NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

2025 Aerial Ignition Operations

Unit: Nez Perce - Clearwater NFs

MASP INSTRUCTIONS

Page 1 through the end of the Risk Assessment Worksheet require completion prior to regional office review and approval signatures. The Aerial Hazard Analysis and Map page through the end of the MASP document may be completed as information becomes available. Partial completion of these pages is recommended during the submission process and all pages **shall** be completed prior to mission start. A Mission Planning Sheet (MPS) or UAS Flight By Notification (FBN) with this information is considered completion of these pages. Insert Unit Specific MPS/FBN Hyperlink as able.

Mission Planning & Aircraft Ordering Sheet

RISK MATRIX INSTRUCTIONS

The risk outcomes on the risk assessment matrix have been incorporated into the risk assessment worksheet's drop-down menus. Risk Assessment Category (RAC) outcomes are categorized as follows:

LOW MODERATE HIGH EXTREMELY HIGH

In no case will the overall risk of the mission be less than the highest specific factor. (Example: One extremely high, one high, and two moderate threats results in an extremely high risk assessment category outcome).

SIGNATURES

Route all MASP's through the Unit/Forest Aviation Officer for Regional Office review. Signature blocks on page 2 are listed in the order required for MASP approval. The MASP's will be routed back down through the Unit/Forest Aviation Officer (AO) for line officer approval or as appropriate. MASPs should be submitted as a PDF document (if possible) to allow for digital signatures for Forest/Unit Aviation Officer, RASM, RAO, and Line officer. The MASP approval signature will only be valid for one year (365 days).

All signature boxes for Mission Prepared Unit level will be signed in typed text:

Example: /s/ John M. Smith

Line officer signatures may be signed with a wet signature or link pass digital signature at their discretion.

RETENTION AND FILING OF PLAN

MASPs that have been reviewed by the Regional Office will remain in Pinyon and archived by fiscal year. These plans are accessible by the Regional Office, Unit/Forest Aviation Officers, and select aviation managers. Plans approved by the line officer will be maintained in the dispatch office and referenced during flight. Retention of the safety plan by dispatch shall be three years. Retention of the plan and daily briefing sheets by the mission manager shall be three years.

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

Unit: (Insert Local Unit) Nez Perce - Clearwater NFs			**Sub Unit**:		
Agency Requesting Mission **FS** ☒ **NPS** ☒ **BLM** ☒ **FWS** ☒ **BIA** ☒ **STATE** ☒ **OTHER** ☒			**Anticipated Date(s):** **YES** ☒ **NO** ☐ **Calendar Year**: **YES** ☐ **NO** ☒ ***Use start and end date below only if anticipated date(s) box is selected***		**Calendar Year**
Aircraft Type					
Fixed	**Rotor**	**UAS**	**Start Date**	**End Date**	**MASP Objectives**
☐	☒	☒	03/07/2025	03/07/2026	**Training** ☒ **Resource** ☒ **LE&I Mission** ☐ **Incident** ☒

Mission prepared by:	**Title:**	**Date:**
Mission reviewed by: (OPTIONAL) Joshua Schulz Digitally signed by Joshua Schulz Date: 2025.02.06 08:53:06 -07'00'	**Title**: Helicopter Operations Specialist	**Date:** 2/6/2025
Mission reviewed by: (OPTIONAL) NATHAN HARRISON Digitally signed by NATHAN HARRISON Date: 2025.02.06 08:59:14 -07'00'	**Title**: UAS Program Specialist	**Date:** 2/6/2025
Mission reviewed by: (REQUIRED) Forest Level: JEREMY BEESON Digitally signed by JEREMY BEESON Date: 2025.03.06 16:32:50 -08'00'	**Title**: Unit Aviation Officer FAO	**Date:** 03/06/2025
Mission reviewed by: (REQUIRED) Regional Level: EVAN DAY Digitally signed by EVAN DAY Date: 2025.02.06 09:32:21 -07'00'	**Title:** Helicopter Program Manager	**Date:** 2/6/2025
Mission reviewed by: (REQUIRED) RASO: JOHN HARRIS Digitally signed by JOHN HARRIS Date: 2025.02.10 08:18:53 -07'00'	**Title**: Regional Aviation Safety Officer	**Date:**
Mission reviewed By: (REQUIRED) RAO: PHILLIP KETEL Digitally signed by PHILLIP KETEL Date: 2025.02.10 10:02:53 -07'00'	**Title**: Regional Aviation Officer	**Date:**
Mission and Risk Assessment approved by: (REQUIRED) Line Officer: HEATH PERRINE Digitally signed by HEATH PERRINE Date: 2025.03.18 15:44:55 -07'00'	**Title**:	**Date:**
Mission and Risk Assessment approved by: (OPTIONAL) - Line Officer:	**Title**:	**Date:**

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

*** Participant's qualifications and responsibilities shall be verified and discussed during daily briefing***

Project Aviation Manager (IAW IAT Guide):	Alternate Proj. Aviation Manager (IAW IAT Guide):
Complete or See MPS/FBN	Complete or See MPS/FBN

