Whiting Petroleum Corporation
and its wholly owned subsidiary
Whiting Oil and Gas Corporation

1700 Broadway, Suite 2300, Denver, CO 80290-2300
Phone: 303.837.1661 | FAX: 303.861.4023

JUN 2015
RECEIVED
ND OIL & GAS
DIVISION

May 28, 2015

Mr. Todd L. Holweger
DMR Permit Manager
Oil & Gas Division
Department of Mineral Resources
North Dakota Industrial Commission

Mr. Holweger:

Whiting Petroleum Corporation completed the acquisition of Kodiak Oil & Gas Corp. in December 2014. The acquisition of existing assets of Kodiak included the Kodiak Polar Buried Array, located in Williams County, North Dakota. This array is currently operated under two separate Geophysical Exploration Permits as follow;

1) Permit # 97-0235 Kodiak Buried Polar Array dated 2/22/13
2) Permit # 97-0246 Kodiak Scanlan Wells Extension dated 2/14/14

It is the request of Whiting that any changes necessary to the existing permitting to reflect the change in control be undertaken, and that the current bonding of the Array be changed to the existing Whiting Geophysical Exploration Bond No. RLB0015326. A copy of this Bond is attached.

If you have any further questions regarding this request, please direct them at your earliest possible convenience, to Mike FitzMaurice whose direct phone number is 303 / 390-1327.

Thank you for your assistance in this matter.

Sincerely,

Mark Williams
Senior Vice President
Exploration & Development
Whiting Petroleum Corporation

MicroSeismic
Passive Monitoring, Active Listening

MicroSeismic.com + 866.593.0032

July 22, 2015

Mr. Todd L. Holweger
DMR Permit Manager
Oil & Gas Division
Department of Mineral Resources
North Dakota Industrial Commission
600 E. Boulevard Ave-Dept. 405
Bismarck, ND 58505-0840

Re: KODIAK POLAR BA GEOPHYSICAL EXPLORATION PERMIT # 97-0235
WILLIAMS COUNTY NON EXPLOSIVE METHOD

KODIAK SCANLAN WELLS EXTENSION GEOPHYSICAL EXPLORATION PERMIT # 97-0246
WILLIAMS COUNTY NON EXPLOSIVE METHOD

Dear Mr. Holweger,

Pursuant to Whiting Petroleum Corporation's ("Whiting") acquisition of the Polar BuriedArray and Scanlan Extension from Kodiak Oil and Gas Corporation, Whiting has requested that we release our responsibility for the arrays and transfer it to them as they are now the owners of the array.

Per Whiting's request would you please transfer responsibility for the two installations from MicroSeismic, Inc. (MSI) to Whiting. This would include ongoing maintenance of the arrays and the decommissioning of the array as required at the end of life.

MSI permits are currently secured with our bond number B005315 in the amount of $50,000 issued by US Specialty Insurance Company.

Thanks in advance for your assistance with this matter.

