



February 19, 2019

Sue Simonds
Permits Manager
SAExploration, Inc.
8240 Sandlewood Place, Suite 102
Anchorage, AK 99507

RE: MLUPNS 19-001, SAExploration, Inc., Gas Hydrate VSP Geophysical Exploration Permit Approval

Dear Ms. Simonds:

The Department of Natural Resources (DNR), Division of Oil and Gas (Division) approves the SAExploration, Inc (SAE) Gas Hydrate Vertical Seismic Profile (VSP) Miscellaneous Land Use Permit (MLUP) application, dated January 9, 2019, to conduct geophysical exploration on State of Alaska lands in the North Slope. The enclosed permit, MLUPNS 19-001, authorizes SAE to conduct a seismic survey on State of Alaska lands within the Prudhoe Bay Unit subject to the conditions of the permit. This project includes approximately 11 square miles and will collect downhole seismic data for the Gas Hydrate VSP.

This permit is effective February 19, 2019, to May 31, 2019.

Issuance of a permit under 11 AAC 96 is not a disposal of an interest in land and does not grant a preference right to a lease or other disposal. The permit is revocable for cause for violation of a permit stipulation of this chapter, and is revocable at will if the DNR determines that the revocation is in the state's interest. The proposed activities are for a discrete and limited duration with limited, temporary impact to the land, and are not part of a larger project or investment by the permittee that might weigh against revoking the permit. Therefore, the permit is both legally and functionally revocable. Each permit issued is subject to any stipulations the DNR determines necessary to assure compliance with this chapter, to minimize conflicts with other uses, to minimize environmental impacts, or otherwise to be in the interests of the state. Public notice of any miscellaneous land use application is discretionary under 11 AAC 96.030(c). The Director of the Division of Oil and Gas (Director) has the right at any time to amend or modify any provisions of this permit, or revoke this permit.

Project Description: Proposed Activity, Associated Structures, Type of Equipment:

SAE has been contracted to support the Alaska gas hydrate research and development project. Project ID: LONS 18-004, Gas Hydrates Test Well, was permitted by BP Exploration Alaska Inc. (BPXA). The goal of this program is to evaluate the potential to establish gas hydrates as a technically and commercially viable unconventional gas reserve.

SAE will perform a VSP on the well within the Prudhoe Bay Unit. Equipment will be trucked to the Kuparuk State 7-11-12 pad location near the project location. Operations will begin with ice check and hazard surveys. SAE will utilize satellite imagery, existing bathymetry, and ground penetrating radar to produce data for hazard maps. There will be no geophones placed on the tundra for this project. A geophone unit was placed down-hole during drilling in December 2018.

There will be four source vibrators on the project that will work in pairs. Vibrators will move in a circular pattern within the project area. The crew will consist of approximately 14 people on site. Crew supporting the project will stay on a gravel pad close to the project or in existing facilities. Equipment will consist of four tracked vibrators, two Tuckers, two support trailers, and a Steiger with a 4000-gallon fuel trailer to support operations.

Cleanup operations will be conducted the summer after the seismic program to inspect for any remaining debris not identified and removed during demobilization activities, and to identify any remnant issues. All debris collected will be disposed at an approved waste facility in Deadhorse.

Project Area Legal Description:

Meridian: Umiat

Township: 011N Range: 011E Section(s):1, 12-13, 24

Township: 011N Range: 012E Section(s):5-8, 17-19

Scope of Decision:

This decision is reviewing the following activities for Division approval:

Activities supporting seismic data acquisition on State of Alaska land and waters have been reviewed under the authority of this approval.

Land Status:

The Gas Hydrate VSP project area is located on State land and waters within the North Slope Borough. The project area covers approximately 11 square miles. (See Appendix C Figure 1).

Other third-party interests within or adjacent to the project area were identified:

ADL 419896 – ACS Cable Systems, LLC

ADL 419915 – The Alaska Wireless Network

ADL 402294 – Kuparuk Transportation Company

ADL 411731 – Oliktok Pipeline Company

TWUA A2014-124 – BP Exploration (Alaska) Inc.

TWUP A2013-156 – Armstrong Energy, LLC

This permit does not grant access to any non-state lands.

