# 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)

Received
JAN 20 2022
ND Oil & Gas Division

PERMIT # 970261

Project Name
**Hess EN Uran A**

County
**Mountrail**

Supplemental Information

**The purpose of running microseismic equipment in the EN Uran A batch was to obtain fracture geometry data on the following wells: EN Uran A-154-93-2215H-5,7,8, and H12.**

**The microseismic geophones were deployed in the wellbore of the EN Uran A-154-93-2215H-6 on 4/26/2015 and retrieved at the conclusion of real time operation 5/7/2015.**

**Surface line geophones were deployed 4/20/2015 1.9 miles from 48° 09' 13.6808" N 102° 39' 21.7155" W to 48° 10' 56.7346" N 102° 39' 21.7632" W and retrieved by 7/24/2015 according with GE 6B.**

**Down hole installed geophones were deployed 4/20/2015 and sites remediated and reclaimed, operations concluded by 11/15/2021**

* NDIC Field inspector will verify remediation/ reclamation.

| | | |
|---|---|---|
| Company: **Halliburton** | | Telephone Number: **(713) 212-2800** |
| Address: **3000 North Sam Houston Parkway** | | |
| City: **Houston** | State: **TX** | Zip Code: **77032** |
| Signature | Printed Name: **Price Stark** | |
| Title: **Account Representative** | Date: **November 15, 2021** | |
| Email Address: **price.stark@halliburton.com** | | |

**FOR STATE USE ONLY**

| | |
|---|---|
| ☒ Received * | ☐ Approved |
| Date: 1/20/22 | |
| By: | |
| Title: Mineral Resources Permit Manager | |

HESS BAKKEN INVESTMENTS II, LLC
3015 16th Street SW, Suite 20
Minot, ND 58701

*Sent via Email*

September 25, 2015

DMR Permit Manager
Oil & Gas Division
North Dakota Industrial Commission
ATTN: Todd L. Holweger
600 East Boulevard Dept. 405
Bismarck, ND 58505-0840

**RE: Landowner Notification Compliance Lettter**
**Hess EN-Uran A Geophysical Exploration Permit # 97-0261**

Dear Mr. Holweger,

The intent of this letter is to notify you that Hess Bakken Investments II, LLC has done its due diligence and provided the operator of the land and each landowner within one-half mile of the land on which geophysical exploration activities were 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).

Please accept this letter as compliance with Paragraph #4 shown in the April 16, 2015, Hess EN-Uran A Permit letter written by you. Should you have any questions, please contact me at (701)420-7090 or wmontonye@hess.com.

