MARSH CREEK EAST SEISMIC EXPLORATION

Purpose and Need

Kaktovik Iñupiat Corporation (KIC) has requested authorization to conduct 3-dimensional (3-D) winter seismic activities on the eastside of the Arctic National Wildlife Refuge (ANWR) Coastal Plain (Coastal Plain) for the winter season of 2020-2021. Seismic exploration generates acoustic waves that are picked up by sensors as the waves bounce off subsurface formations. From this information, images can be created that show subsurface topography and formations including those areas of potential hydrocarbons.

The purpose of the proposed seismic exploration is to acquire quality, high resolution seismic data, using vibroseis techniques to identify potential oil and gas reserves. Approval of the proposed action would authorize KIC and their operator to conduct 3-D seismic surveys beginning when frost and snow cover are at sufficient depths to protect tundra (as identified in the 2020 Coastal Plain Leasing Record of Decision) and would continue through the winter season until tundra travel has been closed.

Analysis of this project will include access to the Program Area from Deadhorse, storage of fuel, and the use of a mobile camp capable of housing up to 180 people. The Program Area encompasses 542,592 acres (92,000 acres of KIC lands with Arctic Slope Regional Corporation (ASRC) subsurface and 450,592 acres that the Bureau of Land Management (BLM) manages for oil and gas related activities).

Access and Advance Surveys

Mobilization to the Program Area would begin on or around December 31, 2020, but after Forward Looking Infrared Radar (FLIR) surveys had been conducted to detect polar bear den sites. KIC estimates there would be sufficient snow cover for mobilization and all permits for tundra travel from the State of Alaska would have been received by December 31, 2020. KIC would work with the operator to deploy thermistors in and around Kaktovik to determine snow depth and appropriate soil temperatures prior to start of operations.

Equipment would be mobilized from existing facilities in Deadhorse. The camp trailers and seismic equipment would be transported via a preferred overland access route from Deadhorse to Kaktovik or along a secondary sea ice route.

The length of each snow access trail would be approximately 136.5 miles for the tundra access route and 66.4 miles for the sea ice access route. Use of the sea ice route would be dependent upon the thickness of sea ice. No ice roads would be constructed for this program.

Before seismic camp trailers and equipment enter the Program Area, advance survey teams using either Tucker Sno Cats (Tuckers) or Steigers (low ground pressure vehicles) would scout environmental conditions, such as snow depth and ice thickness and integrity, and would map a trail for the main seismic crew and camp to follow. All mobile equipment would have a navigation system installed for logistics and hazard identification. In addition to snow and ice

integrity surveys, the advance survey crew would verify, identify, stake, and map avoidance areas including environmental hazards, slopes greater than 10°, native allotments, cultural sites, river/stream crossings, and important habitat features including (but not limited to) polar bear critical habitat and den sites, seal lairs, grizzly bear den sites, and sensitive willow areas.

There could be three to four advance crews with two personnel per crew to conduct snow surveys and map avoidance areas. The advance crews would conduct surveys to substantiate snow depths to verify adequate snow cover to protect the tundra from seismic operations and camp moves throughout the Program Area. Snow depths would be recorded and mapped to ensure the best routes would be used. Access to the Program Area as well as seismic activities and camp operations would occur when soil temperatures at 12 inches below the tundra surface (defined as the top of the organic layer) has reached 23 degrees Fahrenheit (°F) (or less) and snow depths are an average of 9 inches, or 3 inches over the highest tussocks along the line of vehicle travel (USDOI BLM 2020).

Advance survey crews would travel throughout the Program Area in advance of the main seismic camp by approximately 7-20 days. There would be one mobile base camp to support the advance crews. This base camp would include camp trailers, Steigers, Tuckers, and support trailers, and travel would be along areas with adequate freeze down and snow cover to protect the tundra (see description of "adequate" freeze down and snow cover above). The mobile base camp would also be established on areas of appropriate freeze down and snow depth to protect the tundra. Advance crews would travel from the base camp using Steigers, Tuckers or snow machines to conduct surveys and marking activities. The crews would work independently of each other to measure snow depth, ice conditions, identify and mark hazards and avoidance areas, and scout safe routes for seismic operations. Depending on the number of locations needed to be verified, crews could travel up to 10 miles per day. At the end of each day, the advance crews would return to the base camp. Once operations being conducted at a distance are too far from camp for daily travel, the camp would move location to stay close to the advance survey operations. When the main seismic camp arrives with the recording crew, the advance camp would merge with the main camp.