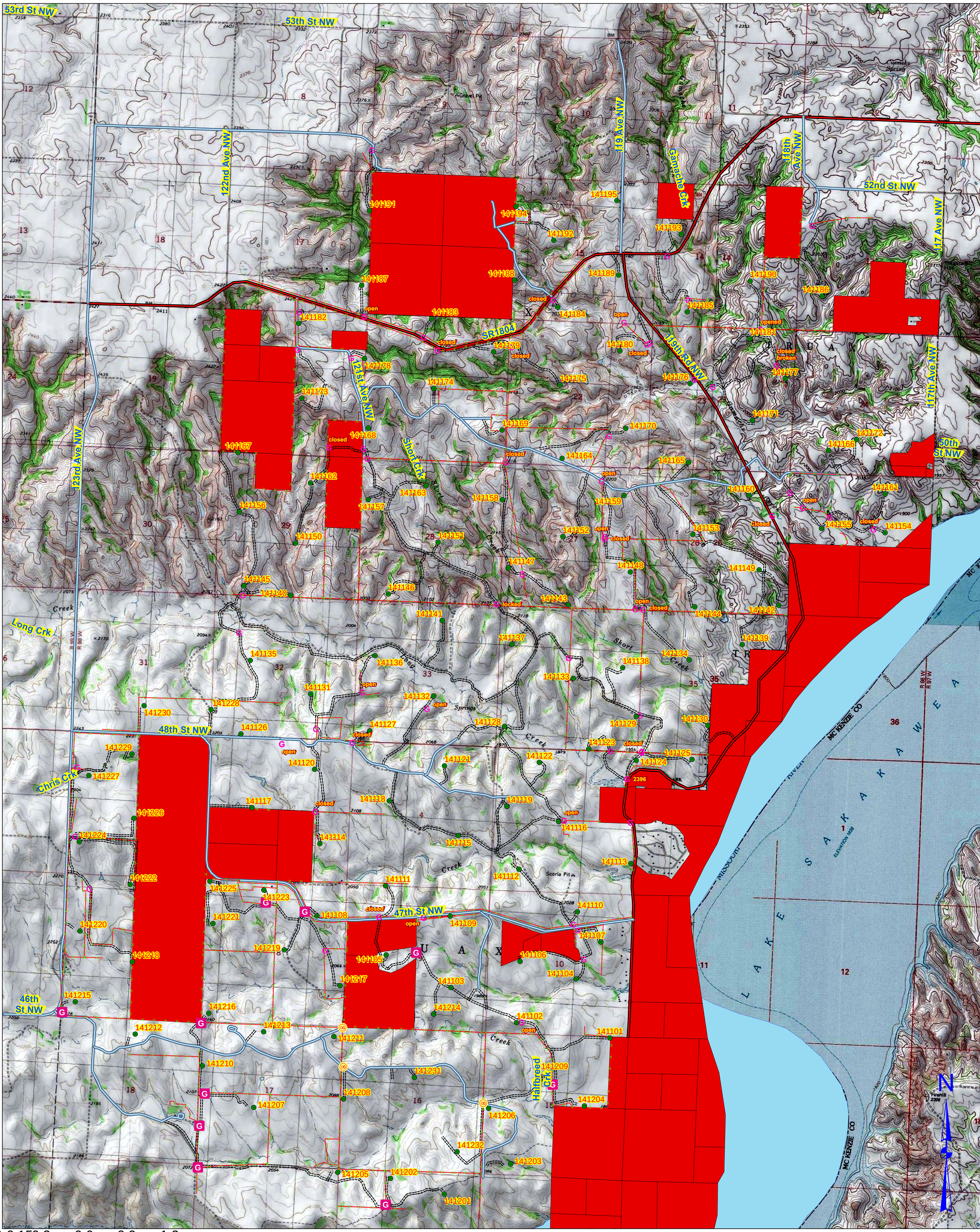
Regards,

Randy L. Evans

Vice President, Operations

MicroSeismic, Inc.

10777 Westheimer | Suite 500 | Houston, TX 77042



Kodiak Polar BA

Date: 4/13/2014

Coordinate System: NAD 1927 StatePlane North Dakota North FIPS 3301

Legend

- Kodiak Post Plot
- Gates
- No Permit

GEOPHYSICAL EXPLORATION AFFIDAVIT OF COMPLETION REPORT - FORM GE 6B

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 51456 (03-2011)

PERMIT NAME (Required): Kodiak Buried Array

PERMIT NUMBER: 97-0235

AFFIDAVIT OF COMPLETION (GEOPHYSICAL CONTRACTOR)

STATE OF Texas)
)
COUNTY OF Midland)

Before me, Nancy A. Hanson, a Notary Public in and for the said County and State, this day personally appeared Dimas Gonzalez Jr. who being first duly sworn, deposes and says that (s)he is employed by Micro Seismic, that (s)he has read North Dakota Century Code Section 38-08.1, that the foregoing seismic project has been completed in accordance with North Dakota Administrative Code Rule 43-02-12 and that the statements on the reverse side of this document are true.

Geophysical Contractor Representative

Subscribed in my presence and sworn before me this 19 day of March, 2015.

NANCY A HANSON
My Commission Expires
June 6, 2018

Notary Public

My Commission Expires 6/6/18

GEOPHYSICAL EXPLORATION AFFIDAVIT OF PLUGGING (HOLE PLUGGER) - FORM GE 7B

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 51457 (03-2011)

PERMIT NAME (Required): Rodiak Buried Array

PERMIT NUMBER: 97-0235

AFFIDAVIT OF PLUGGING (HOLE PLUGGER)

STATE OF Texas)
)
COUNTY OF Midland)

Before me, Nancy A. Hanson a Notary Public in and for the said County and State, this day personally appeared Dimas Gonzalez Jr. who being first duly sworn, deposes and says that (s)he is employed by Micro Seismic, that (s)he has read North Dakota Century Code Section 38-08.1 and that the foregoing seismic project has been plugged in accordance with North Dakota Administrative Code Rule 43-02-12 and that the statements on the attached documents are true.

Hole Plugger Representative

Subscribed in my presence and sworn before me this 19 day of March, 2015.

NANCY A HANSON
My Commission Expires
June 6, 2018

Notary Public

My Commission Expires 6/6/18.