Sincerely,
**HESS BAKKEN INVESTMENTS II, LLC**

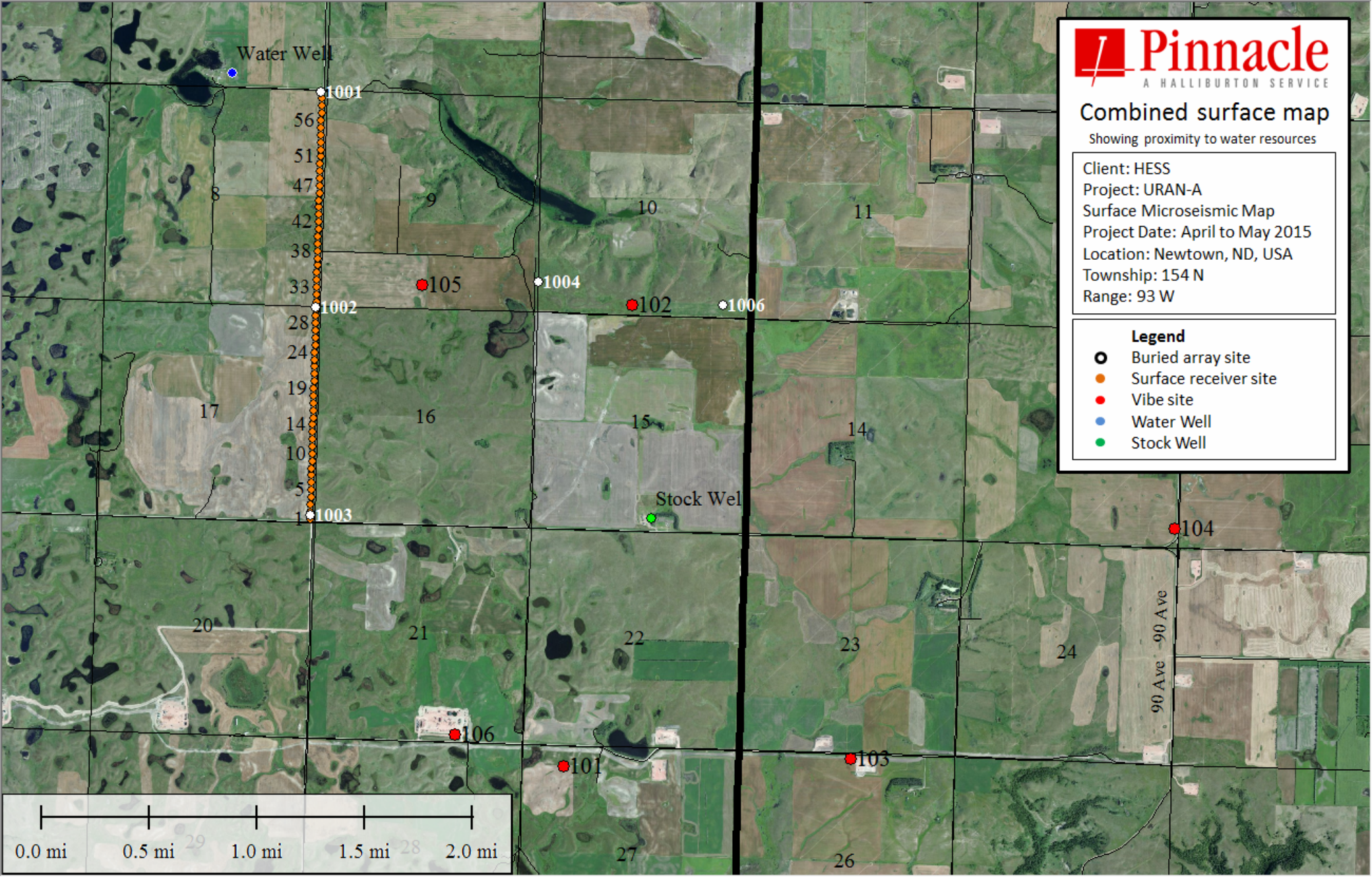
Whitney Montonye
Senior Land Negotiator

*WM/jla*

| X | Y | LATITUDE | LONGITUDE | NAME | LAYER | NOTE |
|---|---|---|---|---|---|---|
| 1442307 | 428236.5 | 48° 09' 13.6808" N | 102° 39' 21.7155" W | 1 | Receiver Station | X coordinate - North Dakota North (ft international) - FIPS3301 - EPSG 2265 - NAD83 |
| 1442312 | 428413.4 | 48° 09' 15.4275" N | 102° 39' 21.7163" W | 2 | Receiver Station | Y coordinate - North Dakota North (ft international) - FIPS3301 - EPSG 2265 - NAD83 |
| 1442317 | 428590.4 | 48° 09' 17.1742" N | 102° 39' 21.7171" W | 3 | Receiver Station | |
| 1442322 | 428767.3 | 48° 09' 18.9209" N | 102° 39' 21.7179" W | 4 | Receiver Station | |
| 1442327 | 428944.2 | 48° 09' 20.6675" N | 102° 39' 21.7187" W | 5 | Receiver Station | |
| 1442332 | 429121.1 | 48° 09' 22.4142" N | 102° 39' 21.7195" W | 6 | Receiver Station | |
| 1442337 | 429298.1 | 48° 09' 24.1609" N | 102° 39' 21.7203" W | 7 | Receiver Station | |
| 1442342 | 429475 | 48° 09' 25.9076" N | 102° 39' 21.7211" W | 8 | Receiver Station | |
| 1442347 | 429651.9 | 48° 09' 27.6542" N | 102° 39' 21.7220" W | 9 | Receiver Station | |
| 1442351 | 429828.8 | 48° 09' 29.4009" N | 102° 39' 21.7228" W | 10 | Receiver Station | |
| 1442356 | 430005.7 | 48° 09' 31.1476" N | 102° 39' 21.7236" W | 11 | Receiver Station | |
| 1442361 | 430182.7 | 48° 09' 32.8943" N | 102° 39' 21.7244" W | 12 | Receiver Station | |
| 1442366 | 430359.6 | 48° 09' 34.6410" N | 102° 39' 21.7252" W | 13 | Receiver Station | |
| 1442371 | 430536.5 | 48° 09' 36.3876" N | 102° 39' 21.7260" W | 14 | Receiver Station | |
| 1442376 | 430713.4 | 48° 09' 38.1343" N | 102° 39' 21.7268" W | 15 | Receiver Station | |
| 1442381 | 430890.3 | 48° 09' 39.8810" N | 102° 39' 21.7276" W | 16 | Receiver Station | |
| 1442386 | 431067.3 | 48° 09' 41.6277" N | 102° 39' 21.7284" W | 17 | Receiver Station | |
| 1442391 | 431244.2 | 48° 09' 43.3743" N | 102° 39' 21.7292" W | 18 | Receiver Station | |
| 1442396 | 431421.1 | 48° 09' 45.1210" N | 102° 39' 21.7300" W | 19 | Receiver Station | |
| 1442400 | 431598 | 48° 09' 46.8677" N | 102° 39' 21.7308" W | 20 | Receiver Station | |
| 1442405 | 431775 | 48° 09' 48.6144" N | 102° 39' 21.7317" W | 21 | Receiver Station | |
| 1442410 | 431951.9 | 48° 09' 50.3610" N | 102° 39' 21.7325" W | 22 | Receiver Station | |
| 1442415 | 432128.8 | 48° 09' 52.1077" N | 102° 39' 21.7333" W | 23 | Receiver Station | |
| 1442420 | 432305.7 | 48° 09' 53.8544" N | 102° 39' 21.7341" W | 24 | Receiver Station | |
| 1442425 | 432482.6 | 48° 09' 55.6011" N | 102° 39' 21.7349" W | 25 | Receiver Station | |
| 1442430 | 432659.6 | 48° 09' 57.3477" N | 102° 39' 21.7357" W | 26 | Receiver Station | |
| 1442435 | 432836.5 | 48° 09' 59.0944" N | 102° 39' 21.7365" W | 27 | Receiver Station | |
| 1442440 | 433013.4 | 48° 10' 00.8411" N | 102° 39' 21.7373" W | 28 | Receiver Station | |
| 1442445 | 433190.3 | 48° 10' 02.5878" N | 102° 39' 21.7381" W | 29 | Receiver Station | |
| 1442449 | 433367.2 | 48° 10' 04.3344" N | 102° 39' 21.7389" W | 30 | Receiver Station | |
| 1442454 | 433544.2 | 48° 10' 06.0811" N | 102° 39' 21.7397" W | 31 | Receiver Station | |
| 1442459 | 433721.1 | 48° 10' 07.8278" N | 102° 39' 21.7405" W | 32 | Receiver Station | |
| 1442464 | 433898 | 48° 10' 09.5745" N | 102° 39' 21.7414" W | 33 | Receiver Station | |
| 1442469 | 434074.9 | 48° 10' 11.3211" N | 102° 39' 21.7422" W | 34 | Receiver Station | |