Agency Review:

The Division provided an agency review and comment opportunity for the activities considered for authorization under this decision. The following government entities were notified on

January 22, 2019, for comment on the application: Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Conservation (ADEC), and DNR: Division of Mining, Land, and Water, and Division of Oil and Gas (DOG). The comment deadline was 4:30 pm Alaska time on February 5, 2019. No comments were received.

Public Review:

The public notice process is discretionary and was not initiated for this application.

Performance Guarantee:

The permittee has provided the Division with a performance guarantee under 11 AAC 96.060 in the amount of \$100,000.

Insurance:

The certificate of insurance has been furnished to the department and lists the State of Alaska, Department of Natural Resources as an additional named insured on the policy. The policy is issued by an insurer licensed to transact the business of insurance under AS 21.

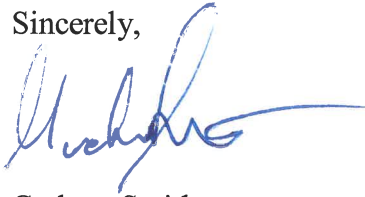
Application Approved:

Should any unforeseen issues arise, the Division has the authority to amend or revoke this permit. As detailed in this permit, the Division shall be notified if, during the conduct of activities, a surface use conflict occurs. All activities conducted under this permit are subject to inspection by the Division, and if damage occurs, appropriate interest holders will be engaged, and corrective action will be prescribed. The Division will impose additional provisions as necessary under 11 AAC 96.040 at any time during the activity approved under this permit to minimize impacts and conflicts.

The Division considered all facts material to this application including the permit provisions contained in this authorization per 11 AAC 96.040(b). The Division has determined that this permit as conditioned by the attached provisions for this non-permanent activity is in the state's interest. Stipulations in this permit authorization are necessary to protect the state's interest and the public interest.

An eligible person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of issuance of this decision, as defined in 11 AAC 02.040 (c) and (d), and may be mailed or delivered to the Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918; or emailed to dnr.appeals@alaska.gov. This decision takes effect immediately. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

Sincerely,



Graham Smith
Permitting Manager
Division of Oil and Gas

Appendices:

A: Stipulations

B: Comments

C: Map(s)

ecc:

DOG: Graham Smith, Nathaniel Emery, James Hyun, Mark Henspeter, SPCS Records, Heather Heusser, Kelsey Tucker, and Holly Fair

DMLW: Melissa Head, Kimberley Maher, Becky Baird, and Henry Brooks

ADF&G: Jack Winters, Dick Shideler

ADEC: Oil and Gas, DEC and Laurie Silfven

Borough: Josie Kaleak, Mabel Kaleak, and Jason Bergerson

APPENDIX A: STIPULATIONS

MISCELLANEOUS LAND USE PERMIT FOR GEOPHYSICAL EXPLORATION

Geophysical and Seismic activities are subject to the following permit stipulations:

Standard Stipulations:

1. The permittee shall defend, indemnify and hold the State of Alaska harmless from and against any and all claims, damages, suits, losses, liabilities and expenses for injury to or death of persons and damage to or loss of property arising out of or in connection with the entry on and use of State lands authorized under this permit by the permittee, its contractors, subcontractors and their employees.
2. A copy of the permit and stipulations must be posted in a prominent location where other permits and safety information are displayed for crew members. The permittee shall make available a copy of the application, all subsequent modifications, and a copy of this permit and all its attachments to any interested party upon request in a reasonable time.
3. The permittee shall notify and obtain a modification from the Division in advance of any activities that deviate from the approved permit. Any action taken by the permittee or his agent that increases the overall scope of the project or that negates, alters, or minimizes the implied intent of any stipulation contained in this permit will be considered a deviation from the approved permit.
4. The issuance of this permit does not alleviate the necessity of the permittee to obtain authorization required by other agencies for this activity.
5. The permittee shall inform and ensure compliance with all conditions of this permit by its employees, agents and contractors, including subcontractors at any level.
6. **Reservation of Rights:** The Division reserves the right to grant additional authorizations to third parties for compatible uses on or adjacent to the land under this permit. Authorized concurrent users of state land, their agents, employees, contractors, subcontractors, and licensees, shall not interfere with the operation or maintenance activities of each user.
7. **Valid Existing Rights:** This permit is subject to all valid existing rights and to the land. The State of Alaska makes no representations or warranties whatsoever, either expressed or implied, as to the existence, number, or nature of such valid existing rights.
8. The Commissioner of the DNR may require that an authorized state representative be present during any oil and gas activities described in or conducted under this permit.
9. The permittee shall consult the Alaska Heritage Resources Survey (907-269-8721) so that known historic, archeological and paleontological sites may be avoided. Should any sites be discovered during the course of field operations, activities that may damage the site will cease and the Office of History and Archaeology in the Division of Parks and Outdoor Recreation (907-269-8721) shall be notified immediately.
10. The permittee shall, upon request, make available to the Division all records relating to the permit activities and landowner approvals upon request.

