minutes, etc.
3. If AFF becomes inoperable, aircraft position will be reported to the flight following designee (usually the Forest dispatch office) every 15 minutes by radio. If radio contact is lost and not restored within 15 minutes after the next scheduled check-in, the survey will be terminated and the crew will ensure communication is restored by landing at an airport and calling from a telephone or by contacting a third party, who can immediately relay a message to Dispatch regarding current status of the aerial survey crew. The Fixed-wing Flight Manager – Special-Use will ensure they have the current primary and secondary radio frequencies with appropriate tones and dispatch phone numbers.
4. Verbal 15 minute flight-following check-ins are required when FHP aircraft are airborne, including ferrying from point to point (exception: see item 5 below) or during the aerial survey. Once Dispatch confirms that the “aircraft is positive for AFF”, the 15 minute check-in requirement may be met by Dispatch checking AFF. This procedure ensures that the Dispatch Center has the current aircraft location to reduce response time if there is an emergency. Observers should notify dispatch of any proposed change in flight planning; for instance, “changing to xx location due to weather” or “landing at xx airstrip for lunch, contact you on the ground”, or “returning to base”.
5. When transitioning between dispatch areas, observer needs to ensure communication exists with the next Dispatch Center before terminating flight following with the previous Dispatch Center. For long ferry flights (point to point), an FAA flight plan may be filed in lieu of the 15 minute flight-following check-ins. Even with an official FAA flight plan, upon arrival at the final destination a courtesy check-in with departing and receiving dispatch units involved is recommended. See

geographic area Mobilization Guide.

In the event that an FHP aerial survey aircraft is determined to be overdue during flight following by a Dispatch Center, the dispatch center will follow their own aviation plan for overdue aircraft and search and rescue operations. Generally, after 30 minutes without aircraft communication or contact and all reasonable efforts have been made to re-establish contact or determine the location of the aircraft, the Dispatch Center will initiate an aircraft search. To ensure no unnecessary search and rescue operations are mobilized, the Fixed-wing Flight Manager will take all actions necessary to contact dispatch or ground personnel.

11. Aerial Hazard Analysis and Fire Traffic Areas

Aerial observers and their pilots should review the flight hazard maps maintained at each dispatch center to become familiar with potential flight hazards within their mission area, including Military Training Routes and Military Operational Areas, helicopter logging, fire suppression activities, other working aircraft project areas, high suspension power lines, etc. Observers will obtain current temporary flight restriction (TFR) information from the dispatch center before each flight and avoid restricted areas. Wildfire TFR's may only be entered if flight arrangements have been made with the TFR supervisor and dispatch has been notified that TFR supervisor approval has been granted. Observer will contact the Air Tactical Group Supervisor (ATGS) before entering wildfire TFR.

Aerial observers often see smoke during surveys. Observers will not enter the fire traffic area (7 nautical miles from the incident) unless dispatch has confirmed status as a new fire and requests wildfire size-up. Extra vigilance is required to see and avoid other aircraft.

12. Backcountry Operations

Backcountry airstrips are unpaved, isolated airstrips often with highly challenging flight patterns (e.g., one way in or out) that have a higher landing/takeoff risk than other airstrips and may have limited communication. Back country airstrips are identified in the Airfield/Airstrip Directory. Backcountry airstrips should only be for emergency or mission critical usage. An example of mission critical usage could involve identifying unknown forest damage not seen elsewhere. Meal or restroom breaks are not mission critical. The intent is to limit exposure to the higher risk landing/takeoff environment. Backcountry airstrip use should be limited. All emergency or mission critical backcountry airstrip use will be reported to the Aerial Survey Program Manager for review.

Non-emergency, preplanned landings at a backcountry airstrip will require approval by the R1/4 FHP Aerial Survey Program Manager. Approval will not be granted until all safety precautions are in place. Prior to landing at back country airstrips, FHP observer will:

- ❖ Ensure personal protective equipment (PPE) for back country operations is being worn, in accordance with the Region 1/4 Supplements to the National Aviation Management Safety Plan. For instance, Nomex clothing and boots.
- ❖ Ensure pilot is properly carded for mission and meets back country airstrip pilot requirements
- ❖ Notify dispatch of their intent to land
- ❖ Ensure they have the proper frequencies to close flight following after landing and to initiate flight following prior to take off
- ❖ Perform a rapid risk assessment to assess weather, calculate aircraft performance (e.g. density altitude), pilot experience, complexity of airstrip (e.g. one-way in or out), etc.
- ❖ Provide dispatch with time of next contact

13. Protective Clothing/Equipment

PPE for overview aerial survey flights (not into back country airstrips) consists of non-synthetic materials or Nomex clothing, shoes or boots that fully cover the feet, and long pants that overlap the shoes when in the seated position. Long sleeve shirts are recommended.

