

Marsh Creek 3D

PLAN OF OPERATIONS WINTER SEISMIC SURVEY

Submitted by:

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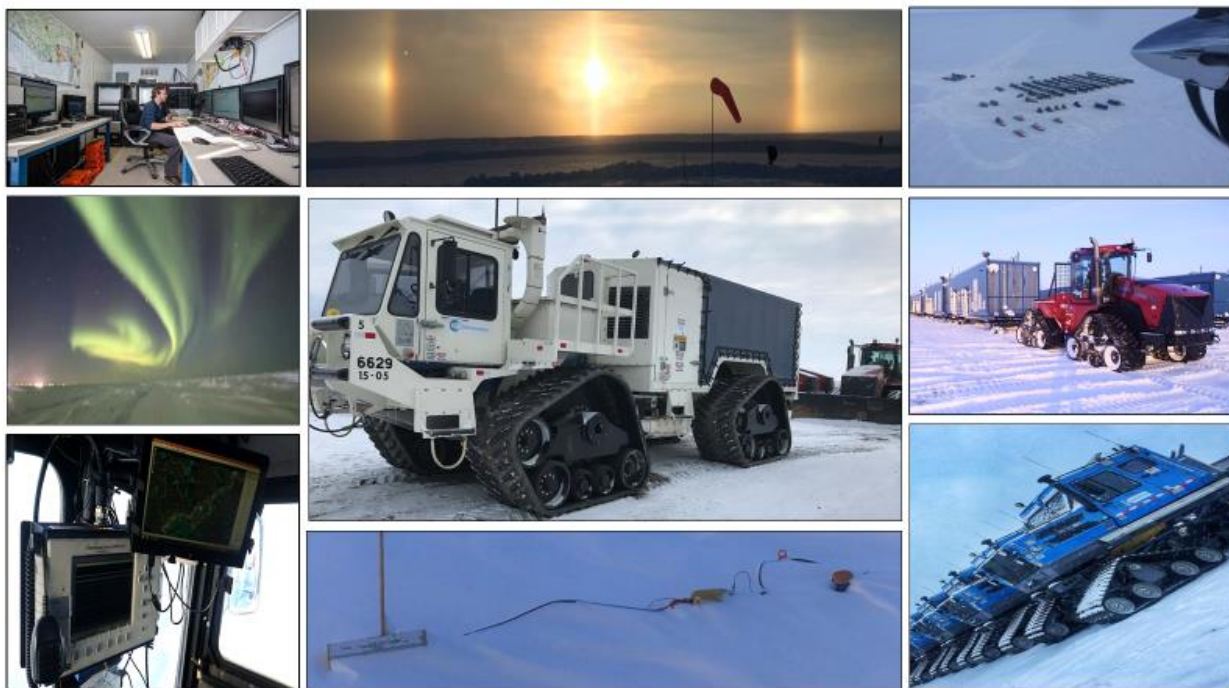


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Marsh Creek Plan of Operations

Winter Plan of Operations 2018 Project Description

1.0 Introduction

SAExploration, Inc (SAE), along with our partners, Arctic Slope Regional Corporation (ASRC) and Kaktovik Iñupiat Corporation (KIC), is pleased to submit their plan of operations for the Marsh Creek 3D Program. Together ASRC, KIC, and SAE, through its joint venture with the Kuukpik Corporation (Kuukpik-SAE), are in the process of forming a joint venture, Iñupiat Geophysical Partnership, LLC. SAE is requesting permits on behalf of its partners to conduct a seismic survey within the 1002 Area of the Arctic National Wildlife Refuge (ANWR) beginning during the winter season of 2018-2019 initially. SAE will be the operator conducting seismic operations during open tundra travel winter season within this boundary with an estimated start date of December 10th, 2018 with ice checking and continuing until the close of tundra or the sea ice deteriorates. Land ownership within this boundary area is primarily federal lands that fall within the Arctic National Wildlife Refuge 1002 area, Native Corporation land owned by ASRC and KIC, and private lands all within the North Slope Borough.

2.0 Scope

SAE is proposing to acquire seismic data from within ANWR with the opening of the coastal plain area (1002) for oil exploration. SAE would like to be the entity that initiates the exploration phase of the 1002 Area, this area represents the interests of the people of the local communities. SAE will use the best available technology, to acquire better quality and higher resolution seismic data, using new recording methodology to image potential targets for future lease sales. SAE would support two (2) crews each winter season for two (2) winter seasons to complete the acquisition of the seismic program. This plan of operations will cover the winter seasons of 2018-2019 and 2019-2020, starting approximately December 1st each winter season and ending on May 31st, or tundra closure.

3.0 Location

The survey permit area encompasses approximately 2602 sq. miles. The project area will include parts, or all the following townships:

All of:

U003N034E, U003N035E, U003N036E, U004N031E, U004N032E, U004N033E
U004N034E, U004N035E, U004N036E, U004N037E, U005N024E, U005N025E
U005N026E, U005N027E, U005N028E, U005N029E, U005N030E, U005N031E
U005N032E, U005N033E, U005N034E, U005N035E, U005N036E, U005N037E
U006N024E, U006N025E, U006N026E, U006N027E, U006N028E, U006N029E
U006N030E, U006N031E, U006N032E, U006N033E, U006N034E, U006N035E

U006N036E, U006N037E, U006N038E, U007N024E, U007N025E, U007N026E
U007N027E, U007N031E, U007N032E, U007N033E, U007N034E, U007N035E
U007N036E, U007N037E, U008N025E, U008N026E, U008N033E, U008N034E
U008N035E, U008N036E,

Part of:

U009N024E, U009N025E, U009N026E, U009N032E, U009N033E, U009N034E
U009N035E, U009N036E, U008N024E, U008N027E, U008N028E, U008N030E
U008N031E, U008N032E, U008N037E, U008N038E, U007N023E, U007N028E
U007N029E, U007N030E, U007N038E, U007N039E, U006N023E, U006N039E
U006N040E, U005N023E, U005N038E, U005N039E, U005N040E, U004N038E
U004N039E, U003N037E, U003N038E

The program areas are defined by the enclosed boundary map in Appendix A.

4.0 Environmental Management

This partnership is dedicated to minimizing the effect of our operations on the environment. We are unified in a commitment to environmental excellence and continuous improvement. We will constantly assess our impact on the environment, and will apply what we have learned over the past several years to each new project.

