



**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)

Received

AUG 17 2017

ND Oil & Gas  
 Division

Permit No. <b>#97-0279</b>	
Shot Hole Operations	*Non-Explosive Operations <b>Non-Explosive</b>

**SECTION 1**

Geophysical Contractor <b>Schlumberger</b>	
Project Name and Number <b>Hess RS Nelson Farms - 2</b>	County(s) <b>Montrail County</b>
Township(s) <b>152N</b>	Range(s) <b>95W</b>
Drilling and Plugging Contractors <b>n/a</b>	
Date Commenced <b>07/08/2017</b>	Date Completed <b>07/08/2017</b>

**SECTION 2**

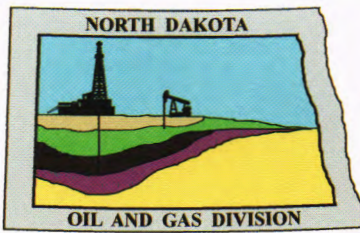
First S.P. #													Last S.P. #
Loaded Holes (Undetonated Shot Points)													
S.P.#'s													
Charge Size													
Depth													
Reasons Holes Were Not Shot													

**SECTION 3**

Flowing Holes and/or Blowouts S.P.#'s
Procedure for Plugging Flowing Holes and/or Blowouts
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).





# 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/](http://www.dmr.nd.gov/oilgas/)

June 30, 2017

Ms. Sandy Connors  
Borehole Seismic Sales  
Schlumberger Technology Corporation  
333 Clay Street  
Allen Center 3, Suite 1900  
Houston TX, 77002

RE: HESS RS-NELSON FARMS-2  
GEOPHYSICAL EXPLORATION PERMIT #97-0279  
MOUNTRAIL COUNTY  
NON EXPLOSIVE METHOD

Dear Ms. Connors:

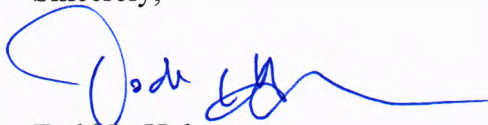
Please be advised that we are in receipt of your Geophysical Exploration permit application and it is conditionally approved; effective for one year from June 30, 2017. **PURSUANT TO NDAC 43-02-12-05 (DISTANCE RESTRICTION) non-explosive exploration method may not be conducted not less than 300 feet from a water well, building, underground cistern, pipelines, and flowing spring. In addition, pursuant to NDAC 43-02-12-06 (NOTIFICATION OF WORK PERFORMED), "The director is authorized to suspend operations of the entire geophysical project, or any portion thereof, if further activity will cause excessive damage to the surface of the land".** 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, **(Must re-file when project is completed)**
  - 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. Must provide a GIS layer using NAD83 in an Esri shape file format and an Image file (.img) on a Flash Drive or email: [ttorstenson@nd.gov](mailto:ttorstenson@nd.gov) with all source and receiver points,
  - e. Affidavit 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 4. **(Received 6/30/2017)**
4. 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. **(Received 6/30/2017)**
  5. 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.
  6. 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/>
  7. 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

Received

JUN 27 2017

ND Oil & Gas  
Division



**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)

1) a. Company <b>Schlumberger Technology Corporation</b>		Address <b>333 Clay Street, Allen Center 3, Suite 1900, Houston, TX 77002</b>	
Contact <b>Sandy Connors</b>		Telephone <b>832-415-7595</b>	Fax
Surety Company <b>Liberty Mutual Insurance</b>		Bond Amount <b>\$25,000</b>	Bond Number <b>16036783</b>
2) a. Subcontractor(s)		Address	
b. Subcontractor(s)		Address	
3) Party Manager <b>Luis Gonzalez</b>		Address (local) <b>713 Market Street, Oklahoma City, OK</b>	
4) Project Name or Line Number <b>Hess RS-Nelson Farms - 2</b>		Telephone (local) <b>832-520-8640</b>	
5) Exploration Method (Shot Hole, Non-Explosive, 2D, 3D, Other) <b>Non-Explosive Vibroseis</b>			
6) Distance Restrictions (Must check all that apply)			
<input checked="" type="checkbox"/> 300 feet - NonExplosive - Distance setbacks apply to water wells, buildings, underground cisterns, pipelines, and flowing springs.			
<input type="checkbox"/> 660 feet - Shot Hole - Distance setbacks apply to water wells, buildings, underground cisterns, pipelines, and flowing springs.			
7) Size of Hole 3-D	Amt. of Charge	Depth	Source points per sq. mi.
Size of Hole 2-D	Amt. of Charge	Depth	Source points per permit: <b>6</b>
8) Approximate Start Date <b>July 6, 2017</b>		Approximate Completion Date <b>July 13, 2017</b>	

