

**Holweger, Todd L.**

Received

**From:** Sandy Conners <sconners@slb.com>  
**Sent:** Thursday, October 05, 2017 11:05 AM  
**To:** Holweger, Todd L.  
**Subject:** RE: [Ext] RE: Hess BW-Hedstrom Permit Request

OCT - 5 2017

ND Oil & Gas  
Division

**CAUTION:** This email originated from an outside source. Do not click links or open attachments unless you know they are safe.

Todd,

Also to answer your question below. We did occupy all 5 vibe points twice.

Rgds,  
sandy

**From:** Sandy Conners  
**Sent:** Thursday, October 05, 2017 10:56 AM  
**To:** 'Holweger, Todd L.' <[tholweger@nd.gov](mailto:tholweger@nd.gov)>  
**Subject:** RE: [Ext] RE: Hess BW-Hedstrom Permit Request

Todd,

I sent you the documentation on September 12 in the attached email. Please confirm you received the attached email with the documentation.

Thank you,  
sandy

**From:** Holweger, Todd L. [<mailto:tholweger@nd.gov>]  
**Sent:** Thursday, October 05, 2017 10:44 AM  
**To:** Sandy Conners <[sconners@slb.com](mailto:sconners@slb.com)>  
**Subject:** [Ext] RE: Hess BW-Hedstrom Permit Request

Sandy,  
Please submit the Completion Report, Completion affidavit. Also, confirm that the 5-source points were in the location as proposed.  
Thanks,

**Todd L. Holweger**  
Permit Manager  
NDIC-DMR-OGD  
(701) 328-8024

**From:** Sandy Conners [<mailto:sconners@slb.com>]  
**Sent:** Wednesday, October 04, 2017 2:28 PM



# 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

OCT - 5 2017

ND Oil & Gas  
Division

Permit No. <b>97-0281</b>	
Shot Hole Operations	*Non-Explosive Operations <b>Non-Explosive</b>

## SECTION 1

Geophysical Contractor <b>Schlumberger</b>	
Project Name and Number <b>Hess SC-1 WX</b>	County(s) <b>McKenzie</b>
Township(s) <b>152N</b>	Range(s) <b>99W, 100W</b>
Drilling and Plugging Contractors <b>n/a</b>	
Date Commenced <b>08/26/2017</b>	Date Completed <b>08/30/2017</b>

## SECTION 2

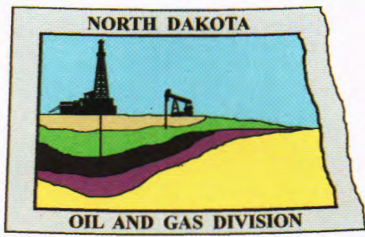
First S.P. #	Last S.P. #																		
Loaded Holes (Undetonated Shot Points)																			
S.P.#s																			
Charge Size																			
Depth																			
Reasons Holes Were Not Shot																			

## 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/)

August 21, 2017

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

RE: HESS SC-1WX  
GEOPHYSICAL EXPLORATION PERMIT #97-0281  
MCKENZIE COUNTY  
NON EXPLOSIVE METHOD

Dear Ms. Connors:

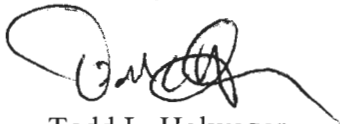
Please be advised that we are in receipt of your Geophysical Exploration permit application and it is conditionally approved; effective for one year from August 21, 2017. **PURSUANT TO NDAC 43-02-12-05 (DISTANCE RESTRICTION) non-explosive exploration method may not be conducted not less than 300 feet 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 8/16/2017)**
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 8/16/2017)**
  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  
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

AUG 16 2017

ND Oil & Gas  
 Division

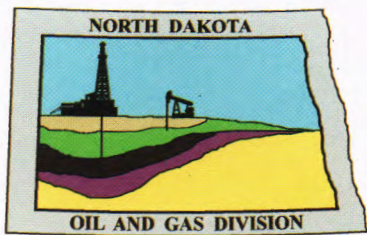
1) a. Company <b>Schlumberger Technology Corporatio</b>		Address <b>333 Clay Street, Allen Center 3, Suite 1900, Houston, TX 77002</b>			
Contact <b>Sandy Conners</b>		Telephone <b>832-415-7595</b>		Fax	
Surety Company <b>Liberty Mutual Insurance</b>		Bond Amount <b>\$25,000</b>		Bond Number <b>16036783</b>	
2) a. Subcontractor(s)		Address		Telephone	
b. Subcontractor(s)		Address		Telephone	
3) Party Manager <b>Luis Gonzalez</b>		Address (local) <b>713 Market Street, Oklahoma City, OK</b>		Telephone (local) <b>832-520-8640</b>	
4) Project Name or Line Numbers <b>Hess SC-1WX</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	Amt of Charge	Depth	Source points per sq. mi.	No. of sq. mi.	
<b>3-D</b>					
Size of Hole	Amt of Charge	Depth	Source points per in. mi.	No. of in. mi.	
<b>2-D</b>			<b>5</b>		
8) Approximate Start Date <b>August 24, 2017</b>			Approximate Completion Date <b>September 12, 2017</b>		

