

U.S. Department of Agriculture Forest Service	1. WORK PROJECT/ACTIVITY Aerial Survey Sketch Mapper	2. LOCATION Pacific Southwest Region	3. UNIT Forest Health Protection
JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 (Instructions on Reverse)	4. NAME OF ANALYST Jeff Mai	5. JOB TITLE Aerial Survey Specialist	6. DATE PREPARED 5/11/07
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE	
Pre flight activities on the airport ramp/helipad	Head/Eye	Be aware of propellers, wings, struts, pitot tube, etc...	
	Propeller	Stay clear of prop by 10 ft or more, never approach fixed wing from front or helicopter from rear, never approach or enter fixed wing aircraft with the propeller turning.	
	Fueling	Do not be in aircraft during fueling, observe testing, caps on.	
	Dust	Provide dust abatement on native surface helipads if possible.	
	Potential Emergency	Fixed wing pilot or helicopter flight manager will provide all passengers with a pre-flight safety/emergency briefing, qualified fixed-wing flight manager special use/helicopter flight manager to brief pilot on planned route including elevation ranges/potential hazards, check that pilot and aircraft carding is current and appropriate for mission.	
	Hazardous materials	For special use missions these typically include oxygen, fire extenguisher, insect repellent, pepper spray (other aerosols); reference IAT Transport of Hazardous Materials Handbook/Guide and 49CFR part 171-180 to properly store and secure.	
Flight Operations	Pilot or crew impaired before or during operations	Cancel mission if pilot is ill or otherwise impaired and unable to perform flight duties, dismiss crew members if ill or otherwise impaired and unable to perform crew duties.	
	Fuel starvation	Maintain awareness of required fuel type & fueling, flight time/fuel consumption, distance to refuel; communicate with pilot at regular intervals during mission progress.	
	Lost or over due aircraft	File manifest with dispatch, telephone dispatch prior to each take-off and following each landing, maintain flight following during the mission.	
	Position Reports: Automated Flight Following (AFF)	AFF will be utilized on all missions (exceptions only when technical difficulties prevent operation); establish positive radio communication with dispatch at onset of flight, during AFF as required by dispatch and at conclusion of mission.	

Flight Operations (continued)	Position Reports: Radio Flight Following	Maintain “ops normal, do you still have us on AFF?” check-ins at intervals predetermined by fixed-wing flight manager special use/ helicopter flight manager and dispatch when utilizing <u>AFF</u> (recommend every 15 minutes); for <u>radio-only</u> flight following, complete a radio/telephone check-in with dispatch prior to take-off (beginning of day) or once airborne; if contact is interrupted, return to base or other facility while attempting to reestablish radio contact; know frequencies and repeater options that may be useful, climbing to a higher elevation may help broadcast. Contact dispatch by radio/telephone when safely on the ground.
	Loose cargo	Properly stow cargo, secure equipment when not in use and during take-off and landing.
	Airsickness	Keep fresh air vents open, look to the horizon if queazy, know location of “sick sacks”
	Hearing damage	Wear quality headset during fixed wing flight. If not available, wear ear plugs or equivalent.
	Personnal protective equipment (PPE)	Wear appropriate PPE for the mission and based on the aircraft: <ul style="list-style-type: none"> • Helicopter - flight helmet or hard hat with chin strap, leather boots, leather or nomex gloves, nomex flight suit (or nomex pants/shirt), glasses • Fixed wing – nomex optional but wear long pants, long-sleeve shirt (or short-sleeve shirt with jacket on board), sturdy shoes or boots, and other apparel reasonable for surviving at least 36 hours outdoors in the event of an emergency landing. Carry food, water, knife, safety matches, etc for survival needs.
	High Altitude Operations	Comply with FAR 135.89 and 135.157, not limited to the following: If more than 30 minutes of operation between 10,000'-12,000', ensure pilot uses oxygen continuously; if more than 30 minutes between 10,000'-15,000', ensure at least 10% of occupants use oxygen; over 15,000' ensure oxygen is used by each occupant (one-hour supply required unless aircraft able to safely descend to 15,000' within four minutes, in which case 30-minute supply is required)
	Mid-air collision	All personnel watch for other aircraft, birds, wires, towers, other hazards – check area hazard map prior to flying mission; utilize TCAS (on board radar) if available.
Aircraft damaged	In event of bird- or other strike resulting in aircraft damage inform Dispatch and land at nearest facility. Do not use aircraft until damage is repaired and/or aircraft is returned to availability by aircraft maintenance inspector; notify management.	