Mission Name
Aerial Ignition Operations

Mission Description and Location: This MASP details the utilization of aerial ignition to achieve resource or fire objectives. The overall intent is to utilize aerial ignition as a tool. Other Agencies may be the requesting entity, however this MASP is only applicable when the Forest Service has aviation operational control. This plan may be used for the ignition of multiple burn units in the same vicinity when acceptable conditions exist. **Note: Both UAS and helicopter platforms with aerial ignition carding could be utilized for the missions, potentially concurrently.**

Helicopter:
All missions may include standard fire operations (crew transport, internal/external cargo, recon, bucket work) and aerial ignitions utilizing a plastic sphere dispenser (PSD) or Helitorch. All participants will receive an operational briefing before performing missions. Helitorch and PSD bench testing, configuration, and operations would be conducted with qualified personnel and in accordance with NWCG Standards for Aerial Ignition, and NWCG Standards for Helicopter Operations.

UAS:
Flight missions could include aerial reconnaissance (examples include but are not limited to; infrared imagery, video, still photos, post burn missions etc.) and aerial ignition operations. In the event UAS operator trainees are utilized, they will operate under the direction and guidance of qualified UAS personnel. Aerial ignition operations would be conducted in accordance with approved aerial firing plans. Additionally, all UAS operations and mission planning will be conducted in compliance with the NWCG Standards for Fire Unmanned Aircraft Systems Operations, NWCG Standards for Aerial Ignition and Forest Service Standards for UAS Operations.

Areas ignited will not exceed the capability of resources needed for control, considering current and expected fire behavior conditions. Ignition may occur over several operational periods. Reconnaissance, shuttling authorized crewmembers, transporting cargo, and bucket operations are covered under this plan.

This MASP or a specific Mission Planning Sheet (MPS) and/or UAS Flight By Notification (FBN) will be utilized that details the project name, funding codes, aircraft assigned, specific mission, communication plan, project site location(s), specific helispot and/or landing zones, participant signatures, and mission/flight hazard maps. Site or project specific hazards not identified in the attached Risk Assessment need to be documented (e.g. FRAT/GAR); consider developing a mission specific MASP if the hazards exceed the scope of this plan. The mission may include both hand and aerial ignition. Both PSD and Helitorch may be used to create different fire effects resulting in mixed severity burning. Firing patterns will be determined by the Firing Boss/Burn Boss and may be dependent on several factors such as weather, ground operations and intended effects. Ground and aerial ignition may occur simultaneously.

The pilot will be briefed prior to commencing any flights on known hazards, MTR's/MOA's, TFRs and NOTAMs and local weather. Current and forecasted weather/fuels conditions will be observed and discussed prior to operations.

An Operational Risk Assessment (e.g. FRAT/GAR) will be conducted prior to flight operations. If at any point during this briefing any or all participants are uncomfortable to continue, or a NO-GO assessment is found, or the ORA risk level exceeds the approved rating level, the mission will be cancelled or delayed until the issue/s can be rectified.

Aviation personnel will be equipped with required PPE and radios. Positive communication between all air and ground resources will be in place and utilized. In the event of a mishap the Aviation Mishap Response Guide and Checklist will be initiated by contacting Dispatch as applicable.

Mission Objectives: The objective is to use aerial ignition to reduce exposure to personnel assigned to meet management objectives.

The number one priority objective is providing for Firefighter safety. Other objectives with the use of aerial ignition include:

- Reduce wildland fire threats and impacts to the communities, public facilities, and improvements to various resource and ecosystem components.
- Increase safety and effectiveness of fire suppression crews.
- Further the development and operational approach to aerial ignition with the utilization of new and advancing technologies.

Aircraft Justification For Mission:

Justification statement for low-level manned flights: Management has deemed aerial ignition as the best method of achieving this agency goal. **Aerial Ignition may be conducted below 500 feet above ground level (AGL) when necessary to meet the mission objectives.**

Minimum helicopter performance for aerial ignition within the Northern Rockies shall be 7000'/30C with a HOGE payload of 700 lbs. when using the CWN MATOC contract (MATOC payload category 3.700).

UAS will be used when available and where appropriate to reduce exposure to firefighters and pilots during the ignition and monitoring phase of the operation. UAS will utilize an agency approved UAS and/or other approved equipment with a Plastic Sphere Dispenser and an IR/EO camera to assist with the ignition and monitoring.

A combination of manned and unmanned flight may be used to limit the length of time the manned flight crew is exposed to low level flight and ground crews are exposed to the hazards of fire. Mitigation measures noted in the risk assessment will be in place prior to the mission. These mitigations will include the separation either vertical, horizontal, or temporal in nature. This separation will be decided between the pilots.

