



GEOPHYSICAL EXPLORATION SUNDRY NOTICE - FORM GE 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 51458 (03-2011)

PERMIT # 97-0181



Project Name
Sanish Buried Array

County
Mountrail

Supplemental Information
Operations plan for Decommissioning of project. Project has 276 Buried Sites and 20 Towers Sites to reclaim. 16 Buried Sites from original project have been previously removed at landowner request.

PERMITTING

David Prozeller will contact all of the individual landowners and seek permission to access their property to reclaim the monitoring sites. This phase of the project is expected to take 5-7 days to complete.

DECOMMISSIONING

David will coordinate with the crews as to which holes will be reclaimed each day and instruct them on the proper access conditions necessary to enter each location. Each 2 man crew is expected to reclaim ~3 locations a day. The towers will require 2- three man crews and each crew is expected to disassemble and reclaim one tower location per day. The decommissioning of each site will follow the same general procedures;

1. The crew will locate the monitoring location and then begin the disassembly of the fence and all of the above ground equipment.
2. Once this is done and everything is loaded on the truck, the crew will continue digging to 18 inches where the hole plugs are located.
3. The crew will proceed to cut the phone connector off of the geophone string. They will then proceed to backfill the holes.
4. After the hole has been filled the crew will spread grass seed over the reclaimed monitor location.
5. After all of the sites are removed from each landowner, the landowner will be asked to inspect the property and then sign a form that will state their satisfaction of the job. This process is expected to take 30 to 35 days to complete.
6. All of the removed stations and towers will be moved to a central staging area provided by Whiting. Everything will be inventoried, packed and stored at this site.

*Must call Tom Torstenson @ 701-290-1546
24 hrs prior to reclamation*

Company Whiting Oil and Gas Corporation		Telephone Number (303) 748-5308	
Address 1700 Broadway, Suite 2300			
City Denver		State CO	Zip Code 80290
Signature <i>Mike Waugh</i>	Printed Name Mike Waugh		
Title Project Manager	Date 9/5/2014		
Email Address seismic21@aol.com			

FOR STATE USE ONLY

Received Approved

Date
9/5/14

By
Tom G. Gledhill

Title
Mineral Resources Permit Manager



GEOPHYSICAL EXPLORATION PERMIT

INDUSTRIAL COMMISSION OF NORTH DAKOTA
 OIL AND GAS DIVISION
 600 EAST BOULEVARD DEPT 405
 BISMARCK, ND 58505-0840
 SFN 51459 (02-2008)

5

1) a. Company Micro Seismic, Inc.		Address 1300 West Sam Houston Parkway South, Suite 200, Houston, TX 77042	
Contact Dave Fairservice	Telephone 713 781-2323	Fax 713 781-2326	
Surety Company U.S. Specialty Insurance Company	Bond Amount \$50,000	Bond Number B005315	
2) a. Subcontractor(s) Exploration Drilling, Inc.		Address 12653 County Road 352, Sidney, MT	Telephone 406 482-3356
b. Subcontractor(s)		Address	Telephone
c. Subcontractor(s)		Address	Telephone
3) Party Manager J.D. Driskell		Address (local) TBD	Telephone (local) 208 318-6361
4) Project Name or Line Numbers Sanish Burried Array			
5) Exploration Method (Shot Hole, Non-Explosive, 2D, 3D, Other) Burried geophone monitors at specific locations within project area. See attached detailed description.			
6) Approximate Start Date December 1, 2009		Approximate Completion Date December 1, 2014	



THE COMMISSION MUST BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF COMMENCEMENT OF DRILL/PLUG OPERATIONS

7) Location of Proposed Project - County Mountrail County (see attached details)					
Section(s), Township(s) & Range(s)	Section	T.	R.		
	Section	T.	R.		
	Section	T.	R.		
	Section	T.	R.		
8) Size of Hole 3-D	Amt of Charge na	Depth na	Source points per sq. mi. na	No. of sq. mi. 180 na	9) Must supply latitudes and longitudes of post-plot source and receiver points on an SD card.
Size of Hole 2-D	Amt of Charge	Depth	Source points per ln. mi.	No. of ln. mi.	

10) Anticipated special drilling and plugging procedures?
See attached description

11) Enclose a pre-plot map with proposed location of seismic program lines and powder mag.