	Smell smoke or burnt wires	Adjust flight path away from terrain, shut down digital mapping system, AFF, other unnecessary circuits. Inform Dispatch and land at nearest facility. If smoke is from aircraft, do not use aircraft until it is repaired and/or aircraft is returned to availability by aircraft maintenance inspector; notify management
	Poor weather	Avoid hazardous weather conditions, circumvent extreme weather areas (ie, thunderheads & hail storms) by several miles
	Winds	Be aware of winds aloft and down drafts by talking with the pilot and calling flight service stations, winds can be erratic in mountainous terrain.
	Eye strain	Recommend sunglasses that will not obscure foliar signature, dark clothing (anti-reflection) and billed cap.
	In-air emergency	Assist pilot as requested, inform dispatch of situation, prepare for forced landing, stow/secure all loose gear (eg. cameras, computers, radios, etc) on floor or under cargo net, assume crash position, know location and operation of ELT. After forced landing in remote areas, stay with aircraft until rescuers arrive.
	Pilot incapacitated	Use radio communications for assistance, attend "pinch hitter" course to be able to fly and land a plane safely.
	Forced landing	Know location of emergency kit and exits.
	Forced landing in water	Attend IAT Water-Ditching Course
	Unreasonable Risk in General (before or during flight)	When unsure about safety of the mission, cancel it. Do not try to coerce fellow employees into flying when they feel it is unsafe. Do not try to coerce the pilot into doing something the pilot is unsure about.
Limited Control Flying	Engine failure or mechanical malfunction	Know the flight characteristics of the aircraft, communicate with pilot on mission flying strategies (ie, altitude, wind, terrain, remote areas), minimize changes to power setting by using efficient flight techniques during survey.
	Stall or down drafts, ridgetop hazards	Maintain aircraft above specified above-ground-minimums (500 ft. for fixed wing), avoid tight turns and maneuvering to maintain appropriate altitude, remain aware of ridgetop features such as lookouts, towers wires, trees and snags.
	Lack of altitude	Climb as needed before entering a drainage to maintain enough altitude to exit drainage safely.
Crew Resource Management	Fatigue	Limit flight times and days to those that keeps pilot and observers fresh. Do not exceed pilot duty hour limitations. Pilot and observers (crew) must get a good night's sleep with a minimum of 10 hours off the clock. Crew must eat and drink appropriately to remain mentally alert during the mission. At no time should crew be under the influence of mind-altering drugs which might affect the safety of the mission.

Crew Resource Management (continued)	Distracting Pilot	Observe the “Sterile Cockpit” rule of not talking to the pilot, crew, or on the radio within 5 miles of airport/helipad after take-off or before landing. Be aware of when the pilot is communicating on the radio and don’t “talk over” pilot.
	Flight Control Interference	Keep feet, hands, equipment and personal belongings out of flight controls (pedals), instruments and radios.
Hazard Identification and Attitude	Overconfidence Complacency	Maintain a high level of awareness and attitude toward safety before, during, and after your flight. Do not allow hazards to be minimized or ignored based on your perceived comfort level. Continually work to identify ‘watch out’ situations or hazards unique to your area/mission and take appropriate steps to minimize risk. Report to supervisor, Forest/Unit aviation officer, or line officer any aviation operation that you (crew and others) believe is being conducted in a hazardous manner. Initiate appropriate action when an unsafe act or condition is observed. Any employee may refuse to participate in (or continue) an aviation operation when conditions indicate that further activity would jeopardize safety.
Evacuation Plan	No contact w/EMS or law enforcement	Provide for communication with dispatch or 911 via radio, cell or (most reliable) satellite telephones.
Post-Flight Mission Review	Perceived or Actual Safety Issue	File a SAFECOM report to document any condition, observance, act, maintenance deficiency, or circumstance which has caused or has the potential to cause an aviation-related mishap, as soon as possible with the Region, Area, or Station Aviation Safety Manager and Forest/Unit Aviation Officer.
10. LINE OFFICER SIGNATURE		11. TITLE Acting Director of State & Private Forestry
		12. DATE

Previous edition is obsolete

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JHA Instructions (References-FSH 6709.11 and .12)

The JHA shall identify the location of the work project or activity, the name of employee(s) writing the JHA, the date(s) of development, and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.

Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.

Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).

Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:

- a. Research past accidents/incidents
- b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature.
- c. Discuss the work project/activity with participants
- d. Observe the work project/activity
- e. A combination of the above

Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:

- a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture.
- b. Substitution. For example, switching to high flash point, non-toxic solvents.
- c. Administrative Controls. For example, limiting exposure by reducing the work schedule; establishing appropriate procedures and practices.
- d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills portable water pumps)
- e. A combination of the above.

Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.

Blocks 11 and 12: Self-explanatory.

Emergency Evacuation Instructions (Reference FSH 6709.11)

Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the worksite.

Be prepared to provide the following information:

- a. Nature of the accident or injury (avoid using victim's name).
- b. Type of assistance needed, if any (ground, air, or water evacuation)
- c. Location of accident or injury, best access route into the worksite (road name/number), identifiable ground/air landmarks.
- d. Radio frequency(s).
- e. Contact person.
- f. Local hazards to ground vehicles or aviation.
- g. Weather conditions (wind speed & direction, visibility, temp).
- h. Topography.
- i. Number of person(s) to be transported
- j. Estimated weight of passengers for air/water evacuation.

The items listed above serve only as guidelines for the development of emergency evacuation procedures.

JHA and Emergency Evacuation Procedures Acknowledgment

We, the undersigned work leader and crew members, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:

SIGNATURE

DATE

SIGNATURE

DATE

Work Leader