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

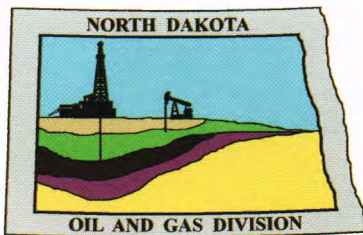
9) Location of Proposed Project - County <del>McKenzie County</del> <b>Mountain County</b>			
Section(s), Township(s) & Range(s)	Section <b>19</b>	T. <b>156N</b>	R. <b>91W</b>
	Section <b>11</b>	T. <b>156N</b>	R. <b>92W</b>
	Section <b>14</b>	T. <b>156N</b>	R. <b>92W</b>
	Section <b>28</b>	T. <b>156N</b>	R. <b>92W</b>
	Section <b>35</b>	T. <b>156N</b>	R. <b>92W</b>
	Section <b>36</b>	T. <b>156N</b>	R. <b>92W</b>

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date **June 23, 2017**

Signature 	Printed Name <b>Sandy Connors</b>	Title <b>Borehole Seismic Sales</b>
Email Address(es) <b>sconnors@slb.com</b>		

(This space for State office use)		<p><b>Permit Conditions</b></p> <ul style="list-style-type: none"> <li>• Permit in hand required at pre-program meeting with field inspector and be aware of all NDIC Rules and Regulations (i.e. distance restrictions).</li> <li>• See attached letter.</li> </ul>
Permit No. <b>970279</b>	Approval Date <b>6/30/17</b>	
Approved by 	Title <b>Mineral Resources Permit Manager</b>	

\*See Instructions On Reverse Side



# 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/](http://www.dmr.nd.gov/oilgas/)

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June 30, 2017

The Honorable Stephanie Pappa  
Mountrail County Auditor  
P.O. Box 69  
Stanley, ND 58784-0069

RE:    Geophysical Exploration  
       Permit #97-0279

Dear Ms. Pappa:

Pursuant to Section 38-08.1-04.2 of the North Dakota Century Code, please be advised that Schlumberger Technology Corporation was issued the above captioned permit on June 30, 2017 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

# Schlumberger

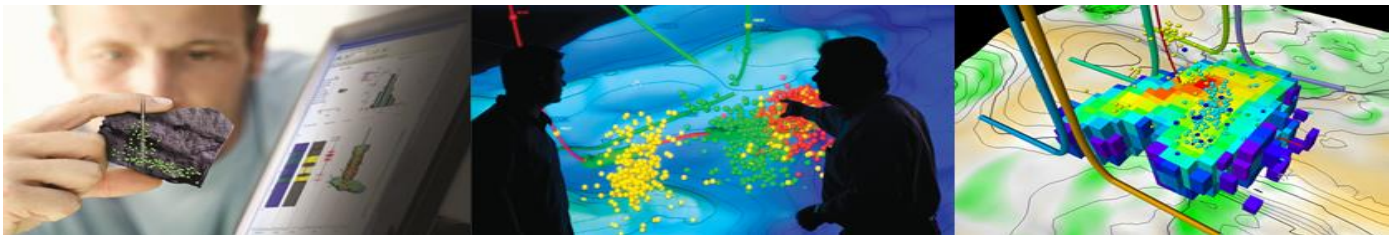
Vibe Orientation  
Hess RS-Nelson Farms  
Planned for July, 2017