To determine ice conditions at rivers, lakes and on sea ice, the advance crew would use Tuckers and/or snow machines equipped with ground penetrating radar systems (GPR) to test ice thickness. In addition, ice conditions would be checked with battery operated ice augers to verify the calibration of the GPR, measure ice depths on sea ice, or verify depths where the GPR units cannot reach. Freeboard testing would also be conducted along potential routes on floating ice to ensure ice is strong enough to safely support equipment. Tuckers conducting the advance ice check operations would also be equipped with a handheld or vehicle mounted FLIR device to scan for potential polar bear dens in defined polar bear denning habitat. Preliminary trails for vibroseis vehicles would be established along sea ice routes, lakes, or rivers to reduce the potential for equipment breaking through ice. The advanced crew would also map each hazard encountered and ensure that it is entered into the navigation system so each vehicle would have an up to date display of the Program Area, hazards, and avoidance areas.

River crossings would be based on local knowledge, advanced surveys (to determine environmental and terrain conditions), and operational safety. At stream crossings and on the edge of lakes, the advance survey crew would identify steep banks and, depending on the crossing or lake, would either avoid the area and identify a different route or recommend snow ramps be constructed. Snow ramps would be built to protect the integrity of the banks and adjacent tundra, and to lessen the grade for vehicles. Snow ramps would be constructed by moving snow from drifts adjacent to the river/lake banks.

There may be some river crossings with ungrounded ice and where floating ice would not support the weight of some equipment and prevent a safe crossing. In these cases, the operator would contact the Alaska Department of Fish and Game (ADFG) to permit the application of water to increase ice thickness and establish safe, temporary river crossings.

To aid in identifying safe river crossings and reduce the number of vibroseis source lines crossing major drainages, a slope analysis tool would be used to map slopes in the Program Area. The advance survey crews would ground verify predicted steep slopes (greater than10°) and map them as avoidance locations. Equipment would only cross drainages at areas of the lowest possible relief, as vibroseis vehicles are not able to operate on slopes greater than 10º. All slopes greater than 10-15º would also have an 82.5-foot avoidance buffer along the slopes for all source points.

Based on results from the advance survey, snow-packed (prepacked) trails would be made throughout the Program Area by Tuckers and/or Steigers pulling a groomer. These trails would help reduce environmental impacts and would be used for camp moves, resupply, and crew travel (including trails between airstrips and camps). The main seismic camp would move to each predetermined camp site over prepacked snow trails with adequate snow cover using the flattest terrain possible.

Predetermined snow routes have not been identified because routes within the Program Area would be located based on snow conditions, camp locations, results of cultural and wildlife surveys, local knowledge, community consultation, terrain and environmental conditions. KIC's operator would attempt to coordinate routes with other operators along the proposed access route in order to share the use of any existing or planned trails to access the Program Area.

Temporary airstrips would be constructed on tundra and lakes, as necessary, to support seismic activities. The advance survey crew would identify appropriate locations for airstrips in areas that have adequate space for safely landing aircraft on skis. Airstrips would be constructed on flat snow-covered tundra or lakes with grounded ice and would be prepared using a Tucker or a Steiger pulling a groomer. Only lakes with grounded ice, that are large enough to use as an airstrip, would be identified for use. Due to the lack of lakes in the Program Area, however, the majority of airstrips would be expected to be on tundra.

The size of airstrips would be approximately 75-100 feet wide and 2,300-3,500 feet long to provide adequate space for aircraft to land. Black bags filled with snow and lights would be placed along

the side of the snow berm to delineate the edge of the landing strip. The airstrips would only be maintained while in use unless the same location would be needed again. When an airstrip is no longer necessary, it would be inspected, the condition recorded, and the location identified with Global Positioning System (GPS) to be included in the final report.