11. The permittee shall observe and apply applicable setbacks as defined by 18 AAC 80.020, 18 AAC 72 and/or the International Association of Geophysical Contractors Setback Guidelines to activities approved under this authorization. Alternative setback distances may be employed to protect coastal uses and resources, water wells, structures, private property including livestock, and other resources if it is determined that a particular guideline is insufficient.
12. Trails, campsites and work areas must be kept clean. Trash, survey lath, markers, and other debris that accumulate in camps, along seismic lines, and travel routes that are not recovered during the initial cleanup, shall be picked up and properly disposed of within one calendar year.
13. The Director has the right at any time to modify or revoke this permit.
14. All wastewater must be disposed of in a manner acceptable to ADEC and must meet Alaska Water Quality Standards found at: <https://dec.alaska.gov/water/water-quality/standards>.
15. ADEC Drinking Water regulations, 18 AAC 80, apply to public water systems.
16. Performance Guaranty. To ensure performance with the terms of the permit and to cover the potential cost of restoring the site, the permittee will maintain security acceptable to the state.
17. Insurance. The permittee shall maintain insurance to protect the State from risks associated with the planned activities during the term of the permit. The Permittee shall maintain a comprehensive general liability insurance policy with the state named as an additional insured party. The insurance requirement must be for no less than \$1,000,000.00 per occurrence and \$2,000,000.00 per annual aggregate. The insurance requirement may be adjusted periodically by the Division.

Land and Access Stipulations:

1. The permit authorizes the Permittee to conduct geophysical/seismic exploration activity upon lands owned by the State of Alaska. No person may engage in mineral exploratory activity on land, the surface of which has been granted or leased by the State of Alaska, or on land for which the state has received the reserved interest of the United States.
2. This permit does not authorize activity on Mental Health Trust Lands, School Trust Lands, Park Lands, or Lands of the University of Alaska.
3. Approval of this permit does not constitute the approval required for surface entry on non-state land without an agreement with the surface owner. This permit does not approve entry on private land.
4. The seismic exploration activities granted under this permit must not diminish the use and enjoyment of lands encompassed within a Native Allotment. Before entering a pending or approved Native Allotment, the permittee shall contact the Bureau of Indian Affairs and Bureau of Land Management and comply with applicable federal law.

Public Safety and Program Outreach Stipulations:

1. Public safety: Appropriate signage will be deployed on all access routes and roadways in the project area. A Right of Way Lessee may advise permittee on appropriate measures to maintain safe

conditions where appropriate. The permittee must watch for, provide verbal warning to and document people or vehicles entering potentially dangerous areas of the project. Lighting and marking with lath or fluorescent tape of some project work areas is advised for activities that occur during periods of sustained darkness or where conditions are unsafe for humans or animals.

2. Notices: To avoid unintended conflicts with other users, the permittee shall post a Notice of this project at conspicuous locations, including key travel intersection crossings, areas of public use, and in a prominent location in any operator or contractor staging area or camp. The Notice shall include the Division's contact number (907-269-8800), project title and permit number, names and contact telephone numbers of the permittee and all operators. The permittee shall provide notices on behalf of the Division to all upland owners involving shoreland, tideland, or submerged land adjacent to the upland owner's property if no notice or agreement is made with the owner by the permittee as required under 11 AAC 96.030(c). All forms of public outreach must be documented and reported to the Division as they occur.
3. In areas of subsistence and personal use harvesting, the permittee will coordinate survey activity with local users to prevent unnecessary conflicts. The permittee shall make a good faith attempt to coordinate survey activities with the owners of trap lines, if known. Existing snowmachine, dogsled, or other trails should be marked with survey lath where they intersect receiver and source lines. The permittee is required to post notice of potentially dangerous or hazardous project activities at these locations.