By Schlumberger Technology Company

June 26, 2017

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# Schlumberger



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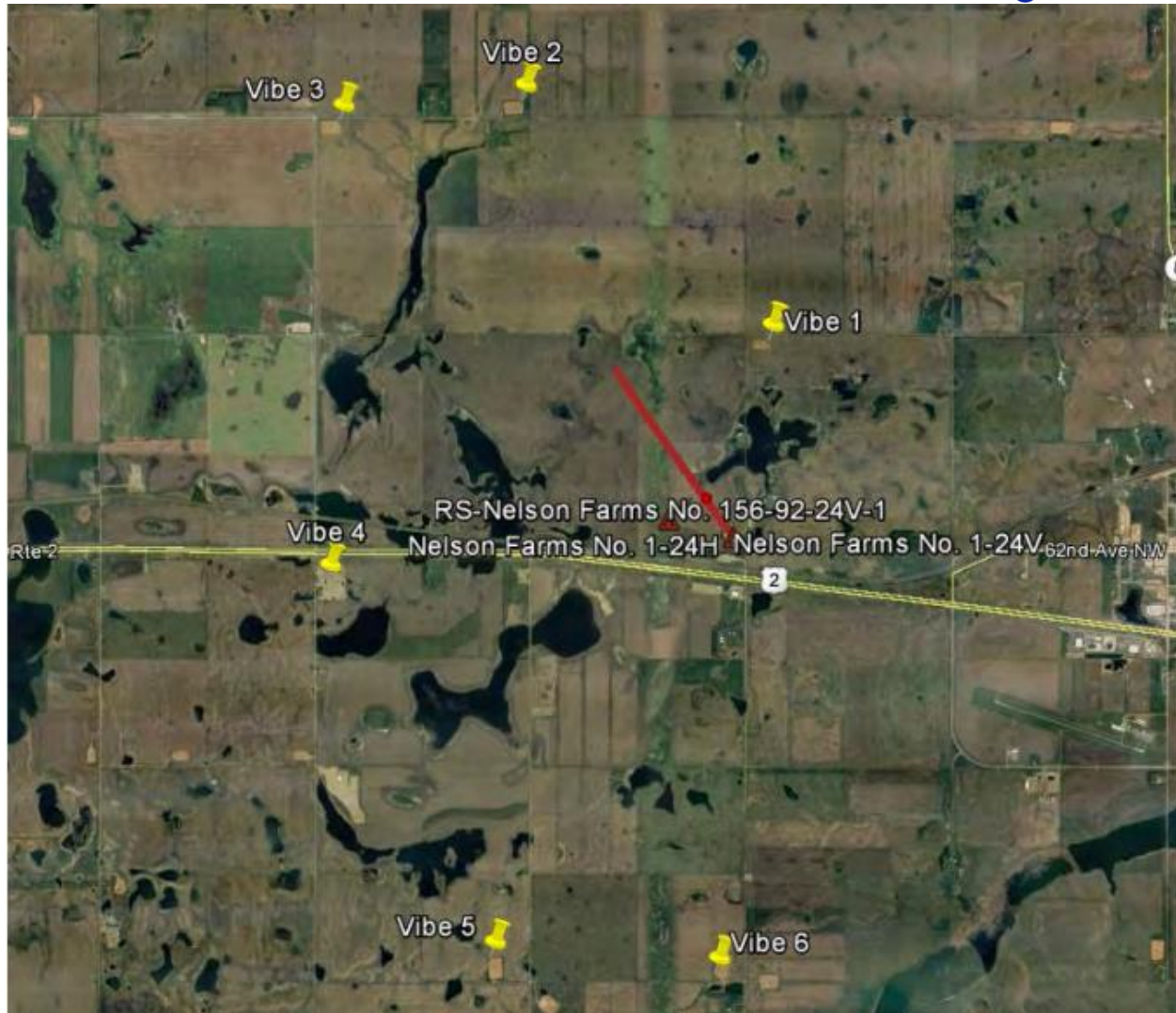


## Operational Description

Schlumberger will be performing a series of geophysical exploration services for the upcoming monitoring project of the Hess RS Nelson Farms No. 156-92-24V-1 vertical well in McKenzie County, ND (S24, T156N, R92W). The expected timeframe for this operation is July 6<sup>th</sup> through 13<sup>th</sup>, 2017. *Mountrail*

A single downhole array will be used to map the upcoming hydraulic fracture treatment of the Hess RS-Nelson Farms pad. We plan to measure the injection of fluid in hopes that no microseismic events are generated which would indicate that the rock is being fractured. In order to calibrate the orientation of our downhole geophones we will perform a series of vibroseis sweeps at up to 6 known surface locations. A map view of the projected pad, wells and vibe locations is provided in Figure 1.