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

9) Location of Proposed Project - County <b>McKenzie County, ND</b>						
Section(s), Township(s) & Range(s)	Section	<b>15</b>	T.	<b>152N</b>	R.	<b>99W</b>
	Section	<b>19</b>	T.	<b>152N</b>	R.	<b>99W</b>
	Section	<b>13</b>	T.	<b>152N</b>	R.	<b>100W</b>
	Section	<b>5</b>	T.	<b>152N</b>	R.	<b>99W</b>
	Section	<b>4</b>	T.	<b>152N</b>	R.	<b>99W</b>
	Section		T.		R.	

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.			Date <b>August 21, 2017</b>
Signature 	Printed Name <b>Sandy Conners</b>	Title <b>Borehole Seismic Sales</b>	
Email Address(es) <b>sconners@slb.com</b>			

(This space for State office use)		<b>Permit Conditions</b>	
Permit No. <b>97-0281</b>	Approval Date <b>8/21/17</b>	* Permit in hand required at pre-program meeting with field inspector and be aware of all NDIC Rules and Regulations (i.e. distance restrictions).	
Approved by 		* See attached letter.	
Title <b>Mineral Resources Permit Manager</b>			



# 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/)

August 21, 2017

The Honorable Erica Johnsrud  
McKenzie County Auditor  
201 5th St NW Ste 543  
Watford City, ND 58854

RE:    Geophysical Exploration  
       Permit #97-0281

Dear Ms. Johnsrud:

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 August 21, 2017 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  
Permit Manager

# Schlumberger

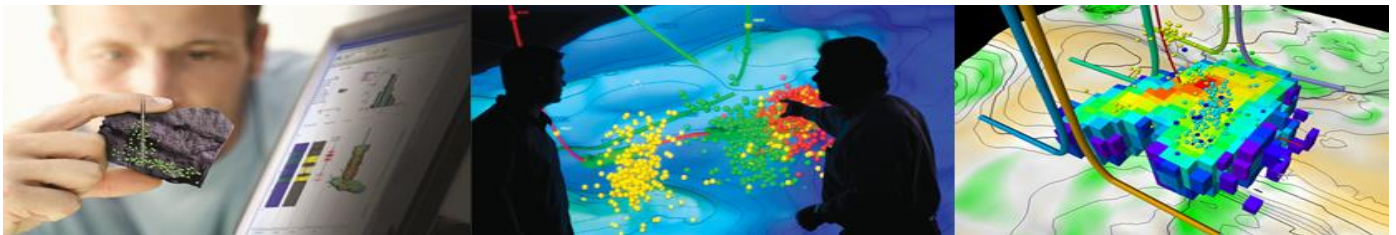
Vibe Orientation  
Stoney Creek  
Planned for August, 2017