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

Aircraft Information:

Check all that apply, if name is unknown, add information as it becomes available
Leave text fields blank if unknown
All state cooperators require an annual approval letter onboard

Cooperator: ☐ **Agency:** ☒
Vendor: ☒ **Military:** ☐
Other: ☒ **Federal Partners**

Mission Category: **Complete or see MPS/ FBN**

Check all that apply, if unknown, add information as it becomes available

☐ **Pax Transport** ☐ **Detection** ☐ **Recon** ☐ **Aerial Ignition (**☐ **PSD** ☐ **Helitorch)** ☐ **UAS**
☐ **External Load** ☐ **Backcountry** ☐ **Training** ☐ **Other** _____

Rotor Wing: Type One: ☐ Type Two: ☒ Type Three: ☒

***Document additional requirements beyond standard typing in aircraft justification and on the resource order* (performance capabilities, equipment, etc.).**

Fixed Wing: Single Engine ☐ Twin Engine ☐

Document mission needs for turbine, twin-engine, air conditioning, high or low wing, pressurized cabin, radio package, etc. in the aircraft justification section and on the resource order.

UAS: Fixed Wing ☐ Rotor Wing (VTOL) ☒

Aircraft Make and Model: If unknown, add information as it becomes available. All information shall be filled out prior to mission start. **Complete or see MPS/FBN**

Unknown CWN: ☒ **Unknown EU:** ☒
Vendor: **FAA Registration #:**
Make: **Model:**
Carded for Mission: ☒ **YES** ☐ **NO** **Card Expiration Date:**
Aircraft Color Scheme:

** CWN helicopter information attained after hiring process, ensure CWN inspection sheet has been completed and a copy of the aircraft data card is on file prior to mission start. **

Procurement and Cost Information: Check unknown if unable to provide accurate or estimated information.

Procurement Type: **Unknown** ☒ **Mission Flight Hours:** **Unknown** ☒ **Charge Code:** **Unknown** ☒	**Estimated Flight Hour Cost:** **Unknown** ☒ **Estimated Miscellaneous Cost(s):** **Unknown** ☒

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

UAS Missions Only

Crew: Other Than Pilot: **Complete or see MPS/FBN**

UAS Crew Leader:	**Contact Number:**
UAS Data Specialist (1):	**Contact Number:**
UAS Data Specialist (2):	**Contact Number:**
UAS Visual Observer (1):	**Contact Number:**
UAS Visual Observer (2):	**Contact Number:**
Additional Crew:	**Contact Number:**

TFR Information:

Airspace Authorization:

☒ **Part 107** ☒ **107/LAANC** ☒ **SGI Waiver** ☒ **FAA/DOI MOA**

Authorization Comments -

Lost Link and Flyaway Procedures-Protocols:

Approved UAS have built in failsafe systems. GPS coordinates and elevations will be confirmed prior to mission. The aircraft will return to home (LRZ) in the event of low battery voltage or loss of link with the GCS. In the event of loss of control, communication, or visual contact with UAS: Notify aerial supervision/helibase/dispatch, aircraft in the area, and ground personnel as applicable. Clear the affected airspace and suspend air operations in the area. Wait for the duration of the fuel/battery load. Resume air operations. Search for the missing UAS. Follow established mishap reporting procedures.

Special Consideration-Safety Concerns-Comments Section:

All fire personnel will be briefed on communications, Medivac, aerial ignition operations, lost link protocols, and ignitions outside of control lines.

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

****Risk assessment must be completed prior to mission approval****

****Risk assessment hazards shall be reassessed prior to starting the mission, see FRAT****

****Ensure appropriate management level for approval ****

****This Risk Assessment does not negate the requirement to complete a FRAT prior to flight. ****

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 (Remotely possible but not probable)	Rare (Improbable; but has occurred in the past)
Severity/ Consequences *Consequence if Mishap Occurs*	Catastrophic (Imminent and immediate danger of death or permanent disability; major property or facility damage; loss of critical system or equipment)	Extremely High	Extremely High	Extremely High	High	Moderate
	Critical (Permanent partial disability, temporary total disability; moderate environmental damage; extensive damage to equipment)	Extremely High	Extremely High	High	Moderate	Moderate
	Moderate (Hospitalized minor injury, reversible illness; minor damage to equipment, property or the environment)	High	High	Moderate	Low	Low
	Negligible (First aid or minor medical treatment; little or no property or environmental damage)	Moderate	Moderate	Low	Low	Low

Risk Assessment Code	Severity of Consequences
Extremely High	• Complete or near complete failure to meet objective • Major property or facility damage • Death or permanent total disability • Severe environmental damage • Loss of major or critical system or equipment
High	• Significantly degraded capability for meeting the objective or accomplishing the project/incident/work activity • Injury that results in permanent partial disability, or temporary total disability lasting more than three months • Serious environmental damage
Moderate	• Degraded capability for meeting objective or accomplishment of the project/fire operation • Lost days due to injury or illness not exceeding three months • Moderate damage to property or the environment
Low	• No adverse impact to meeting objective or accomplishment of the project/fire operation • Little or no medical treatment required • Little or no damage to equipment, systems, property or environment