Hearing protection is an important consideration for aircraft crew members. Noise-cancelling aviation headsets are recommended to reduce fatigue and enhance communication between the aerial observer/s and the pilot. Regular aviation headsets are acceptable. At a minimum, ear plugs should be worn during flight. Forest Service aerial observer positions fall under a hearing conservation program (OSHA 1910.95) and aerial observers should have baseline hearing tests followed by annual hearing tests to document for mitigation further hearing degradation caused by the aerial survey environment.

14. Load Calculations and Weight-and-Balance

Weight and balance computations are ultimately the responsibility of the pilot. Aerial observers will notify the pilot of passenger/s and equipment weight at the beginning of the season and additional passenger's weight when required.

15. Risk Hazard Assessment

This risk assessment is supplemental to and tiers to System Safety Aviation Risk Assessment for Forest Health Protection aerial survey mission type, dated October 28, 2008 (amended May 2013) available on the web at [Forest Health Aviation Safety](http://www.fs.fed.us/foresthealth/aviation/safety/safety-riskmgmt.shtml) website is as follows
<http://www.fs.fed.us/foresthealth/aviation/safety/safety-riskmgmt.shtml>.

Assessment: Forest Health Protection's aerial surveys for Insect & Disease damage surveys

Completed by: Kathleen Matthews Date: 3/2/2016

RISK MATRIX	SEVERITY			
LIKELIHOOD	Negligible	Marginal	Critical	Catastrophic
Frequent	[Blue Cell]	[Yellow Cell]	[Red Cell]	[Red Cell]
Probable			[Red Cell]	HIGH
Occasional	[Green Cell]	MEDIUM	SERIOUS	[Red Cell]
Remote	[Green Cell]		[Blue Cell]	[Yellow Cell]
Improbable	LOW		[Blue Cell]	[Blue Cell]

Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
1. Injury hazards around parked aircraft, e.g. propeller, wings, struts, pitot tube, etc.	O	M	M	Wait for pilot acknowledgement & propeller to stop before approaching or entering aircraft. Stay clear of protruding or hazardous aircraft parts.	R	M	M
2. Injury hazards during refueling of aircraft. Fire or explosion during refueling.	O	CR	S	Exit aircraft before fueling. Do not operate cell phone within 50 feet of fueling aircraft. Only Pilot or fuel dispenser operate nozzle.	R	M	M
3. Maintaining altitude above ground in geographic variability: mountainous terrain, box canyons, density altitude, & restricted areas.	F	CA	H	Brief pilot on mission area, determine elevational ranges & known hazards (Forest Hazard Map). Identify Flight Restrictions, military operation areas/routes & ensure dispatch has deconflicted the area. Obtain weather briefing. Fly ridges rather than drainage bottoms, use turbo-charged aircraft with adequate payload where appropriate.	R	CA	S
4. Lack of timely response to lost or overdue aircraft.	R	CA	S	Notify dispatch of planned mission area prior to every take off. Follow Regional guidelines for flight following during mission. Notify dispatch of any change in plans. Check-in with dispatch after every flight leg.	R	CR	M
5. Mid-air collision.	R	CA	S	All passengers notify pilot of aircraft, birds, & other potential hazards. Check area hazard map prior to mission. Use TCAS if available.	R	CA	S
6. Overheated cigarette lighter adaptor when used to power electronic equipment.	O	CR	S	Utilize hardwired air attack plug approved by avionics inspector & tested for proper polarity/voltage.	I	N	L

Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
7. Loose cargo, equipment or unrestrained wiring	P	CR	H	Stow cargo, secure equipment when not in use & during take-off and landing. Test polarity of aircraft accessory power source. Bundle cables out of the way of seat rails & to maintain emergency egress.	R	M	M
8. Loss of radio contact.	O	M	M	Prior to take-off complete a radio check with dispatch. Carry portable radio with correct frequencies or cell phone. Know how to program frequencies into radios, lock and unlock radio touchpad, carry frequency list for the survey are with you. If no contact can be established, land and establish contact via landline.	R	N	L
9. airsickness	P	N	M	Air crew should avoid wearing perfumes or bringing strong smelling foods. Maintain good personal hygiene. If queasy, keep fresh air vents open, look out at the horizon, find & use sick sack.	O	N	L
10. Lack of oxygen causing hypoxia.	P	M	S	Ensure oxygen is on board. Monitor & spend less time above 10,000 feet or use oxygen.	R	M	M
11. Hearing damage or eye strain.	P	M	S	Aerial observers fall into the Noise Hazardous Occupations category. Have baseline and annual hearing tests. Wear noise cancelling headsets or ear plugs if headsets are not available. Wear non-polarized, tinted sunglasses and a billed cap to reduce eye strain & glare.	R	N	L

Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
12. Pilots with minimal flight hours or mission experience.	P	CR	H	Thorough preflight briefing to pilots new to survey, prioritize flight in less challenging terrain to allow for training time.	O	CR	S
13. High winds, turbulence or extreme weather – thunderstorms	F	CR	H	Avoid hazardous flying weather conditions. Circumvent extreme weather areas by several miles. Be aware of winds aloft and downdrafts by talking to pilot and calling flight service stations. Maintain adequate altitude to recover from sudden down drafts. Terminate flight if wind/weather becomes too turbulent.	O	M	M
14. Pilot incapacitated	I	CA	M	Flight manager to notify dispatch of emergency. Gain altitude & request assistance from flight center. Attend a “Pinch-hitter” course annually (minimum bi-annually) to learn to navigate, fly & land the aircraft.	I	M	M
15. Pilot missing a pre-flight or pre-landing step.	R	CR	M	Encourage use of appropriate checklists, ask for checklists as part of crew resource management.	I	CR	M
16. Aircraft engine failure in remote area.	R	CA	S	Know the flight characteristics of the aircraft. Communicate with the pilot on mission flying strategies to enhance opportunities for survivability.	R	CA	S
17. Aircraft mechanical malfunction.	P	M	H	Pilot will determine if safety of flight requires aborting mission. Once landed, surveyors do not fly in aircraft until returned to service by certified aircraft inspector.	R	M	M

Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
18. Engine stall, down drafts, or lack of altitude to avoid obstacles.	P	CR	H	Always maintain a minimum of 500 feet above ground level. Maintain appropriate altitude while maneuvering. Enter rising terrain with adequate altitude and identified escape routes. Maintain awareness of lee winds over terrain.	O	M	M
19. Distracted pilot. Pilot paying inordinate attention to surveying or crew chatter rather than flying.	O	M	M	Observe “sterile cockpit” rule within 10 miles of airport after take-off or before landing. Be aware of radio communication with pilot. Brief new pilots on flight duties and monitor pilot. Pilot use intercommunication system isolation capability.	R	N	L
20. Fatigue/Complacency	O	M	M	Keep flight time to a length that keeps the pilot and observer fresh. Eat appropriately. Wear noise-cancelling headsets.	R	N	L
21. Flight control or radio touch-pad interference.	O	CR	S	Keep hands, equipment and personal belongings out of flight controls including pedals, instruments and radios. Lock radio touchpad.	R	N	L
22. Lack of visibility – smoke, fog, clouds, etc.	O	CR	S	Monitor conditions and abort mission if conditions deteriorate. Notify dispatch of change in plans.	O	M	M
23. Over reliance on automated systems such as AFF & TCAS by crew regarding other aircraft traffic.	O	CR	S	Emphasize fallibility of automated systems during training & review of PASP. Notify dispatch of location or operational	R	M	M

Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
				changes. Operate aircraft with transponder ON at all times.			

Describe Pre-Mitigation Hazard:	Likelihood (F-I)	Severity (N-CA)	Risk Level	Post-Mitigation Hazards after Mitigation Measures	Likelihood (F-I)	Severity (N-CA)	Risk Level
23. Flying near or in Fire Traffic Areas or Temporary Flight Restricted areas (TFR's)	O	CR	S	Nor new fires, contact dispatch to deconflict before entering FTA. Be especially watchful for other aircraft even if deconflicted. For ongoing fires, contact Air Attack & arrange permission and time of flight to avoid heavy aircraft activity. Otherwise avoid, reschedule or don't fly area.	R	M	M
24. ABS issues or lack of internet connectivity contributing to long duty day or vendors not being paid.	O	M	M	Utilize disconnected client for data entry or contact COR as alternate entry person. Notify COR of payment issues.	R	N	L
25. Pressure to complete the project.	O	CR	S	Crew Resource Management. Recognize this is occurring – speak up and use stress relaxing techniques.	R	N	L