By Schlumberger Technology Company

August 15, 2017

# Schlumberger

Schlumberger-  
Private





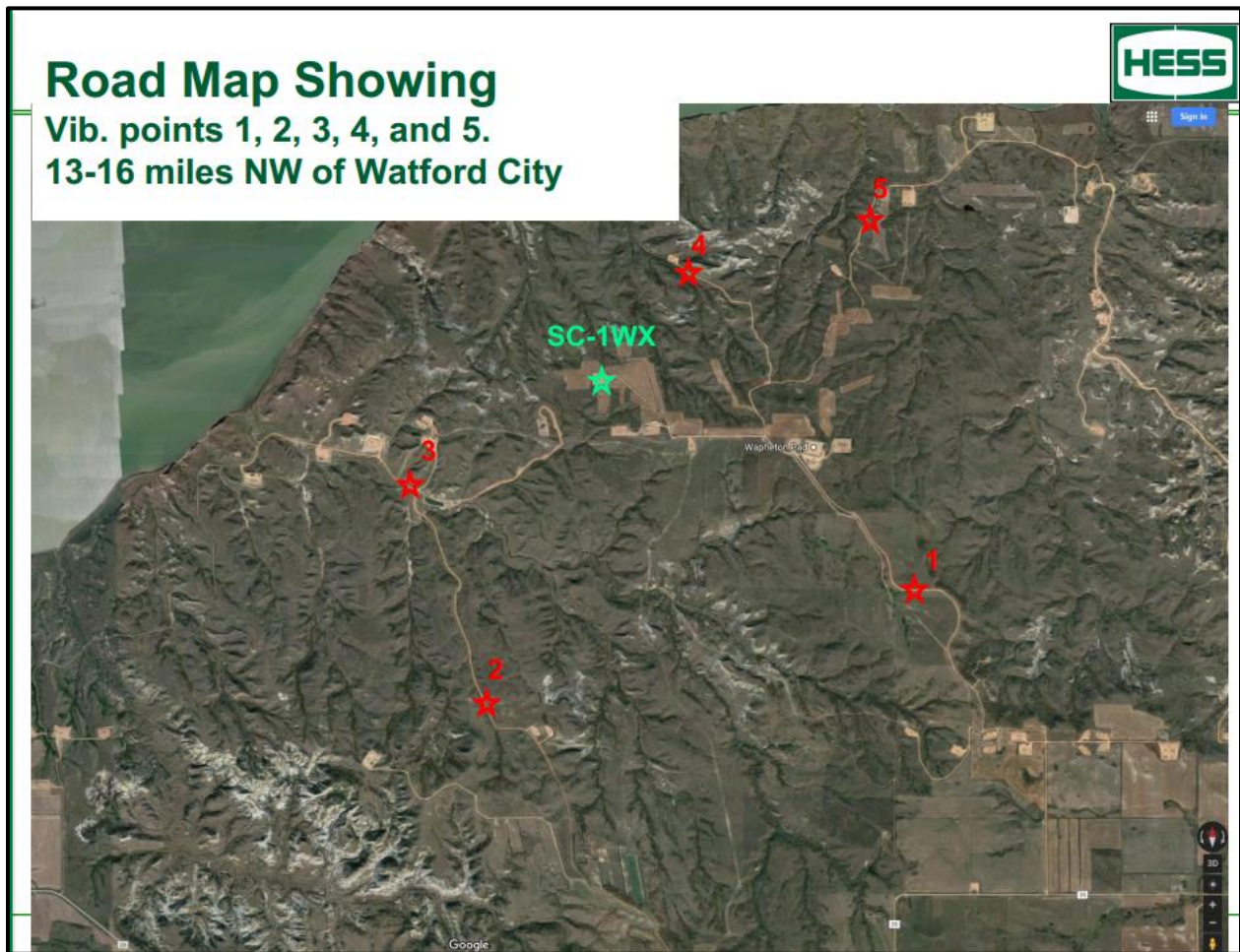
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## Operational Description

Schlumberger will be performing a series of geophysical exploration services for the upcoming monitoring project of the Stoney Creek-1 WX 152-99-0809H-6 well in McKenzie County, ND. The expected timeframe for this operation is August 23rd through September 11 2017. Most of the vibrator use will be early in the project.

A single downhole array will be used to map the upcoming hydraulic fracture treatment of the Hess Stoney Creek pad. We plan to measure the injection of fluid. In order to calibrate the orientation of our downhole geophones we will perform a series of vibroseis sweeps at up to 5 known surface locations. A map view of the projected pad and vibe locations is provided in Figure 1.



Schlumberger-  
Private

Figure 1. Hess Corporation Stoney Creek Pad (SC-1WX) and Vibe Locations indicated by Red Stars

## Downhole Seismic Deployment

### Deployment

Schlumberger will deploy a geophone toolstring in the Stoney Creek-1 WX 152-99-0809H-6 horizontal observation well from a surface wireline logging unit. The deployment is comparable to any wireline deployed toolstring conveyed with a downhole tractor.

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 five locations in the area. An image of the vibroseis unit is provided in Figure 2. All of the vibe locations are on roads which Hess has previously gained approval for access. These vibe locations and their relative positions are provided in Table 1.



**Figure 2. 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 Suhail Kanwar, the McKenzie County road engineer which allows for operations on County Roads. A copy of email with approval is provided in this document. Images of the vibe locations are provided below in Figure 3 through Figure 7. These locations are approximate depending on conditions in the field and accessibility.