**Figure 2. Hess Corporation RS-Nelson Farms Pad and Vibe Locations**

## Downhole Seismic Deployment

### Deployment

Schlumberger will deploy a geophone toolstring in the RS-Nelson 156-92-24V-2 vertical observation well from a surface wireline logging unit. The deployment is comparable to any wireline deployed toolstring.

These geophones require a known signal source to orient themselves to so that each of the 3 axis in the toolstring are known for the duration of the job. This is required to locate any potential microseismic events.

### Vibe Operation

The orientation process will involve the use of a vibrator unit to perform a series of 10-14 second sweeps at up to six locations in the area. An image of the vibroseis unit is provided in Figure 3. All of the vibe

locations are on existing well pads which Hess Corporation currently has access. These vibe locations and their relative positions are provided in Table 1.



**Figure 3. Schlumberger Vibroseis Unit**

Due to the unknown nature of field operations the vibroseis orientation may need to be repeated during the microseismic monitoring if mechanical issues force the geophone toolstring to be replaced or reoriented.

The vibe operation will be conducted in accordance with the rules and restrictions for a non-explosive method. A variance has been obtained from Hess Corporation in regards to rule 43-02-12-05 regarding distance restrictions. A notarized copy of this variance will be delivered to NDIC with the permit request. Images of the vibe locations are provided below in Figure 4 through Figure 9. These locations are approximate depending on conditions in the field and accessibility.

**Table 1. Vibe Locations**

Location	Sec	TwN	Rng
1	19	156N	91W
2	11	156N	92W
3	14	156N	92W
4	26	156N	92W
5	35	156N	92W
6	36	156N	92W



Figure 4. Hess Corporation RS-Nelson Farms Vibe Location 1



Figure 5. Hess Corporation RS-Nelson Farms Vibe Location 2



Figure 6. Hess Corporation RS-Nelson Farms Vibe Location 3

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Figure 7. Hess Corporation RS-Nelson Farms Vibe Location 4





Figure 8. Hess Corporation RS-Nelson Farms Vibe Location 5



Figure 9. Hess Corporation RS-Nelson Farms Vibe Location 6

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## Project Completion

At the completion of the microseismic monitoring, the downhole geophones will be retrieved on wireline and the logging unit will leave the location. Notifications will be provided of the completion of the project and the (form) will be submitted to the NDIC.

## Related Documents

- Geophysical Exploration Permit – Form GE1
- Hess Corporation Notification of Variance
- Affidavit of landowner contact
- A plot map showing actual monitoring locations
- Geophysical Exploration Completion Report – Form GE 6B
- Letter of Landowner Notification

If there are any questions or concerns, please feel free to contact me.

Sincerely,



Sandy Conners  
Hydraulic Fracture Monitoring and Borehole Seismic Geophysical Sales  
832-415-7595 cell  
[sconners@slb.com](mailto:sconners@slb.com)

## Hess Notification of Variance



Hess Bakken Investments II, LLC  
1501 McKinney Street  
Houston, TX 77010

June 23, 2017

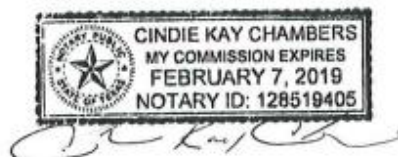
North Dakota Industrial Commission  
Oil and Gas Division  
600 East Boulevard Dept. 405  
Bismarck, North Dakota 58505-0840  
Attn: Todd L. Holweger

Ref: Distance Restriction Variance  
Hess Nelson Farms Microseismic  
Mountrail County, North Dakota

Dear Mr. Holweger;

As part of the microseismic data collection to be done at Hess' operated RS-Nelson Farms 11-19 location in July of 2017, a vib truck will be used to assist with the orientation of the downhole geophones. Per NDIC rule 43-02-12-05 distance restrictions, a non-explosive vib location must remain greater than 300 feet from existing infrastructure. This letter is intended to provide notice that Hess Bakken Investments II, LLC hereby gives Schlumberger a variance to the 300 foot distance allowing them to be less than 300 feet from Hess' existing infrastructure.