Fuel and Hazardous Substances Stipulations:

1. Fuel and hazardous substances. Secondary containment shall be provided for fuel or hazardous substances, as defined under AS 46.03.826 (5) or under 42 U.S.C. 9601(14)F.
2. Fuel or hazardous substance transfers. Secondary containment or a surface liner must be placed under all container or vehicle fuel tank inlet and outlet points, hose connections, and hose ends during fuel or hazardous substance transfers. Appropriate spill response equipment to respond to a spill of up to five gallons must be on hand during any transfer or handling of fuel or hazardous substances. Transfer operations shall be attended by trained personnel at all times.
3. Fuel or hazardous substances containers with a total combined capacity larger than 55 gallons shall not be stored within 100 feet of a waterbody.
4. Sorbent material in sufficient quantity to handle operation spills must be on hand at all times for use in the event of an oil or fuel spill.
4. Any use of explosives or blasting materials must comply with ADF&G Habitat Publication No. 13-03, Alaska Blasting Standard for the Proper Protection of Fish. Additionally, the permittee must contact the nearest ADF&G Division of Habitat office regarding the need for a Fish Habitat permit.
5. Stationary fuel storage facilities must not be placed within the annual floodplain of a watercourse or closer than 100 feet to a waterbody. There shall be no fueling, servicing or repair of vehicles or equipment, and no vehicles shall be left unattended within the floodplain or below the ordinary high-water line of any river, lake or stream or closer than 100 ft. to a waterbody or wetland. [potentially not possible on some slope projects in the winter]

Wildlife Stipulations:

1. All activities shall be conducted in a manner to minimize or avoid disturbance to wildlife and their habitat. Hazing of wildlife is prohibited unless a Health Safety and Environment concern is present.
2. Activities must avoid occupied grizzly bear dens and black bear dens by one-half mile unless alternative mitigation measures to minimize disturbance are authorized by the Division after consultation with ADF&G. Known den locations shall be obtained from the nearest ADF&G Division of Wildlife Conservation office prior to starting operations. Occupied dens encountered in the field must be reported to the above, and subsequently avoided.
3. The permittee shall abide by the provisions of Alaska's wildlife feeding regulation, 5 AAC 92.230.
4. Activities must avoid known polar bear dens by one mile. Known den locations shall be obtained from the U.S. Geological Survey (907-786-3800 or 800-362-5148) prior to starting operations. New dens encountered in the field must be reported to the above, and subsequently avoided by one mile.

North Slope Stipulations:

1. Crossing of water bodies and activities near fish bearing water bodies may require permits from ADF&G; the permittee is required to obtain all permits necessary for this project prior to commencing activities authorized by this permit.
2. All solid wastes, including incinerator residue, shall be backhauled to a solid waste disposal site approved by ADEC.
3. The use of ground contact vehicles for off-road travel must be limited to those areas that have adequate ground frost and snow cover to prevent damage to the ground surface as determined by DNR DMLW. Movement of equipment through willow (*Salix*) stands must be avoided wherever possible. The use of ground contact vehicles for off-road travel is subject to regional tundra travel openings and closure notices issued by DMLW.
4. Vehicles shall be operated in a manner such that the vegetative mat is not disturbed, and blading or removal of vegetative cover is prohibited except as approved by DMLW. Filling of low spots and smoothing using snow and ice is allowed. Incidents of vegetative mat damage and follow-up corrective actions shall be reported to the Division.
5. The DMLW maintains tundra monitoring stations throughout the North Slope. Tundra monitoring stations must not be impacted by permitted activities. Specific location information for these sites can be obtained from the DMLW directly at 907-451-2740.

Reporting Stipulations:

1. **Geophysical Data Submission Requirement Form:** As a stipulation of the issuance of this MLUP for Geophysical Exploration, the permittee acknowledges the requirements of 11 AAC 96.210 (1) and agrees to notify the Director of the Division of the availability of processed seismic exploration data within 30 days of completion of initial processing and submit seismic exploration data. The Geophysical Data Submission Requirements can be found on the Division's Website: <http://dog.dnr.alaska.gov/Services/Applications>. Your signature acknowledges your obligation to

fulfill the Data Submittal requirements. This report shall be submitted to dog.permitting@alaska.gov before each survey commences.