Signed <i>[Signature]</i>		Title Contract Permit Agent	Date November 24, 2009
(This space for State office use)			Conditions of Approval if any See Attached letter
Permit No. 97181	Approval Date 12/8/09		
Approved by <i>[Signature]</i>			
Title Mineral Resources Permit Manager			
County Approval Sent Mountrail County			

*See Instructions On Reverse Side

Installation of Micro Seismic monitors in the Sanish Field

This project involves the installation of Micro Seismic monitors in 292 locations over an area as noted below and on the attached map. All specific locations will be approved by landowners and care will be taken to locate monitors where they will be easily accessible by Micro Seismic, Inc. technicians on a regular basis, and where they will not conflict with farming or ranching operations. Monitors will be in use for at least one year and up to five years.

Area of Monitor Installation:

Project area is in Mountrail County, North Dakota:

T.152n. R.91w: Sec.2-11.

T.152n. R.92w: Sec.1-12.

T.152n. R.93w: Sec.1 & 12.

T.153n. R.90w: Sec.6, 7, 18, 19 & 31.

T.153n. R.91w: Sec.1-36.

T.153n. R.92w: Sec.1-36.

T.153n. R.93w: Sec.1, 2, 11, 12, 13, 14, 23, 24, 25 & 36.

T.154n. R.91w: Sec.3-12 & 13-36.

T.154n. R.92w: Sec.1, 2, 3 & 7-36.

T.154n. R.93w: Sec.12, 13 & 25.

T.155n. R.91w: Sec.31-34.

T.155n. R.92w: Sec.33-36.

Purpose of Monitors:

To record the sounds emitted when the reservoir is stimulated with high pressure fluid during the hydro fracturing procedures in the area. By mapping the spatial and temporal location of the points of sound emission in the reservoir and by relating these positions to the rate of fluid injection, much can be determined to improve the effectiveness of hydro fracturing.

Installation Process and Plugging Information:

A 300' hole will be drilled (using conventional drill trucks) at each predetermined location as approved by landowners. The geophone string will be attached to a 1" PVC pipe and lowered in to the hole. The geophones are spaced 50' apart to a depth of 300' (with the top geophone located 150' below surface).

Once the geophones are installed they will be cemented in, using a light slurry of "Quick Crete" Portland cement pumped through the PVC to a level approximately 100 feet from the surface. The compressive strength of the cement will be 945 psi @ 140 deg After 72 hours. From past experience, it is expected to take 20 sacks of cement from 300 ft to 150ft. Once the cement is pumped the hole is temporarily plugged to allow the cement 24 hrs to set up. The cement will settle to the 150 foot level.

24 hrs later the temporary plug is removed and one bag of sand is added to assist in attenuating noise from above reaching the cemented area. The hole will then be filled with course bentonite to within 18 inches of the surface. A non metallic plug (which will have MSI scribed into the plug) will be inserted in to a depth of 18 inches. The hole will then be filled with cuttings to the surface. Cuttings will be spread out or removed

depending on the landowner's preference.

Surface Indications:

On the surface there will be a small vault that will be flush to the ground for the purpose of housing the geophone leads. There will be a sign installed on location indicating geophone buried-do not dig. The sign will also have Micro Seismic, Inc. contact information and client name.

During periods of data acquisition each geophone string is plugged in to a Remote Acquisition Unit (RAUL) used to digitize the analog geophone output. Each RAUL is approximately 6" x 6" x 10" in size, has a 12 volt external power supply and sits on the ground near the buried geophone string.