“Environmental management is not just the job of a few specialists - it is a crucial and integral part of our day-to-day business and an environmental culture for our seismic projects.” Our experience on the tundra and sea ice has enabled us to manage and develop equipment and procedure to minimize environmental impact caused by seismic operations. This type of health, safety and environment (HSE) management has enable us to successfully implement many environmental improvements a few are listed below:

- Reduce the number of equipment on the tundra, through new technology, thereby has reduced the total environmental impact of the crew.
- The use of articulating, rubber tracked, low ground pressure vehicles has minimized the compaction of the tundra and risk of damage when vehicles are turning.
- Reduced vehicle size
- Many modifications of seismic equipment have minimized the risk of hydrocarbon spills to the tundra.
 - Containments systems
 - High resolution rear mounted vehicle monitoring cameras, aids in spill detection.
 - Daily and weekly maintenance of equipment.
 - Daily equipment inspections.
 - Hourly equipment walk-arounds.
 - The use of biodegradable, environmentally sensitive products is number one priority when operating in delicate regions such as the NPRA and ANWR. This includes lubricants, hydraulic fluids, greases and glycol that

have readily biodegradable based oils that are virtually non-toxic, still delivering maximum protection to our equipment aiding in preventing breakdowns.

5.0 Cultural Interface

SAE will coordinate its seismic activities with the local communities and villages to mitigate and to prevent potential conflicts when operating in close proximity of subsistence users. Prior to the commencement of the 2018-2019 and 2019-20 winter seasons, representatives will hold a meeting with the village of Kaktovik to discuss the planned activities. These discussions will include text and visual documentation of the crew's activities, as well as the project boundaries. It is anticipated that as a result of these meetings various protocols and procedures can be developed and implemented which will allow both subsistence and exploration activities to co-exist with respect to this project. Any subsistence hunting and fishing that will be in the area of operations can be documented at this time with the help of community members. All meetings will be documented and kept on file as a resource during and after activities. We are dedicated to enhance, sustain and develop locally based economic and employment opportunities for Borough businesses and residents.

6.0 Oversight Panel

An oversight panel for subsistence and the native community of Kaktovik will be developed to address subsistence issues and will report back to the communities near the project area and the agencies overseeing the project. This oversight panel will have the charter for the following:

- Meet with the Kaktovik Native Community prior to the season start to discuss the concerns.
- Document past subsistence activities in the area.
- Work with a biologist hired by SAE on any wildlife or environmental issues.
- Conduct scouting with a local subsistence representative from the community.
- Staff a subsistence observer on each crew-each shift to scout with the survey team and consult on any unknown subsistence or cultural sites.
- Address any key issues with communities.
 - “An issue is a significant opportunity, problem, factor or trend or a challenge to our mission, direction, way of doing business, or culture”.

7.0 Crew Integrity

SAE's commitment at all levels to continue “Raising the Bar” for HSE awareness is paying off. Our health and safety goal is to achieve a zero-accident rating consistently. Over the past six seasons and more than 4,769,424 man hours we have not recorded a lost time accident. We attribute a portion of this success to the following critique:

7.1 Our Hiring Process:

- We work to attract and hire the best in the industry to operate the crew.
- A comprehensive pre-employment screening for new hires.
- Prospective employees are administered a drug and alcohol screening test.
- Prospective employees must complete a Physical exam and Functional Capacity Exam.
- Prospective employees complete an eight-hour Health, Safety and Environmental orientation and task specific training as well as a competency assessment while on the crew.

7.2 Our Training Process:

- The operations are controlled with high quality, experienced arctic personnel.
- Provide unique employment opportunities for its employees.
- Engages its employees in operations outside the seismic sector.
- Holds an Annual HSE Seminar for the full crew.
- Comprehensive online SAE training and testing.
- Hold daily orientation and safety briefings (for each shift) accounting for: hazards which could be encountered, other conflicting operations, daily conditions, and review of the day before and the day ahead.
- Tailgate meetings are held to review procedures in areas of known hazard or where operational requirements have changed from those expected.
- Annual training for employees, including:
 - Remote medicine training
 - Arctic survival training
 - first aid/CPR
 - Hazard recognition, rating and mitigation seminars
 - NSTC refreshers
 - Hazwoper training
 - Hazcom awareness training
 - Behavior based safety awareness training
 - Wildlife interaction training
 - Permit stipulation reviews

8.0 Permit Requirements

Provided below is a list of permits, approvals, authorizations and supporting documents required for the operations described in this Plan. Land ownership for this program includes Federal, Native Corporation (ASRC and Kaktovik Iñupiat Corporation) and private holdings all within the North Slope Borough.

Agency	Authorization
Federal Government	
Bureau of Land Management	Geophysical Exploration Permit
US Fish and Wildlife Service	Incidental Harassment Authorization (IHA), Polar Bear
North Slope Borough	
Planning Department	Land Management Development Permit for seismic: Landing Strips: Mobilization Route
IHLC Department	Form 600
TLUI Department	Administrative Approval form 400
ICAS Department	Coordination
State of Alaska	
Alaska Department of Natural Resources, State Historic Preservation Office	Letter of Concurrence
Department of Natural Resources, Division of Mining Land and Water	Temporary Water Use Permit (if necessary) Tundra Travel Permit
Alaska Department of Environmental Conservation	Kitchen Potable Water Permits Discharge Permits
State of Alaska Fish and Game	Fish Habitat Permit Water Withdrawal Permit (if necessary)
Other Approvals	
Lease Holders	Letter of Non-Objection
Kaktovik Inupiat Corporation	Letter of Non-Objection
Arctic Slope Regional Corporation (ASRC)	Letter of Non-Objection
Native Allotments	"No go buffers" placed around lands.

9.0 Mobilization and Access

SAE will stage equipment from existing facilities in Deadhorse. Camp and equipment will be trucked via road infrastructure to a point of access to the tundra or sea ice (See Appendix C). The crews will mobilize to existing gravel pads which will allow access to the tundra and provide a resupply area for the crews. All mobile equipment will have a navigation system installed for logistics and hazard Identification. Tracked and wheeled tundra vehicles will be used to transport the sled camp along the tundra. The camp will remain close to the survey activities and will move every 2-5 days depending on the survey progress and snow cover. When the survey is completed each season, the camp

and equipment will travel along the tundra or sea ice to gravel pad for offloading and then trucked back to our Deadhorse pad location. Snow packed trails will be made throughout the project area, these trails will be used for the purpose of less environmental impact and crew travel /re-supply. The location of these trails will depend on snow coverage and terrain conditions. SAE will attempt to coordinate with companies to use any existing or planned trails.

10.0 Survey and Ice check

Surveyors will establish survey controls by setting up a base station; controls will be set with a satellite navigation system transported by tracked vehicles. One of the highest risk potentials for arctic operations is properly verifying the integrity of the ice. This will be done by “ice checking units” consisting of a Tucker vehicle capable of supporting 24 hour operations. Snow machines may also be used for survey and ice check operations. The survey units will be equipped with ground penetrating radar systems (GPR), which are extremely accurate on fresh water. In addition, each ice check unit is equipped with battery operated ice auger which is used to verify the calibration of the GPR, measure ice depths on sea ice, or verify if depths where the GPR units cannot reach. Freeboard testing (ice stabilization) is also be conducted when working on floating ice to insure the ice has the strength to safely hold the equipment. Preliminary trails or snail trails will be established for every foot that the vibrators must travel on the sea ice, lakes or rivers, which will minimize the potential for breaking through the ice. Survey will also map each hazard that is discovered and placed into Tiger-Nav which is a navigation system that allows each vehicle to display the program area, hazards and avoidance areas.

