

Standard Operating Procedure (SOP) 3: Field Safety, Version 1.0

Weather and Climate Monitoring Protocol

*Arctic (ARCN), Central Alaska (CAKN), and Southeast
Alaska (SEAN) Inventory and Monitoring Networks*

Change History

Original Version #	Revision Date	Revised By	Changes	Justification	New Version #

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Overview

This SOP describes the safety and training requirements necessary to conduct a safe and successful field season. It includes links to park specific safety information and an example of a Green, Amber, Red (GAR) Risk Assessment for climate monitoring fieldwork.

Every NPS employee has the right to a safe workplace and the right to refuse unsafe work. A primary goal of the Arctic (ARCN), Central Alaska (CAKN), and Southeast Alaska (SEAN) Networks is to ensure the safety of its staff and partners while conducting inventory and monitoring activities in parks. Encountering hazardous situations is inherent in outdoor monitoring activities, and supervisors need to be aware and committed to ensuring that all monitoring staff receive adequate training on National Park Service (NPS) safety procedures, incident reporting, field communications, and emergency response prior to field work.

There are four different levels of training and safety related policies that need to be followed in order to conduct a safe and successful climate monitoring program: 1) National/NPS level policy, 2) Network or Inventory and Monitoring (I&M) policy, 3) Regional policy, and 4) Park level policy.

For Alaska-based fieldwork, the Alaska Region Communication Center (ARCC) staff are available to answer radio or satellite phone calls 24 hours a day/ 7 days a week throughout the field season. Flight, float, or backcountry plans are filed with either park-based dispatch or the ARCC prior to the field mission, which include established check-in times.

Risks Inherent in Climate Monitoring in the Alaska Parks

The parks in Alaska are remote and rugged with challenging weather extremes. Protection against sun, rain, wind, and snow is critical. Extra food and survival gear is a must. Protection from mosquitos is absolutely necessary. The climate sites are remote and could involve long drives between the office and the parks, long boat rides, long fixed-wing flights to remote airstrips, and helicopter flights to the climate sites. The cumulative stress of multiple forms of transportation and a long field day is an inherent risk for field staff.

Safety Procedures

1. Each year prior to the field season the staff involved in climate station fieldwork will discuss safety, training, and any other field requirements or procedures that contribute to a safe work environment.
2. A list of potential safety concerns are listed in Table SOP 3-1. Each year the safety list will be reviewed and updated if necessary. The list identifies potential hazards for each task and procedures on how to reduce or abate the hazard.
3. Specific park hazards, emergency contact information, and procedures should be reviewed with the staff at the start of each field season and before each field trip. All park safety protocols must be reviewed and adhered to. This will take good coordination between the I&M staff and all of the parks that they will be working in. Links to park specific safety policies are included in Appendix SOP3-A.
4. All of the aviation safety requirements must be adhered to including all prerequisite training that is required according to the Regional Aviation Policy (RM 60), the Northern Hub Aviation Plan, the Denali Aviation Plan, the Wrangell-St. Elias Aviation Plan, Klondike Gold Rush Aviation Plan, Glacier Bay Aviation Plan, and the Interagency Helicopter Operations Guide (IHOG). Follow the matrix of required training on the Interagency Aviation Training (IAT) website according to the specific role you will fill for the project. All complex field operations involving aircraft are required to complete a Project Aviation Safety Plan (PASP) at least three weeks in advance of the field dates. The plan is signed by the program manager and the aviation manager. See Appendix SOP 3-B for a PASP example. Proper personal

protective equipment (PPE) is required for flights and survival gear must be carried at all times.

5. All of the boating safety requirements must be adhered to including all prerequisite training according to the Glacier Bay Boating Policy (Appendix SOP3-A).
6. Prior to daily field events, all staff, including the pilot(s) and boat captain(s) and anyone else who has joined the immediate team, will review potential safety concerns (Table SOP 3-1) and complete a Green, Amber, Red (GAR) risk matrix (Appendix SOP3-C) to make sure everyone feels comfortable going forward with the field plan. This will occur each time the climate team moves to a different park or location, or if there are major changes to the original plan.
7. For field communications, each climate field crew will have a satellite phone plus a personal locating beacon (PLB) or an emergency GPS Communicator (e.g., InReach, Spot). In addition, a park radio is helpful in those parks that have repeaters and an air-to-ground radio is useful for contacting aircraft from the ground. Crews are required to check in with the appropriate park staff upon arrival in the park and when they leave the park at the end of the field visit.
8. Daily check-ins with the Alaska Region Communication Center (ARCC) will occur at times referenced in either the flight, float, or backcountry plan that has been submitted prior to the field mission. Having established lines of communication and a Check-in/Check-out procedure ensure timely assistance can be provided in case of a mishap or delay. These procedures are described on the ARCC intranet website (<https://sites.google.com/a/nps.gov/arcc-region/>).
9. The minimum crew size is two people. Working alone is discouraged and is allowed only with advance permission from the program manager.
10. Agency driving regulations must be followed (Appendix SOP3-A). Field crews will depart the office (or the field) with plenty of time left in the workday to arrive without exceeding 12-hour travel day or 10 hours of driving limits *unless prior approval by the program manager* and a GAR risk matrix has been completed.
11. Immediately report any work-related injury to your supervisor. Depending on severity or nature of accident, further reporting may be required. All vessel, aircraft, and motor vehicle related accidents are to also be reported to a Law Enforcement Ranger. Access the Safety Management Information System (SMIS) at <https://www.smis.doi.gov> to report your injury and complete the necessary forms to file for worker's compensation as soon as possible, but no later than 30 days after your injury to qualify for benefits. Reporting of near misses is also encouraged as we want to learn from these events to prevent a future injury from occurring.

Table SOP 3-1. Potential safety concerns for climate fieldwork.