| | | | | | |
|---|---|---|---|---|---|
| 1442474 | 434251.9 | 48° 10' 13.0678" N | 102° 39' 21.7430" W | 35 | Receiver Station |
| 1442479 | 434428.8 | 48° 10' 14.8145" N | 102° 39' 21.7438" W | 36 | Receiver Station |
| 1442484 | 434605.7 | 48° 10' 16.5611" N | 102° 39' 21.7446" W | 37 | Receiver Station |
| 1442489 | 434782.6 | 48° 10' 18.3078" N | 102° 39' 21.7454" W | 38 | Receiver Station |
| 1442494 | 434959.5 | 48° 10' 20.0545" N | 102° 39' 21.7462" W | 39 | Receiver Station |
| 1442498 | 435136.5 | 48° 10' 21.8012" N | 102° 39' 21.7470" W | 40 | Receiver Station |
| 1442503 | 435313.4 | 48° 10' 23.5478" N | 102° 39' 21.7478" W | 41 | Receiver Station |
| 1442508 | 435490.3 | 48° 10' 25.2945" N | 102° 39' 21.7486" W | 42 | Receiver Station |
| 1442513 | 435667.2 | 48° 10' 27.0412" N | 102° 39' 21.7494" W | 43 | Receiver Station |
| 1442518 | 435844.1 | 48° 10' 28.7879" N | 102° 39' 21.7502" W | 44 | Receiver Station |
| 1442523 | 436021.1 | 48° 10' 30.5345" N | 102° 39' 21.7511" W | 45 | Receiver Station |
| 1442528 | 436198 | 48° 10' 32.2812" N | 102° 39' 21.7519" W | 46 | Receiver Station |
| 1442533 | 436374.9 | 48° 10' 34.0279" N | 102° 39' 21.7527" W | 47 | Receiver Station |
| 1442538 | 436551.8 | 48° 10' 35.7745" N | 102° 39' 21.7535" W | 48 | Receiver Station |
| 1442543 | 436728.8 | 48° 10' 37.5212" N | 102° 39' 21.7543" W | 49 | Receiver Station |
| 1442547 | 436905.7 | 48° 10' 39.2679" N | 102° 39' 21.7551" W | 50 | Receiver Station |
| 1442552 | 437082.6 | 48° 10' 41.0145" N | 102° 39' 21.7559" W | 51 | Receiver Station |
| 1442557 | 437259.5 | 48° 10' 42.7612" N | 102° 39' 21.7567" W | 52 | Receiver Station |
| 1442562 | 437436.4 | 48° 10' 44.5079" N | 102° 39' 21.7575" W | 53 | Receiver Station |
| 1442567 | 437613.4 | 48° 10' 46.2546" N | 102° 39' 21.7583" W | 54 | Receiver Station |
| 1442572 | 437790.3 | 48° 10' 48.0012" N | 102° 39' 21.7591" W | 55 | Receiver Station |
| 1442577 | 437967.2 | 48° 10' 49.7479" N | 102° 39' 21.7600" W | 56 | Receiver Station |
| 1442582 | 438144.1 | 48° 10' 51.4946" N | 102° 39' 21.7608" W | 57 | Receiver Station |
| 1442587 | 438321 | 48° 10' 53.2412" N | 102° 39' 21.7616" W | 58 | Receiver Station |
| 1442592 | 438498 | 48° 10' 54.9879" N | 102° 39' 21.7624" W | 59 | Receiver Station |
| 1442597 | 438674.9 | 48° 10' 56.7346" N | 102° 39' 21.7632" W | 60 | Receiver Station |

| X | Y | LATITUDE | LONGITUDE | NAME | NOTES |
|---|---|---|---|---|---|
| 1442574.777 | 438665.907 | 48° 10' 56.6400" N | 102° 39' 22.0800" W | 1001 | X coordinate - North Dakota North (ft international) - FIPS3301 - EPSG 2265 - NAD83 |
| 1442439.725 | 433408.631 | 48° 10' 04.7400" N | 102° 39' 21.9000" W | 1002 | Y coordinate - North Dakota North (ft international) - FIPS3301 - EPSG 2265 - NAD83 |
| 1442305.721 | 428333.805 | 48° 09' 14.6400" N | 102° 39' 21.7800" W | 1003 | There is no 1005 |
| 1447864.124 | 434029.906 | 48° 10' 12.3600" N | 102° 38' 02.1600" W | 1004 | |
| 1452388.671 | 433454.951 | 48° 10' 07.9200" N | 102° 36' 55.2000" W | 1006 | |


Water Well
1001
56
51
47
42
38
33
1002
28
24
19
14
10
5
1
1003
105
1004
102
1006
Stock Wel
104
106
101
103
8
9
10
11
17
16
15
14
20
21
22
23
24
27
26
90 Ave
90 Ave
0.0 mi
0.5 mi
1.0 mi
1.5 mi
2.0 mi
Pinnacle
A HALLIBURTON SERVICE
Combined surface map
Showing proximity to water resources
Client: HESS
Project: URAN-A
Surface Microseismic Map
Project Date: April to May 2015
Location: Newtown, ND, USA
Township: 154 N
Range: 93 W
Legend
Buried array site
Surface receiver site
Vibe site
Water Well
Stock Well

# 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):** Hess EIV-Uran A

**PERMIT NUMBER:** 97-026 I

## AFFIDAVIT OF COMPLETION (GEOPHYSICAL CONTRACTOR)

STATE OF Colorado )

)

COUNTY OF Denver )

Before me, PAMELA M JOHNSON, a Notary Public in and for the said County and State, this day personally appeared BEN BAGHERIAN who being first duly sworn, deposes and says that (s)he is employed by Halliburton Energy Services, 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.