In low snow years, snow surveys will be conducted to substantiate depths and will be recorded for equipment movement efforts

11.0 River Crossings

There may be areas where we encounter floating ice which may not safely support the weight of some equipment. In these cases, SAE will permit this activity with State of Alaska Department of Fish & Game, to apply water to increase the thickness of the ice to establish temporary river crossings. There also may be areas on rivers, streams and lakes that need to be protected with snow for traversing from tundra to ice for crossing. SAE will make snow ramps in these areas and establish that the ice is grounded or the ice is of sufficient ice depth to cross. This will eliminate any impact to river banks and or tundra.

12.0 Willow Protocol

SAE is committed to operate in a manner that all its operations or activities do not damage or affect the social, cultural or community in the areas where we work. If it is determined that willows are in the area, SAE has developed a willow protocol that ensures willow areas are mapped and defined by size. Willow areas will first be identified via aerial photos and possibly snow machines, the areas will then be placed

on maps. It is the responsibility of the survey manager to ensure that willow areas are recorded on the hazard maps and appropriate markings are in place. During the ground truthing of willows, Subsistence Representatives will be responsible for assisting in identifying sensitive willow areas and defining size. Survey will mark trials to be follow by the crews if it is determined that the area is accessible.

13.0 Recording Operations

The method of acquisition is Random Source Driven Acquisition (RSD) combined with a Compressive Sensing design. Seismic operations will be conducted utilizing rubber tracked/buggy vibrators and wireless, autonomous recording channels (nodes). Vibrators will typically operate within a distinct area proximal to each other. Vibrator source points will be located along source lines every 41.25 feet. Geophone receiver lines will run perpendicular to source lines, and both source and receiver lines are spaced approximately 660 feet apart. Geophones will be located along source lines every 165 feet. Up to 20 receiver lines could be placed on the ground at one time. Wireless nodes and geophones will be laid out by crews on foot and through the use of rubber tracked tundra travel approved vehicles. Each station will be placed individually and will be surveyed by GPS upon deployment. Upon retrieval, all GPS data is then entered into a database.

Using the RSD methodology, multiple vibrators can collect data at the same time. This methodology means that only a single vibrator is required to travel down any source line, thereby reducing risk compaction or damage to the tundra. Vibrators will only operate on snow covered tundra or grounded sea ice.

Recording Operations continue for 24 hours per work day and are based on two 12 hour shifts. Communications with the crews while out in the field will be via VHF radio systems and wireless data transfer radios.

14.0 Camp Facilities

Each camp can accommodate up to 150 - 160 persons. Equipment included at camp stations will include long haul fuel tractors, remote fuelers, water maker, incinerator, resupply and survival sleigh, tractors, loaders and tuckers.

Sanitary conditions in the kitchen and diner and washrooms will be maintained in full compliance with governmental regulations.

Grey water will be filtered to meet the discharge requirements of the Alaska Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System (APDES) permit prior to discharge. SAE holds a current APDES discharge permit for this purpose.

Due to the size of the project, SAE may use 2 camps and 2 crews at different locations within the project area for logistical purposes. The mobilization of the camp or camps will be from the existing gravel roads, starting off a gravel pad. A pre-determined route will be used to move equipment to the project location. Camp trails during project will be scouted out in advance by project manager to avoid hazards and measure snow depth. To mitigate any tundra damage the sleigh camp could be moved up to 2 miles every few days, this will depend on the weather, snow covering and the advancement of the project.

The SAE HSE advisor and the local hire subsistence representative will revisit every camp site, after camp has moved on, to review the area and sign-off that no damage occurred.

During the active work season, crews will travel to the camp area by personnel carrier tundra travel. If existing airstrips are within the project area those area may be utilized to allow personnel, food and fuel to be delivered to the work area.

15.0 Water Withdrawal

Potable water will be produced at camp with a skid-mounted snow melter. Water is produced by melting snow or if it is a low snow year this can be supplemented by withdrawing water from lakes, it is then processed through our ADEC approved water system. SAE will identify lakes and will be permitted if used. If lakes are used, SAE has fish and game approved water withdrawal pumps that will be utilized during this process. If there is not an adequate source of snow, water may need to be transported to each camp from an approved source.

16.0 Temporary Snow Airstrips

The project will need airstrips to transport crews on crew change days. Having temporary airstrips will save several hours of tundra travel. SAE will create a flat area on predetermined grounded, frozen lakes, or tundra to serve as landing strip to receive the aircraft for crew changes. An advance scouting trip will be identifying grounded lakes and or tundra locations that can be used for this purpose. The landing strip will only be on areas that have adequate space for safely landing aircraft. On lakes, a rubber tracked Steiger with a blade will clear the snow down to ice approximately 75 feet wide and 2300 to 3500 feet long for the aircraft to land. Black bags filled with snow will be placed along the side of the berm to delineate the edge of landing strip along with lighting.

After crew has mobilized and initial scouting has been done lakes which may support this operation will be documented for possible airstrip locations. The GPS location of the landing strip will be documented.

The strips will be used for landing and will not be maintained unless the same location is needed again. After use of the strip is no longer necessary, the crews will inspect the location and record that area that was used by GPS location to be included in the final reporting. An example of airstrip is listed in Appendix E.

17.0 Fuel Supply and Storage

SAE will be using long haul sleigh tanks for fueling. All fuel will be ultra-low sulfur for vehicles and equipment. Fuel will be delivered using over land Rolligon or rubber tracked carriers. In the event the supply is disrupted by weather or other unforeseen events fuel may have to be delivered by aircraft, SAE will use temporary airstrips for these occasions. An advance scouting trip will assist SAE in identifying existing airstrips if any that can be used for this purpose. Off-loading fuel from aircraft will be done in accordance with SAE's fueling procedure. Fueling storages and fueling activity will be located at least 100 feet from any water body. All equipment fuel locations will be tracked and recorded. SAE fueling procedures include spill management practices such as drip pan placement under any vehicle parked and placement of vinyl liners with foam dikes under all valves or connections to diesel fuel tanks. All fuel tanks are double-wall tank construction. Fuel dye is added to all fuel as part of spill detection. All spills, no matter what the size are tracked and cleaned up by SAE and used for spill prevention operations. We also hold a Spill Prevention Countermeasure Control (SPCC) plan for our fueling and fuel storage operations associated with seismic operations. This SPCC plan is site specific and will be amended for each new project. All reportable spills will be communicated through the proper agencies and reporting requirements.