General Job Activity	Basic Job Step	Potential Hazards	Potential Mitigations
Communication	Daily check-ins with ARCC	Satellite phone does not work, battery dies, system is down	Test phone prior to departure. Bring extra batteries and redundant communication devices.
	Communication between field crew and pilot/boat captain	Radio does not work, communication plan not set-up	Conduct radio check and verify plans have been received by park dispatch or ARCC, prior to departure. Bring extra batteries and redundant communication devices.
Aviation	Fixed wing flight point to point/helicopter access to remote locations	Changing weather conditions, visibility, pilot condition, hazardous cargo, weight and balance, other passengers, condition of unimproved landing areas, military flight activity, other flights in area, loading and unloading, terrain	Identify a sufficient weather window to accommodate the duration of flight operations. Verify conditions prior to departure. Ensure pilot and aircraft are OAS carded prior to takeoff. Maintain flight following with park dispatch or ARCC, as appropriate. Make sure pilot is aware of any gear loaded into the aircraft so that they can manage weight distribution. Carry the "10 essentials of survival".
Boating	Access to remote sites	Changing weather conditions, visibility, hypothermia, cold water immersion, sea sickness, other boats, marine debris, underwater obstructions	Verify weather conditions and sea state at the point of departure and destination prior to setting off. Verify with captain that sufficient floatation devices and emersion suits are onboard for the number of crew. Carry the "10 essentials of survival".
Working on stations	Servicing instruments from ladder	Falls from heights	Ask someone to hold the ladder if needed. Complete required training and use

			safety harness when working height exceeds six feet.
	Connecting electrical components	Electrical shock	Avoid working with electrical connections in wet conditions. Cover surface of solar panels when not in use. Use rubber work gloves and rubber-handled tools. Use appropriately-sized wires, wire terminals, and fuses. Follow manufacturer instructions.
All Field Activities	Hiking	Steep, rugged, slippery terrain; thick vegetation, blisters, falls, slips; stream crossings	Wear appropriate footwear for conditions. Maintain adequate physical fitness for strenuous activities. Set and maintain hiking pace that is comfortable for all crew members.
	Encountering wildlife	Bears, moose, mosquitos, bees/wasps	Make noise to avoid startling wildlife, particularly in heavy vegetation or where visibility is limited. Carry bear spray and be prepared to use it. Wear bug-resistant clothing and use bug spray as needed.
	Exposure to environment	Hypothermia, hyperthermia, Giardia, Dehydration, Sunburn, Smoke inhalation from wildfires, lightning	Wear adequate outerwear for the conditions. Effective rain gear and insulating layers are critical. Be prepared for conditions to change during operations by dressing in layers. Bring plenty of water and avoid drinking directly from water bodies without filtration or treatment. Use sunscreen as needed, particularly at high elevations. Minimize exposure to smoke from wildfires.

Travel to Parks	Highway driving	Varied road conditions, other drivers, construction, fatigue, wildlife in road	Delay trip to avoid adverse driving conditions where practical. Stay alert and rest if needed before proceeding.
	Driving on unimproved roads	Rough road, muddy road, snowy conditions, poor visibility, other traffic	Delay trip to avoid adverse driving conditions where practical. Stay alert and rest if needed before proceeding.

Appendix SOP 3 – A: Specific Safety Links

National

[NPS Reference Manual 50B](#)

[NPS Travel and Driving Policy](#)

Alaska Region

[ARCC Standard Operating Procedures](#)

[AKR Bear Safety Training Policy](#)

Bering Land Bridge National Preserve

Northern Hub [Aviation Policy Documents](#)

Denali National Park and Preserve

[Denali Safety Plan](#)

Gates of the Arctic National Park and Preserve

[GAAR Backcountry Protocol](#)

[YUGA Aviation Management Plan 2012](#)

Northern Hub [Aviation Policy Documents](#)

Glacier Bay National Park and Preserve

[Glacier Bay RV Fog Lark Safety Plan](#)

[GLBA Aviation Management Plan](#)

[Glacier Bay Backcountry Communications Plan](#)

[Glacier Bay Boating Policy](#)

Klondike Gold Rush National Park

[Klondike Gold Rush \(KLGO\) Aviation Management Plan](#)

[Klondike Gold Rush Backcountry Travel and Communications Procedures](#)

Western Arctic Parklands (NOAT, CAKR, KOVA)

Northern Hub [Aviation Policy Documents](#)

Wrangell – St. Elias National Park and Preserve
[Project Aviation Safety Plan Template 2016](#)

Yukon-Charley Rivers National Preserve
[YUCH Backcountry Protocol](#)

[YUGA Aviation Management Plan 2012](#)

Northern Hub [Aviation Policy Documents](#)

Appendix SOP3–B: Example of a Project Aviation Safety Plan (PASP)

PROJECT AVIATION SAFETY PLAN

Project Name and Date: CAKN Climate Monitoring 2015 - WRST, DENA, & YUCH

APPROVALS

Prepared By: Pam Sousanes

Physical Scientist/Project Manager

Reviewed By: Maggie MacCluskie

Supervisor

Reviewed By:

Peter Christian

WRST Aviation Manager

Reviewed By:

Pat Owen

DENA Aviation Manager

Reviewed By:

Dave Rosser

Northern Hub Aviation Manager

Supervision:

Project Manager: Pam Sousanes (Physical Scientists ARCN) 907-455-0677 (office), 907-750-5227(cell), 8816-3144-3129 (Iridium Satellite)

Supervisor: Maggie MacCluskie 907-455-0660; 907-388-8622 (cell)

Aviation Safety Manager: Dave Rosser – Northern Hub; Peter Christian WRST; Pat Owen/Joe Reichert DENA

Helicopter Manager: Pam Sousanes 907-750-5227 (alternate Ken Hill 435-757-5165)

Project Name and Objective:

CAKN Climate/Stream Monitoring

This is part of the long-term climate and stream monitoring projects that are part of the Central Alaska Inventory and Monitoring Network. The project involves helicopter access to do climate station maintenance at 17 sites and stream surveys at 1-2 sites nearby each climate station in WRST, DENA, and YUCH. Each year we visit the climate stations to swap sensors, download data and do annual maintenance and repairs.

