

RISK ASSESSMENT MATRIX		PROBABILITY					
		Likelihood of Mishap if Hazard is Present					
		Almost Certain (Continuously experienced)	Likely (Will occur frequently)	Possible (Will occur several times)	Unlikely (Improbable; but has occurred in the past)	Rare (Remotely possible; but highly improbable)	
SEVERITY	Consequence if Mishap Occurs	<b>Catastrophic</b> (Death, Loss of Asset or Mission Capability or Unit Readiness)	Extremely High	Extremely High	Extremely High	High	Medium
	<b>Critical</b> (Permanent Disabling Injury or Damage, Significantly Degraded Mission Capability or Unit Readiness)	Extremely High	Extremely High	High	Medium	Medium	
	<b>Moderate</b> (Non-Permanent Disabling Injury or Damage, Degraded Mission Capability or Unit Readiness)	High	High	Medium	Low	Low	
	<b>Negligible</b> (Minimal Injury or Damage, Little or No Impact to Mission Capability or Unit Readiness)	Medium	Medium	Low	Low	Low	
		Risk Assessment Codes (RAC)					
		Extremely High=1 High=2 Medium=3 Low=4					

### Risk Assessment Codes

RAC Value	Risk Category	Action Required
1	Extremely High	Stop, Mitigation Required
2	High	Mitigation Needed, Consider Stopping
3	Medium	Mitigation Recommended
4	Low	Possible Acceptance, Mitigation Optional

*\*Reference specific agency policy regarding action required based on risk category*

## Risk Assessment Worksheet

<b>SYSTEM: Helicopter Operations</b>		Pre-Mitigation			Post Mitigation								
Sub System	Hazard(s)	Probability	Severity	Risk Level	Mitigation(s)	Probability	Severity	Risk Level	Additional Local Mitigation(s)	Probability	Severity	Overall Risk	Mitigation Achieved?
													Yes/No
<b>Mission - Policy</b>	Operational/Mission goals may be unstated, unclear, or conflict with policy.	Possible	Critical	High	Conduct thorough briefings, ensure organization is in place, and adhere to interagency policy, procedures & Guides (NSHO, NSRO, etc.)	Unlikely	Critical	Medium		Choose an	Choose an	Medium	YES
<b>Mission - Policy</b>	MASP/MPS/FBN absent or not complete (Policy Deviation)	Possible	Critical	High	Ensure MASP and risk assessment are completed and approved at appropriate level. Ensure Forest Aviation Officer is involved in mission planning. MASP/MPS/FBN should be used as a briefing tool. If at any point any or all participants are uncomfortable continuing, or the ORA level exceeds the approved rating, the mission will be canceled or delayed until the issue(s) can be rectified.	Unlikely	Critical	Medium		Choose an item.	Choose an item.	Medium	YES
<b>Mission</b>	Personnel transport/recon; Unimproved landing zone/helispot	Possible	Critical	High	Ensure load calculations/manifests are completed, reviewed & signed. Landing zones approved by qualified personnel. Landing zones staffed by qualified helitack as available. Ensure required PPE is being utilized.	Unlikely	Critical	Medium		Choose an	Choose an	Medium	YES

<b>Mission Communications</b>	Frequency management, cockpit overload, inadequate briefing, and/or loss of communication.	Possible	Critical	High	Ensure frequencies are reviewed and operational. Establish dedicated channel for air operations. Ensure thorough communication briefing. Halt operations if loss of communications occurs. Follow policy and guidelines, use existing checklists (NSHO, IRPG, MPS, etc.) Ensure AARs are being conducted and documented	Unlikely	Critical	Medium		Choose an item.	Choose an item.	Medium	YES
<b>Hazardous Materials</b>	Transportation of Hazardous Materials in the Helicopter	Possible	Catastrophic	Extremely High	Follow the directions spelled out in the Transport of Hazardous Materials Handbook for all HazMat associated with the mission.	Unlikely	Catastrophic	High		Choose an item.	Choose an item.	High	YES
<b>Personnel</b>	Unqualified employees working in or around aircraft. Personnel not trained properly or proficient with equipment/mission. Personnel are too close to drop site. Personnel unfamiliar with local flight following protocols and/or crash rescue procedures.	Possible	Critical	High	All personnel will be fully qualified to perform the duties associated with their positions and will take part in the pre-mission brief. Assignments (duties) will be assigned. Personnel unfamiliar with their assigned duty/role should ask for clarification. Provide mentoring and training in conjunction with operations, emphasizing hazard identification and communications. Advise pilot to communicate feedback to ground contact.	Unlikely	Critical	Medium		Choose an item.	Choose an item.	Medium	YES

<b>Personnel Human Factors</b>	Acceptance of high-risk missions as normal. Lack of CRM. Task saturation of fixation. Hazardous attitudes. Poor mission analysis. Fatigue. Management pressure/mission driven sense of urgency. Unknown change in project objective. Experience level of flight crew and vendor.	Possible	Catastrophic	Extremely High	Conduct thorough risk assessments & brief/debrief. Pilot and qualified non-crew members trained in CRM and implement associated skills. Conduct daily briefing and complete worksheet including real time FRAT/GAR. Ensure management does not place undue pressure or sense of urgency on helicopter operations. Ensure objectives have not changed and re-evaluate mission if changes occur.	Unlikely	Catastrophic	High	Choose an item.	Choose an item.	High	YES
<b>Aircraft</b>	Aircraft performance not suitable for mission. Operating in High, Hot, & Heavy (HHH) environment.	Unlikely	Catastrophic	High	Ensure appropriate aircraft are ordered, utilized, and operated IAW with appropriate flight manuals. Schedule flights during the cooler parts of the day when possible. Utilize agency load calculation process for all flights (NSHO). Ensure pilot/aircraft/FSV are carded for mission. Conduct thorough pre-mission planning and briefing.	Rare	Catastrophic	Medium	Choose an item.	Choose an item.	Medium	YES
<b>Aircraft</b>	Mission may require operating within the avoidance areas of the height velocity diagram (HVD); Low level flight below 500' AGL	Likely	Critical	Extremely High	Reduce time spent at speed and altitude combinations from which a successful autorotational descent and landing cannot be performed. Educate personnel on the limitations of autorotation. Identify and brief emergency landing areas that are in close proximity to the project area.	Possible	Critical	High	Choose an item.	Choose an item.	High	YES
<b>Aircraft</b>	Aircraft experiences engine, transmission, hydraulic, or tail rotor failure while in low and slow flight profile.	Unlikely	Catastrophic	High	Aircraft maintenance records reviewed during aircraft carding. Ensure contract maintenance standards are being adhered to. Reduce the amount of time spent operating in the avoidance areas of HVD. Perform Quality Assurance and contract compliance visits.	Unlikely	Catastrophic	High	Choose an item.	Choose an item.	High	YES