MicroSeismic
Passive Monitoring, Active Listening

Industrial Commission of North Dakota
Oil & Gas Division
600 East Blvd. Dept. 405
Bismarck, North Dakota 58505

Kodiak Polar BA #97-0235

Dear, Mr. Todd Holweger,

We have contacted landowners during the permitting process to explain the project followed by the rules and guidelines that apply while performing the Buried Array project.

Best Regards,
Austin Cottongame

Permit Agent

Streamline Permit Services

GEOPHYSICAL EXPLORATION COMPLETION REPORT - FORM GE 6A

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 51456 (03-2011)

Permit No.	
97-0235	
Shot Hole Operations	*Non-Explosive Operations
no	**yes**

SECTION 1

Geophysical Contractor	
MicroSeismic Inc.	
Project Name and Number	County(s)
Kodiak Burried Array	**Williams**
Township(s)	Range(s)
see Attached	**see attached**
Drilling and Plugging Contractors	
Val's Drilling	
Date Commenced	Date Completed
February 28, 2013	**March 17, 2013**

SECTION 2

First S.P. #	Last S.P. #
141101	**141195**

Loaded Holes (Undetonated Shot Points)

S.P.#'s												
Charge Size												
Depth												

Reasons Holes Were Not Shot

SECTION 3

Flowing Holes and/or Blowouts
S.P.#'s

none

Procedure for Plugging Flowing Holes and/or Blowouts

see schematic

Include a 7.5 minute USGS topographic quadrangle map or a computer generated post-plot facsimile of the approximate scale displaying each individual shot hole, SP #, line #, and legal location.

***Non-Explosive Operations - Complete Section 1 and Affidavit (Form GE 6B).**

Installation of Micro Seismic monitors in the Kodiak Polar BA

This project involves the installation of Micro Seismic monitors in 95 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 **Williams** County, North Dakota:

- **154N 98W Sec 13 thru 35**
- **153N 98W Sec 2 thru 5 and 8 thru 11**
-
-
-
-
-
-
-

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.

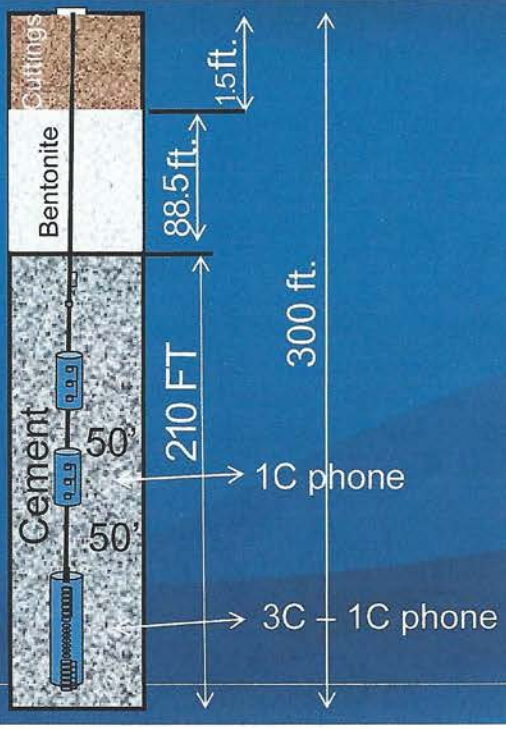
Installation Process and Plugging Information:
A 300' hole will be drilled (using conventional drill trucks) at each predetermined location as approved by landowners. The geophone string will be attached to a 1" PVC pipe and lowered in to the hole. The geophones are spaced 50' apart to a depth of 300' (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

Geophone Installation

MicroSeismic Inc. proprietary information, which is PRIVILEGED, CONFIDENTIAL, or subject to COPYRIGHT belonging to MicroSeismic Inc



MicroSeismic
Passive Monitoring, Active Listening

GEOPHYSICAL EXPLORATION HOLE PLUGGING REPORT - FORM GE 7A

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 51457 (03-2011)

Geophysical Company **MicroSeismic Inc.**	Date Plugged **March 17, 2013**
Hole Plugging Contractor **Val's Drilling**	Permit No. **97-0235**
Prospect **Kodiak Burried Array**	Hole Plugger **Val's Drilling**

	Line No.	S.P. No.	Hole Depth	Drill Type *CABP	Wet/ Dry	Bent. Sx	Bent. Capsules	Capsule Size**	Surface Plug Depth	Remarks Hole Bridged, Thick Mud, Etc.
1	see	attached	document							
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