18.0 Waste Management

Food waste generated by the field operations will be stored in vehicles until the end of the shift. The garbage will then be consolidated at camp in wildlife resistance containers for further disposal. All food waste generated in camp will also be collected and stored in the same consolidation area. A skid-mounted incinerator will be used for daily garbage waste. This equipment falls within the regulatory requirements of 40 CFR 60. This cyclonator will use on an average 1 to 2 gallons of fuel per hour while in use. The use of electricity is for the motor to the unit that maintains the air to fuel mixture. SAE will collect data to provide the required records on a calendar basis of description and weight of camp wastes burned.

Any wastes generated by seismic operations will be properly stored and disposed of in accordance with applicable permit stipulations and SAE controls. Food waste is continually incinerated to avoid attracting wildlife. Gray water generated from the mobile camp will be discharged according general permit AKG332000 and 18 AAC 83.210 and NPDES discharge limits. Toilets are "PACTO" type to eliminate "black water". Ash from the incinerator will be back-hauled to the North Slope Borough

disposal facility in Deadhorse. The sleigh camp will move approximately every two to five days depending on weather conditions. An inspection by the HSE Advisor will be done after camp has left to ensure that the area is clean of all debris.

19.0 Wildlife

Wildlife that may be in the area during the winter season are owls, ravens, arctic fox, wolverine, musk ox, and, possibly, over-wintering caribou, ringed seals, and polar bears. Grizzly bears also inhabit the general area in the project, but are likely to be inactive during the winter season. Polar Bears may be seen along the coastal areas and out on the sea ice. Although encounters with Polar Bears or Grizzly bears are unlikely, SAE and its contractors will exercise caution during the project. Should a Grizzly Bear or Polar Bear be encountered, SAE would follow the procedures as outlined in our comprehensive Wildlife Interaction Plan that is approved by the ADF&G and USFWS. Food and food waste will be kept inside vehicles while out in field. All Polar Bear sightings will be reported to the USFWS as per the authorization from USFWS. Any type of bear dens, suspected or confirmed will be reported to the USFWS or ADF&G agency personnel.

SAE will work with agencies to avoid and minimize interactions with wildlife; this includes abiding by relevant regulations and obtaining required authorizations. Our Wildlife Interaction Plan is listed in Appendix F.

20.0 Historic and Cultural Resources

SAE and its partners have commissioned a Cultural Resources Study to identify the historic and cultural resources in the program area. The Cultural Resources Study will inform SAE's activities. Cultural resources known and new that fall within the mapped area will have avoidance buffers placed around them. If required, an Archeological study will be permitted through the appropriate agencies and conducted approximately August 2018. Any known existing studies will be reviewed. SAE will not be accessing any native allotments without permission of the owners. A licensed archeologist will work with the NSB, State of Alaska and the Refuge manager to review existing records. The studies will include the use of the Alaska Heritage Resource Survey (AHRs) database, maintained by the Alaska Department of Natural Resources (ADNR) and the Traditional Land Use Inventory (TLUI) database, maintained by the NSB.

Previously recorded and any new AHRs sites will not be affected by any of the proposed seismic activities. All areas will have 500-foot buffers placed around them as a non-activity zone. These buffers will be placed in our Tiger Nav system and placed on maps to ensure no vehicles enter avoidance areas.

21.0 Communication & Supervision

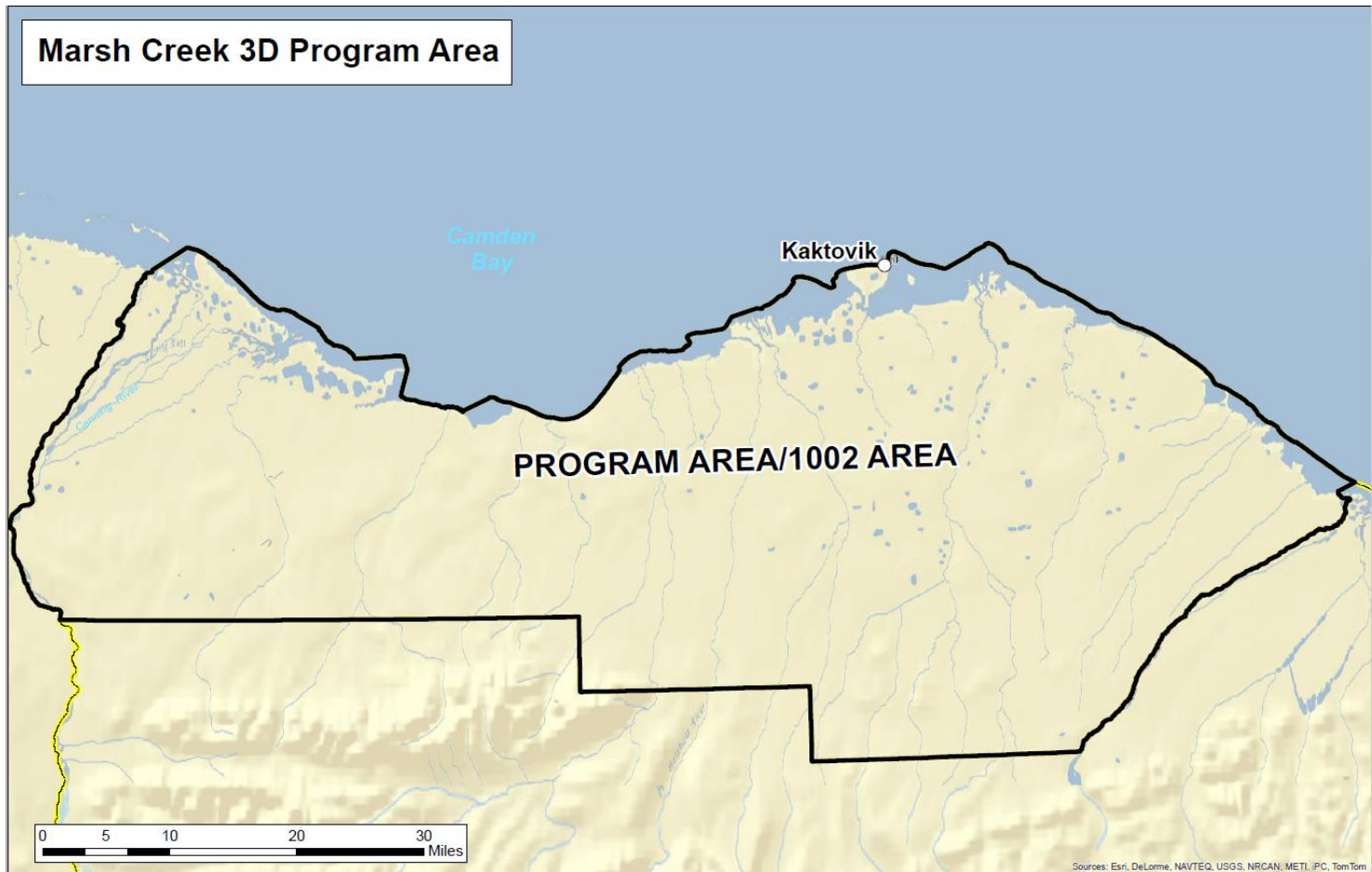
The following personnel at SAE can be contacted for information during the permitting survey program are:

<p>Ted Smith Operations Supervisor 907-522-4499 907-301-5434 cell</p>
<p>Suzan Simonds Permits and Regulatory Manager 907-522-4499 907-331-8140 cell</p>
<p>Rick Trupp General Manager of Alaska 907-522-4499</p>
<p>Oversight Panel Suzan Simonds 907-522-4499 907-331-8140</p>

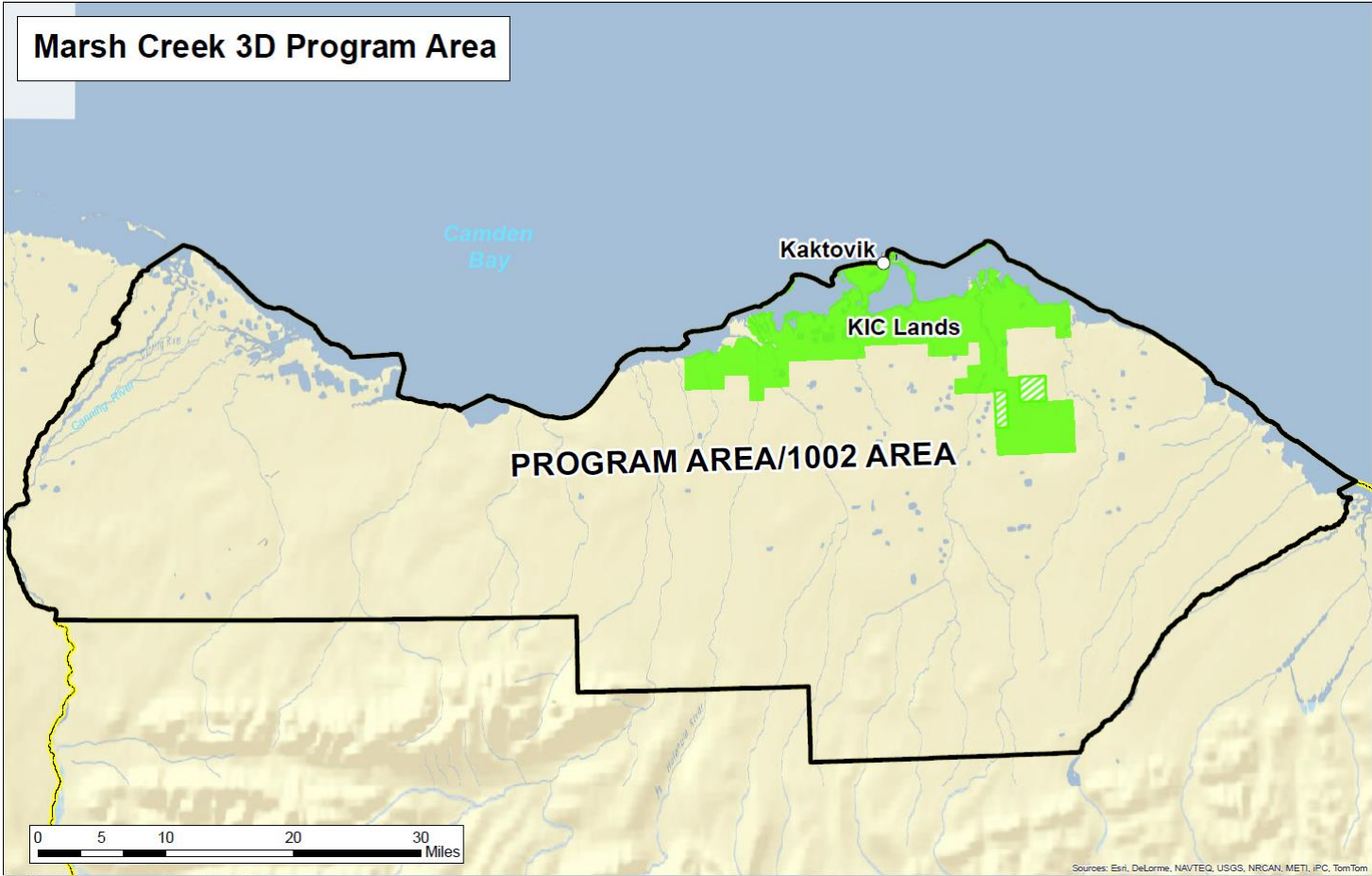
22.0 Appendices

Appendix A -	Project Area Maps
Appendix B -	Equipment List
Appendix C -	Example Map of Mobilization Route
Appendix D-	Equipment Pictures
Appendix E-	Example of Temporary Airstrip
Appendix F-	Wild Life Interaction Plan

Project Area



Project Area with Land Status



Appendix B: Equipment List Per Crew

Equipment list per crew		
Tucker Snow Cat	12	1644
Tucker Ice Cat	8	1644
Tucker Personnel Carrier	3	1600
GPS Base Station	3	Hagglund
		Trailer
Vibe Tender	2	Tucker Trailer
Mechanic Field Shop	1	Tucker Trailer
Node Charging Shack	3	Tucker Trailer
Recorder	1	Tucker Trailer
Taco	6	Trailer
Survival Trailer	2	Tucker Trailer
GSX Nodes	TBD	GSX-1
Batteries	TBD	BX10
Sensor	TBD	Arctic Base
AHV-IV Vibrators	12	Commander (PLS-364)
Sleigh Camp	1	150 Man
Fuel Tanks/Fuel Stations	7	3,000 / 4000 Gallon
Long Haul Fueler	4	4,000 Gallon
Rolligons	1	
Case/Steiger Tractors	9	535
CAT Dozer	2	D7G
CAT loader	1	977H

Appendix C: Example of Mobilization Route



Appendix D: Equipment Pictures



NODES

Cable-Free/Radio-Free Autonomous Data Recording Seismic Recorder (GSX)