Risk Decision Authority		
Risk Level	**Fire**	**Mission**
Extremely High	Incident Commander or Operations Sections Chief	Line Officer
High	Incident Commander or Operations Sections Chief	Line Officer
Moderate	Air Operations Branch Director	Supervisor or Lead
Low	Base Manager	Individual

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Mission - Policy	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.	**Unlikely**	**Critical**	**Moderate**
Mission - Policy	MASP and/or GO-NO GO checklist 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 should be used as a briefing tool. Stress that on a "GO-NO GO" checklist a "NO GO" halts the operation. Ensure that all parties are available for mission briefings.	**Unlikely**	**Critical**	**Moderate**
Mission	Burn Crew transport/ pre-burn recon; Unimproved landing zone / helispot	**Unlikely**	**Critical**	**Moderate**	Ensure load calculations/manifests are completed, reviewed & signed. Landing zones approved by qualified personnel. Landing zone staffed by qualified helitack.	**Rare**	**Critical**	**Moderate**
Mission - Communications	Frequency management, cockpit overload, inadequate briefing, and/or loss of communication.	**Possible**	**Critical**	**High**	Ensure frequencies are reviewed and operational. Consider a discrete channel for air operations. Ensure thorough communication briefing and understood. Halt operations if loss of Communications.	**Unlikely**	**Critical**	**Moderate**