The helicopter is used to transport the climate and stream crews to their site/sampling locations. The climate crew is familiar with the landing zones (LZs) at each climate site. Brief low level reconnaissance of the stream survey landing sites will be necessary. We plan to use the three Temsco exclusive use helicopters on contract with Denali mountain operations and the eastern and western area fire programs.

These are both ongoing long-term monitoring projects that are part of the Central Alaska Inventory and Monitoring Program.

Justification: The climate and stream sites are in remote areas of the park at higher elevations. Travel routes will be as efficient as possible to minimize flights over areas used by visitors. Aircraft altitude and horizontal distances would be maintained according to park policy. It was determined that the use of a helicopter was the most appropriate tool for accomplishing the mission.

Project Dates: This project will take place at four locations throughout the summer: DENA/Talkeetna; WRST/McCarthy; YUCH/Coal Creek; & DENA/Park Headquarters. All dates are tentative pending weather, fire activity, and availability of aviation resources.

Trip #1: DENA/Talkeetna Tentative: July 1-2

<u>Day</u>	<u>Date</u>	<u>Activity</u>
Monday	June 30	Travel to Talkeetna
Tuesday	July 1	Climate/SNOTEL/Stream maintenance and surveys
Wednesday	July 2	Weather day; Travel from Talkeetna

Trip # 2: WRST/McCarthy July 8-12

<u>Day</u>	<u>Date</u>	<u>Activity</u>
Wednesday	July 8	Travel to McCarthy
Thursday	July 9	Climate and stream sites

Friday	July 10	Climate and stream sites
Saturday	July 11	Climate and stream sites

Trip # 3 YUCH/Coal Creek July 22-23

<u>Day</u>	<u>Date</u>	<u>Activity</u>
Wednesday	July 22	Fly fixed-wing to Coal Creek. Visit climate site and stream sites near Upper Charley. Maintenance on aerial snow markers.
Thursday	July 23	Finish aerial snow marker maintenance (Copper, Crescent, Cathedral, Step, and Three Fingers). Fixed-wing flight back to Fairbanks.

Trip #4 DENA/Park headquarters August 12-13(tentative dates, may change)

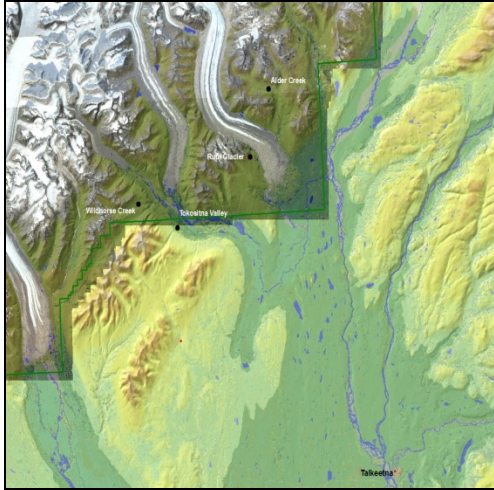
<u>Day</u>	<u>Date</u>	<u>Activity</u>
Wednesday	July 12	Climate station maintenance on Wigand and Stampede stations.
Thursday	July 23	Back-up weather day.

Location of Operations: Stream sites are located near climate stations. These two projects will be sharing the helicopter at each park. The climate crew has landed at the off airport LZs at the climate stations for the past 10 years and can share knowledge of terrain with the pilot. The stream sites will be evaluated by doing a low level recon to determine a suitable landing location by the pilot. Crew is aware that most of the flights for this project will take place in mountainous terrain where visibility is imperative.

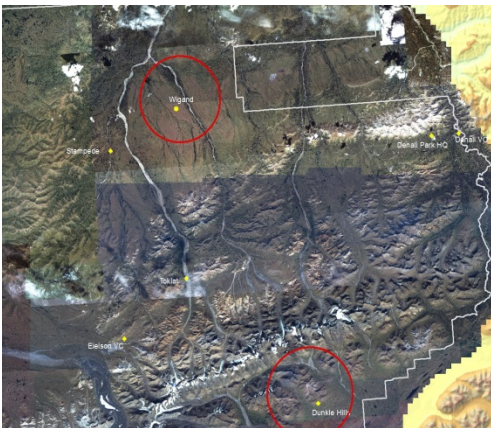
Trip # 1 and #4 Denali Sites

South side sites based out of Talkeetna, North side sites out of Denali Park HQ (INR).

Site	N or S DENA	Lat/Long DM	Elev. Ft.
Tokositna SNOTEL	S	N 62° 37.750, W 150° 46.442	900'
Ruth Glacier RAWs	S	N 62° 42.598, W 150° 32.390	3300'
Wildhorse Creek	S	N 62° 39.330, W 150° 54.186	2300'
Alder Creek	S	N 62° 47.274, W 150° 27.573	1900'
Dunkle Hills	N	N 63° 16.019, W 149° 32.492	2850'
Wigand Creek	N	N 63° 48.720, W 150° 02.990	1700'



Climate/Snow/Stream Sites – South Side Denali



Climate Sites –North side Denali

Trip # 2: WRST/McCarthy

Based out of McCarthy. The pilot will be given the modified aviation sectional near McCarthy which delineates private property. Based out of McCarthy. Helicopter at Fireweed Airstrip.