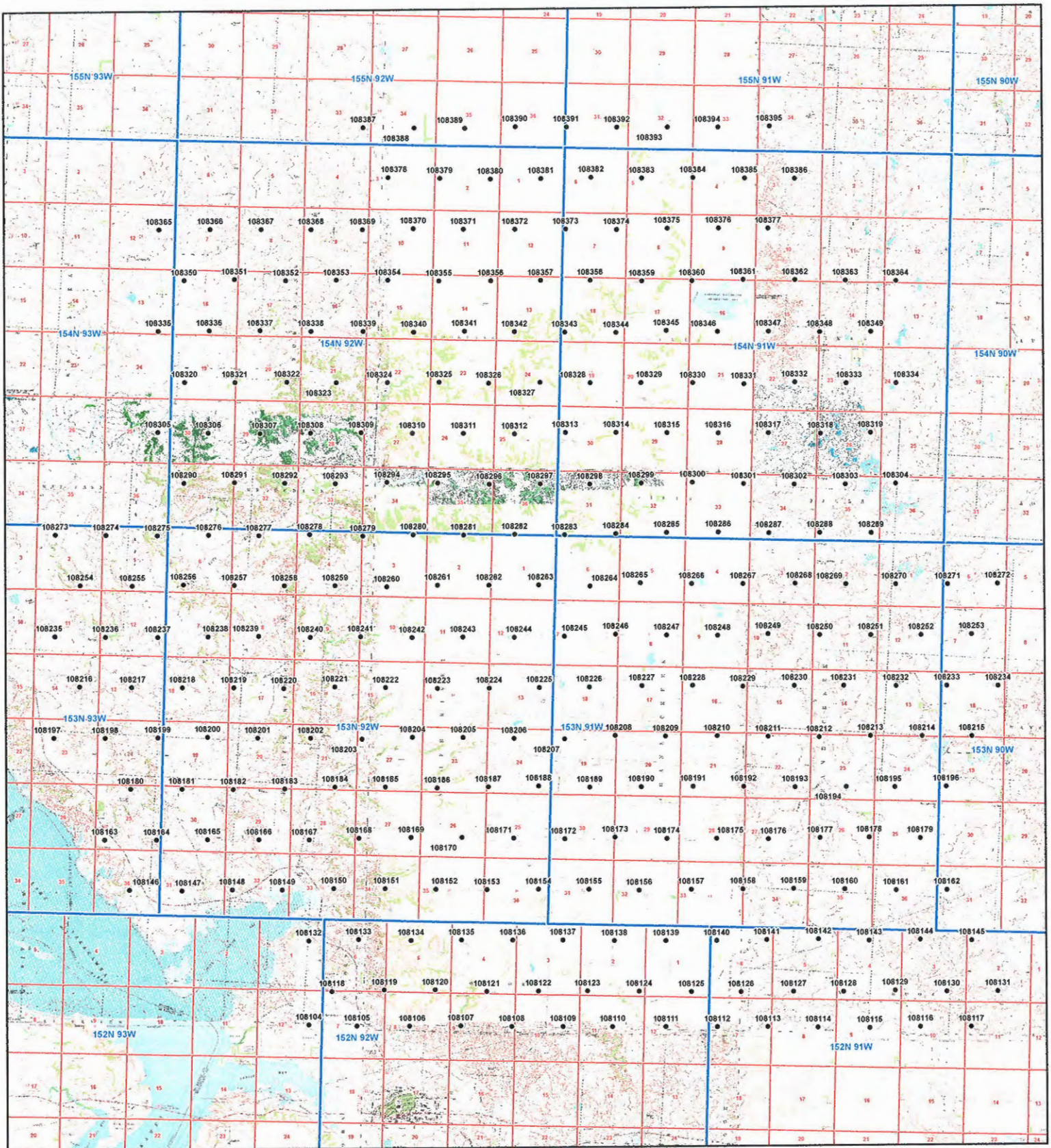
Four wheeled all-terrain vehicles (UTV's) such will be used for bulk equipment movement along approved roads and trails. Some time in the future when the monitoring is completed, wire leads will be cut, signs removed and the surface will be restored to normal.

Upon Completion of Monitor Installation:

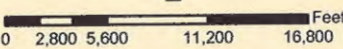
An inventory of locations will be done upon completion and landowners will be paid pursuant to the permit agreement.

The NDIC Oil & Gas Division will be provided;

A post-plot map showing actual monitor location installations and an SD Card with the Latitude and Longitude of each monitor location that is installed.



Mountrail Co., North Dakota
Sanish Buried Array
Client : Whiting Oil & Gas
292 Total Stations
November 01, 2009



North Dakota North_Nad27_3301

Recon Surveys L.L.C.
 ArcGIS 9.2 Development Team
 Created By C.S.

Oil and Gas Division

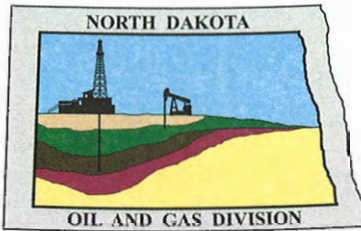
Lynn D. Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov



December 8, 2009

The Honorable Joan Hollekim
Mountrail County Auditor
P.O. Box 69
Stanley, ND 58784

RE: Geophysical Exploration
Permit #97-0181
Noise Attenuation testing

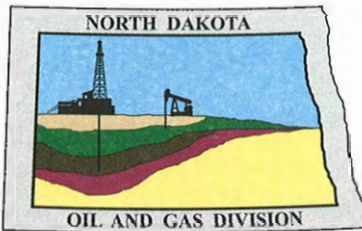
Dear Ms. Hollekim:

Pursuant to Section 38-08.1-04.2 of the North Dakota Century Code, please be advised that Micro Seismic, Inc was issued the above captioned permit on December 8, 2009 and will remain in effect for a period of one year. The entire permit can be viewed on our website at: <https://www.dmr.nd.gov/oilgas/seismic/seismicstats.asp>

Should you have any questions, please contact our office.