Table 1. Vibe Locations

Location	Latitude	Longitude	Datum
1	47 58 42.05615	-103 20 35.67556	NAD27
2	47 58 3.37423	-103 24 20.30619	NAD27
3	47 59 17.83402	-103 25 0.31949	NAD27
4	48 00 31.85352	-103 22 37.41813	NAD27
5	48 00 51.28359	-103 21 2.09641	NAD27

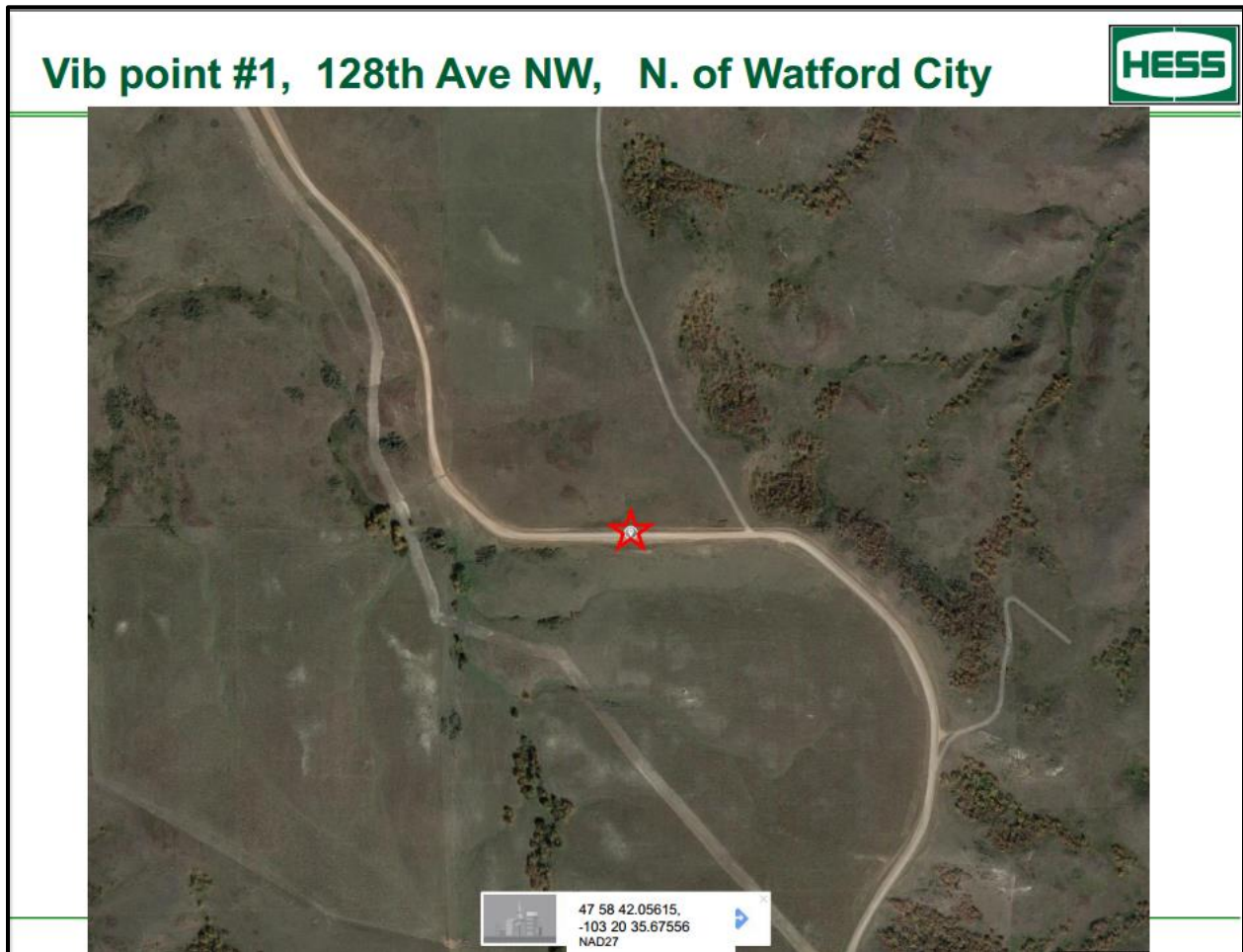
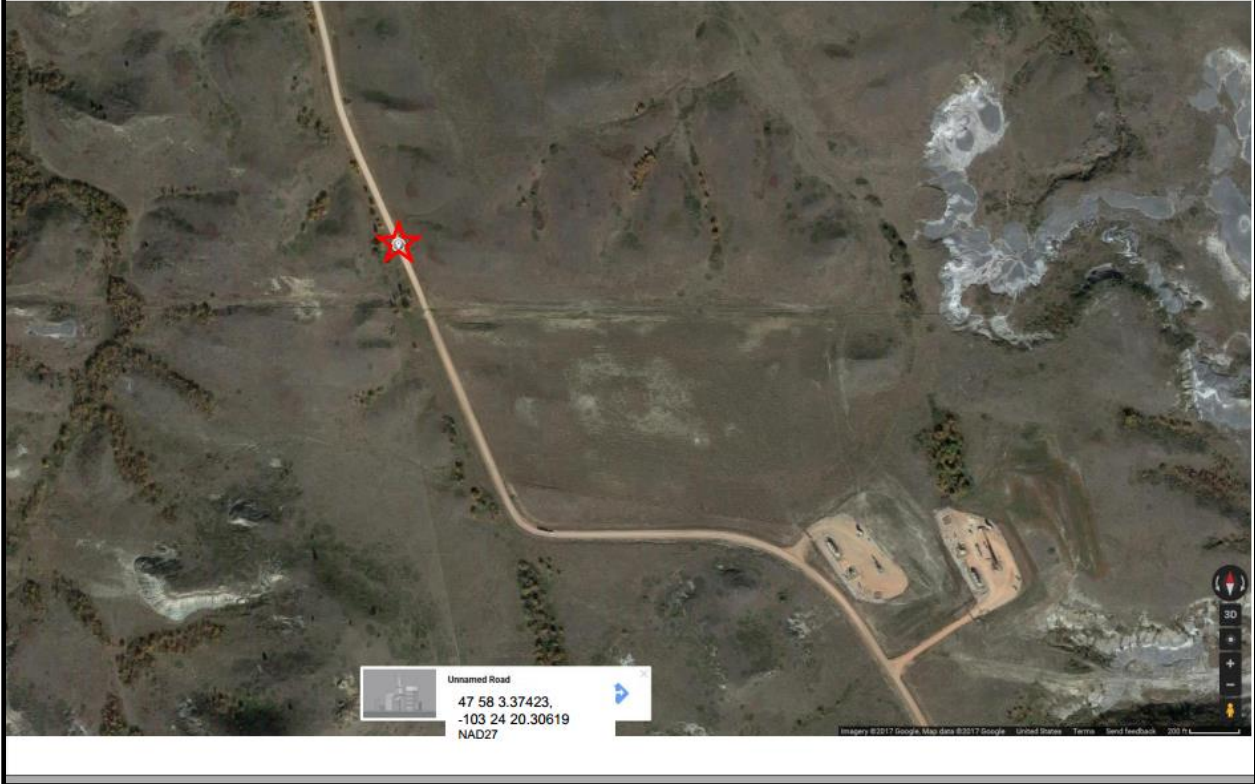


