

Philip S Marshall
1300 Skyline Drive
Fairbanks, AK 99712
Tel: (907) 457 3895
E-Mail: pmarshall@acetekk.com

14 August 2018

BLM
Anchorage , AK

Sirs;

This letter is in response to the application (see DOI-BLM-AK-R000-2018-0040-EA) for seismic exploration to be conducted by SAEExploration in ANWR commencing Dec 2018. As a thirty-seven year resident of Alaska and a retired periglacial geologist with an MS in permafrost studies who has worked on the North Slope as an engineering geologist and conducted fieldwork in the circumpolar north , I urge you to deny this application.

From a policy viewpoint, this application and its timing (to say nothing of the unhelpful rapid and short period for public comment concerning this permit application) is illogical due to the still pending decision of the DEIS for exploration activities in ANWR. (This sidesteps the issue of oil/gas exploration at all in the Arctic National Wildlife Refuge.) In a larger context, furtherance of fossil-fuel exploration, development and extraction is highly ill-advised due to exacerbating already pronounced climate change with its deleterious effects.

On a more immediate level, having read your synthesis of SAE's proposed operations plan, and their Marsh Creek Ops Plan, I find the following omissions and deficiencies cause for rejection of their application.

1. Overall, there is no mention of any governmental or outside agency with enforcement authority that will ensure compliance with federal, state or borough laws and regulations during the actual fieldwork to protect the environment. (Local observers may be helpful, but they lack regulatory control.) Protocol for this oversight must be defined; timeframes and chain of command identified; and penalties delineated.
2. SAE claims they have Spill Prevention Countermeasure Control (SPCC), but there is no indication of pumps, absorbent booms, pads, containment vessels or any other equipment to control toxic spills, or where they will be stationed in such a flexible, variable project or what their availability will be.

The potential for hazardous spills in this endeavor are legion due to winter operations; repeated tractor-sledded fuel transport, delivery and storage; similar aircraft fuel ops in case of variable conditions; and then special terrain hazards of sea ice, river, creek, or lake crossings with or without their challenges of steep banks.

The concept of snow ramps to climb in and out of drainages belies the likelihood that gathering of the required snow will do even more damage to the ground cover since a front-end loader operator has little idea what is the correct depth to dig without damaging/scarifying the ground surface or subsurface.

The idea of willow recon parties to avoid such terrain pockets is unrealistic since the tracked vehicle parties themselves will likely cause damage to vegetation just in the inspection phase. There is no mention of aufeis (overflow) hazards known to occur in the area nor how they will be dealt with if vehicles go through the ice (not to mention the extreme difficulties of winter toxic spill cleanup from a sunken large vehicle, all with unproven technology).

3. Especially worrisome is the size and scope of the project that demands fuel volumes on a seldom encountered level. Given that there will be two crews/camp and at times two camps, and that a crew will require 6-7000 gals fuel/day with a work span of 180 days for one season (possibly two), that indicates a rough fuel consumption estimate of 2.34 million gallons. The probability of handling such a volume in these field conditions with significant adverse impact due to spills is high.
4. The size and numbers of the vehicles involved will likely lead to problems. Where and how will the CAT D7s operate? These vehicles pose a special threat for permafrost degradation. None of the vehicles are identified as LPG (Low-ground pressure). None of the tracks illustrated are extra-wide as used at ski areas.
5. The temperature/snow depth standards for vehicle operations are based on Nancy Felix's fieldwork for the US F&WS dating from the late 1980s. These need to be reworked because vehicle specifications have changed since then and most importantly, her studies did not take into account the many more numerous passes of vehicles that will be entailed in this proposed fieldwork.
6. The spacing and frequency of the receiver lines to the source lines entailed in this seismic survey to achieve 3-D modeling present a dramatic increase in the number of disturbance lines within ANWR. Given the 5% unremediated trails from the 1980s exploration and well in ANWR (see US F&WS report), and the imagery of the recent seismic survey permafrost disturbances south of Point Thompson (also Pt . Thomson) taken by Dr. Nolan and published in The New York Times article from 4 August 2018, 200 miles of potentially permanently disturbed permafrost with its attendant thermokarst features is unacceptable.
7. The entire scope and nature of the project with 160 personnel/camp attended by ~20 vehicles and 50 trailers at 40-50 camp locations is intolerably industrial in a wildlife refuge. Trailside litter and debris from these activities is virtually guaranteed even with the well-intentioned proposed policies for the main camp waste disposal outlined in the above documents. Who will oversee and clean up these lesser-recognized but still impressionable and undesirable environmental impacts?
8. Conditions for SAE's permit should stipulate posting a realistic bond for spill/environmental cleanup; and funding for a longterm scientific study of the effects of their activity on the North Slope.

In conclusion, SAE's application shows they have serious lapses in their ability to adequately protect the undisturbed arctic environment from significant, longterm degradational consequences. Therefore, their application for a permit should be rejected. Dr. Ernest DeKoven Leffingwell, author of USGS Professional Paper 109 and first western scientist to study and report on this area c. 1907, would undoubtedly question the appropriateness of this entire venture.

Sincerely,

Philip S. Marshall