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Personnel	Unqualified employees working in or around aircraft. Personnel not proficient with equipment/mission.	**Possible**	**Critical**	**High**	All personnel will be fully qualified to perform the duties associated with a position. Trainees will have direct supervision. The Firing Boss, if not a helicopter crew member, will be loaded and unloaded by qualified personnel.	**Unlikely**	**Critical**	**Moderate**
Personnel Human Factors	Acceptance of high risk missions as normal. Lack of CRM, Task saturation or fixation, hazardous attitude. Poor mission analysis. Fatigue. Management pressure/mission driven sense of urgency. Unknown change in project objective. Experience level of air crew and vendor.	**Possible**	**Catastrophic**	**Extremely High**	Conduct thorough risk assessments & brief/debrief. Pilot and flight crew trained in CRM and work together in mission planning. Conduct daily briefing and complete worksheet including real time FRAT. Ensure management does not place undue pressure or sense of urgency on flight crews. Ensure project objective has not changed and re-evaluate mission if changes occur	**Unlikely**	**Catastrophic**	**High**
Human Factors	Ground Crews / Public within the planned burn area	**Almost Certain**	**Critical**	**Extremely High**	Conduct thorough briefings, ensure Organization is in place, and Adhere to Interagency policy, procedures & Guides (PMS 501 , PMS 510)	**Rare**	**Critical**	**Moderate**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Human Factors	Multi-tasking - Pilot, Helicopter Manager, Helibase Manager, Helitack Crew personnel, fuel service personnel	**Almost Certain**	**Critical**	**Extremely High**	Ensure existing staffing, supervision and management policies & procedures are met. Order resources early when the need is anticipated. Management needs to recognize aviation staffing is a critical safety priority. Limit collateral duties in key supervisory positions. If unable to fill key positions, operations will be shut down or use of aircraft will be limited until span of control issues are resolved.	**Unlikely**	**Critical**	**Moderate**
Aircraft	Aircraft Performance not suitable for mission	**Unlikely**	**Catastrophic**	**High**	Ensure appropriate aircraft is ordered, utilized and operated in accordance with appropriate flight manuals. Utilize agency load calculation process for all flights (NWCG Standards for Helicopter Operations). Ensure pilot/aircraft are carded for mission. Conduct thorough pre-mission briefing and planning.	**Rare**	**Catastrophic**	**Moderate**
Aircraft	Missions may require operating in the avoidance area of the height velocity curve; Low Level Flight below 500 feet AGL	**Likely**	**Critical**	**Extremely High**	Reduce time spent at speeds and altitudes from which a successful autorotational descent and landing cannot be completed. Identify and brief emergency landing areas in close proximity to the burn. Use equipment that allows greater airspeeds and altitudes. Consider reduced burn efficiency for greater safety margins.	**Possible**	**Critical**	**High**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Aircraft	Aircraft experiences an engine, transmission, hydraulic, or tail rotor failure while in low and slow flight profile	**Unlikely**	**Catastrophic**	**High**	Aircraft maintenance records reviewed during aircraft carding. Aircraft manager will work with vendor mechanics to ensure contract maintenance standards are being adhered to. Reduce the amount of time operating within the avoid zone of the height velocity chart during PSD operations. Regional Quality Assurance audits conducted within the region.	**Unlikely**	**Catastrophic**	**High**
Environment	Adverse wind speed / direction, thunderstorms, etc.	**Unlikely**	**Catastrophic**	**High**	Ensure flight crew obtains current forecast and updated weather briefings and continually monitor the wind speed and direction. If winds become unfavorable, postpone or delay to another day.	**Rare**	**Catastrophic**	**Moderate**
Environment	Smoke limiting visibility	**Possible**	**Catastrophic**	**Extremely High**	Utilize smoke observations, coordinate with ground ignition and set decision points for discontinuing or delaying the mission. The pilot/PLDO has the right to refuse or modify the request of the firing boss/ burn boss.	**Unlikely**	**Catastrophic**	**High**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Environment	Flying in Mountainous Terrain while focused on a low-level mission	**Possible**	**Catastrophic**	**Extremely High**	Carded and experienced pilot. Chosen aircraft will have enough performance to allow for more options flying in mountainous terrain. Recon of the areas to be treated will occur prior to the mission. All boundaries aerial hazards will be pre-identified. Division of tasks between pilot, burn boss, and PLDO and communicating frequently location relative to terrain.	**Unlikely**	**Catastrophic**	**High**
Aerial Hazards	Powerlines, towers, birds, UAS, other aircraft.	**Possible**	**Catastrophic**	**Extremely High**	Brief personnel of known aerial hazards. Complete high-level reconnaissance prior to committing aircraft to low level operations. Practice “see and avoid”. Communicate using principles of CRM to identify/mitigate hazards.	**Unlikely**	**Catastrophic**	**High**
Hazardous Materials	Transportation of Hazardous Materials in the Helicopter	**Possible**	**Catastrophic**	**Extremely High**	Follow the directions spelled out in the Standards for Aviation Transport of Hazardous Materials Handbook (PMS 513) for any and all Hazmat associated with the mission.	**Unlikely**	**Catastrophic**	**High**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Equipment – PSD /Helitorch	Aerial Ignition equipment not maintained, tested or functioning. Burn fuel mix inappropriate. PSD Spheres faulty. Malfunction of the machine. Hang Fire in machine.	**Possible**	**Critical**	**High**	Ensure equipment is well maintained, tested & operational. Replace equipment if needed. Check fuel mix ratio. Check condition of spheres. Ensure reservoir is full & additional water on board. Ensure all items are properly secured. Brief emergency procedures with pilot, burn boss, and operator.	**Unlikely**	**Critical**	**Moderate**
Equipment - Helitorch	Helitorch Malfunction or Hang Fire	**Possible**	**Critical**	**High**	Helitorch personnel will be qualified (or Trainer onsite) on equipment type and understand Emergency procedures. Ensure Emergency procedures are briefed and understood by all personnel involved. Helitorch preplanning and mission "GO-NO GO" checklist will be utilized.	**Unlikely**	**Critical**	**Moderate**
Equipment – PSD	Doors Off Flight Operations could cause fall and/or unintended equipment exiting the aircraft	**Unlikely**	**Catastrophic**	**High**	All agency missions that require aircraft doors to be removed prior to flight, or open during flight shall receive hands-on secondary restraint refresher training. All Secondary Restraint Operations will be in accordance with Interagency / Forest Service Safety Alert 18-03 and Interagency ALSE Handbook.	**Rare**	**Catastrophic**	**Moderate**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
UAS Collision	Collison with another aircraft	**Unlikely**	**Catastrophic**	**High**	The remote pilot will utilize a visual observer (VO) who will scan the area for air traffic and other hazards to aviation. PMS 515 will be utilized for all incident flights and implemented when appropriate on RX projects. The remote pilot will file a NOTAM as per Interagency/ FAA policy. Flights within TFRs will be coordinated with the controlling authority and participating aircraft. The remote pilot will give way to manned aircraft. The remote pilot will confirm de-confliction with local aviation about the mission. Utilize CRM for visual or audible encounters with manned aviation, communicate using principles of CRM to identify/mitigate hazards. Practice “see and avoid”. As able use available tools such as ADS-B, Foreflight etc.	**Rare**	**Catastrophic**	**Moderate**
UAS Collision	Collision with personnel or vehicles	**Possible**	**Critical**	**High**	The remote pilot will conduct a pre-flight briefing which will include flight patterns and safe observation/parking areas. VO will be utilized.	**Unlikely**	**Critical**	**Moderate**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION									
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**			
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
UAS Collision	Collision with fixed aerial hazard	**Possible**	**Catastrophic**	**Extremely High**	The remote pilot will conduct a survey of the operations area prior to flight operations and consult an aviation hazard map and/or aviation sectional of the operations area.	**Rare**	**Catastrophic**	**Moderate**
UAS Aircraft Communication	Aircraft flyaway (loss of control)	**Unlikely**	**Critical**	**Moderate**	The remote pilot will utilize specific make/model emergency procedures. Aircraft, personnel and ATC/ARTCC having jurisdiction over the airspace will be notified with the last location, heading, speed and approximate battery/time remaining of the UAS. The crew actions to recover the UAS will be relayed as well.	**Unlikely**	**Critical**	**Moderate**
UAS Aircraft Communication	Aircraft loss of link with Ground Control Station	**Possible**	**Moderate**	**Moderate**	UAS will be programmed to return to home and land.	**Unlikely**	**Moderate**	**Low**
Injury	Injury caused by spinning propellers	**Unlikely**	**Critical**	**Moderate**	Preflight briefing will include safety precautions when working around UAS with motors running. Trainees will be supervised around equipment until they demonstrate proficiency working around aircraft.	**Rare**	**Critical**	**Moderatea**