BEN BAGHERIAN
Geophysical Contractor Representative

Subscribed in my presence and sworn before me this 24th day of July, 2015.

PAMELA M. JOHNSON
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 19874101186
MY COMMISSION EXPIRES MAY 01, 2018

Notary Public

My Commission Expires May 01, 2018

# 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 - 0261 | |
|---|---|
| Shot Hole Operations | *Non-Explosive Operations 300ft Non-Explosive, other |

## SECTION 1

| Geophysical Contractor Halliburton | |
|---|---|
| Project Name and Number Hess EN-Uran A | County(s) Mountrail County |
| Township(s) 154 | Range(s) 93 |
| Drilling and Plugging Contractors SRS Drilling | |
| Date Commenced April 20, 2015 | Date Completed May 8, 2015 |

## 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<br>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).**

# 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)

APR 2015
RECEIVED
ND OIL & GAS
DIVISION

PERMIT # 97-0261

Project Name
**Hess EN-Uran A**

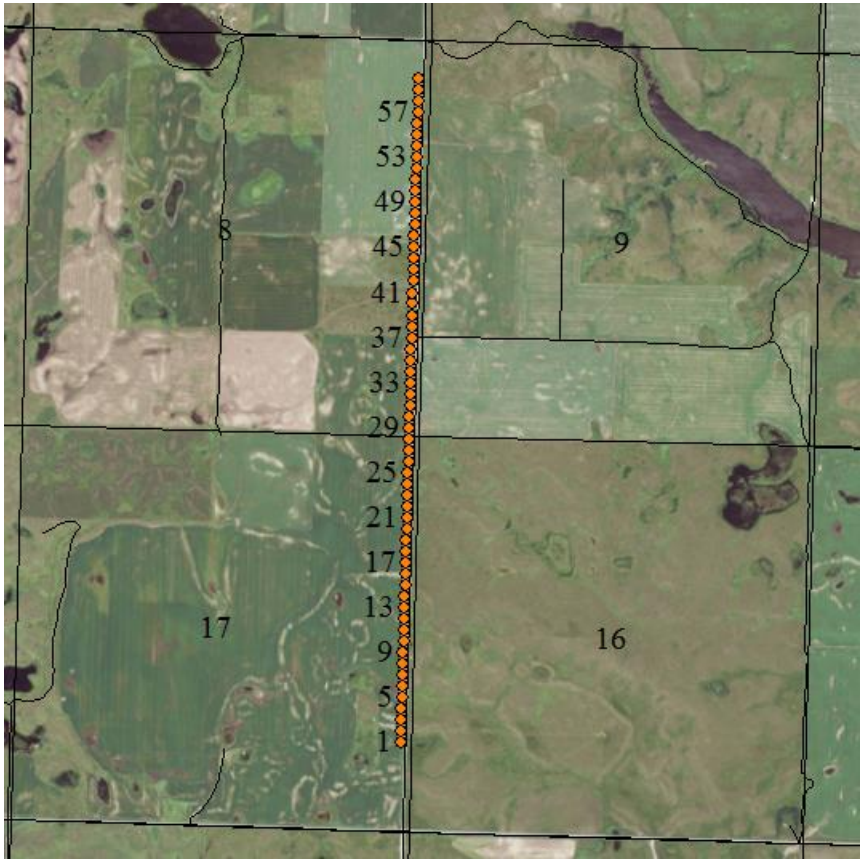
County
**Mountrail**

Supplemental Information
**We respectfully request to make two corrections:**
**1) Correct "Location of Proposed Project - County" - it should be Mountrail, not McKenzie.**
**2) Extend, slightly, the length of the surface seismic line from 1.7 miles to 1.98 miles. The BOL/EOL will remain within the same quarter-section, but will simply run up-to (but not across) the section boundary. Previously, the BOL/EOL were inset from the section boundary by 500 and 1100 ft respectively.**

| | | | |
|---|---|---|---|
| Company: **Halliburton** | | | Telephone Number: **720-593-7077** |
| Address: **1125 17th Stree, Suite 1900** | | | |
| City: **Denver** | | State: **CO** | Zip Code: **80202** |
| Signature | Printed Name: **Price Stark** | | |
| Title: **Pinnacle Team Lead** | Date: **April 19, 2015** | | |
| Email Address: **Price.Stark@halliburton.com** | | | |

**FOR STATE USE ONLY**

| | |
|---|---|
| ☐ Received | ☒ Approved |
| Date: 4/20/15 | |
| By: | |
| Title: Mineral Resources Permit Manager | |




Original


Updated

Surface Receiver Stations. 4/20/2015. (Passive Array Line)