Figure 3. Hess Corporation Stoney Creek Pad (SC-1WX) Vibe Location 1



Vib point #2, 131<sup>st</sup> Ave. N.W.



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Figure 4. Hess Corporation Stoney Creek Pad (SC-1WX) Vibe Location 2

Vib point #3



Schlumberger-  
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Figure 5. Hess Corporation Stoney Creek Pad (SC-1WX) Vibe Location 3

Vib point #4

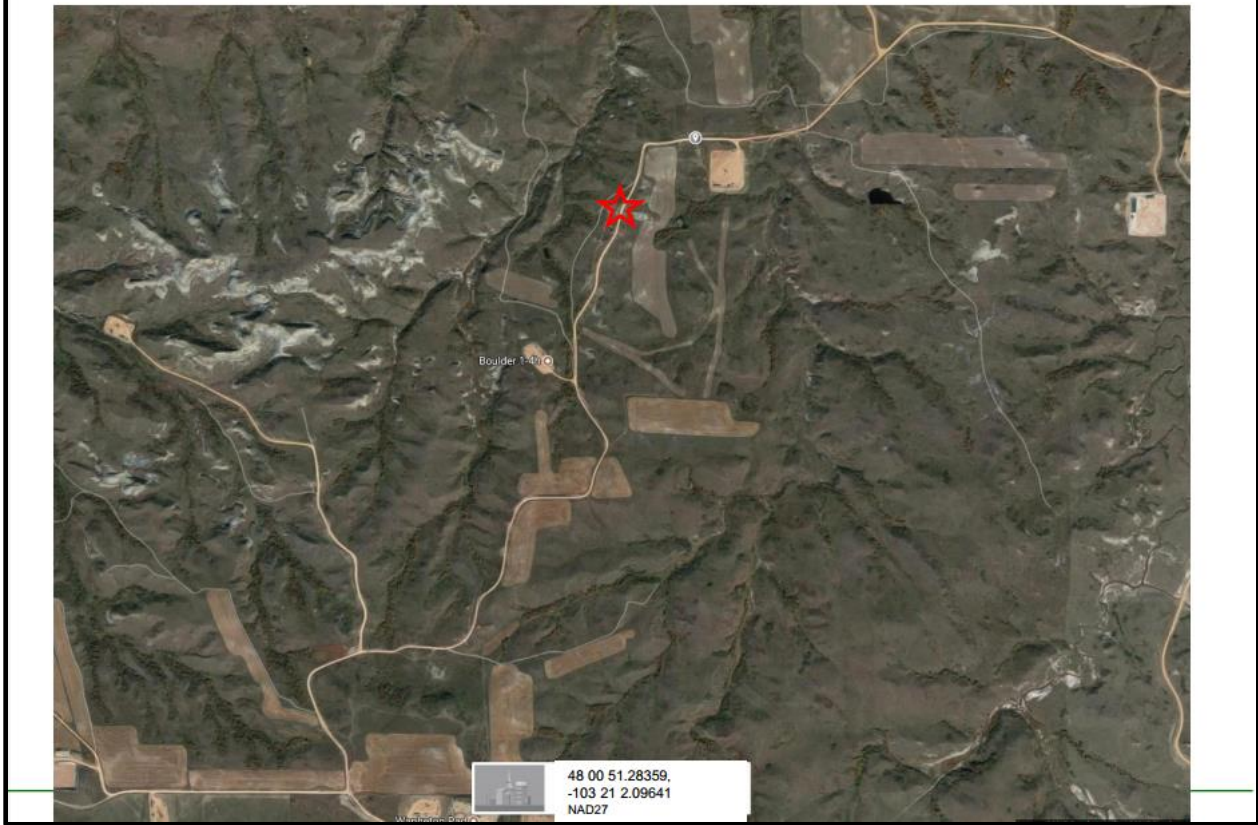


Schlumberger-  
Private

Figure 6. Hess Corporation Stoney Creek Pad (SC-1WX) Vibe Location 4



## Vib point #5



Schlumberger-  
Private

Figure 7. Hess Corporation Stoney Creek Pad (SC-1WX) Location 5



## 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
- McKenzie County Road Engineer Notification of Variance
- Affidavit of landowner contact
- A plot map showing actual vibrator 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)

## McKenzie County Road Engineer Notification of Variance



Wed 8/9/2017 5:02 PM

Smith, Nathaniel <nsmith@hess.com>

[Ext] RE: Using dirt county roads for vib points

To  Suhail Kanwar

Cc  tholweger@nd.gov;  Sandy Conners;  Ziegler, Abra

---

Thank you for your help. I am sure that you will enjoy observing this operation as it is so different from the traffic that you normally see using your roads!

Schlumberger will be doing the orienting. The Schlumberger contact is Sandy Conners who is cced above. Sandy or one of her coworkers will get in touch with you before the orienting is done in order to give you time to meet the crew.

If you have questions about this do contact me or Sandy Conners.

Thanks,  
Nat

---

**From:** Suhail Kanwar [<mailto:skanwar@co.mckenzie.nd.us>]  
**Sent:** Wednesday, August 09, 2017 4:42 PM  
**To:** Smith, Nathaniel  
**Cc:** [tholweger@nd.gov](mailto:tholweger@nd.gov)  
**Subject:** RE: Using dirt county roads for vib points

It appears okay to me. Please inform us when you do that so that we can witness one of these tests.

Thanks,

Suhail Kanwar, M.S., P.E. (ND, MN)  
Public Works Administrator/County Engineer  
Ph: (701) 444-7426  
Fax: (701) 444-4113  
McKenzie County, ND  
<https://www.facebook.com/mckenziecountynd>

## Affidavit of Landowner Contact

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

August 15, 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 August 23, 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).