Site	Elev. Ft.	Latitude	Longitude	Distance (from McCarthy)
Gates Glacier Climate Station	4,060	61° 36.173' N	143° 0.793' W	15 miles
Gates Glacier Trib.		61° 35.084' N	142° 58.834' W	
4 th of July Creek		61° 30.072' N	143° 2.450' W	
Tana Knob Climate Station	3,739	60° 54.480' N	142° 54.078' W	42 miles
Upper Willow Crk		61° 1.429' N	142° 47.010' W	
Tana Glacier Trib		60° 47.964' N	142° 44.023' W	
Tebay Lakes Climate Station	1,927	61° 10.860' N	144° 20.532' W	55 miles

WRST-GRTS-160		61° 10.426' N	144° 23.155' W	
Sangaina Creek Trib		61° 8.006' N	143° 57.097' W	
Dora Creek		61° 23.462' N	143° 49.830' W	
Chititu Climate Station	4,544	61° 16.416' N	142° 37.254' W	15 miles
Chititu Creek		61° 17.820' N	142° 36.340' W	
White Creek		61° 16.752' N	142° 33.225' W	
Chicken Creek Climate Station	5,240	62° 07.441' N	141° 50.840' W	85 miles
Glacier Creek		62° 7.110' N	141° 51.873' W	
Chisana River Trib		62° 15.499' N	141° 56.718' W	
Beaver Creek Trib		62° 1.136' N	141° 42.040' W	
McCarthy	Fuel	61° 26.224' N	142° 54.224' W	
May Creek	Fuel	61° 20.197' N	142° 40.955' W	

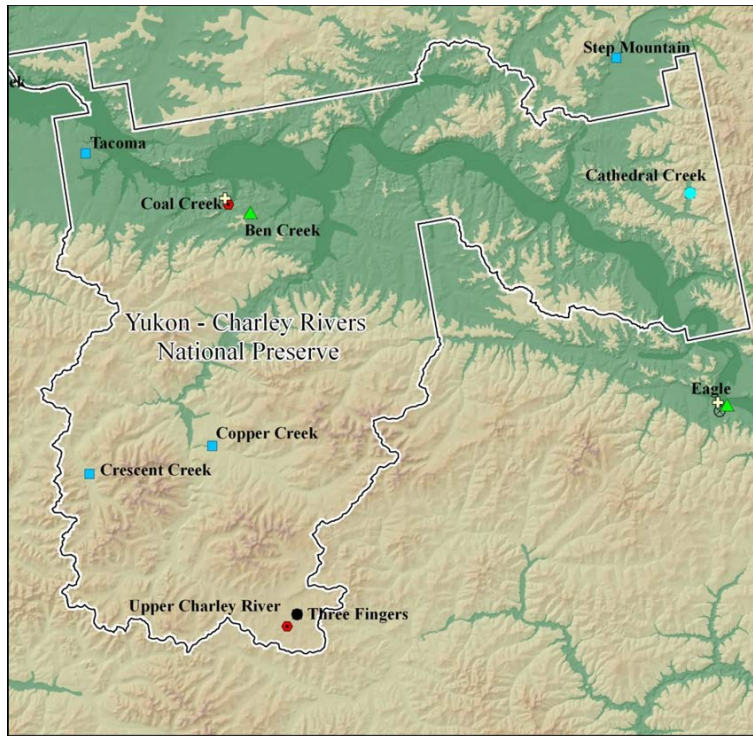


Trip # 3 Locations for YUCH

Based out of Coal Creek.

Site	Lat./Long.	Elev. '
Coal Creek	N 65° 18.235, W 143° 09.431	946'
Upper Charley River	N 64° 31.015, W 143° 12.137	3604'
Cathedral Mountain	65° 10.427, W 141° 08.767	1826

Copper Creek	64° 52.100 , W 143° 23.936	2160
Crescent Creek	64° 51.140, 143° 56.779	2581
Three Fingers	64° 32.123, 143° 09.311	3363
Step Mountain	65° 26.727, 141° 35.131	2850



YUCH climate and snow sites Note: Tacoma site has been discontinued.

Projected Cost of Aviation Resources:

This project will operate under 4 task orders:

Trip 1: ~\$3,500 AS N570AE Temsco exclusive use helicopter –Denali

Trip 2 & 4: ~\$12,000/\$2,500 AS6015S Temsco exclusive use western area fire helicopter (2 task orders/2 parks)

Trip 3 ~3,500 AS ~4,000 AS57954 Temsco exclusive use eastern area fire helicopter

Account code for all trips:

Functional Area PPMRSNR1N.AM0000; Cost Center PPAKAKIMC1 (climate); Cost Center PPAKAKIMC8 (streams); Billee Code 57X1

Aircraft:

Company	Temsco for Dena S	Temsco for YUCH	Temsco for WRST/DENA
Address	Ketchikan, AK	Ketchikan, AK	Ketchikan, AK
Phone number	907-225-5141	907-225-5141	907-225-5141
Sat phone number	8816-5146-0925		
Contact name	Joe Reichert	Jessica Sherwood	Jeremiah Boyd

Pilot name	Andy Hermansky		
Aircraft type	A-Star	A-Star	A-Star
Aircraft colors	Red and Silver	Red and Silver	Red and Silver
Tail number	N507AE	N57954	N6015S
Tracking	AFF	AFF	AFF
Contract number			
Billee code	57X1	57X1	57X1

Payload/Useful Load: The pilot will be responsible for the accurate completion of load calculations and weight and balance, and will insure that the aircraft is operated within its performance capabilities at all times. The aircraft scheduled (A-star 350 helicopter) is the appropriate aircraft for this project. The project manager shall ensure that all safety regulations are complied with.

Hazardous Materials:

 X Hazardous Materials being transported? Yes / No

We will have bear spray and will the Interagency Aviation Transport of hazardous materials Handbook for transportation regulations. We will transport it in a sealed ammo case preferably in an external basket or cargo pod.