Aircraft would not operate within 0.5 mile of polar bears and would remain 1,500 feet above ground level (AGL), except during landing and takeoff, and when required for safety reasons such as inclement weather. The aerial infrared (FLIR) surveys for maternal polar bear den sites, however, would be conducted below this altitude with U.S. Fish and Wildlife Service (FWS) approval. If a polar bear is observed while the aircraft is on the ground, personnel would board the aircraft and leave the area and the pilot would not fly over the bear. Aircraft routes would be planned to minimize potential conflicts with active or anticipated subsistence hunting, as determined through community consultations.

KIC's operator (SAExploration Inc.) has developed a willow protocol that would ensure willow areas would be mapped and defined by size (see Appendix G in the Marsh Creek Plan of Operations). Areas containing willows would first be identified via aerial photos and added to known avoidance maps. Willow habitats would then be loaded into the navigation system of vehicles so survey crews could ground truth the sites and mark them as avoidance areas. If an advance crew discovers willows above the snow line, they would investigate further on foot or by snow machine. During ground truthing of willows, subsistence representatives would assist in identifying sensitive willow areas and defining the size of areas to be avoided. Crews would also look for alternative paths to avoid willow areas when willows are visible above the snow line during scouting or operations. If an area with willows is deemed accessible after coordination with the subsistence representative, the route would be marked to minimize impacts to willows.

KIC has commissioned a cultural resource study to identify historic and cultural resources in the Program Area. A licensed archaeologist will work with the North Slope Borough (NSB), State of Alaska and the ANWR Manager to review existing records of all known existing cultural studies in the Program Area. The study 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. All cultural or historic sites within the Program Area would be avoided and have 500-foot non-activity buffers placed around them. This avoidance and non-activity buffer protocol would include any new historic or cultural sites located during operations. Buffer locations would be entered into the navigation system of all vehicles as well as identified on maps to ensure no vehicles enter avoidance areas. The operator would not be accessing any native allotments without permission of the owners. And all native allotments not involved in the project would be avoided with a 500-foot buffer.

A polar bear awareness training program would be provided to all workers prior to the start of operations. In addition, polar bear awareness refresher briefings would be held as part of regular safety briefings and employees would be instructed to immediately notify the Program Manager

or Health, Safety, and Environment (HSE) Advisor whenever a bear is detected. All personnel would be trained on the restrictions regarding "taking" of polar bears as described by the Marine Mammal Incidental Harassment Authorization. All transit outside of the Coastal Plain would be covered under the existing 2016-2021 Beaufort Sea Incidental Take Regulations (ITRs).

Two aerial FLIR surveys, with the objective to detect maternal polar bear den sites, would be conducted in December 2020 and/or January 2021. If a potential den site is located during the surveys KIC would consult with the FWS to analyze the data and determine if additional surveys or mitigation measures would be warranted. The FLIR survey would be approved by the FWS and reports would be submitted to the agency.

If a polar bear is observed in the immediate area of the camp or operations, workers would stay inside trailers or vehicles to avoid potential interactions with the bear. If a polar bear is detected near any part of the operation, the Program Manager or HSE Advisor would be notified immediately. Approaching a bear for any reason would be strictly forbidden. Known polar bear den sites would be avoided with a 1-mile buffer in all directions from the beginning of operations through April or until a female with cubs abandons an area. No operations would be allowed within the 1-mile exclusion zone without approval from the FWS. During operations, should previously unknown occupied polar bear dens be discovered within 1 mile of activities, work would cease and the FWS would be contacted for guidance. All polar bear sightings would be reported to the FWS.

In addition to the no operations buffer around polar bear den sites, designated polar bear critical denning habitat would have a 330-foot avoidance buffer. Crossings over major drainages within denning critical habitat (where necessary to cross) would be surveyed for dens using handheld or truck mounted FLIR instruments prior to movement.

After completion of seismic activities, the camp and all equipment would return to Deadhorse using previously identified snow routes across sea ice or overland depending on the camp location at the completion of the program. It is possible that the camp and equipment could also return to a pad in Kaktovik for a summer barge demobilization.

All tundra disturbance or impacts would be investigated by the HSE advisor and subsistence representative to determine the extent of the impacts and to report the event. Measurements and photos would be taken and any disturbance to the vegetative mat would be documented and reported to the BLM Authorized Officer within 72 hours of occurrence. Follow-up corrective actions would be determined in consultation with and approved by the BLM Authorized Officer.