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
Weather	Adverse Weather (wind, thunderstorms, etc.)	**Possible**	**Critical**	**High**	Remote pilot will obtain a current forecast and ensure the aircraft is flown within approved parameters. The crew will monitor weather conditions periodically during flights. Cease aircraft operations when weather precludes mission objectives from being accomplished.	**Unlikely**	**Critical**	**Moderate**
UAS Night Operations	Night Operations	**Possible**	**Critical**	**High**	The UAS will have policy approved lighting. The launch and recovery area will be well lit. UAS pilots will be trained in UAS night operations and follow agency protocols.	**Possible**	**Moderate**	**Moderate**
UAS Battery Fire	Battery Fire	**Unlikely**	**Catastrophic**	**High**	Batteries will be stored in approved containers. Batteries will be inspected prior to each flight, if damage or abnormalities are noted the batteries will not be used and specific manufactures guidelines will be followed. A fire extinguisher will be available on site.	**Rare**	**Catastrophic**	**Moderate**
UAS Capabilities	Operating aircraft outside of published parameters	**Possible**	**Moderate**	**Moderate**	The remote pilot will ensure the aircraft is operated within policy and the provisions of the aircraft operations manual.	**Unlikely**	**Moderate**	**Low**

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
UAS Personnel	Lack of training in Firefighting strategy, tactics, terminology, basic ICS, frequency management, etc.	**Possible**	**Critical**	**High**	Establish requirements for documentation of online training to meet basic, minimum level of knowledge for all contracts. Consider pilot academy. Ensure PMS 515 is utilized for all incident UAS operations and implemented when appropriate on RX projects. Follow all provisions of aerial ignition plan (project or incident) and the aerial ignition guide.	**Unlikely**	**Critical**	**Moderate**
UAS Personnel	Fatigue	**Likely**	**Critical**	**Extremely High**	Managers work with company personnel to ensure adequate rest. Manage missions to be most effective with proper use of pilots & aircraft. Implement Phase Duty Limitations as appropriate	**Possible**	**Critical**	**High**
UAS Personnel	Low CRM with crew rotations (multiple relief pilots)	**Almost Certain**	**Critical**	**Extremely High**	Ensure there incoming crews are thoroughly briefed. Practice CRM, conduct effective AARs, etc.	**Possible**	**Moderate**	**Moderate**
UAS PSD	PSD Miscommunication	**Possible**	**Critical**	**High**	Conduct orientation flight with Ignition Specialist, hang fire mitigation and escaped fire contingency established, complete all operational checklists prior to starting operations.	**Unlikely**	**Critical**	**Moderate**

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

SAFETY MANAGEMENT SYSTEM ASSESSMENT AND MITIGATION								
System Being Evaluated: Helicopter/UAS Aerial Ignition		**Pre-Mitigation**				**Post Mitigation**		
Sub System(s)	**Hazards**	**Likelihood**	**Severity**	**Risk Level**	**Mitigation**	**Likelihood**	**Severity**	**Risk Level**
UAS PSD	PSD dispenser fire	**Possible**	**Critical**	**High**	Emergency procedures covered by Remote Pilot, Visual Observer and Burn Boss/Ignition Specialist in pre-burn briefing. Emergency release operations tested before flight.	**Unlikely**	**Critical**	**Moderate**
Helicopter Rotor Wing – Final Assessment: **Low** ☐ **Moderate** ☐ **High** ☒ **Extremely High** ☐		**Date prepared:** **(Insert Date)** 03/06/2025			**Prepared By:** **(Insert Preparer's Name)** Jeremy Beeson			
UAS PSD Final Assessment: **Low** ☐ **Moderate** ☐ **High** ☒ **Extremely High** ☐								

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

Aerial Hazard Analysis and map: A written analysis of aerial hazards surrounding the mission area in this box or in the MPS/FBN, e.g. towers, wires, sloping terrain, dust, proximity to airports, confined landing zones, etc. Provide a hazard map/QR code.

Project Specific Maps will be provided and briefed to prior to mission.

Insert local QR code OR attach aerial hazard map

QR Code

Optional: Insert Hyperlink in Field Below

https://usfs-public.box.com/shared/static/3mw0wc

MAP

Aircraft Performance Planning:
The pilot is responsible for the accurate completion of load calculations or PPC (military performance planning). Trained personnel shall ensure that aircraft scheduled are capable of performing the mission(s) safely and within the capabilities of the aircraft selected. The helicopter or flight manager shall ensure that manifests, load calculations, weight & balance are completed properly using accurate environmental and aircraft data. Reference NSHO chapter 7 or chapter 70 of the Military Use Handbook for additional information.