Participants:

NPS Personnel	Dates	Qualifications	Safety Skills	Aviation Training
Pam Sousanes	June 23-24; July 8-11; July 23-24; Aug 12-13	Physical Scientist - CAKN	Bear Safety; operational leadership	A-100; M-3; Crewmember (S-271), Helicopter Manager S-372
Ken Hill	July 8-11; Aug 12-13	Physical Scientist – CAKN	Bear Safety; operational leadership; wilderness first responder	A-100; S-271 crewmember helicopter manager S-372
Trey Simmons	June 23-24; July 8-11; July 23-24	Aquatic Ecologist CAKN	Bear Safety; operational leadership; shotgun qualified;	A-100; Crewmember (S-27) Helicopter Manager
Jeremiah Boyd Jessica Sherwood	??? may participate in some projects	Fire helicopter mgrs		Helicopter Manager +

Fueling Plan, Locations/Facilities:

Trip 1 – Talkeetna NPS Jet A tank

Trip 2 - Gulkana N 62° 09.2967 W 145° 27.2600 Jet A tank

McCarthy N 61° 26.2237, W 142° 54.2242

Fireweed Strip N 61° 25.691'; W 142° 58.548'

May Creek N 61° 20.1405, W 142° 41.2065 NPS Jet A tanks

Chisana N 62° 04.271383N W 142° 02.9025 NPS Jet A tanks

Trip 3 – Coal Creek Jet A tank

Trip 4 – McKinley Park Airstrip Jet A tank

Aerial Hazard Analysis: We will have daily safety discussions to go over potential risks for the flights being conducted each day and we will do a helicopter go/no-go assessment prior to each take-off. The helicopter will mainly be used as point-to-point transport for crew and equipment from the base location to the field sites. The aerial hazards involved in this field work will be around Talkeetna, Gulkana, McCarthy, Fairbanks, and Denali Park. NPS crew will have the aerial hazard maps for each park and the pilots will have the sectional maps for each location. Field crew will meet Stephens Harper on June 30 to review the special requirements and aerial hazards near McCarthy.

Protective Clothing/Equipment: PPE will be required for this project. Personnel will wear helmets, nomex clothing, nomex or leather gloves, leather boots (or use waiver for rubber boots for stream work), and survival vests/thigh pouches.

Survival Gear: Each two person field crew will have one tent and two sleeping bags with sufficient food and water to stay overnight if needed. They may also have a shotgun with slugs for bear protection, or bear spray. Communication devices will include at least 1 satellite phone for each 2 person crew. Crew will also have a PLB (ACR) and an InReach two way device.

Procedures for Flight Consent: A GO/NO-GO form for Vendor Fixed wing or Helicopter flights is required for all projects prior to commencement, in accordance with the WRST, DENA, and Northern Hub Aviation Management Plans. A GAR model should be completed each morning before the flight mission proceeds. The Go/No-go or ORM form will be presented to the Northern Hub Aviation Manager (HAM) for record keep process.

Communications/ Flight Following Specifics:

Flight crews will file flight plans with the ARCC each day. Each aircraft will have a functioning Automatic Flight Following system in operation, and if/when in flight will check in with ARCC at least once per hour via park radio, satellite phone, or cell phone. Flight manager will make sure Spidertracks (if vendor) equipment is turned on prior to the flight. In the event that AFF fails, 15 minute check ins will be initiated. If any aircraft's location is unknown for 30 minutes beyond the hourly requirement, the mishap response plan will be initiated by contacting ARCC and declaring that an aircraft is overdue. Communication with ARCC will be through the park radio system, satellite phone, cell phone or land line.

During times when the pilot is flying by himself, either on a fuel ferry or on his way to pick up personnel, the following will occur: Before leaving, the pilot will call ARCC with the pertinent information (departure and destination locations, ETD, ETA). If the pilot is not back at the expected time, after 30 minutes the waiting staff will call ARCC or the vendor home base for an update. Communications will be

organized such that when the pilot is working solo, both the field staff and ARCC know the pilot's location and flight plan.

In the event that the satellite phones are not operable after personnel or the helicopter are in the field, the pilot will fly to a designated helispot previously conveyed to ARCC and wait there until communications can be re-established.

Satellite Phone Numbers and VHF

Communication between aircraft will occur on VHF 122.9. Flight following with ARCC will be done with satellite phones. The CAKN crews and pilot will each have a satellite phone. Hill, Sousanes, or Simmons will coordinate flight following with ARCC. Iridium phones will be recharged each evening and at least two extra batteries will be carried with each phone.

AIRCRAFT/Pilot/Observer	SATELLITE PHONE #	(AFF)
Helicopters	8816-4146-8399 TBD TBD	N57954 N570AE N6015S
Fire Helicopter Manager J. Sherwood or J. Boyd	8816-3258-3023	
Pam Sousanes/Ken Hill	8816-3144-3129	
Trey Simmons	8816-3168-0378	

Iridium Dialing Procedure:

- 1. Landline to Satellite Phone:** 011+ Satellite Phone Number, or dial 1-480-768-2500, then dial sat phone number when prompted.
- 2. Satellite Phone to Satellite Phone:** 00+ Satellite Phone Number
- 3. Satellite Phone to US Landline:** 001+Area Code+Number

EMERGENCY CONTACT #s for PILOT(s) and other PARTICIPANTS

Pam Sousanes	NPS-CAKN	Ken Karle (spouse): 907-479-5227(h); 907-388-3450 (cell) Parker Martyn (acting supervisor until mid-June): 907-644-3697; 907-474-9159 (cell) Maggie MacCluskie (supervisor after mid-June): 907-455-0660 (w); 907-388-8622 (cell)
Ken Hill	NPS -CAKN	Anna Schemper (spouse): 907-978-1110 (cell) Pam Sousanes (supervisor): 907-455-0677 (work); 907-750-5227 (cell)
Trey Simmons	NPS-CAKN	Parker Martyn (acting supervisor until mid-June): 907-644-3697; 907-474-9159 (cell) Maggie MacCluskie (supervisor after mid-June): 907-455-0660 (w); 907-388-8622 (cell)

Emergency Procedure: Emergency procedures for overdue and missing aircraft will follow the Aviation Mishap Response Plan for the appropriate park. Prior to the survey, the pilot and observer will discuss scenarios of overdue and missing aircraft to ensure that everyone is familiar with procedures and contacts. The current Aviation Mishap Response Plans for each park have

been reviewed by project participants, and current emergency contacts have been incorporated in this PASP.