Camp Facilities

There would be one main seismic support camp located adjacent to seismic exploration activities. The mobilization of the camp would be from an existing gravel pad (at Deadhorse) using roads located outside of the Program Area. A pre-determined route and snow trail would be used to move camp equipment to and within the Program Area. The camp would consist of 8-10

"strings" of trailers, typically with 5 trailers per string, and would travel in a single file configuration pulled by a rubber tracked Steiger or heavy equipment. The advance crew would identify routes for the camp move to ensure adequate snow coverage and to avoid hazards or environmentally sensitive sites. Camps would not be located on lakes or rivers and would be a minimum of 500 feet from waterbodies.

The seismic camp would be able to accommodate up to 180 people and would consist of sled-mounted units including; a kitchen and diner, sleeping areas, washrooms, laundry, offices, shops, medical clinic, generator rooms, and storage compartments. Equipment at the main seismic camp would include long haul fuel tractors, water maker, incinerator, resupply and survival sleigh, tractors, loaders and Tuckers and/or Steigers. There would be up to 50 trailers at the seismic camp. The snow trails for camp moves and resupply would be prepacked (hardened), groomed and monitored closely for wear to the snow base. Trails would be rerouted to avoid environmental disturbance, when necessary. Depending on weather, snow cover and advancement of seismic exploration activities, the camp would be expected to move 1 to 2 miles every 5 to 7 days. It is anticipated that there would be four to six camp moves per month. The maximum footprint for the camp would be approximately 300 feet by 400 feet and the camp would generally be located in the center of seismic operations.

Sanitary conditions in the kitchen, diner and washrooms would be maintained in full compliance with governmental regulations. Gray water would be filtered to meet discharge requirements of the Alaska Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System (APDES) permit prior to discharge. A current APDES discharge permit is in place for this purpose.

Resupply of food and other supplies would occur by aircraft and ground vehicles over packed snow trails two or more times per week. Crew changes would be twice a week and would occur by aircraft and ground vehicle (from airstrips). Rubber tracked vehicles such as Rolligons and/or Steigers would be used to resupply fuel and/or water from Deadhorse or Kaktovik to the camp approximately two to three times per week. There would be no hunting or fishing allowed.

After the camp has moved, the HSE advisor and local subsistence representative would visit each camp site to review the area and ensure no damage had occurred.

Fuel Supply and Storage

All vehicles and equipment fuel would be ultra-low sulfur diesel. Rolligons or other rubber tracked vehicles (such as Steigers) would tow long haul sleigh fuel tanks on skis/tracks on prepacked snow trails. In the event the fuel supply is disrupted by weather or other unforeseen events, fuel could be delivered by aircraft using temporary airstrips. There would be no refueling on airstrips (except in the case of an emergency) and off-loading fuel from aircraft would be done in accordance with the operators fueling procedure which would include trained fuelers and ensuring two crew members

are involved. The operator would have a Spill Prevention Countermeasure Control (SPCC) plan in place and ensure a copy is provided to the BLM.

The average daily fuel consumption of the camp and vehicles would be approximate 6,000 gallons. KIC anticipates a maximum of 20,000 gallons of fuel to be stored within 7-9 tanks that are each capable of holding 3,500 gallons. This would ensure adequate fuel in case delivery is delayed due to weather. Fuel storage and fueling would be located at least 100 feet from waterbodies and all locations would be recorded. All fueling locations would require management practices to prevent spills including drip plan placement under all parked vehicles and use of vinyl liners with foam dikes under all valves or connections to diesel fuel tanks. All fuel tanks would be double-wall tank construction capable of holding 110 percent of the fuel volume in case of a spill. In addition, fuel dye would be added to more easily detect fuel spills.

All spills, no matter what the size, would be cleaned up and their locations recorded. The operator currently holds a SPCC plan for fueling and fuel storage associated with seismic operations. This SPCC plan is site specific and would be amended for the Marsh Creek East Program Area. All reportable spills would be communicated through the proper agencies and reporting requirements.

Field Operations

The method of seismic acquisition would be Source Driven Shooting (SDS) combined with a Compressive Sensing design. Seismic operations would be conducted utilizing rubber tracked/buggy vibroseis vehicles and wireless autonomous recording devices (nodes/geophones).