| Station number | Longitude (decimal degrees) | Latitude (decimal degrees) |
|---|---|---|
| 1 | -102.6560321 | 48.15380023 |
| 2 | -102.6560323 | 48.15428542 |
| 3 | -102.6560325 | 48.15477060 |
| 4 | -102.6560328 | 48.15525579 |
| 5 | -102.6560330 | 48.15574098 |
| 6 | -102.6560332 | 48.15622617 |
| 7 | -102.6560334 | 48.15671136 |
| 8 | -102.6560337 | 48.15719655 |
| 9 | -102.6560339 | 48.15768173 |
| 10 | -102.6560341 | 48.15816692 |
| 11 | -102.6560343 | 48.15865211 |
| 12 | -102.6560345 | 48.15913730 |
| 13 | -102.6560348 | 48.15962249 |
| 14 | -102.6560350 | 48.16010767 |
| 15 | -102.6560352 | 48.16059286 |
| 16 | -102.6560354 | 48.16107805 |
| 17 | -102.6560357 | 48.16156324 |
| 18 | -102.6560359 | 48.16204843 |
| 19 | -102.6560361 | 48.16253361 |
| 20 | -102.6560363 | 48.16301880 |
| 21 | -102.6560366 | 48.16350399 |
| 22 | -102.6560368 | 48.16398918 |
| 23 | -102.6560370 | 48.16447436 |
| 24 | -102.6560372 | 48.16495955 |
| 25 | -102.6560375 | 48.16544474 |
| 26 | -102.6560377 | 48.16592993 |
| 27 | -102.6560379 | 48.16641511 |
| 28 | -102.6560381 | 48.16690030 |
| 29 | -102.6560384 | 48.16738549 |
| 30 | -102.6560386 | 48.16787068 |
| 31 | -102.6560388 | 48.16835586 |
| 32 | -102.6560390 | 48.16884105 |
| 33 | -102.6560393 | 48.16932624 |
| 34 | -102.6560395 | 48.16981142 |
| 35 | -102.6560397 | 48.17029661 |
| 36 | -102.6560399 | 48.17078180 |
| 37 | -102.6560402 | 48.17126699 |
| 38 | -102.6560404 | 48.17175217 |
| 39 | -102.6560406 | 48.17223736 |
| 40 | -102.6560408 | 48.17272255 |
| 41 | -102.6560411 | 48.17320773 |
| 42 | -102.6560413 | 48.17369292 |
| 43 | -102.6560415 | 48.17417811 |
| 44 | -102.6560417 | 48.17466329 |
| 45 | -102.6560420 | 48.17514848 |

| | | |
|---|---|---|
| 46 | -102.6560422 | 48.17563367 |
| 47 | -102.6560424 | 48.17611885 |
| 48 | -102.6560426 | 48.17660404 |
| 49 | -102.6560429 | 48.17708922 |
| 50 | -102.6560431 | 48.17757441 |
| 51 | -102.6560433 | 48.17805960 |
| 52 | -102.6560435 | 48.17854478 |
| 53 | -102.6560438 | 48.17902997 |
| 54 | -102.6560440 | 48.17951516 |
| 55 | -102.6560442 | 48.18000034 |
| 56 | -102.6560444 | 48.18048553 |
| 57 | -102.6560447 | 48.18097071 |
| 58 | -102.6560449 | 48.18145590 |
| 59 | -102.6560451 | 48.18194109 |
| 60 | -102.6560453 | 48.18242627 |

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/

April 16, 2015

MR. PRICE STARK
PROJECT MANAGER
HALLIBURTON SERVICE
1125 17th STREET
SUITE 1900
DENVER, CO 80202

RE: ***County Correction***
HESS EN-URAN A
GEOPHYSICAL EXPLORATION PERMIT # 97-0261
MOUNTRAIL COUNTY
NON EXPLOSIVE METHOD

Dear MR. STARK:

Please be advised that we are in receipt of your Geophysical Exploration permit application and it is conditionally approved; effective for one year from April 16, 2015. **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. An Image file (.img) on an 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. 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.
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

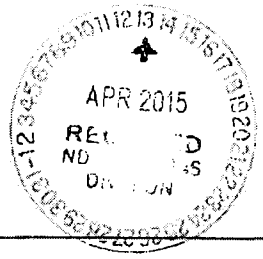
Should you have any questions regarding this matter, feel free to contact me at 701-328-8020, or Tom Torstenson at the number listed in paragraph 1.

Sincerely,

Todd L. Holweger
DMR Permit Manager

# 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 **Halliburton** | Address **1125 17th Street, Suite 1900** | |
| Contact **Price Stark** | Telephone **720-593-7077** | Fax **303-766-4306** |
| Surety Company **Westchester Fire Insurance Company** | Bond Amount **$25,000.00** | Bond Number **K08358977** |
| 2) a Subcontractor(s) S & S Drilling | Address 5030 133 Ave NW, Williston | Telephone 701-570-8730 |
| b. Subcontractor(s) | Address | Telephone |
| 3) Party Manager **Jeff Keller** | Address (local) | Telephone (local) **720-468-2785** |

4) Project Name or Line Numbers
**Hess EN-Uran A**

5) Exploration Method (Shot Hole, Non-Explosive, 2D, 3D, Other)
**Non-explosive, Other**

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.

| 7) Size of Hole | Amt of Charge | Depth | Source points per sq. mi. | No. of sq. mi. | |
|---|---|---|---|---|---|
| 3-D | | | | | |
| Size of Hole | Amt of Charge | Depth | Source points ~~per ln. mi.~~ | No. of ln. mi. | |
| 2-D | | | 7 | | |

| 8) Approximate Start Date | Approximate Completion Date |
|---|---|
| **May 7th, 2015** | **August 30th, 2015** |

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

9) Location of Proposed Project - County
~~McKenzie~~ Mountrail

| Section(s), Township(s) & Range(s) | Section | T. | R. |
|---|---|---|---|
| | 27 | 154 | 93 |
| | 10 | 154 | 93 |
| | 26 | 154 | 93 |
| | 13 | 154 | 93 |
| | 9 | 154 | 93 |
| | 21, 22 | 154 | 93 |

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date **March 23, 2015**

| Signature | Printed Name | Title |
|---|---|---|
| | **Price Stark** | **Pinnacle Team Lead** |

Email Address(es)
price.stark@halliburton.com

(This space for State office use)

| Permit No. 97-0261 | Approval Date 4/16/15 |
|---|---|
| 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

# 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/


April 16, 2015

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

RE: Geophysical Exploration
Permit #97-0261

Dear Ms. Pappa:

Pursuant to Section 38-08.1-04.2 of the North Dakota Century Code, please be advised that Halliburton Energy Services was issued the above captioned permit on April 16, 2015 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

Price Stark
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Jeff Keller
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Denver, CO 80202
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www.pinntech.com

3/23/2015

Mr. Todd Holweger
NDIC
tholweger@nd.gov

Pinnacle will be performing a series of geophysical exploration services for the upcoming treatment of the Hess EN-Uran A lateral well pad in McKenzie County, ND (S22, T145N, R93W). The expected timeframe for this operation is May 7th through August 30th 2015.