YUCH – Northern Hub – See Appendix G

DENA – Contact ARCC

WRST - NPS points of contact for WRST are

WRST Gulkana Ops Center Dispatch: 907-822-7425

Denali Dispatch (open 24/7): 907-683-9555

WRST Headquarters office, main line 907-822-7200

Peter Christian (WRST Chief Ranger, Copper Center) 907-822-7210 (c)907-831-0441

Luke Hodgson (WRST North District Ranger) 907-822-7405 (c) 907-960-1023

Stephens Harper (WRST South District Ranger) 907-554-1144

Mike Thompson (WRST Yakutat District Ranger) 907-784-3295

Lee Fink (NPS Regional Aviation Safety Manager) 907-644-3407, (c) 907-440-4233

Appendices:

We have attempted to accommodate each individual park's aviation hazard analysis tools by doing the following worksheets:

Hazard Analysis/Mitigation Section (Rubric or Chart): WRST

METHOD		YES	NO
1.	Is there an alternative method that would accomplish the mission more safely and/or efficiently (including accomplishment by ground methods)?		X
	<i>Explanation here: This project has gone through a minimum requirement/minimum tool analysis for all parks and sites and helicopter access is the preferred option.</i>		
2.	Is the method selected approved and do detailed instructions for safe accomplishment exist?	X	
	<i>Explanation here: Yes, all personnel have the minimum requirements to undertake the tasks on this mission safely.</i>		
3.	Have adequate flight following and communications methods been established?	X	
	<i>Explanation here: Yes, we will follow the ARCC and regional aviation safety plan documents including RM60 and all policies particular to safe aircraft operations in WRST, DENA, and YUCH.</i>		

MEDIUM			
1.	Can factors of terrain, altitude, temperature, or weather that could adversely affect the mission's success be mitigated?	X	
	<i>Explanation here: We will do a go/no go analysis before every flight and postpone the mission if conditions are unsafe.</i>		
2.	Will the mission be conducted at low (below 500' AGL) altitudes -can the same objective be achieved by flying at a higher altitude AGL other than below 500' AGL?		X
	<i>Explanation here: There will be minimal low level flying. Aircraft will be lower than 500 ft when landing and when approaching stream sites to locate suitable landing area.</i>		
3.	If low-level flight, have all known aerial hazards been identified during the planning process and are they known to all participants?	X	
	<i>Explanation here: All known aerial hazards will be discussed prior to mission</i>		
4.	If there is a potential for an airspace conflict (military, media, or sightseeing aircraft), have mitigating measures been taken?	X	
	<i>Explanation here: Current aeronautical info has been reviewed, standardized reporting points and communication frequencies will be discussed at each location. There will be scenic tour operations in the McCarthy, Tokositna, and Denali headquarters areas, flight crew will talk about common flight routes and the pilots should have previous knowledge of the flight routes and can mitigate any problems.</i>		
5.	Have adequate landing areas been identified and/or improved to minimum requirements?	X	
	<i>Explanation here: Yes, we have landed at these locations in the past and all are acceptable.</i>		

PERSONNEL			
1.	Are the pilots properly carded for the mission to be conducted?	X	
	<i>Explanation here: Yes, these pilots are on exclusive use contracts with Denali mountain operations and fire and have the required cards.</i>		
2.	Will the flight be conducted within the Pilot flight time/duty day requirements and limitations?	X	
	<i>Explanation here:</i>		
3.	Have the minimum number of personnel necessary to accomplish the mission safely been assigned, and do they meet personnel qualifications and experience requirements?	X	
	<i>Explanation here:</i>		

4.	Will adequate personnel (flight and ground) and pilot briefings be conducted prior to the flight?	X	
	Explanation here: We will do a full briefing the day of the mission with all involved.		
5.	Are users aware that the pilot-in-command has final authority over any operations conducted involving the aircraft or its occupants?	X	
	Explanation here:		

MACHINE			
1.	Is the aircraft capable of performing the mission in the environment (altitude, temperature, terrain, weather) where the operation will be conducted?	X	
	Explanation here:		
2.	Is the aircraft properly carded for the intended mission?	X	
	Explanation here:		

GAR Model

Green, Amber, Red (GAR) Model –CAKN Climate/Stream Work All parks. **Score: 23 GREEN-Low Risk.**

The GAR model is used during planning to identify risk and present mitigation recommendations to the Park Aviation Manager. A GAR will also be done each day in the field prior to flights.

(See Appendix SOP 3-C)

Aerial Hazardous Maps: These maps have been reviewed for reference and awareness. Pilot will have sectional maps. Pilot and field staff will review hazards prior to flight. The McCarthy map is included because of the special restrictions.



Sectional map near McCarthy. Red areas are private land/congested areas. A minimum altitude of 1,000 feet above congested areas is required except during takeoff and landing.

Aviation Risk Assessment Worksheet

CAKN Climate and Streams: Highest risk after mitigation: **MEDIUM**

Risk Assessment Matrix				
	Severity			
Likelihood	Negligible IV	Marginal III	Critical II	Catastrophic I
Frequent A				
Probable B				<i>High 4</i>
Occasional C			<i>Serious 3</i>	
Remote D	<i>Low 1</i>	<i>Medium 2</i>		
Improbable E				

Severity Scale Definitions		
Catastrophic	Results in fatalities and/or loss of system.	
Critical	Severe injury and/or major system damage.	
Marginal	Minor injury and/or minor system damage.	
Negligible	Less than minor injury and/or less than minor system damage.	
Likelihood Scale Definitions		
Frequent	Individual Fleet	Likely to occur often. Continuously experienced.
Probable	Individual Fleet	Will occur several times. Will occur often.
Occasional	Individual Fleet	Likely to occur sometime. Will occur several times.
Remote	Individual Fleet	Unlikely to occur, but possible.
Improbable	Individual Fleet	Unlikely but can reasonably be expected to occur. Unlikely to occur, but possible.