Geophone receiver points occupied with wireless nodes and a single geophone (recorder) would be laid out along a receiver line that is perpendicular to source lines and both source and receiver lines would be spaced approximately 1320 and 660 feet apart, respectively. Up to 5 receiver lines could be placed on the ground at one time. The wireless nodes and geophones would be deployed using rubber tracked vehicles to access the sites and then by crews on foot. It is possible that receivers could be placed on ungrounded sea or freshwater ice that is safe for Tucker or snow machines to access but not by the heavier vibroseis vehicles. Each station would be placed individually and would be surveyed with GPS during deployment. Upon retrieval, all GPS data would be entered into a database.

Using the SDS methodology, multiple vibroseis vehicles could collect data at the same time. This methodology allows for a single vibroseis vehicle to travel down a source line, reducing risk of compaction or damage to the tundra. Vibroseis vehicles would only operate on snow covered tundra or grounded sea ice. Up to 12 vibroseis vehicles, spaced at least 1,320 feet apart, could collect data at the same time.

Lighter, smaller univibe vehicles (also used to conduct vibroseis) would be used in narrow riverbeds and on ungrounded freshwater ice. This would reduce potential disturbance as well as reduce the risk of working in areas of ungrounded freshwater ice. Univibes would only be used on lakes where ice is greater than 36-inch thick. Nodal devices and geophones, however, could

be placed on lakes and riverbeds where ice is thick enough for Tuckers to travel but not thick enough for the univibes. Univibes could also be used on grounded sea ice. Up to 2 univibe vehicles could collect data at the same time.

The vibroseis sampling frequency along the source line would be 27.5 feet. The duration and decibel level of the source (vibroseis or univibe vehicles) varies depending on factors such as terrain and weather conditions; however, the levels are so low that hearing protection is not required for seismic crew members.

There would be approximately 6,459 miles of receiver lines and 3,237 miles of source lines in the Program Area. Receiver lines would be traveled twice, once to lay out the receivers and again to pick up equipment after recording. Source lines would be traveled by the advance crew in Tuckers to identify hazards and conduct ice stability checks and then would be traveled by one vibroseis vehicle.

Recording operations would be conducted for 24 hours per workday, based on two 12-hour shifts. Communications with the crews would be via Very High Frequency (VHF) radio systems and wireless data transfer radios.

Although encounters with polar bears or grizzly bears are unlikely, the operator and its contractors would exercise caution during operations. Should a polar bear be encountered, procedures outlined in the comprehensive Wildlife Interaction Plan (approved by the ADFG and FWS) would be followed. Food and food waste would be kept inside vehicles during field operations. All polar bear sightings would be reported to the FWS as per the authorization from FWS. Any type of bear dens suspected or confirmed would be reported to the FWS or ADFG.

To minimize impacts to ringed seals, vibroseis (with vibroseis or univibe vehicles) would be conducted on grounded sea ice. Although unlikely, it is possible that receivers could be deployed beyond grounded sea ice with Tuckers or snow machines. Grounded sea ice would be determined by using ground penetrating radar and handheld drills. In addition to staying on grounded sea ice for vibroseis, impacts to ringed seals would also be minimized by having a subsistence representative from Kaktovik as an advanced crew member as well as using traditional knowledge to avoid areas used by seals during mobilization, scouting, ice checks, and operations.

KIC, through its operator and contractors, would work with agencies to avoid and minimize interactions with wildlife including abiding by relevant regulations and obtaining required authorizations.

Water Use

Potable water would be produced at camp with a skid-mounted snow-melter. Water would be produced by melting snow, transporting water to camp from Kaktovik and/or Deadhorse or, if it is a low snow year, from withdrawing water from lakes. Snow would only be removed from grounded areas of lakes.

KIC does not anticipate needing to withdraw large quantities of water from lakes for camp use. It is estimated that 2,000-3,000 gallons of water would be necessary for camp operations per day. If the amount of water withdrawn from any one lake would not exceed ADNR requirements for a Temporary Water Use Authorization (TWUA) (5,000 gallons), a permit would not be required. If the amount of required camp water could possibly exceed 5,000 gallons for any one lake, KIC would be required to obtain additional authorization from the BLM and the State of Alaska (TWUA).

Any water withdrawn would be processed through an Alaska Department of Environmental Conservation (ADEC) approved water system, which consists of filtration and chlorination.