Please accept this letter in compliance to NDIC rule 43-02-12-05 mentioned above.



### 43-02-12-05. Distance restrictions –

Shot hole operations - Nonexplosive methods.

Seismic shot hole operations may not be conducted less than six hundred sixty feet [201.17 meters] from water wells, buildings, underground cisterns, pipelines, and flowing springs.

Nonexplosive exploration methods may not be conducted less than three hundred feet [91.44 meters] from water wells, buildings, underground cisterns, pipelines, and flowing springs.

Variances may be granted to this section by written agreement between the permitholder and the owner of the subject property and must be available to the director upon request. History: Effective December 1, 1997; amended effective September 1, 2000; May 1, 2004. General Authority: NDCC 38-08.1 Law Implemented: NDCC 38-08.1-08 43-02-12-06. Notification of work

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## Affidavit of Landowner Contact

Todd L. Holweger  
Oil & Gas Division  
North Dakota Industrial Division  
600 East Boulevard Dept. 405  
Bismark, ND 58805-0840

June 26, 2017

Mr. Holweger,

Schlumberger has complied with the requirement that all landowners within a one half mile radius of the vibration points where geophysical activities are planned to be conducted commencing July 6, 2017 were provided written copies of NDCC 28-08.1-04.1 (Exploration Permit) and NDCC Chapter 38-11.1 (Oil and Gas Production Damage Compensation).

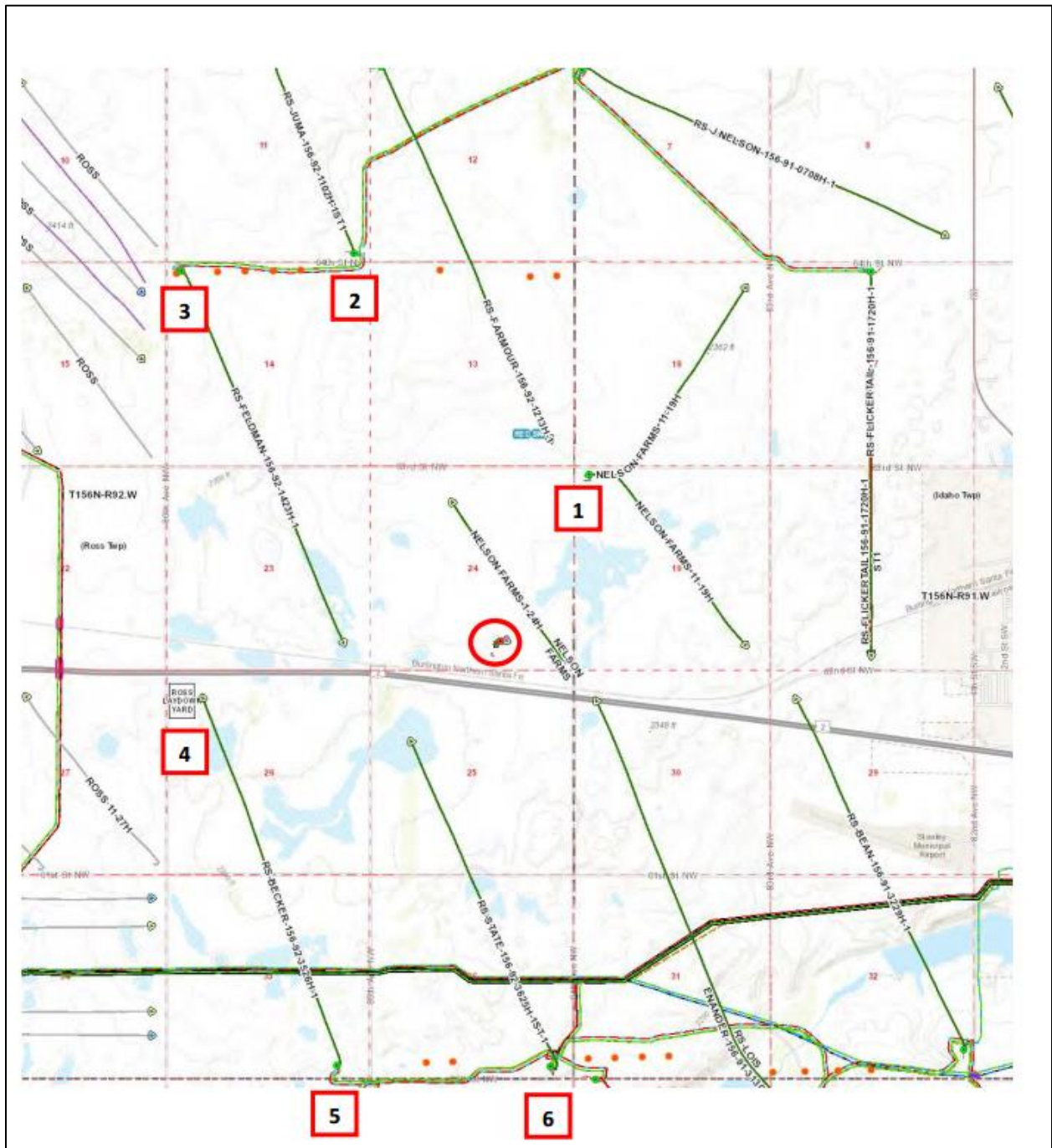
Please accept this letter as compliance to allow commencement of operations.