Personal Protective Equipment: *Always refer to current ALSE, NSHO, and manual direction*	
Type of Operation- Check applicable boxes that may apply to mission or mission	**Personnel protective equipment requirements.** **NOTE:** Agency employees must be informed of the increased personal hazard that is associated with wearing non-fire resistant clothing or footwear when the full complement of PPE is not worn. **The MASP for the project must document PPE exception(s) and in accordance with FSH 5709.16, Chapt 30, 36.53b.**
☒ **Rotor Wing Ground Operations**	Fire resistant clothing, hard hat w/chin strap or approved flight helmet, fire resistant and/or leather gloves, all leather boots, eye protection, hearing protection. *Refer to the Standards for Aerial Ignition (PMS 501) for additional ground operation requirements.*
☒ **Rotor Wing**	Fire resistant clothing, approved flight helmet, hard hat w/chin strap, fire resistant and/or leather gloves, approved leather or flight boots, eye protection, hearing protection. Additional personnel restraints needed in the helicopter pending type of mission. * Refer to appropriate guides. * Charter flights, (non-agency controlled mission), shall comply with 14 CFR 135 requirements.
☒ **Doors Off Flight(s)**	Personnel will remain seated and inside fuselage during all flights, approved secondary restraint harness for doors off flights (only for PLDO, HRAP, HERS, Aerial Photography, IR Operator, ACETA Gunner, Cargo Letdown, Short Haul Spotter, Cargo Free Fall Operations in type 3 helicopter) * Refer to appropriate guides*
☐ **Cargo Free Fall Operations**	Fire resistant clothing, approved flight helmet, fire resistant and/or leather gloves, all leather boots, eye protection, hearing protection. Additional qualifications, compliance with rotorcraft manual and approved restraint requirement apply. * Refer to NSHO chapter eleven for additional details. *
☐ **Fixed Wing**	Refer to current NSAS, ALSE and 5700 manual directions for PPE requirements.

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

Helicopter or Fixed Wing Pilot Information: **Fixed wing: use "other" box** and state approved mission(s). Any unknown information shall be added after signature approvals. All personnel shall be qualified for mission or designated as a trainee with appropriate oversight. **Complete or see MPS/FBN**

Pilot Name (P1): PIC/Primary	**Pilot Phone Number:**
Pilot Name (P2): Co-Pilot/Relief	**Pilot Phone Number:**
Pilot Carded For Mission: Yes ☒ No ☐ **Charter Pilot** ☐ **135 Certificate and FAR's Apply** **** Use of charter pilot requires regional forester approval**** Check all boxes that apply to pilot's carding below:	**Pilot Card (P1) Expiration Date:** **Pilot Card (P2) Expiration Date:**

Low-Level Recon & Survey	**P1** ☐	**P2** ☐	**Designated "Pilot Trainer"**	**P1** ☐	**P2** ☐
Helitack-Passenger Transport	**P1** ☐	**P2** ☐	**"Trainee Only" Pilot**	**P1** ☐	**P2** ☐
External Load (Belly Hook)	**P1** ☐	**P2** ☐	**Short Haul LE** ☐ **SAR** ☐	**P1** ☐	**P2** ☐
Water-Retardant Delivery	**P1** ☐	**P2** ☐	**Float Operations (Fixed)**	**P1** ☐	**P2** ☐
Longline VTR (150')	**P1** ☐	**P2** ☐	**Platform Landings-Offshore**	**P1** ☐	**P2** ☐
Snorkel: VTR ☐ **Mirror** ☐	**P1** ☐	**P2** ☐	**Vessel Landings**	**P1** ☐	**P2** ☐
Mountainous Terrain Flying	**P1** ☐	**P2** ☐	**NVG Operations**	**P1** ☐	**P2** ☐
Aerial Ignition (PSD)	**P1** ☐	**P2** ☐	**ACETA Net Gun (All ACETA)**	**P1** ☐	**P2** ☐
Aerial Ignition (Torch)	**P1** ☐	**P2** ☐	**ACETA Eradication**	**P1** ☐	**P2** ☐
Rappel Operations	**P1** ☐	**P2** ☐	**ACETA (Herding)**	**P1** ☐	**P2** ☐
Cargo Letdown	**P1** ☐	**P2** ☐	**ACETA Darting-Paintball**	**P1** ☐	**P2** ☐
Snow Operations (Deep Snow)	**P1** ☐	**P2** ☐	**STEP**	**P1** ☐	**P2** ☐
Hoist	**P1** ☐	**P2** ☐	**Other** ☐	**P1** ☐	**P2** ☐
UAS	**P1** ☐	**P2** ☐			
UAS - Aerial Ignition	**P1** ☐	**P2** ☐			
UAS - Night	**P1** ☐	**P2** ☐			
UAS - ELOS / BVLOS	**P1** ☐	**P2** ☐			

Flight Following And Frequencies: TBD/Will confirm, complete or see MPS/FBN *Confirm frequencies prior to flight* *FAA Flight Plan (chartered aircraft non-agency-controlled mission) no frequencies required* *Chartered 135 operator is responsible for communications and flight plan*		
Flight Following Method: AFF ☒ Radio (Local or GACC aircraft desk) ☒ FAA Flight Plan: (Agency-owned or agency contracted aircraft mission) ☐ FAA Flight Plan: (Charter aircraft non-agency controlled mission) ☐		
FM Receive:	FM Transmit:	RX: TX:
FM Receive:	FM Transmit:	RX: TX:
FM Receive:	FM Transmit:	TX: RX:
AM Receive:	AM Transmit:	No Tone

Aviation Manager will coordinate Temporary Flight Restrictions (TFR) with dispatch if needed

Military Training Route(s) (MTR'S) or Military Operating Area(s) (MOA'S)

TBD/Will confirm, complete or see MPS/FBN

Aviation Manager shall confirm deconfliction in these routes and areas prior to the flight with dispatch or other approved local methods.