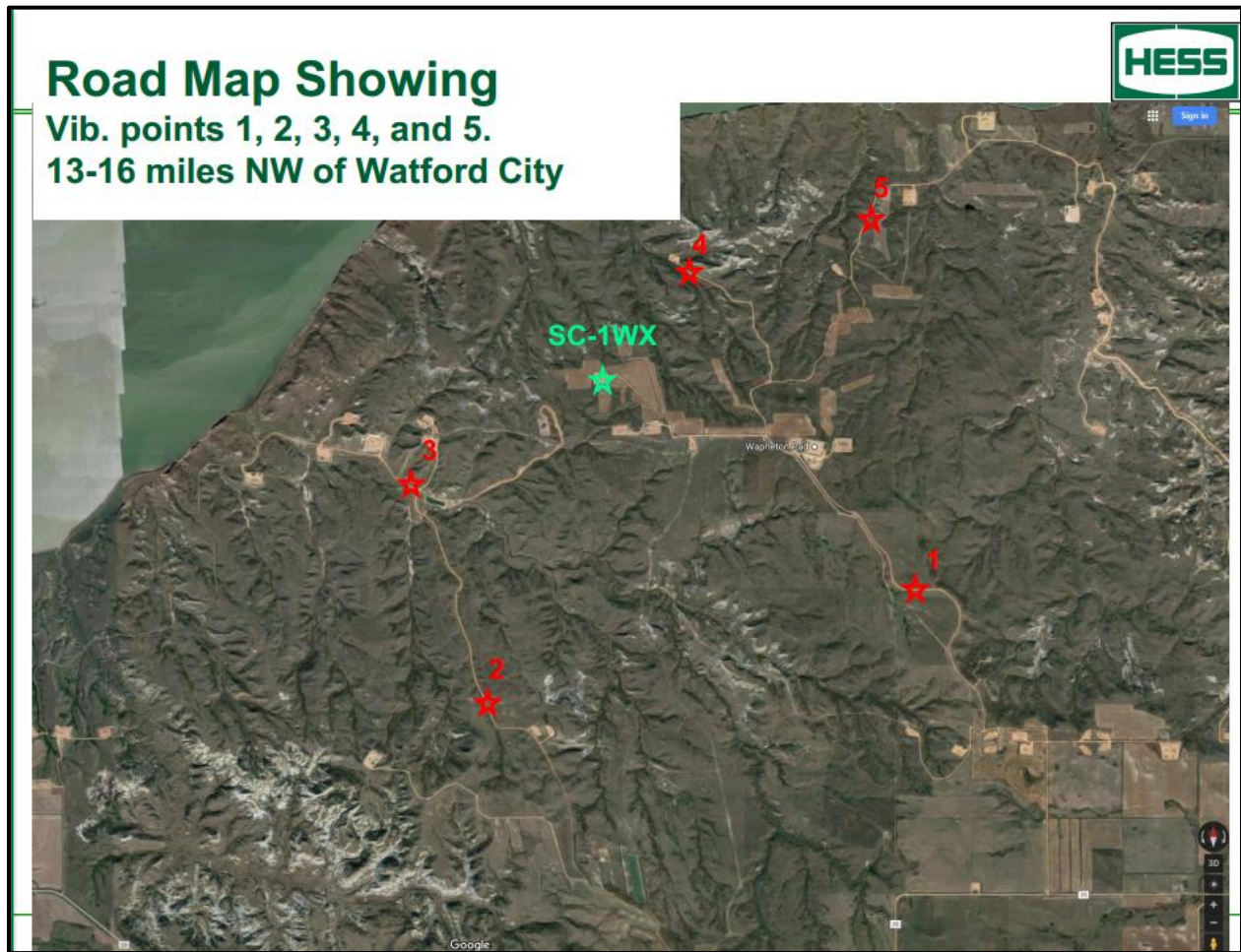
Please accept this letter as compliance to allow commencement of operations.

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



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The monitoring location is indicated by the green star labelled SC-1WX on the map, which is the location of the Stoney Creek-1 WX 152-99-0809H-6 horizontal observation well.

## Sample Letter of Landowner Notification

Flatland AG Holdings, LLLP.  
4391 115<sup>th</sup> Avenue NW  
Watford,, ND 58854  
Vibe Point #1

August 15, 2017

Dear Sir or Madam,

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 Stoney Creek-1 WX 152-99-0809H-6 well in McKenzie County, ND. The expected timeframe for this operation is August 23rd through September 11<sup>th</sup>, 2017.

The geophysical exploration will involve the use of a vibrator unit to perform a series of sweeps at up to five locations in the area. A map of five locations in which geophysical activity will take place is included in this packet. All of the vibrator locations are on existing roads in the area. The McKenzie County Road engineer has provided Schlumberger a variance to allow access to the county roads.