Sincerely,

Todd L. Holweger
DMR Permit manager



Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

December 8, 2009

Mr. Dave Fairservice
Micro Seismic, Inc.
1300 West Sam Houston Parkway South
Suite 200
Houston, TX 77042

RE: Sanish Buried Array
Geophysical Exploration Permit #97-0181
Mountrail County

Dear Mr. Fairservice:

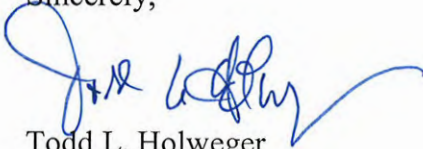
Please be advised that we are in receipt of your Geophysical Exploration (noise attenuation test) permit and it is conditionally approved; effective for one year from December 8, 2009. Review the following conditions for your permit:

1. A pre-program meeting with state seismic inspector Tom Torstenson may be required. You must contact him at 701-290-1546 (cell) or 701-227-7436 at least 24 hours prior to any exploration operations.
2. All variances for distance restrictions are to be furnished, and a pre-plot map displaying any source points that do not comply with the distance restriction rule must be supplied to the inspector.
3. The following information must be submitted within 30 days of the completion of the project by the Geophysical Company:
 - a. Completion Report,
 - b. Completion Affidavit,
 - c. Post Plot Map. It must show all water wells, buildings, underground cisterns, pipelines, and flowing springs that fall within the program area and within one half mile of the perimeter of the program.
 - d. SD card or email ttorstenson@nd.gov with all source and receiver points,
 - e. Letter stating that the Geophysical Company has given all surface owner's a copy of the Section and Chapter of the NDCC as stated in paragraph 5.
4. The following information must be submitted within 30 days of the completion of the project by the SUBCONTRACTOR(s) (when applicable):
 - a. Plugging Report
 - b. Plugging Affidavit

5. It is required that within seven days of initial contact between the permitting agent and the operator of the land, the permitting agent shall provide the operator of the land and each landowner owning land within one-half mile of the land on which geophysical exploration activities are to be conducted a written copy of NDCC Section 38-08.1-04.1 (Exploration Permit) and NDCC Chapter 38-11.1 (Oil and Gas Production Damage Compensation). The permitting agent shall file a letter with this office confirming compliance with such notification. For your convenience, a copy of both Sections are enclosed.
6. The permit agent shall notify the operator of the land at least seven days before commencement of any geophysical exploration activity, unless waived by mutual agreement of both parties. The notice must include the approximate time schedule and the location of the planned activity.
7. Information for the locations of water wells, springs, etc.; refer to the following ND State Water Commission Mapservice website, at:
<http://mapservice.swc.state.nd.us/>
8. The entire permit can be viewed, as well as the status of various seismic projects in the state, at: <https://www.dmr.nd.gov/oilgas/seismic/seismicstats.asp>

Should you have any questions regarding this matter, feel free to contact me at 701-328-8020, or Tom Torstenson at the number listed in paragraph 1.

Sincerely,



Todd L. Holweger
Mineral Resources Permit Manager

SANISH BURIED ARRAY

MONTRAIL COUNTY, ND
292 TOTAL STATIONS

FINAL SURVEY MAP
DATA AS OF JUNE 14, 2010

CREATED BY:
CHRIS BOUB
EWING SURVEYS USA LLC
(303) 495-8562
CHRIS.BOUB@GMAIL.COM

#970181 - SANISH BURIED ARRAY
POST PLOT MAP

LEGEND

- SURVEYED STATION
- STAGING AREA
- ▲ STAGING USED FOR WATER STORAGE
- + HAZARD
- + CREEK CROSSING
- + WELL
- + GATE
- TEXAS GATE
- HIGHWAY
- WALK ONLY
- OFF ROAD TRAIL
- ROAD
- PIPELINE