Tucker



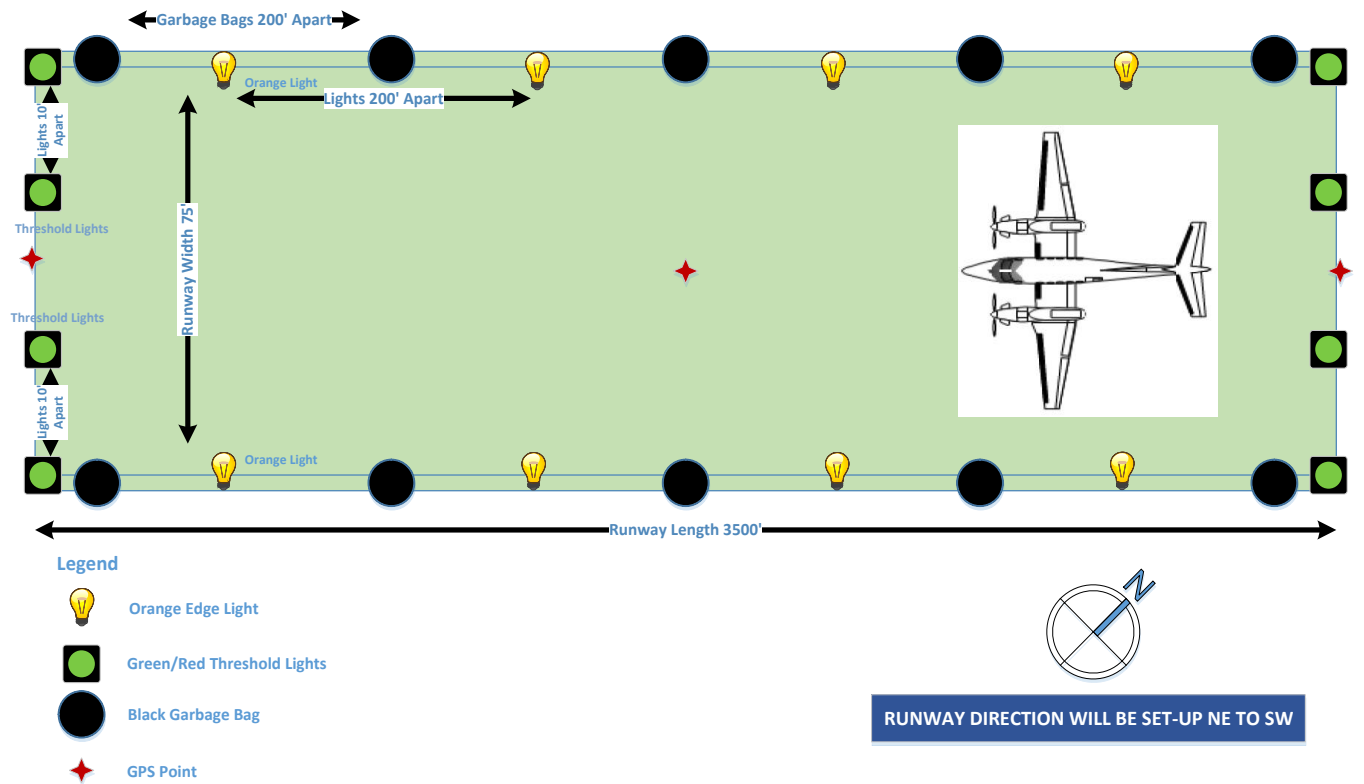
**Approximately 90,000 pounds with Tracks, 60,000 with tires
AHV4 Commander Vibrator (Source Equipment)**





Vibe rectangular baseplate

Appendix E: Example of Temporary Airstrip



Wildlife Interaction Plan

Purpose: To provide guidelines for assuring the prompt reporting, investigation, and documentation of Polar Bears, sightings or incidents involving animals that are protected by the Marine Mammal Protection Act of 1972. This plan also covers reporting of Brown Bears, or any other wildlife that seismic crews may come in contact with during operations. This plan is intended to meet the requirement of a site specific Polar Bear awareness and interaction plan as required by 50 Code of Federal Regulations (CFR) 18.124(c)(3) and to meet the requirements for a Letter of Authorization (LOA) for the non-lethal, incidental and Non-intentional take of Polar Bear. Any permit stipulations that may be requested by permitting agencies will be added to this document as necessary.

Polar Bears: The United States Fish and Wildlife Service estimates that approximately 1,500 Polar Bears occur in the southern Beaufort Sea (SBS). Worldwide there are approximately 20,000 to 25,000 Polar Bears. During the summer months, Polar Bears typically remain on the southern edge of the sea ice. However, they are also known to swim long distances, haul out onto ice flows and barrier islands and can occasionally be found on the coast. It is expected that Polar Bears will be encountered on ice, in the water and on barrier islands,

Responsibility: The Project Manager have overall responsibility. They are responsible for coordination and implementation of all surveillance or monitoring personnel who deal with wildlife/human encounters, sightings and reporting on the North Slope.

Procedure:

Crews will be trained to maintain a constant level of awareness for the potential conflict with Polar Bears. In areas where high potential of conflict exists, SAE will evaluate and if required, place a dedicated watch for Polar Bears in the area of operations. This is not to say that a continuous watch is not always in effect but rather that the crew will have a dedicated person or persons for oversight in areas of known activity. A Polar Bear education program will be given to all workers at a pre-job conference or on-site prior to the start of operations or at commencement of employment on the North Slope. Polar Bear awareness refresher briefings will be held as part of regular safety briefings. A dedicated Health, Safety and Environment (HSE) Advisor will be based with the survey crew for the duration of the seismic program, and workers will be instructed to notify the Project Manager, or HSE Advisor immediately whenever a bear is detected. All personnel will be aware of the restrictions regarding "taking" of Polar Bears as described by the Marine Mammals Protection Act. When a bear is in the immediate area of the crew location, workers will stay inside vehicles or aircraft and away from the bear. Approaching a bear for taking pictures or any other reason is strictly forbidden. USFWS will be called

immediately.

Land based activities:

1. A polar bear den detection survey shall be conducted prior to activities occurring in polar bear denning habitat during the maternal denning period (November to mid-April). All personnel must use caution when operating near polar bear denning habitat during the denning period.
2. When a Polar Bear is detected near any part of the operation, any employee (permanent, temporary, or contract) or visitor shall immediately notify the Project Manager, or HSE Advisor. They shall then notify the Permits Manager.
3. The priority is the protection of human life. The second priority is to avoid any situation in which a bear will be harmed.
4. In a camp situation, the lead person with crew shall radio Project Manager/Administrative Office. The Administrative Office will sound the "air horn" with 5 short blasts and make a radio announcement on all crew channels of the sighting. At the sound of the air horn, EVERYONE is to go to the nearest vessel, helicopter, or vehicle and remain inside with doors and windows secured until the ALL CLEAR is given over the radio. The all clear signal is a long blast on the "air horn".
5. In the field, drivers of each vehicle will advise the personnel they are responsible for and have them get inside the vehicles and wait until further notice.
6. If the bear takes refuge near or in a vehicle and does not appear likely to move, crew HSE will be notified depending on the location of operation. No action will be taken unless authorized by the USFWS or their designated agents.
7. When a sighting is made by a standalone vehicle, such as the survey crew, they must not approach the bear further. The crew will notify the Project Manager, HSE Advisor radio to alert them. The crew must avoid the bear and if necessary cease operations until the bear has left the area.
8. Personnel must remain at least a one-half mile distance in all directions for brown bears and 1-mile distance in all directions from any known polar bear. The radio announcement must indicate whether this will be necessary or not. An all-clear signal will be sounded when the area is determined to be safe.
9. SAE must observe a 1.6 km (1 mi) operational exclusion zone around all known polar bear dens during the denning season (November-April, or until the female and cubs leave the areas). Should previously unknown occupied dens be discovered within 1.6 km (1 mi) of activities, work must cease and the Service contacted for guidance.
10. After any individual sighting or interaction with Polar Bears during operations

on the North Slope, a Polar Bear Sighting Report shall be completed by the HSE Advisor. The SAE Permits Manager will forward this report to the Office of Marine Mammals Management, Christopher Putnam 786-3810 by phone and or 786-3816 by fax, within 24 hours.