*Conventional-Auger-Buggy-Portable

**Diameter X Length

Kodiak Polar BA

HOLE #	DRILLER	DATE	START TIME	END TIME	DEPTH	CEMENT	Bentonite
95	95	95	95	95	95	95	95
141101	Jesse Hofer	16-Mar	11:45 AM	12:55pm	300	8	4.0
141102	Jesse Hofer	16-Mar	1:00pm	2:10pm	300	8	4.0
141103	Jesse Hofer	16-Mar	2:20pm	3:45pm	300	8	7.0
141104	Tim Hofer	28-Feb	11:00 AM	12:05 PM	300	8	6.0
141105	Jesse Hofer	14-Mar	12:00pm	1:15pm	300	8	5.0
141106	Tim Hofer	28-Feb	12:47 PM	2:20 PM	300	8	6.0
141107	Tim Hofer	28-Feb	8:30 AM	10:30 AM	300	8	4.0
141108	Jesse Hofer	1-Mar	11:00 AM	12:30 PM	300	8	6.0
141109	Jesse Hofer	14-Mar	1:30pm	3:00pm	300	8	11.0
141110	Jesse Hofer	28-Feb	12:00 PM	1:40 PM	300	8	4.0
141111	Jesse Hofer	16-Mar	9:30 AM	10:45 AM	300	8	7.0
141112	Jesse Hofer	28-Feb	10:15 AM	11:40 AM	300	8	6.0
141113	Jesse Hofer	28-Feb	8:30 AM	9:50 AM	300	8	7.0
141114	Jesse Hofer	13-Mar	11:00 AM	12:02pm	300	8	8.2
141115	Jesse Hofer	3-Mar	8:20 AM	9:40 AM	300	8	7.0
141116	Jesse Hofer	17-Mar	10:20 AM	11:30 AM	300	8	6.0
141117	Jesse Hofer	13-Mar	8:45 AM	9:30 AM	300	8	7.0
141118	Jesse Hofer	13-Mar	12:50 PM	1:55pm	300	8	6.0
141119	Jesse Hofer	3-Mar	10:00 AM	11:15 AM	300	8	7.0
141120	Jesse Hofer	12-Mar	3:00 PM	4:15pm	300	8	6.0
141121	Jesse Hofer	3-Mar	12:50 PM	2:00 PM	300	8	7.0
141122	Jesse Hofer	3-Mar	11:30 AM	12:35 PM	300	8	8.0
141123	Jesse Hofer	16-Mar	3:45pm	5:08 AM	300	8	6.0
141124	Tim Hofer	16-Mar	2:17pm	3:19 AM	300	8	6.0
141125	Tim Hofer	17-Mar	8:55 AM	10:10 AM	300	8	6.0
141126	Jesse Hofer	1-Mar	8:15 AM	10:15 AM	300	16	8.0
141127	Jesse Hofer	14-Mar	9:00 AM	10:05 AM	300	8	6.0
141128	Tim Hofer	3-Mar	9:30 AM	10:45 AM	300	8	7.0
141129	Tim Hofer	16-Mar	11:36 AM	2:49pm	300	8	9.0
141130	Tim Hofer	17-Mar	10:43 AM	11:56 AM	300	8	7.0