The services being provided for the Hess Corporation to map the treatment of the well are Downhole Microseismic, Surface Microseismic, and a Surface Buried Array. These services include three kinds of geophone deployments including wireline deployed geophones, surface geophones, and buried geophones (shallow 300 ft. wells). Additional detail on the deployment of each geophone service is provided in the following sections. Locations of the different geophone deployments are shown in Figure 1 and located in Table 1 through Table 3.


**Figure 1 Map View of Project Location and Vibe Positions**

## *Project Objectives*

The arrays will be used to map the upcoming hydraulic fracture treatment of the Hess EN-Uran A Pad. It will also serve as a pilot study to determine the viability of a buried microseismic array to monitor a hydraulic fracture treatment in the surrounding region. We plan to measure the fidelity of the

signal from well treatment and determine the effect of attenuation of the glacial till layer. We also plan to compare the number and quality of surface array events, buried array events, and downhole microseismic events. This study will help guide future microseismic data acquisition in the region with the aim to obtain the highest value information while reducing the impact to landowners and natural areas.

## *Downhole Microseismic*

### *Deployment*

Pinnacle will tractor-deploy a geophone toolstring in the nearby EN-Uran A-H-6 lateral observation well from a surface wireline logging unit. This deployment is comparable to any wireline deployed toolstring. The geophone toolstring will be periodically repositioned in the lateral well during the fracture treatment and will be withdrawn upon its completion.

These geophones require a known signal source to orient themselves to the physical world around them which will be accomplished using surface vibroseis signals.

This orientation process will involve the use of a mini-vibroseis unit to perform a series of 5, 12-second sweeps at several locations in the surrounding area. An image of the vibroseis unit is provided in Figure 2. For the purposes of this project all vibe locations are on existing well pads or access roads owned by Hess Corporation. These vibe locations and their relative positions to the treatment and observation wells are provided below in Appendix A, Table 1.

Due to the unknown nature of field operations the vibroseis orientation may need to be repeated during the fracture treatment if mechanical issues force the geophone toolstring to be replaced. This will involve a repeat of the same 12 second vibroseis sweeps at the same locations.

**Figure 2 Halliburton Mini-Vibroseis Unit**

## *Surface Microseismic*

### *Description*

Pinnacle will deploy a surface geophone line approximately 1.7 miles long and will consist of 60 surface geophone stations distributed along its length. Data will be recorded on the surface array string for approximately two months and then it will be completely removed.

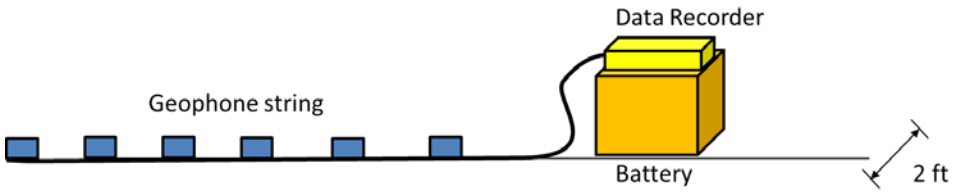


**Figure 3 Surface Receiver Line – Single Station Schematic (not to scale)**

### *Deployment*

The surface geophone line will utilize 60 geophones stations. Each station is comprised of six to twelve geophones strung together in a "geophone string". Geophones each have a 2" spike, and the geophones will be pressed into the soil, see Figure 3. The spike will penetrate into the soil to keep the geophone firmly positioned. The expected ground disturbance from geophone installation is minimal, and comparable to the impact of playing lawn darts.

The surface line will be laid out prior to the hydraulic well treatment and picked up immediately after hydraulic well treatment. Since this seismic line is located beside a roadway, we do not expect to have to drive vehicles off-road to access the seismic line. Planned locations for the geophones in the surface string are provided in Table 2. All equipment will be hand-carried. There will be light-weight cable placed on the ground between many of the stations. Based on our understanding of the roadways in the area, we do not foresee any need to cross roadways with cables. During data acquisition, the surface string will be connected to an autonomous data acquisition unit, at various points, used to record the geophone signals. Each data acquisition unit is approximately 10x10x4 inches in size. The units are powered by12 volt external batteries.

## *Buried Array*

### Description

Pinnacle will deploy an array of four geophones in a group of six shallow (300 ft.) borehole. Locations for the six boreholes are provided in Table 3. These geophones installations are commonly referred to as a "buried array." Borehole locations will be approved by landowners and care will be taken to locate them where they will be easily accessible by

Pinnacle/Halliburton staff and situated so they will not conflict with any sensitive wildlife, archeological resources, or farming and ranching operations. The buried array sites will be invisible from surface and are designed to remain operational for many years. Our intent is to record on the buried array for approximately two months and then leave the sights disconnected until they may be required again in the future.

*Deployment*

A 300 ft. borehole will be excavated using a conventional water-well drill rig at predetermined locations approved by land owners. The geophone array will be attached to a 1" PVC pipe and lowered into the borehole. The geophones will be placed at depths of 300 ft., 212 ft., 126 ft. and 40 ft. below ground level, Figure 4.