Aircraft:

1. Aircraft will not operate within 0.5 miles of Polar Bears.
2. Aircraft will avoid flying over ideal Polar Bear habitat including but not limited to sea ice and barrier islands.
3. When marine mammals are encountered, aircraft will not operate below 1,500ft unless the aircraft is engaged in marine mammal monitoring, approaching, landing, taking off, or as conditions allow.
4. Plan all aircraft routes to minimize any potential conflict with active or anticipated polar bear subsistence hunting activity as determined through community consultations.

Subsistence Hunting:

1. SAE will employ a subsistence advisor to reduce impacts on Polar Bear subsistence hunting.
2. Vessels and aircraft will avoid areas in which subsistence hunting is being conducted.

Reporting:

Polar Bears: When a Polar Bear is observed or crew member they shall immediately notify the HSE and Permits Manager who will be responsible for filling out the Polar Bear report form. Reports of sightings will be sent to the USFWS on a regular basis through the Permits Manager.

Reports will be sent to:

Christopher Putnam
USFWS-Marine Mammals Section
1011 East Tudor Road
Anchorage, AK 99503
Telephone: 907-786-3800
Fax: 907-786-3816

Brown Bears : (*Ursus americanus*) are the most abundant and widely distributed of the three species of North American bears.

Responsibility: The Project Manager and wilderness guides have overall responsibility. They are responsible for coordination and implementation of all surveillance who deal with wildlife/human encounters, sightings and reporting.

Procedure:

Crews will be trained to maintain a constant level of awareness for the potential conflict with bears. In areas where high potential of conflict exists, SAE will evaluate and if required, place a dedicated wilderness guides in the area of operations. This is not to say that a continuous watch is not always in effect but rather that the crew will have a dedicated wildlife guide for oversight in areas of known activity. Bear education program will be given to all workers at a pre-job conference or on-site prior to the start of operations or at commencement of employment. Bear awareness refresher briefings will be held as part of regular safety briefings. A dedicated Health, Safety and Environmental (HSE) Advisor will be based with the survey crew for the duration of the seismic program, and workers/wilderness guides will be instructed to notify the Project Manager or HSE Advisor whenever a bear is sighted by use of a hazard card. When a bear is in the immediate area of the crew location, workers will stay inside vehicles or aircraft and away from the bear. Approaching a bear for taking pictures or any other reason is strictly forbidden.

- 1 When a bear is detected near any part of the operation, any employee (permanent, temporary, or contract) or visitor shall immediately notify the Project Manager or HSE Advisor.
- 2 The first priority is the protection of human life. The second priority is to avoid any situation in which a bear will be harmed.
3. In a camp situation, the lead person with crew shall radio Project Manager/Administrative Office. The Administrative Office will sound the "air horn" with 5 short blasts and make a radio announcement on all crew channels of the sighting. At the sound of the air horn, EVERYONE is to go to the nearest vessel, helicopter, or vehicle and remain inside with doors and windows secured until the ALL CLEAR is given over the radio. The all clear signal is a long blast on the "air horn".
4. In the field, drivers of each vehicle will advise the personnel they are responsible for and have them get inside the vehicles and wait until further notice. If no vehicles are near, the wilderness guide shall lead crew away from bear.
5. If the bear takes refuge near or in a vehicle and does not appear likely to move, crew HSE will be notified depending on the location of operation. No action will be taken unless authorized by the AKFG or their designated agents.
6. The crew must avoid the bear and if necessary cease operations until the bear has left the area. The bear's safe distance from the crew will determine by the

wilderness guide. The distance should be far enough as not to affect the bears behavior. The radio announcement must indicate whether this will be necessary or not. An all-clear signal will be sounded when the area is determined to be safe.

7. Personnel must report any active bear dens. These dens will be mapped and sent to AKFG. After any individual interaction with bears during operations, the Bear Sighting Report shall be completed by the HSE Advisor or the wilderness guide. The SAE Permits Manager will forward this report to the agencies which are listed in the permit stipulations of all permits within 24 hours.

Caribou / Foxes / Wolverines or Other wildlife:

Responsibility: The Project Manager and wilderness guides have overall responsibility. They are responsible for coordination and implementation of all surveillance who deal with wildlife/human encounters, sightings and reporting.

Procedure:

- 1 Avoid any interaction with wildlife.
- 2 Do not take any actions that would cause the animals to change course or behavior unless approved by Alaska Fish and Game
- 3 After any individual interaction with Caribou or other types of wildlife during operations, the Wildlife Sighting Report shall be completed by the HSE Advisor or the wilderness guide. The SAE Permits Manager will forward this report to the agencies which are listed in the permit stipulations of all permits.
- 4 If foxes or other wildlife take up shelter within camp area, notify the permits manager.
- 5 Feeding of animals is strictly prohibited.
- 6 There is no hunting or fishing allowed on project.

U.S. Fish And Wildlife Service
Marine Mammals Management
POLAR BEAR SIGHTING REPORT

Company: _____ LOA #: _____
Date: _____ Observer Name: _____
Time: _____ am / pm / 24 Phone/Email: _____

Location: _____

Latitude: _____ Longitude: _____ Datum: _____

Weather Conditions: Fog _____ Snow _____ Rain _____ Clear _____ Temperature _____ °F / °C

Wind Speed _____ mph / kts Wind Direction (from) _____ N NE E SE S SW W NW

Visibility: Poor _____ Fair _____ Good _____ Excellent _____

Total Number of Bears: _____ (total number of bears & how many of each type)

	adult	sub-adult	2 year-old	yearling	cub of year
Male	_____	_____	_____	_____	_____
Female	_____	_____	_____	_____	_____
Unknown	_____	_____	_____	_____	_____

Closest Distance of Bear(s): from personnel _____ facility/vessel _____ m / yd / ft

Bear Behavior (Initial Contact): curious ignore aggressive walk run swim hunt feed rest other _____

Bear Behavior (After Contact): curious ignore aggressive walk run swim hunt feed rest other _____

Description of Encounter: _____

Duration of Encounter: _____ Possible Attractants Present: Y / N

Describe Attractants: _____

Deterrents Used & Distance: If Yes, submit report within 48 hours of incident

Vehicle	Y / N	_____	m / yd / ft	_____	Spotlight/Headlight	Y / N	_____	m / yd / ft	_____
Horn/Siren/Noise	Y / N	_____	m / yd / ft	_____	Other (describe)	Y / N	_____	m / yd / ft	_____
Crackershell	Y / N	_____	m / yd / ft	_____					
Rubber Bullet	Y / N	_____	m / yd / ft	_____					
Bean Bag	Y / N	_____	m / yd / ft	_____					