Waste Management

Food waste generated during field operations would be stored in vehicles until the end of the shift. All garbage would be consolidated at camps in wildlife resistant containers until further disposal. A skid-mounted incinerator would be used to incinerate garbage and food waste twice daily to avoid attracting wildlife. Incinerators fall within the regulatory requirements of 40 Code of Federal Regulations (CFR) 60. As required by regulation, the operator would provide a description and weight of camp wastes burned during operations.

Paper, food, wood, petroleum products and plastic would be expected to be generated from the proposed activities. Any waste generated by seismic operations would be properly stored and disposed of in accordance with applicable permit stipulations and operator controls.

Gray water would be generated and discharged from the advanced camp and main camp locations. The operator's current permit allows up to 5,000 gallons of grey water discharge per day. All grey water would be treated and discharged according general permit AKG332000 and 18 AAC 83.210 and Alaska Pollution Discharge Elimination System (APDES) discharge limits. Toilets would be "PACTO" type toilets (brand of toilet that does not use water), and waste would be burned in the camp incinerator, so there would be no black water discharges. Ash from the incinerator would be backhauled to the NSB disposal facility in Deadhorse. An inspection by the HSE Advisor would be completed after the camp has left to ensure the area is clean of all debris.

Community Relations

KIC represents the Iñupiat people of the Coastal Plain within the Program Area, including its shareholders and subsistence users in the community of Kaktovik. KIC would require all operations and activities to be conducted in a manner that does not damage or affect the social, cultural or community in the Program Area.

KIC would coordinate its seismic activities with the community of Kaktovik and the NSB to prevent potential conflicts when operating in close proximity of subsistence users. KIC would hold meetings in Kaktovik to discuss planned activities prior to commencement of the 2020-2021 winter season. These discussions would include text and visual documentation of the crew's activities, as

well as the program boundaries. KIC anticipates that, because of these meetings, various protocols and procedures would be developed and implemented which would allow both subsistence and exploration activities to co-exist with respect to this program. Any subsistence hunting and fishing occurring in the Program Area would be identified with the help of community members and all meetings would be documented and kept on file as a resource during and after activities.

Due to the winter timing and short-term nature of the proposed activities, KIC has determined that there would be little impact on any subsistence communities other than Kaktovik. KIC has communicated directly with the Native Village of Kaktovik and the NSB and is in the process of applying for the required NSB Development Permit. KIC would provide the BLM with a copy of the NSB Development Permit.

KIC would hire a community liaison to coordinate with the community of Kaktovik on subsistence issues and uses. The community liaison would report back to Kaktovik and the agencies overseeing the program on how subsistence issues had been addressed. The community liaison would be the local point of contact and have the following responsibilities:

1. Meet with the community of Kaktovik prior to the start of operations to discuss any concerns.
2. Document past subsistence activities in the Program Area.
3. Conduct scoping with the operator and local subsistence representative from the community.
4. Help identify local subsistence observers to work on the seismic crew.
5. Address any key issues with community members. Issues are described as "a significant opportunity, problem, factor or trend, or challenges to KIC's mission, direction, way of doing business, or culture."

KIC would require the operator to hire local community members as subsistence advisors and representatives on the crews. Program vehicles and aircraft would avoid subsistence hunting areas. Based on current consultations with all parties, KIC has determined that the proposed activities could occur without any impacts to access to the Program Area by subsistence users.

Summer Activities

Summer cleanup and inspections would take place in July and August (2021). A single helicopter would conduct flyover inspections of the Program Area looking for any debris that may have been left behind during winter activities. All camp locations and source and receiver lines would be inspected and all debris that could have been covered by snow and inadvertently left behind would be removed. The aircraft would land and pick up any debris identified during aerial surveys of the Program Area. In addition, any area that sustained damage to the tundra would also be surveyed. This phase of the program would require one helicopter for approximately 15 days, including possible weather days.

Each day of aerial inspections and clean up would cover roughly 100 miles and entail approximately 30-40 landings and take offs. Over the course of 15 days, there could be 450-600 landings and take offs.

Aircraft routes would be planned to minimize potential conflicts with active or anticipated subsistence hunting, as determined through community consultations. During summer flyovers, the helicopter would not land within 0.5 mi of polar bears.