Sincerely,



Sandy Conners  
Hydraulic Fracture Monitoring and Borehole Seismic Geophysical Sales  
832-415-7595 cell  
[sconners@slb.com](mailto:sconners@slb.com)

## Map Displaying Monitoring Location



The monitoring location is indicated by the circle on the map, which is the location of the RS-Nelson 156-92-24V-2 vertical observation well.

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## Sample Letter of Landowner Notification

Jacolyn Nelson  
P.O. Box 385  
Stanley, ND 58784-0870

June 26, 2017

Mrs. Nelson,

In accordance to the requirements of the North Dakota Industrial Division, all landowners must be given 7 days of notice of all geophysical activities that will occur within one half mile of any landowners. Additionally it is required that written copies of NDCC 28-08.1-04.1 (Exploration Permit) and NDCC Chapter 38-11.1 (Oil and Gas Production Damage Compensation) also be provided to the landowners

Schlumberger will be performing a series of geophysical exploration services for the upcoming monitoring project of the Hess RS Nelson Farms No. 156-92-24V-1 vertical well in McKenzie County, ND (S24, T156N, R92W). The expected timeframe for this operation is July 6<sup>th</sup> through 13<sup>th</sup>, 2017. Most of the activity should occur on July 6<sup>th</sup>.

The geophysical exploration will involve the use of a vibrator unit to perform a series of sweeps at up to six locations in the area. A map of the six locations in which geophysical activity will take place is included in this packet. All of the vibrator locations are on existing well pads which Hess Corporation currently has access. Hess Corporation has provided Schlumberger a variance to allow access to the pad locations.