Aviation Risk Assessment Worksheet			
Assess the risks involved with the proposed operation. Use additional sheets if necessary.			
Assignment: CAKN Climate Station Maintenance WSRT, DENA, and YUCH July 6-10; July 23-24; Aug 12-13			Date: June 23-24;
Describe Hazard: <u>Pre-Mitigation hazards rate out as:</u>	Probability (A-E)	Effect (I-IV)	Risk Level
Cabin Fire	E	I	Medium

<i>Rotor Strike (e.g landing @ unimproved landing site)</i>	D	II	Medium
<i>Weather (Thunderstorms and High Winds)</i>	B	II	High
<i>Personnel and/or Gear striking rotors during “hot” loadings and unloadings.</i>	A	I	Extreme
Mitigation Controls: Post-Mitigation hazards rate out as:			
<i>Cabin Fire:</i> Pilot briefed on all flammable being transported. All passengers briefed on location and proper use of fire extinguisher. No smoking or open flames in ship. No flammable products in main cabin. Flammables to be stored in externally according to DOT guidebook	E	II	Medium
<i>Rotor Strike (e.g landing @ unimproved landing site):</i> High-level recon of potential landing sites. Qualified personnel (helicopter manager) on board to assist pilot in landing site selection. If rotor strike does occur, helicopter will shut down till mechanic can be flown to site and problem fixed.	D	III	Low
<i>Weather (Thunderstorms and High Winds)</i> Pilot will obtain daily weather briefings. Pilot will monitor weather throughout the day and in flight. Pilot will avoid thunderstorms. Helicopter manager and crewmembers will alert pilot of hazardous weather at and in the vicinity of the landing site. Will use ORM on daily basis to assess conditions.	D	IV	Low
<i>Personnel and/or Gear striking rotors during “hot” loadings and unloadings.</i> Qualified personnel will escort passengers to and from ship and assist with loading/unloading of passengers. All personnel working in and around ship will be briefed by qualified personnel as to the dangers of working around helicopters with rotors turning. All personnel loading ship with rotors turning will be qualified as either a helicopter manager or crew member. Proper PPE (flight helmet) will be worn when working around helicopters with rotors turning.	D	II	Medium
Operation Approved By: _____ Title: _____ Date _____			

Aviation Risk Assessment Worksheet			
Assess the risks involved with the proposed operation. Use additional sheets if necessary.			
Assignment : CAKN Climate Station Maintenance WRST, DENA, and YUCH 24; July 6-10; July 23-24; Aug 12-13			Date: : June 23-
Describe Hazard: Pre-Mitigation hazards rate out as:	Probability (A-E)	Effect (I-IV)	Risk Level
<i>Stranded at Remote Areas (hunger, thirst, cold, bears)</i>	E	I	Medium
<i>Mountain Flying</i>	A	I	Extreme
<i>Overloading of Helicopter</i>	B	I	Extreme
<i>Mid-air Collision</i>	B	I	Extreme

Mitigation Controls: Post-Mitigation hazards rate out as:			
<i>Stranded at Remote Areas (hunger, thirst, cold, bears):</i> AFF and 15-min flight following with the Denali Comm Center will expedite rescue. Helicopter is equipped with survival gear. ELT, Satellite Phone, and GPS are all on board ship Crew has sat. phone, personal PLB, survival gear, and Bendix king radios.	E	II	Low
<i>Mountain Flying:</i> Pilot is carded for mountain flying. All project flights will be conducted at least 500' AGL	C	II	Medium
<i>Overloading of Helicopter:</i> Pilot will prepare a daily load calculation with allowable weights (this load calculation includes a 120# federal weight reduction). Qualified personnel (Helicopter Managers or Crewmembers) will manifest personnel and gear using scales	E	IV	Low
<i>Mid-air Collision</i> Pilot announces arrival/departure from developed helibases and airports on appropriate frequency. Helicopter manager or crewmembers alert pilot of aircraft or other aerial hazards in the area. Pilot stays informed on military operations in the area.	E	I	Medium
Operation Approved By:	Title:	Date:	

Appropriate Management Level for Risk Assessment Worksheet Operational Risk Decisions		
Risk Level	Project	Fire
High	Superintendent/Line Officer	Incident Commander/OPS Section Chief
Serious	Superintendent/Line Officer	Incident Commander/OPS Section Chief
Medium	Northern Hub Aviation Manager	Air OPS Branch Director
Low	Helicopter or Flight Manager	Helibase/Base Manager

AVIATION Mishap Notification

Notification- Don't delay notification if someone is not available. Accident notification will be by calling 1-888-4MISHAP (DOI and USFS 24 hour accident hotline) and providing the information on OAS 77/FS 5700-28 (included).

Aviation Emergency Notification List:

Name/Position	Location	Work	Home	Cell
AMD- Flt. Coord. Center	Anchorage	907-271-3935		
Paul Anderson Regional Aviation Manager	Anchorage	907-644-3419		907-365-9180
Chris Pergiel Supervisor, Ranger Services	Anchorage	907-644-3406		907-382-0431
Joel Hard Assoc. Regional Director	Anchorage	907-644-3506		
Bert Frost Regional Director	Anchorage	907-644-3510		

OVERDUE AIRCRAFT

An aircraft is considered "overdue" when it fails to arrive within 30-minutes past the estimated time of arrival (ETA) and cannot be located.

MISSING AIRCRAFT

An aircraft is considered "missing" when it has been reported to the FAA as being "overdue" and the FAA has completed an administrative search for the aircraft without success. The aircraft is **OFFICIALLY** missing when the fuel duration, as reported on the request for flight following, or as reported on the FAA Flight Plan, has been exceeded and the aircraft location is unknown.