Once the geophones are installed, they will be cemented in-place using a cement grout. The grout will be pumped through a PVC trimie pipe. The cement will be allowed to cure and settle for 24 hrs. A 5ft column of sand will be added to assist with attenuating surface noise. Bentonite chips will be used to plug the remaining open section of the borehole to the surface. A non-metallic vault will be installed to protect the geophone leads. All drill cuttings will be removed and disposed of according to state regulations.

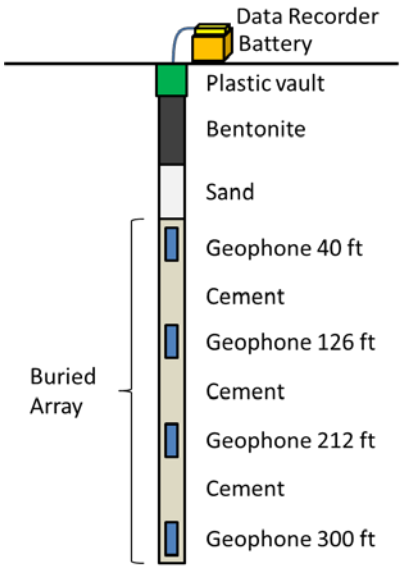


**Figure 4 Buried Array Schematic Diagram – Not to Scale**

The surface completion will consist of a small vault that contains the geophone leads at each buried array station. The vault is installed so that it is flush with ground level. Each vault will have Pinnacle's contact information and client name.

During data acquisition, each station will be connected to an autonomous data acquisition unit used to record the geophone signals. Each data acquisition unit is approximately 10x10x4 inches in size. The units are powered by12 volt external batteries.

### *Project Completion*

At the completion of the fracture treatment, surface data acquisition units will be removed from the six buried-array locations. The buried array cables will be placed fully underground within the plastic vaults. The surface line, as well as any garbage will be picked up completely. The landowners will be paid pursuant to the permit agreement.

### *Related Documents*

The NDIC oil & Gas Division will be provided:

- A post plot map showing actual monitoring locations that will include latitude and longitude of each location.
- Coordinates of all buried-array wells
- Coordinates of all surface line stations
- Coordinates of all vibroseis locations

If there are any questions or concerns please contact either Price Stark or Jeff Keller.

Sincerely,

Price Stark
Team Lead
Pinnacle – a Halliburton Service
O: 720-593-7077
price.stark@pinntech.com

Sincerely,

Jeff Keller
Account Representative
Pinnacle – a Halliburton Service
O: 720.468.2785
jeff.keller@pinntech.com

## APPENDIX A SITE LOCATION TABLES

**Table 1 Vibe Locations**

| Location | Sec | Twn | Rng | Latitude | Longitude |
|---|---|---|---|---|---|
| 101 | 27 | 154N | 93W | 48.13829 | -102.62152 |
| 102 | 10 | 154N | 93W | 48.13925 | -102.61860 |
| 103 | 26 | 154N | 93W | 48.14152 | -102.64277 |
| 104 | 13 | 154N | 93W | 48.13785 | -102.60196 |
| 105 | 09 | 154N | 93W | 48.15584 | -102.57140 |
| 106 | 21 | 154N | 93W | 48.16823 | -102.64543 |
| 107 | 22 | 154N | 93W | 48.13925 | -102.61860 |