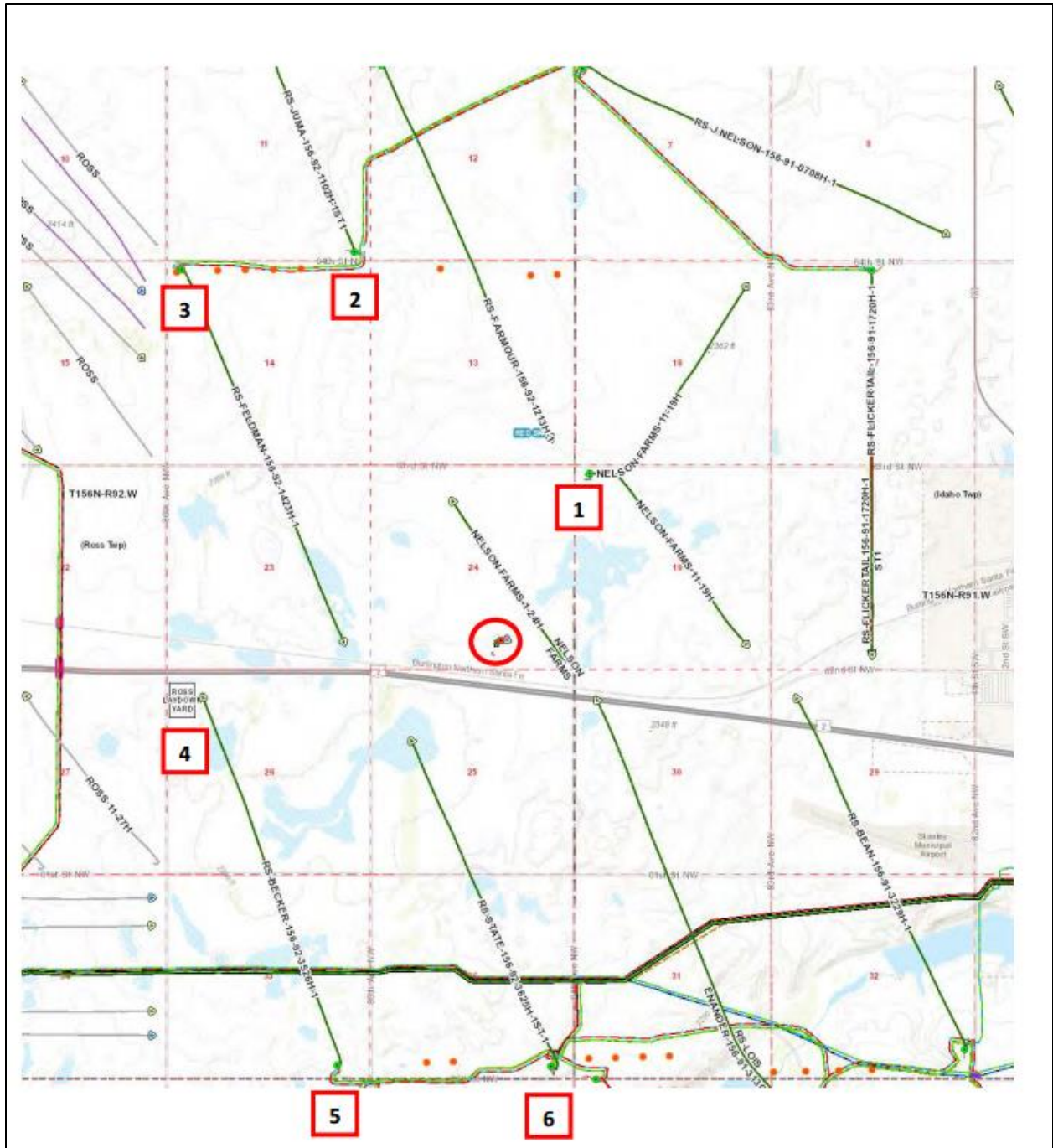
This notification is to ensure that Schlumberger is in compliance with North Dakota Industrial Division requirements for geophysical activities.

Sincerely,



Sandy Conners  
Hydraulic Fracture Monitoring and Borehole Seismic Geophysical Sales  
832-415-7595 cell  
[sconners@slb.com](mailto:sconners@slb.com)