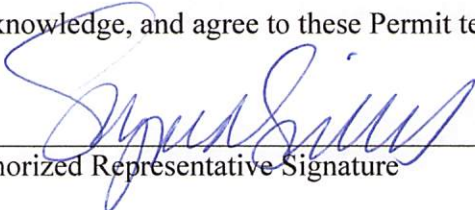
- 2. Activity Completion Report:** Upon expiration of the MLUP or completion of all activities authorized under the MLUP, whichever occurs first, an Activity Completion Report must be submitted summarizing activities, equipment trails, camps and staging areas, damages to State lands and surface impacts, lost equipment, fires, and unintended explosions, spills, land-use conflicts and work completed. The report shall include a map depicting all mulched trails. Rehabilitation, if required, shall be completed to the satisfaction of the DNR. This report shall be submitted to dog.permitting@alaska.gov.

If no activities are completed under the MLUP, then an Activity Completion Report must be submitted on or before the expiration of the MLUP stating that no activities occurred.

- 3. Geophysical Activity Completion Report Form:** The permittee must complete and return a Geophysical Activity Completion Report form for each survey acquired. Please submit a separate form for each sub-program data submittal. A non-confidential public completion report will be placed into the MLUP permit file each time a sub-program is completed. Geophysical Activity Completion reports must be submitted to the Division's Resource Evaluation Section within 30 days of completion of all activities. For in-depth instructions on how to complete the form, please refer to the Division's website <http://dog.dnr.alaska.gov/Services/Applications>. This report shall be submitted to dog.seismicdata@alaska.gov. If no activities are completed under the MLUP, a Geophysical Activity Completion Report must be submitted on or before the expiration of the MLUP (be sure to check box 27 to indicate the survey was cancelled).
- 4. Geophysical Processing Completion Report Form:** The permittee must complete and return a Geophysical Processing Completion Report form for each survey acquired. Please submit a separate form for each sub-program data submittal. A confidential Processing Completion report will be submitted each time a sub-program is completed. The Processing Completion reports must be submitted to the Division's Resource Evaluation Section within 30 days of completion of initial processing. For in-depth instructions on how to complete the form, please refer to the Division's website: <http://dog.dnr.alaska.gov/Services/Applications>. This report shall be submitted to dog.seismicdata@alaska.gov.
- 5. In-field Operations Notice:** During activities conducted under the MLUP, the permittee must submit weekly reports summarizing activities undertaken and their location within the permit area. These reports shall be submitted to dog.permitting@alaska.gov.
- 6. Spill Notifications:** The permittee shall comply with the ADEC requirements for reporting the unauthorized discharge, leak, or spill of hydrocarbons or toxic or hazardous substances. The permittee shall notify the Department of Natural Resources of all spills that must be reported under 18 AAC 75.300 under timelines established therein. All unintentional fires and explosions must be reported to DNR immediately. The DNR 24-hour spill number is (907) 451-2678; the fax number is (907) 451-2751. DOG must be notified at dog.permitting@alaska.gov. DNR and ADEC shall be supplied with all follow-up incident reports.

7. Blowouts, as defined as the detonation of source points that cause surface damage, are reportable if the surface damage encompasses more than 36 inches. The report must include the location (Lat./Long. in WGS 84) and pictures of the blowout. All blowouts will need to be reclaimed or rehabilitated to the satisfaction of the DNR.
8. A summary record of all surface impacts, lost equipment, spills, fires, and unintended explosions, shall be included in the Permitting Section's completion report. Rehabilitation, if required, shall be completed to the satisfaction of the DNR.
9. All fires and explosions that require a response to protect life and property must be reported to DNR and ADEC immediately and shall be supplied with all follow-up incident reports.
10. The Division's Permitting Section shall be notified in Anchorage by telephone at 907-269-8800 and by email at dog.permitting@alaska.gov if, during the conduct of activities, state resources are damaged, or a conflict occurs.
11. The permittee shall make available a copy of the seismic application, all subsequent modifications, and a copy of this permit and all its attachments to any interested party upon request in a reasonable time.