**Table 2 Surface Line Locations (Planned)**

| Station Number | Sec | Twn | Rng | Easting | Northing | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| **1** | 9 | 154N | 93W | 1442406 | 428390 | 48.15423 | -102.65565 |
| **2** | 9 | 154N | 93W | 1442410 | 428540 | 48.15464 | -102.65565 |
| **3** | 9 | 154N | 93W | 1442414 | 428690 | 48.15505 | -102.65565 |
| **4** | 9 | 154N | 93W | 1442418 | 428839 | 48.15546 | -102.65565 |
| **5** | 9 | 154N | 93W | 1442422 | 428989 | 48.15587 | -102.65565 |
| **6** | 9 | 154N | 93W | 1442427 | 429140 | 48.15628 | -102.65565 |
| **7** | 9 | 154N | 93W | 1442431 | 429290 | 48.15670 | -102.65565 |
| **8** | 9 | 154N | 93W | 1442435 | 429440 | 48.15711 | -102.65565 |
| **9** | 9 | 154N | 93W | 1442439 | 429589 | 48.15752 | -102.65565 |
| **10** | 9 | 154N | 93W | 1442443 | 429739 | 48.15793 | -102.65565 |
| **11** | 9 | 154N | 93W | 1442448 | 429889 | 48.15834 | -102.65565 |
| **12** | 9 | 154N | 93W | 1442450 | 430040 | 48.15875 | -102.65565 |
| **13** | 9 | 154N | 93W | 1442454 | 430189 | 48.15916 | -102.65565 |
| **14** | 9 | 154N | 93W | 1442458 | 430339 | 48.15957 | -102.65565 |
| **15** | 9 | 154N | 93W | 1442463 | 430489 | 48.15998 | -102.65565 |
| **16** | 9 | 154N | 93W | 1442467 | 430639 | 48.16040 | -102.65565 |
| **17** | 9 | 154N | 93W | 1442471 | 430789 | 48.16081 | -102.65565 |
| **18** | 9 | 154N | 93W | 1442475 | 430938 | 48.16122 | -102.65565 |
| **19** | 9 | 154N | 93W | 1442479 | 431089 | 48.16163 | -102.65565 |
| **20** | 9 | 154N | 93W | 1442484 | 431239 | 48.16204 | -102.65565 |
| **21** | 9 | 154N | 93W | 1442488 | 431389 | 48.16245 | -102.65565 |
| **22** | 9 | 154N | 93W | 1442492 | 431539 | 48.16286 | -102.65565 |
| **23** | 9 | 154N | 93W | 1442496 | 431688 | 48.16327 | -102.65565 |
| **24** | 9 | 154N | 93W | 1442498 | 431838 | 48.16368 | -102.65566 |
| **25** | 9 | 154N | 93W | 1442503 | 431989 | 48.16410 | -102.65566 |
| **26** | 9 | 154N | 93W | 1442507 | 432139 | 48.16451 | -102.65566 |
| **27** | 9 | 154N | 93W | 1442511 | 432288 | 48.16492 | -102.65566 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **28** | 9 | 154N | 93W | 1442515 | 432438 | 48.16533 | -102.65566 |
| **29** | 9 | 154N | 93W | 1442519 | 432588 | 48.16574 | -102.65566 |
| **30** | 9 | 154N | 93W | 1442524 | 432738 | 48.16615 | -102.65566 |
| **31** | 9 | 154N | 93W | 1442528 | 432889 | 48.16656 | -102.65566 |
| **32** | 9 | 154N | 93W | 1442532 | 433037 | 48.16697 | -102.65566 |
| **33** | 9 | 154N | 93W | 1442536 | 433188 | 48.16739 | -102.65566 |
| **34** | 9 | 154N | 93W | 1442540 | 433338 | 48.16780 | -102.65566 |
| **35** | 9 | 154N | 93W | 1442543 | 433488 | 48.16821 | -102.65567 |
| **36** | 16 | 154N | 93W | 1442547 | 433638 | 48.16862 | -102.65567 |
| **37** | 16 | 154N | 93W | 1442551 | 433787 | 48.16903 | -102.65567 |
| **38** | 16 | 154N | 93W | 1442555 | 433937 | 48.16944 | -102.65567 |
| **39** | 16 | 154N | 93W | 1442560 | 434088 | 48.16985 | -102.65567 |
| **40** | 16 | 154N | 93W | 1442564 | 434238 | 48.17027 | -102.65567 |
| **41** | 16 | 154N | 93W | 1442568 | 434387 | 48.17067 | -102.65567 |
| **42** | 16 | 154N | 93W | 1442572 | 434537 | 48.17109 | -102.65567 |
| **43** | 16 | 154N | 93W | 1442576 | 434687 | 48.17150 | -102.65567 |
| **44** | 16 | 154N | 93W | 1442581 | 434837 | 48.17191 | -102.65567 |
| **45** | 16 | 154N | 93W | 1442585 | 434988 | 48.17232 | -102.65567 |
| **46** | 16 | 154N | 93W | 1442589 | 435136 | 48.17273 | -102.65567 |
| **47** | 16 | 154N | 93W | 1442591 | 435287 | 48.17314 | -102.65568 |
| **48** | 16 | 154N | 93W | 1442596 | 435437 | 48.17355 | -102.65568 |
| **49** | 16 | 154N | 93W | 1442600 | 435587 | 48.17397 | -102.65568 |
| **50** | 16 | 154N | 93W | 1442604 | 435737 | 48.17438 | -102.65568 |
| **51** | 16 | 154N | 93W | 1442608 | 435886 | 48.17479 | -102.65568 |
| **52** | 16 | 154N | 93W | 1442612 | 436036 | 48.17520 | -102.65568 |
| **53** | 16 | 154N | 93W | 1442617 | 436187 | 48.17561 | -102.65568 |
| **54** | 16 | 154N | 93W | 1442621 | 436337 | 48.17602 | -102.65568 |
| **55** | 16 | 154N | 93W | 1442625 | 436487 | 48.17643 | -102.65568 |
| **56** | 16 | 154N | 93W | 1442629 | 436636 | 48.17684 | -102.65568 |
| **57** | 16 | 154N | 93W | 1442633 | 436786 | 48.17725 | -102.65568 |
| **58** | 16 | 154N | 93W | 1442638 | 436936 | 48.17767 | -102.65568 |
| **59** | 16 | 154N | 93W | 1442640 | 437087 | 48.17808 | -102.65569 |
| **60** | 16 | 154N | 93W | 1442644 | 437236 | 48.17849 | -102.65569 |

**Table 3 Buried Array Station Locations**

| Station Number | Sec | Twn | Rng | Easting | Northing | Latitude | Longitude |
|---|---|---|---|---|---|---|---|
| **1001** | 9 | 154N | 93W | 1442623 | 438252 | 48.16708 | -102.65587 |
| **1002** | 16 | 154N | 93W | 1442482 | 433079 | 48.16064 | -102.61286 |
| **1003** | 16 | 154N | 93W | 1442377 | 429349 | 48.13863 | -102.63381 |
| **1004** | 15 | 154N | 93W | 1447695 | 427963 | 48.15346 | -102.63394 |
| **1005** | 27 | 154N | 93W | 1447576 | 422554 | 48.15685 | -102.65587 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1006** | 15 | 154N | 93W | 1452910 | 430438 | 48.18127 | -102.65589 |

## APPENDIX B VIBE LOCATION IMAGES


**Figure 5 Map View of Vibe Position 1**


**Figure 6 Map View of Vibe Position 2**


**Figure 7 Map View of Vibe Position 3**


**Figure 8 Map View of Vibe Position 4**


**Figure 9 Map View of Vibe Position 5**


**Figure 10 Map View of Vibe Position 6**


**Figure 11 Map View of Vibe Position 7**

Todd,

Here is our tentative schedule.

April 17 to May 2 -Drill and install buried array.

April 24 to April 26-Layout Surface Array

April  28 to May 20 Vibe and Collect Seismic Data using Downhole, Buried and Surface Arrays

May 20 -Release Vibe truck or sooner

May 21 to May 25-  Pickup Surface Array and Buried Array Readout equipment

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Learn about ISD for Unconventionals: www.Halliburton.com/ISD