141131	Jesse Hofer	14-Mar	10:05 AM	11:35 AM	300	8	5.0
141132	Tim Hofer	17-Mar	8:50 AM	10:00 AM	300	8	7.0
141133	Jesse Hofer	3-Mar	1:45 PM	3:00 PM	300	8	5.0
141134	Jesse Hofer	13-Mar	11:30 AM	12:35pm	300	8	9.0
141135	Jesse Hofer	13-Mar	2:15pm	3:30 AM	300	8	6.0
141136	Tim Hofer	13-Mar	9:04 AM	10:25 AM	300	8	6.0
141137	Tim Hofer	3-Mar	11:30 AM	12:45 PM	300	8	7.0
141138	Tim Hofer	16-Mar	9:30 AM	10:56 AM	300	8	9.0
141139	Jesse Hofer	8-Mar	8:45 AM	10:00 AM	300	9	6.0
141140	Tim Hofer	14-Mar	9:07 AM	10:35 AM	300	8	8.0
141141	Tim Hofer	14-Mar	3:24pm	4:36pm	300	8	8.5
141142	Jesse Hofer	8-Mar	10:45 AM	11:50 AM	300	9	6.0
141143	Tim Hofer	7-Mar	2:59pm	4:11pm	300	9	7.0
141144	Jesse Hofer	8-Mar	12:50pm	2:00pm	300	9	8.0
141145	Tim Hofer	13-Mar	2:18pm	3:30pm	300	8	5.0
141146	Tim Hofer	12-Mar	1:33pm	2:45pm	300	8	8.5
141147	Tim Hofer	7-Mar	12:09 PM	1:23 AM	300	9	7.0
141148	Jesse Hofer	8-Mar	2:25 AM	3:30 AM	300	9	6.0
141149	Jesse Hofer	7-Mar	10:45 AM	11:50 AM	300	9	7.0
141150	Tim Hofer	6-Mar	2:22PM	3:31PM	300	8	6.0
141151	Tim Hofer	5-Mar	2:59 AM	4:21 AM	300	8	9.0
141152	Jesse Hofer	13-Mar	1:00pm	2:15pm	300	8	8.0
141153	Jesse Hofer	7-Mar	12:00pm	1:05pm	300	9	6.0
141154	Tim Hofer	9-Mar	8:40 AM	9:57 AM	300	8	7.0
141155	Tim Hofer	8-Mar	1:42pm	2:52pm	300	9	7.0
141156	Tim Hofer	14-Mar	11:34 AM	12:41pm	300	8	9.0
141157	Tim Hofer	6-Mar	8:15 AM	9:55 AM	300	9	9.0
141158	Tim Hofer	7-Mar	10:35 AM	11:51 AM	300	9	8.0
141159	Jesse Hofer	6-Mar	12:20 PM	1:30 PM	300	9	6.0
141160	Tim Hofer	9-Mar	10:24 AM	11:37 AM	300	8	7.0
141161	Tim Hofer	8-Mar	12:20pm	1:27pm	300	9	7.0
141162	Tim Hofer	6-Mar	12:38 PM	1:49 PM	300	9	8.5
141163	Tim Hofer	6-Mar	10:04 AM	11:08 AM	300	9	8.5
141164	Jesse Hofer	6-Mar	1:40 PM	2:40PM	300	9	7.0
141165	Jesse Hofer	6-Mar	9:00 AM	11:00 AM	300	9	9.0
141166	Tim Hofer	8-Mar	8:27 AM	10:03 AM	300	9	7.0
141167	Tim Hofer	13-Mar	12:22 PM	1:32pm	300	8	6.0

141168	Jesse Hofer	7-Mar	8:50 AM	10:00 AM	300	9	12.0
141169	Jesse Hofer	6-Mar	3:00PM	4:00PM	300	9	8.0
141170	Jesse Hofer	7-Mar	2:00 AM	3:20 AM	300	9	7.5
141171	Tim Hofer	9-Mar	12:55pm	1:58pm	300	8	7.0
141172	Tim Hofer	8-Mar	10:33 AM	12:00 AM	300	9	6.0
141173	Jesse Hofer	5-Mar	2:15 PM	3:20 PM	300	8	6.0
141174	Jesse Hofer	5-Mar	3:15 PM	5:00 PM	300	8	7.0
141175	Tim Hofer	12-Mar	11:06 AM	12:15pm	300	8	8.0
141176	Jesse Hofer	9-Mar	11:30 AM	12:40pm	300	8	7.0
141177	Tim Hofer	10-Mar	11:34 AM	12:42pm	300	8	9.0
141178	Tim Hofer	7-Mar	8:32 AM	10:05 AM	300	9	9.0
141179	Jesse Hofer	10-Mar	11:15 AM	12:30pm	300	8	7.0
141180	Jesse Hofer	10-Mar	11:45 AM	12:50pm	300	8	9.0
141181	Tim Hofer	10-Mar	1:30pm	2:37 AM	300	8	7.0
141182	Jesse Hofer	5-Mar	12:30 PM	2:00PM	300	8	9.0
141183	Jesse Hofer	10-Mar	1:20pm	2:30pm	300	8	6.0
141184	Jesse Hofer	10-Mar	9:45 AM	10:50 AM	300	8	7.0
141185	Jesse Hofer	10-Mar	10:00 AM	11:20 AM	300	8	6.0
141186	Jesse Hofer	9-Mar	1:45pm	3:00pm	300	8	7.0
141187	Jesse Hofer	10-Mar	2:45pm	4:15pm	300	8	7.0
141188	Tim Hofer	10-Mar	12:46pm	2:15pm	300	8	7.0
141189	Jesse Hofer	10-Mar	8:30 AM	9:40 AM	300	8	7.0
141190	Tim Hofer	30-Mar	3:36 AM	4:44 AM	300	8	8.0
141191	Jesse Hofer	10-Mar	1:00pm	2:15pm	300	8	7.0
141192	Tim Hofer	10-Mar	2:51pm	4:04pm	300	8	7.0
141193	Jesse Hofer	9-Mar	8:45 AM	10:00 AM	300	8	7.5
141194	Tim Hofer	10-Mar	8:51 AM	10:17 AM	300	8	6.0
141195	Jesse Hofer	9-Mar	10:20 AM	11:20 AM	300	8	8.0