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

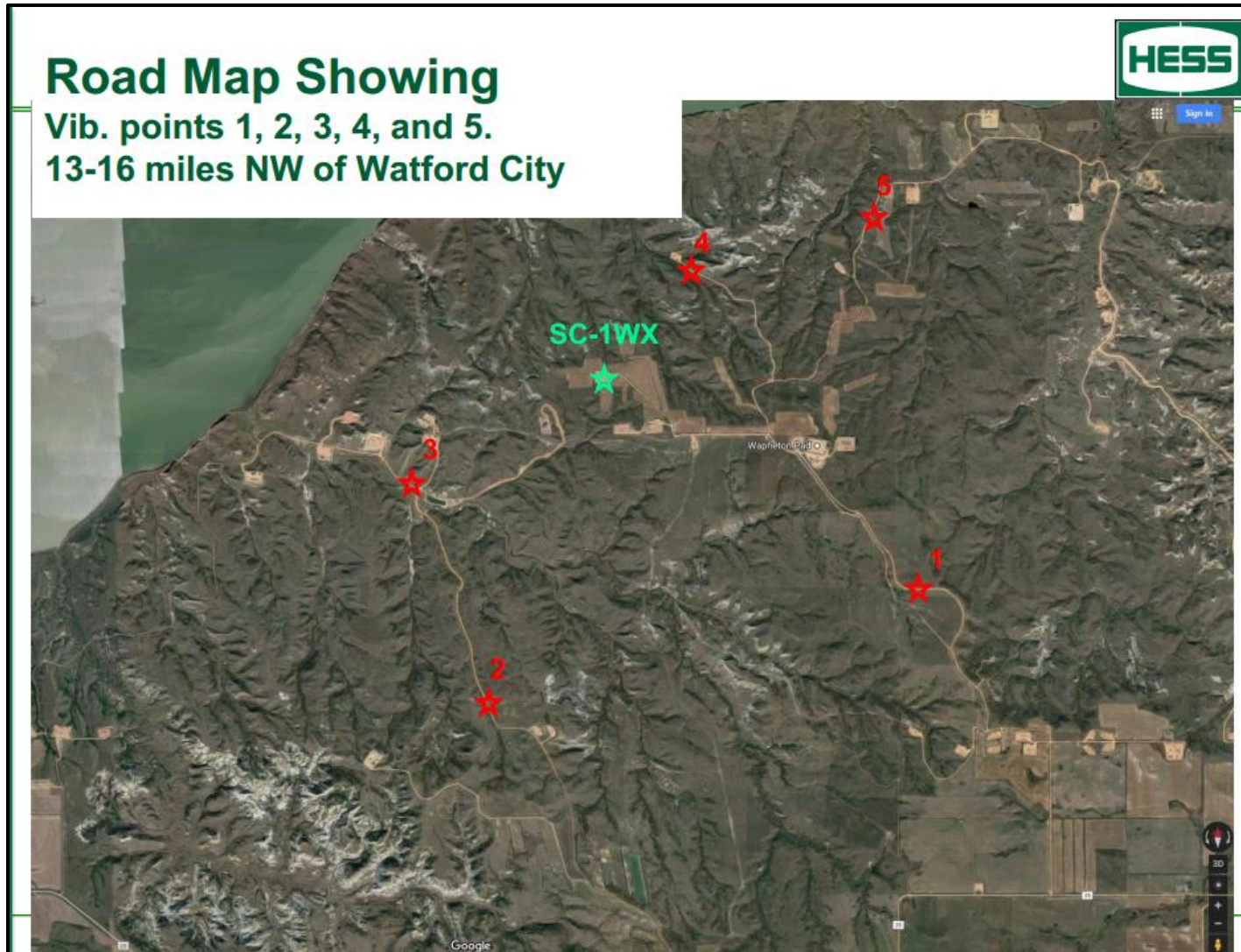


Figure 1. Vibe Locations

## 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 five locations in the area. An image of the vibroseis unit is provided in Figure 2.



Figure 2. Schlumberger Vibroseis Unit

The vibrate operation will be conducted in accordance with the rules and restrictions for a non-explosive method. A variance has been obtained from McKenzie County Road Engineer in which the vibrator will operate in with respect to rule 43-02-12-05 regarding distance restrictions.

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

Sincerely,

A handwritten signature in black ink, appearing to be 'S Conners', is written over a white background.

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