Deconfliction will be discussed prior to mission start. Add Additional MTR-MOA information to the end of the document if necessary.

MTR-MOA	Route Legs-Altitudes	Activity	Time	Time Zone
		Hot ☐ Cold ☐ N/A ☐	Start: Stop:	UTC ☐ Local ☐
		Hot ☐ Cold ☐ N/A ☐	Start: Stop:	UTC ☐ Local ☐

CRASH RESCUE / MEDIVAC PLAN

Additional medical information attached? YES ☐ NO ☒

General Instructions (in the event of an incident):
Mission site duties and actions to be coordinated through dispatch in accordance with local search & rescue (SAR) and emergency crash rescue plan(s). These items will be discussed and recorded during the daily safety briefing.

Specified crash rescue duties will be assigned to ground operations personnel each day before flights of any kind. Crash rescue and first aid equipment will be located near the operations site, and equipment's location made known to all personnel. Information and instructions will be sent and received through the local dispatch office or communications. Personnel will declare an incident and notify dispatch; dispatch will then activate the Aviation Mishap Response Plan. Incident information and instructions will be coordinated through involved personnel and Dispatch.

EMT(s) on site: ☐ **YES** ☐ **NO** **Complete or See MPS/FBN**
Names & Level: **Complete or See MPS/FBN**

First responder(s) on site: ☐ **YES** ☐ **NO** **Complete or See MPS/FBN**
Names & Type/Level: **Complete or See MPS/FBN**

Medivac Helicopter on site? ☐ **YES** ☒ **NO**
FAA Tail #:
Name/Vendor:
Capabilities: ☐ **Hoist** ☐ **Rappel** ☐ **Short Haul**
Level of care medivac personnel can provide: ☐ **ALS** ☐ **BLS** ☐ **UNKNOWN**
Contact Information:

Available medivac helicopters: ☐ **YES** ☐ **NO** ☒ **UNKNOWN***
***Unknown: Select if medivac helicopter won't be ordered for the mission or incident *prior* to need.**
The helicopter will be ordered on demand through the dispatch process.
Dispatch will provide medivac ship call sign or tail number, including capabilities and contact information. *

****Request all Medivac, Hoist/Extrication, & Short Haul Helicopters through your local interagency dispatch center****
Interagency Emergency Helicopter Extrication Source List (PMS 512)

NORTHERN ROCKIES MISSION AVIATION SAFETY PLAN

MEDICAL FACILITIES

Coordinate through your local dispatch center

FACILITY	LAT / LONG ADDRESS	CONTACT FREQ	Helipad? Size Capable & Other Info
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO
			☐ YES ☐ NO

BURN CENTERS

		☐ YES ☐ NO
		☐ YES ☐ NO
		☐ YES ☐ NO

☐ **Doors Off or Doors Open Flight(s)**	Personnel will remain seated and inside fuselage during all flights, approved secondary restraint harness for doors off flights (only for PLDO, HRAP, HERS, Aerial Photography, IR Operator, ACETA Gunner, Cargo Letdown, Short Haul Spotter, Cargo Free Fall Operations-type 3 helicopter) * Refer to appropriate guides* **Safety Alert IASA 18-03 language** "Agency personnel involved in any public aircraft operations mission that require aircraft doors to be removed prior to flight, or open during flight, shall receive hands-on secondary restraint refresher training prior to conducting flight operations".

Doors Off or Open Operations checklist:

All items shall be covered and signed for prior to operations

☐ Aircraft connection point and secondary restraint configuration (Interagency Safety Alert IASA 17-02)

☐ Proper donning and adjustment of secondary restraint system.

☐ Have an understanding of the secondary restraint interaction with FAA approved seat belts.

☐ Potential of secondary restraint interference with Airbus AS 350 fuel shut off lever if applicable.

☐ Know location and use of secondary restraint interaction quick- release.

☐ Perform buddy–check and Pilot in Command check of secondary restraints before flight.

☐ Practice egress with secondary restraint quick-release mechanism and function of seatbelt.

☐ Know location and use of rescue knife.

Signatures –Risk Assessment, Doors off Operations, GAR, Briefings completed

Complete or See MPS/FBN

Participants Name/Position	Date	Participants Name/Position	Date

Use back of this form if needed for additional participants name and date.