NORTH DAKOTA
OIL AND GAS DIVISION

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.dmr.nd.gov/oilgas

FEBRUARY 22, 2013

MR. DIMAS GONZALEZ
PARTY MANAGER
MICROSEISMIC, INC.
ONE WESTCHASE CENTER
10777 WESTEIMER ST
HOUSTON, TX 77042

RE: KODIAK POLAR BA
GEOPHYSICAL EXPLORATION PERMIT # 97-0235
WILLIAMS COUNTY
NON EXPLOSIVE METHOD

Dear Mr. Gonzalez:

Please be advised that we are in receipt of your Geophysical Exploration (noise attenuation test) permit application and it is conditionally approved; effective for one year from FEBRUARY 22, 2013. **PURSUANT TO NDAC 43-02-12-05 (DISTANCE RESTRICTION) non-explosive exploration method may not be conducted not less than 300 feet from a water well, building, underground cistern, pipelines, and flowing spring.** Review the following conditions for your permit:

1. A pre-program meeting with state seismic inspector Tom Torstenson is required. You must contact him at 701-290-1546 (cell) or 701-227-7436 at least 24 hours prior to any exploration operations. Also, a copy of the entire permit is required for all contractors at the pre-program meeting.
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 an affidavit 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 regarding the location 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
DMR Permit Manager

GEOPHYSICAL EXPLORATION PERMIT - FORM GE 1

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 51459 (03-2011)

RECEIVED FEB 2013 ND OIL & GAS DIVISION

1) a. Company MicroSeismic, Inc	Address One Westchase Center 10777 Westheimer St. Houston, Texas 77042	
Contact Dimas Gonzalez	Telephone (432) 238-9700	Fax (713) 781-2326
Surety Company U.S. Specialty Insurance Company	Bond Amount $50,000	Bond Number B005315
2) a. Subcontractor(s) Streamline Permit Services	Address 2526 McVoid Rd, Springtown, TX, 76[illegible]	Telephone (817) 992-2845
b. Subcontractor(s) Val's Drilling	Address 186 Dawn Dr. Columbia Falls, MT, 59[illegible]	Telephone (403) 226-2057
3) Party Manager Dimas Gonzalez	Address (local) 4395 82nd Avn NW, New Town, ND, 58[illegible]	Telephone (local) (713) 781-2326

4) Project Name or Line Numbers
Kodiak Polar BA

5) Exploration Method (Shot Hole, Non-Explosive, 2D, 3D, Other)
burried geophones monitors at specific locations within project areas. (see attached description)

6) Distance Restrictions (Must check all that apply)

- [x] 300 feet - NonExplosive - Distance setbacks apply to water wells, buildings, underground cisterns, pipelines, and flowing springs.
- [ ] 660 feet - Shot Hole - Distance setbacks apply to water wells, buildings, underground cisterns, pipelines, and flowing springs.

Size of Hole	Amt of Charge	Depth	Source points per sq. mi.	No. of sq. mi.
3-D 3-D na	na	300'	na	24
Size of Hole 2-D	Amt of Charge	Depth	Source points per ln. mi.	No. of ln. mi.

8) Approximate Start Date February 20, 2013	Approximate Completion Date February 20, 2023

THE COMMISSION MUST BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF COMMENCEMENT OF GEOPHYSICAL OPERATIONS

9) Location of Proposed Project - County
Williams County

Section(s), Township(s) & Range(s)	Section	T.	R.
	See Attached Document		
	Section	T.	R.
	Section	T.	R.
	Section	T.	R.
	Section	T.	R.
	Section	T.	R.

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date 2/20/13

Signature	Printed Name Austin Cottongame	Title Contract Permit Agent

Email Address(es)
dgonzalez@microseismic.com, austincottongame@gmail.com

(This space for State office use)

Permit No. 970235	Approval Date 2/22/2013
Approved by	
Title Mineral Resources Permit Manager	

Permit Conditions

* Permit in hand required at pre-program meeting with field inspector and be aware of all NDIC Rules and Regulations (i.e. distance restrictions).
* See attached letter.

*See Instructions On Reverse Side

Installation of Micro Seismic monitors in the Kodiak Polar BA

This project involves the installation of Micro Seismic monitors in 95 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 **Williams** County, North Dakota:

- **154N 98W Sec 13-17, 20-24, 25-29, 32-35**
- **153N 98W Sec 2 thru 5 and 8 thru 10**
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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.