Time	Action	Contact and Phone	Time
Immediately at missed check-in/ETA	Attempt to contact aircraft by radio or phone. Contact destination agency airbase or airport. Gather info required for Accident Report.	Iridium phone onboard #N_____ is: _____. Iridium phone onboard #N61473 is: 8816-3144-3648. Iridium phone onboard #N5163E is: 8816-3145-3122. Iridium phone onboard #N2387S is: 8816-4143-0412.	
15 minutes past check-in or ETA	Contact originating or enroute agency dispatch . Contact originating or enroute agency airbase . Contact originating or enroute airports . Notify Park's Hub Aviation Manager - see AK Contacts *Contact local FAA flight service station if unable to reach park or dispatch.	Contact in this order, all 907 area code: work & (after hours numbers): N. Hub Aviation Mgr: Dave Rosser Sr. 455-0646/ (799-6232/347-1771) Chief YUGA Ranger: Scott Sample 455-0616 (385-7036) Chief WEAR Ranger: Dan Stevenson 442-2573 (442-4816/412-2019) YUGA Superintendent: Greg Dudgeon 455-0614 (452-4040/978-9452) YUGA Deputy Superintendent : Randy Larsen 455-0620 (750-8714) WEAR Superintendent: Frank Hays 442-8301 (412-2190) BELA Superintendent: Jeanette Koelsch 443-6101 (434-1215) N. Hub Board of Director's: Jim Lawler: 455-0624 (590-0819/455-4300) Maggie MacCluskie: 455-0660 (388-2419) YUGA FMO: James Sullivan 455-0651 (460-4076)	
30 minutes past ETA*	Contact Vendor home base. Contact FAA Flight Service Station Contact AMD (in Alaska)	1-800-WX BRIEF or 907-271-5936 907-271-3935 24 hours	
Anytime the fuel duration is exceeded or if an aircraft is missing and an accident is suspected	Submit data from the Aircraft Accident Checklist to: FAA / Lockheed-Martin Flight Service Station and request an Alert Notice (ALNOT) NBC-AM /USFS Aviation Safety Manager Local Aviation Manager	1 800 992-7433 (800 WX BRIEF) 1 888 464-7427 (888-4MISHAP)	

Appendix SOP3–C: Example of a Green, Amber, Red (GAR) Risk Assessment

GAR Model

Green, Amber, Red (GAR) Model –CAKN Climate/Stream Work All parks. **Score: 23 GREEN-Low Risk.**

The GAR model is used during planning to identify risk and present mitigation recommendations to the Park Aviation Manager. A GAR will also be done each day in the field prior to flights.

Calculating Risk

National Park Service Operational/Mission Risk Assessment (GAR)

Green (0-35) (Low Risk)	Amber (36-60) (Caution)	Red (61-80) (High Risk)
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Category	Description	Risk (0-10)	Mitigation(s)
Supervision	Presence, accessibility and effectiveness of leadership for all teams and personnel. Clear chain of command. Superintendent, Park Aviation Manager (PAM), Supervisor. The Superintendent has clearly stated policies for all flights, employees are held accountable for deviations, the PAM and Supervisor are directly involved in the decision to conduct the flight under the current condition.	2	This is a small team with supervision on site (project mgr.) and in administrative office (project mgr. supervisor). The team will follow all appropriate policy for the flights as stated in the PASP. A copy of the plan will be distributed to aviation mgr. prior to flight for review. The crew has appropriate aviation training to complete the mission, but the risks involved in aviation still exist.
Planning	Current and relevant standards and policies, team trained in accordance with same. Adequate mission planning time. Required equipment and associated training is provided. Briefs/debriefs planned, team input solicited.	3	Planning done well in advance of trip. All required training complete before mission begins. Small team familiar with operations and expectations. Pilot will need to be briefed prior to mission.
Contingency Resources	Formal agreements in place with participating cooperators. Planning accomplished with cooperators. Shared communications plan and frequencies. Weather reporting: Real time and pilot reports. Aircraft and equipment appropriate for the mission? Yes. Is the required PPE available and being used? Yes.	3	Emergency procedures clearly stated in PASP with resource phone numbers. Communication plan with comm. center, aviation mgr., and supervisors. This work is in a remote area and may not be readily available in case of an emergency.
Communication	Infrastructure: radio communications possible throughout area of operations. Availability of alternate communications. Interpersonal communications on team considered. Communication plan established and rehearsed.	3	Each aircraft will have a satellite phone with spare batteries and an air-to-ground radio. Observers will check in with ARCC upon take-offs, landings and every hour in flight. All aircraft will have AFF.

Team Selection	Level of individual training and experience. Park Aviation Manager, Supervisor, Pilot/Crewmembers. All positions meet the minimum training requirements and have a working knowledge of policy and procedures. The mission is well within the comfort zone of the pilot based on demonstrated experience, knowledge, and training	3	The teams are well chosen for their field experience and capability. The pilot is a vendor pilot is familiar with the project/area. Pre-flight briefing will mitigate any concerns of the field crew. The field crew will be responsible for making sure the pilot and aircraft operate within NPS policy.
Team Fitness	Level of overall physical fitness of team. Level of crew rest/fatigue and overall morale. Team members with major life events and distractions.	2	Field crew works together often and can assess fitness and fatigue of each other on a daily basis. Field crew will ensure that the pilot is well rested and capable of mission each day and entire crew will do a daily risk assessment.
Environment	The operating environment presents significant hazards that cannot be mitigated, including weather, winds, mountainous terrain, and remote operations.	5	Team will maintain awareness of environmental factors; weather; and other aspects of field work, but risk will still exist.
Task Complexity	Task complexity is moderate. The aviation component has the highest risk but is straightforward - point-to-point transport of crew and gear in remote, mountainous environment. The landing zones are unimproved.	2	Field crew is familiar with flight paths and most landing areas. All cargo will be internal, mitigating the risk of external loads.
TOTAL		23	

Mitigations should be considered for any category rated higher than 5.

Overall Mission risk:

Green (1-35)	Amber (36-60)	Red (61-80)
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