Report Sent To: FW7_MMM_REPORTS@FWS.GOV Date: _____ Time: _____

Jack Winters
Habitat Biologist
Division of Habitat
Department of Fish and Game
1300 College Road
Fairbanks, Alaska 99701
907-459-7285

Date: _____
Time: _____

Bear Interaction Report

Location: _____

Observer name: _____

Weather conditions: Fog ____ Snow ____ Rain ____ Clear ____ Wind Speed ____
Wind Direction ____ Approx. Temp ____

Total number of bears: ____ Sow/cubs ____/____ Adult ____ Subadult ____

Estimated distance of bear from personnel/facility: ____/____

Possible attractants present: _____

Bear behavior: Curious ____ Aggressive ____ Predatory ____ Other ____

Description of encounter: _____

Injuries sustained: Personnel _____

Bear _____

Deterrents used/distance: Vehicle ____ Noise-maker ____ Firearms ____
Other ____

Duration of encounter: _____

Agency Contacts: _____ Time: _____ Date: _____

ADF&G _____ Time: _____ Date: _____

SAE _____ Time: _____ Date: _____

SAE Representative: _____ Date: _____

Jack Winters
Habitat Biologist
Division of Habitat
Department of Fish and Game
1300 College Road
Fairbanks, Alaska 99701
907-459-7285

Date: _____

Time: _____

Wildlife Sighting Report

Location: _____

Observer name: _____

Weather conditions: Fog _____ Snow _____ Rain _____ Clear _____ Wind Speed _____

Wind Direction _____ Approx. Temp _____

Total number of animals: _____ Type _____ / Adult _____ Subadult _____

Estimated distance from personnel/facility: _____ / _____

Possible attractants present: _____

Animal behavior: Curious _____ Aggressive _____ Predatory _____ Other _____

Description of encounter: _____

Injuries sustained: Personnel _____

Animal _____

Deterrents used/distance: Vehicle _____ Noise-maker _____ Firearms _____

Other _____

Duration of encounter: _____

Agency Contacts: _____ Time: _____ Date: _____

ADF&G _____ Time: _____ Date: _____

SAE _____ Time: _____ Date: _____

SAE Representative: _____ Date: _____

Field Operating Procedure Polar Bear Protocol

Purpose: To provide guidelines for assuring the prompt reporting, investigation, and documentation of Polar Bear sightings or incidents involving animals that is protected by the Marine Mammal Protection Act of 1972.

Scope: This procedure applies to all sightings or interaction with Polar Bears occurring during operations on the North Slope.

Responsibility: The Project Manager and HSE Advisor have overall responsibility. They are responsible for coordination and implementation of all surveillance or monitoring personnel who deal with wildlife/human encounters or sightings on the North Slope.

Procedure:

1. A polar bear den detection survey shall be conducted prior to activities occurring in polar bear denning habitat during the maternal denning period (November to mid-April). All personnel must use caution when operating near polar bear denning habitat during the denning period.
2. When a Polar Bear is detected near any part of the operation, any employee (permanent, temporary, or contract) or visitor shall immediately notify the Project Manager or HSE Advisor.
3. The first priority is the protection of human life. The second priority is to avoid any situation in which a bear will be harmed.
4. The Administrative Office will sound the "air horn" with 5 short blasts and make a radio announcement on all crew channels of the sighting. At the sound of the "air horn, EVERYONE in camp is to go to the nearest trailer or vehicle and remain inside with doors and windows secured until the ALL CLEAR is given over the radio. The all clear signal is a long blast on the "air horn".
5. In the field, drivers of each vehicle will advise the personnel they are responsible for and have them get inside the vehicles and wait until further notice.
6. If the bear takes refuge near, in, or under a trailer or vehicle and does not appear likely to move, crew HSE security will be notified depending on the location of operation. No action will be taken unless authorized by the USFWS or their designated agents. The District Manager and North Slope Security must be contacted at this time.
7. Areas which have been identified as possible denning sites will be avoided per the permit stipulations. (Typically, prior to mobilization, Polar Bear den locations are received and entered into our hazard mapping system.) Survey crew, trained in Polar

Bear awareness, will be responsible as the lead vehicles in the field to scout for possible additional locations and bring to the crew's attention at the daily safety meetings those locations. Possible locations will be staked in the field and entered on the hazard maps for the crew per permit stipulations. If a den is encountered protocols from USFW will be followed. Operations will then be evaluated and modifications to the operation will be implemented that will allow the avoidance of the denning site and the continuation of exploration activity.

8. When a sighting is made by a stand-alone vehicle, such as the survey crew, they must not approach the bear further. The crew will notify the Project Manager or HSE Advisor via radio to alert them. The crew must avoid the bear and if necessary cease operations until the bear has left the area. The bear's distance from camp will determine whether step 3(b) is required. All personnel must remain at least a one mile distance in all directions from any known bear dens. The radio announcement must indicate whether this will be necessary or not. An all-clear signal will be sounded when the area is determined to be safe.
9. After any individual sighting or interaction with Polar Bears during operations on the North Slope, a Polar Bear Sighting Report shall be completed by the HSE Advisor. The SAE Permits Manager will forward this report to the Office of Marine Mammals Management as listed in the plan of operations.
10. A skid-mounted incinerator will be used for solid waste incineration. All garbage that contains any food will be bagged, stored inside the facilities and incinerated on site two times per day. The resulting ash will be back hauled to the North Slope Borough disposal facility during the winter season.
11. Winter crews will be trained to maintain a constant level of awareness for the potential conflict with Polar Bears. In areas where high potential of conflict exists, SAE will evaluate and if required, place a dedicated watch for Polar Bears in the area of operations. This is not to say that a continuous watch is not always in effect but rather that the crew will have a dedicated person or persons for oversight in areas of known denning or activity. A Polar Bear education program will be given to all workers on-site prior to the start of operations or at commencement of employment on the North Slope. Polar Bear awareness refresher briefings will be held as part of regular safety briefings. A dedicated Health, Safety and Environmental (HSE) Advisor will be based at the camp for the duration of the winter seismic program, and workers will be instructed to notify the Project Manager or HSE Advisor immediately whenever a bear is detected. All personnel will be aware of the restrictions regarding "taking" of Polar Bears as described by the Marine Mammals Protection Act. Approaching a bear for taking pictures or any other reason is strictly forbidden.
12. Plan all aircraft routes to minimize any potential conflict with active or anticipated polar bear subsistence hunting activity as determined through community consultations.

Permits Manager will send reports to:

Christopher Putnam
USFWS-Marine Mammals Section
1011 East Tudor Road
Anchorage, AK 99503
Telephone: 907-786-3800
Fax: 907-786-3816