## Vibrator Locations



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Figure 1. Vibe Locations



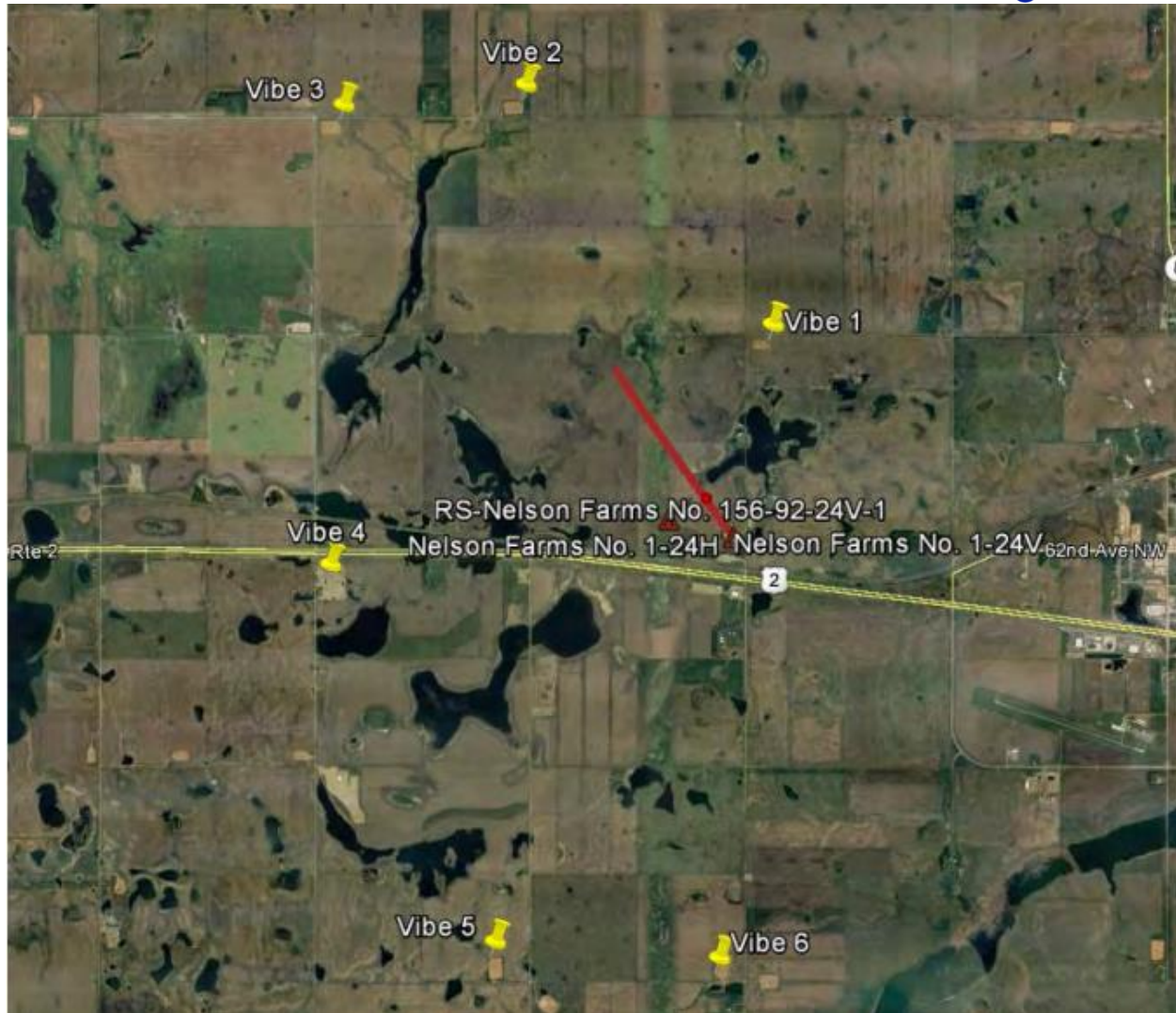


Figure 2. Vibe Locations

### Vibrator Operation

The geophysical process will involve the use of a vibrator unit to perform a series of 10-14 second sweeps at up to six locations in the area. An image of the vibroseis unit is provided in Figure 3.



**Figure 3. Schlumberger Vibroseis Unit**

The vibe operation will be conducted in accordance with the rules and restrictions for a non-explosive method. A variance has been obtained from Hess Corporation who own the six well pads in which the vibrator will operate in regards to rule 43-02-12-05 regarding distance restrictions.

If there are any questions or concerns, please feel free to contact me.

Sincerely,

Sandy Conners  
Hydraulic Fracture Monitoring and Borehole Seismic Geophysical Sales  
832-415-7595 cell  
[sconners@slb.com](mailto:sconners@slb.com)