NORTH DAKOTA
OIL AND GAS DIVISION

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.dmr.nd.gov/oilgas

FEBRUARY 22, 2013

The Honorable Beth Innis
Williams County Auditor
P.O. Box 2047
Williston, ND 58802-2047

RE: Geophysical Exploration
Permit #97-0235

Dear Ms. Innis:

Pursuant to Section 38-08.1-04.2 of the North Dakota Century Code, please be advised that MICROSEISMIC, INC. issued the above captioned permit on FEBRUARY 22, 2013 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

600 E Boulevard Ave - Dept 405, Bismarck, North Dakota 58505-0840 Phone (701)328-8020 Fax (701)328-8022

MicroSeismic
Passive Monitoring, Active Listening

Industrial Commission of North Dakota
Oil & Gas Division
600 East Blvd. Dept. 405
Bismarck, North Dakota 58505

RE: Streamline Permit Services, Contracted to MicroSeismic, Inc.

Dear, Mr. Todd Holweger,

We at MicroSeismic, Inc. are engaged in the process of conducting, a Buried Array Service, in Williams County, North Dakota. Our client Kodiak Oil and Gas U.S.A has contracted MicroSeismic,Inc. to bury Geophones in the Ground and Monitor their Fracing programs. Microseismic has contracted Streamline Permit Services to acquire permission from the surface Owners of the property were we will be placing the Buried Array. Streamline Permitting, will obtain all permits for the surface, to bury the Geophones. Please call if you have questions. (713) 304-3044.

Best Regards
Jake Fadeley

Permit Manager
MicroSeismic, Inc.

2-12-13

Holweger, Todd L.

From: Austin Cottongame <austincottongame@gmail.com>
Sent: Wednesday, February 13, 2013 9:59 PM
To: Holweger, Todd L.
Subject: Microseismic Kodiak Polar BA Sundry Notice
Attachments: Microseismic Kodiak Polar BA Sundry notice paperwork.pdf

Mr. Holweger,

I have attached the required documents for the Sundry notice.The payment will be delivered to your office tomorrow morning. Please let me know if I need to get anything else to you.

Best Regards,

Austin Cottongame

(817) 992-2845

Holweger, Todd L.

From: Austin Cottongame <austincottongame@gmail.com>
Sent: Wednesday, February 20, 2013 11:52 AM
To: Holweger, Todd L.
Subject: Kodiak Polar BA Micro Seismic Inc.

Todd,

On the surface a small 6" water meter vault cover will be flush with the ground. There will also be a 4' tall yellow post marking the location of the geophone. The sign will have MicroSeismic Inc. contact information and will have a notice stating "do not dig, MicroSeismic Inc. equipment in use". The 6" vault cover will house the hard drive that collects the data. The geophone will be dormant until a well is approaching its frac date. At this point a MSI personnel member will return to the hole location to turn on the equipment. He will then leave until the fracturing process is complete. Upon completion he will return to the location to extract the data. He will attach a portable hard drive to the permanent hard drive housed inside the vault cover to extract this data. He will use utv only to egress and regress to the geophones location.

Please let me know if I have failed to include any pertinent information.

Also if you could send an email to auditor@co.williams.nd.us confirming that our bond is still active.

Best Regards,

Austin Cottongame

Industrial Commission of North Dakota
Oil & Gas Division
600 East Blvd. Dept. 405
Bismarck, North Dakota 58505