I acknowledge, and agree to these Permit terms, conditions and stipulations.



Authorized Representative Signature

2-19-2019

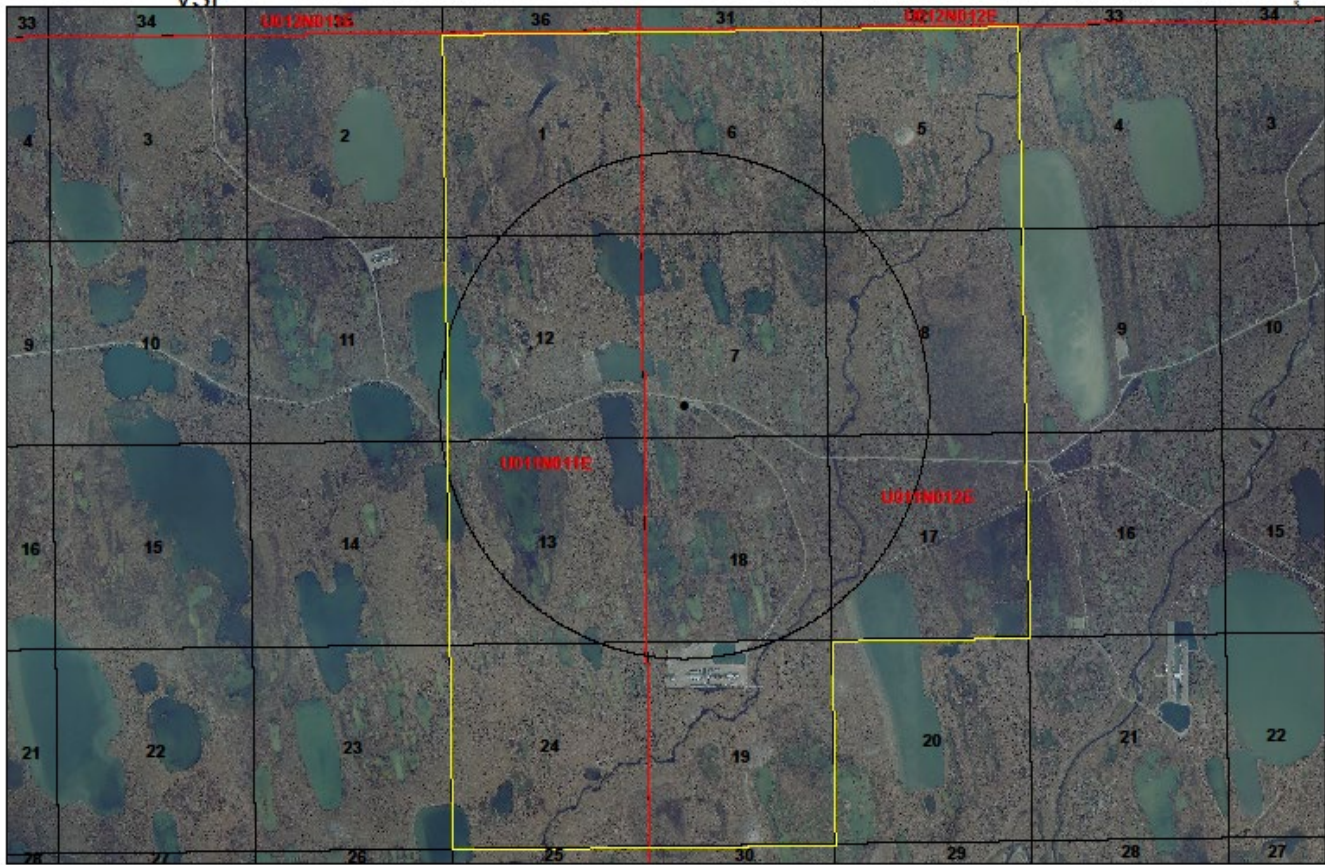
Date

SUZAN SIMONDS

Authorized Representative Printed Name

Appendix B: N/A

METHANE HYDRATE
VSP



Legend

- VSP_Methane Hydrate Well
- VSP_Sections
- VSP_2k_Buffer

NAD27 Alaska State Plane
Zone 4

Date: 12/21/2018
1 in = 3,333 feet