<b>Environment</b>	Adverse wind speed/direction, thunderstorms, etc. Weather is becoming less than VFR conditions.	<i>Unlikely</i>	<i>Catastrophic</i>	<i>High</i>	Ensure flight crew obtains current forecast and updated weather briefings and continually monitor wind speed and direction. If visibility, winds, or other conditions become unfavorable, postpone until conditions improve or reschedule operation.	<i>Rare</i>	<i>Catastrophic</i>	<i>Medium</i>		Choose an item.	Choose an item.	<i>Medium</i>	YES
<b>Environment</b>	Flying in Mountainous Terrain while focused on low-level mission.	<i>Possible</i>	<i>Catastrophic</i>	<i>Extremely High</i>	Utilize carded and experienced pilot. Select aircraft with appropriate performance for the mission and environment. Perform high and low recon of all mission areas prior to mission commencement. Identify applicable boundaries and aerial hazards. Utilize CRM principles to divide tasks between Pilot, HMGB, HECMs, spotter, or HRAPs and communicate location relative to obstacles and terrain.	<i>Unlikely</i>	<i>Catastrophic</i>	<i>High</i>		Choose an item.	Choose an item.	<i>High</i>	YES
<b>Aerial Hazards</b>	Other aircraft, powerlines/wires, towers, birds, UAS, during operations, especially while in Low Level flight (below 500') during the special use mission.	<i>Possible</i>	<i>Catastrophic</i>	<i>Extremely High</i>	Brief personnel on known aerial hazards. Complete high recon prior to committing aircraft to low level operations. Practice "see and avoid" at all times. Utilize CRM principles to continually identify/mitigate hazards.	<i>Unlikely</i>	<i>Catastrophic</i>	<i>High</i>		Choose an item.	Choose an item.	<i>High</i>	YES
<b>In flight hazards - External cargo</b>	Unstable load during flight.	<i>Possible</i>	<i>Catastrophic</i>	<i>Extremely High</i>	Improve crew training, preparation, and assembly. Prepare cargo correctly using approved equipment and rigging techniques.	<i>Unlikely</i>	<i>Catastrophic</i>	<i>High</i>		Choose an item.	Choose an item.	<i>High</i>	YES

<b>In flight hazards - Internal cargo</b>	Loads not balanced properly for CG or items coming loose or shifting during flight.	Possible	Critical	High	Follow proper loading techniques for center of gravity issues, pilot will be consulted on any questionable items or placement. Secure all cargo with adequate restraints.	Unlikely	Critical	Medium		Choose an	Choose an	Medium	YES
<b>In flight hazards- Rappel operations</b>	Loads not balanced properly for CG or items coming loose or moving during flight.	Possible	Catastrophic	Extremely High	All rappel operations will be completed only, when necessary, reviewed by the FAO, and approved at the line officer level. Follow procedures outlined in Standards for Rappel Operations. Complete FRAT/GAR prior to mission.	Unlikely	Catastrophic	High		Choose an item.	Choose an item.	High	YES
<b>Equipment - Rappel Operations</b>	Loads not balanced correctly, movement during flight, doors off operations, people or items coming loose during flight.	Unlikely	Catastrophic	High	All equipment will be inspected prior to and after each use following visual and tactile check procedures outlined in the NWCG Standards for Rappel Operations. Any worn or damaged articles will be placed "out of service" and replaced. All inspections will be documented on official forms.	Unlikely	Catastrophic	High		Choose an item.	Choose an item.	High	YES
<b>Rappel Operations</b>	Incomplete Risk Assessment	Possible	Catastrophic	Extremely High	This MASP utilized for rappel operations is only valid accompanied by the latest Rappel Programmatic Risk Assessment.	Unlikely	Catastrophic	High		Choose an item.	Choose an item.	High	YES
<b>Airspace - Collision Hazards</b>	Conducting training or proficiency flights in vicinity of airport environment, especially non-towered airport.	Possible	Catastrophic	Extremely High	Where possible, conduct training and proficiency flights away from the airport environment where hazards relating to converging traffic, airspace congestion, and communication workload can be reduced.	Unlikely	Catastrophic	High		Choose an item.	Choose an item.	High	YES

<p><i>*Final Risk Value is the overall risk of the mission/flight after all mitigations have been implemented. Overall risk cannot be lower than the highest risk after mitigations. One high risk rating will result in the overall risk being high. It is not an average.</i></p>			<p><b>Final Risk Value:</b></p>	<p><i>High</i></p>	
<p><b>Prepared By:</b></p>		<p><b>Title:</b></p>		<p><b>Date:</b></p>	
<p><b>Approved By:</b></p>		<p><b>Title:</b></p>		<p><b>Date:</b></p>	