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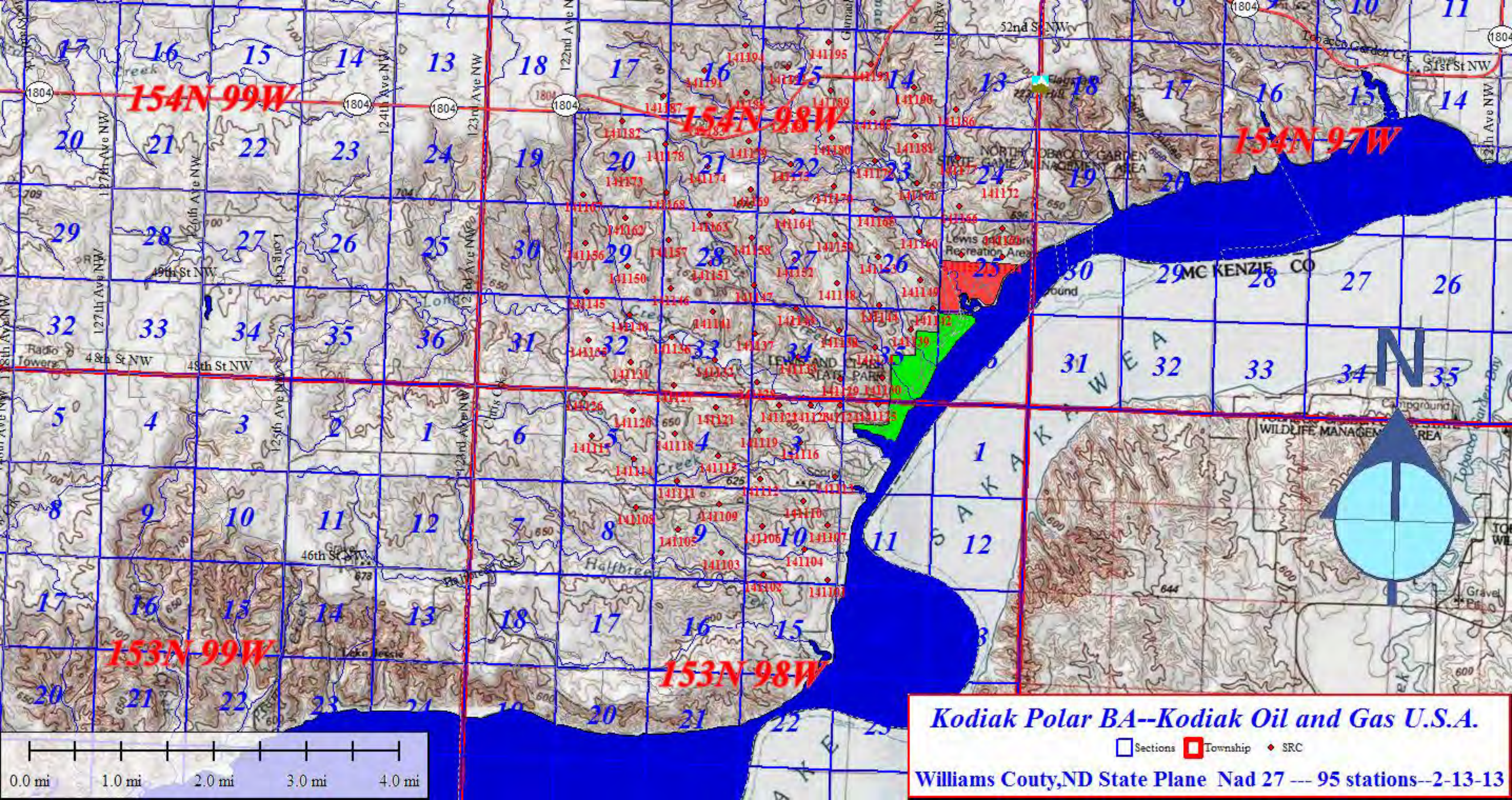
Best Regards
Jake Fadeley

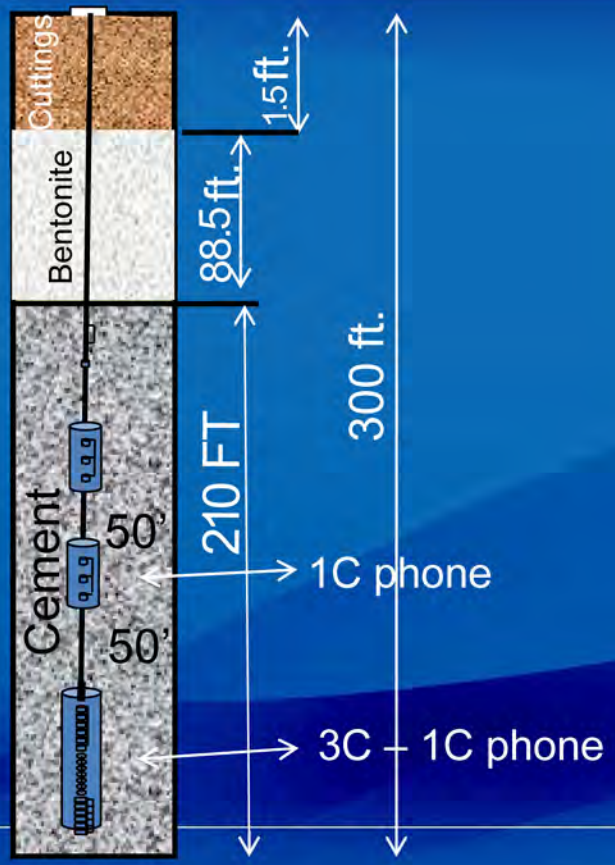
Permit Manager
MicroSeismic, Inc.

2-12-13


Kodiak Polar BA--Kodiak Oil and Gas U.S.A.
Sections
Township
SRC
Williams Couty,ND State Plane Nad 27 --- 95 stations--2-13-13
154N 99W
154N 98W
154N 97W
153N 99W
153N 98W
MC KENZIE CO
0.0 mi
1.0 mi
2.0 mi
3.0 mi
4.0 mi

Geophone Installation

MicroSeismic Inc. proprietary information, which is PRIVILEGED, CONFIDENTIAL, or subject to COPYRIGHT belonging to MicroSeismic Inc



MicroSeismic
Passive Monitoring, Active Listening