



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Received

Well File No.  
**28649**

FEB 12 2016

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |  |
|---|--|
| <input type="checkbox"/> Notice of Intent   | Approximate Start Date                     |
| <input checked="" type="checkbox"/> Report of Work Done   | Date Work Completed<br><b>July 7, 2015</b> |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.<br>Approximate Start Date |  |

|   |  |
|---|--|
| <input type="checkbox"/> Drilling Prognosis   | <input type="checkbox"/> Spill Report                        |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting                            |
| <input type="checkbox"/> Casing or Liner      | <input type="checkbox"/> Acidizing                           |
| <input type="checkbox"/> Plug Well            | <input type="checkbox"/> Fracture Treatment                  |
| <input type="checkbox"/> Supplemental History | <input checked="" type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon  | <input type="checkbox"/> Reclamation                         |
| <input type="checkbox"/> Other                | <b>Well is now on pump</b>                                   |

|  |                       |                           |           |              |              |
|--|-----------------------|---------------------------|-----------|--------------|--------------|
| Well Name and Number<br><b>Chalmers 5300 21-19 11B</b> |                       |                           |           |              |              |
| Footages   | Qtr-Qtr               | Section                   | Township  | Range        |              |
| <b>2325 F N L</b>                                      | <b>327 F W L</b>      | <b>LOT2</b>               | <b>19</b> | <b>153 N</b> | <b>100 W</b> |
| Field<br><b>Baker</b>                                  | Pool<br><b>Bakken</b> | County<br><b>McKenzie</b> |           |              |              |

| 24-HOUR PRODUCTION RATE |      |       |      |
|-------------------------|------|-------|------|
| Before                  |      | After |      |
| Oil                     | Bbls | Oil   | Bbls |
| Water                   | Bbls | Water | Bbls |
| Gas                     | MCF  | Gas   | MCF  |

|                       |      |       |          |
|-----------------------|------|-------|----------|
| Name of Contractor(s) |      |       |          |
| Address               | City | State | Zip Code |

## DETAILS OF WORK

Effective 7/7/2015 the above referenced well is on pump.

End of Tubing: 2-7/8" L-80 tubing @ 9939.2'

Pump: ESP @ 9935.99'

|   |   |                          |
|---|---|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b> | Telephone Number<br><b>281-404-9436</b> |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>           |   |                          |
| City<br><b>Houston</b>                              | State<br><b>TX</b>                      | Zip Code<br><b>77002</b> |
| Signature<br>                                       | Printed Name<br><b>Jennifer Swenson</b> |                          |
| Title<br><b>Regulatory Specialist</b>               | Date<br><b>February 8, 2016</b>         |                          |
| Email Address<br><b>jswenson@oasispetroleum.com</b> |   |                          |

|  |                                   |
|--|-----------------------------------|
| <input checked="" type="checkbox"/> Received | <input type="checkbox"/> Approved |
| Date<br><b>3-3-2016</b>                      |                                   |
| By<br>                                       |                                   |
| Title<br><b>TAYLOR ROTH</b>                  |                                   |
| Engineering Technician                       |                                   |



## AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - Form 8

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SBN 5698 (03-2000)



Well File No.

28649

NDIC CTB No.

To be assigned

228633

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND FOUR COPIES.

|  |                        |                      |                        |                     |                           |
|--|------------------------|----------------------|------------------------|---------------------|---------------------------|
| Well Name and Number<br><b>CHALMERS 5300 21-19 11B</b> | Qtr-Qtr<br><b>LOT2</b> | Section<br><b>19</b> | Township<br><b>153</b> | Range<br><b>100</b> | County<br><b>Mckenzie</b> |
|--|------------------------|----------------------|------------------------|---------------------|---------------------------|

|  |   |                       |
|--|---|-----------------------|
| Operator<br><b>Oasis Petroleum North America LLC</b> | Telephone Number<br><b>(281) 404-9573</b> | Field<br><b>BAKER</b> |
|--|---|-----------------------|

|   |                        |                    |                          |
|---|------------------------|--------------------|--------------------------|
| Address<br><b>1001 Fannin, Suite 1500</b> | City<br><b>Houston</b> | State<br><b>TX</b> | Zip Code<br><b>77002</b> |
|---|------------------------|--------------------|--------------------------|

|   |   |                             |                                      |
|---|---|-----------------------------|--------------------------------------|
| Name of First Purchaser<br><b>Oasis Petroleum Marketing LLC</b> | Telephone Number<br><b>(281) 404-9627</b> | % Purchased<br><b>100%</b>  | Date Effective<br><b>May 1, 2015</b> |
| Principal Place of Business<br><b>1001 Fannin, Suite 1500</b>   | City<br><b>Houston</b>                    | State<br><b>TX</b>          | Zip Code<br><b>77002</b>             |
| Field Address   | City                                      | State                       | Zip Code                             |
| Transporter<br><b>Hiland Crude, LLC</b>                         | Telephone Number<br><b>(580) 616-2058</b> | % Transported<br><b>75%</b> | Date Effective<br><b>May 1, 2015</b> |
| Address<br><b>P.O. Box 3886</b>                                 | City<br><b>Enid</b>                       | State<br><b>OK</b>          | Zip Code<br><b>73702</b>             |

The above named producer authorizes the above named purchaser to purchase the percentage of oil stated above which is produced from the lease designated above until further notice. The oil will be transported by the above named transporter.

|   |               |                    |
|---|---------------|--------------------|
| Other First Purchasers Purchasing From This Lease | % Purchased   | Date Effective     |
|   |               |                    |
| Other First Purchasers Purchasing From This Lease | % Purchased   | Date Effective     |
|   |               |                    |
| Other Transporters Transporting From This Lease   | % Transported | Date Effective     |
| <b>Power Crude Transport</b>                      | <b>25%</b>    | <b>May 1, 2015</b> |
| Other Transporters Transporting From This Lease   | % Transported | Date Effective     |
|   |               | <b>May 1, 2015</b> |
| Comments  |               |                    |

|  |   |
|--|---|
| I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. | Date<br><b>September 10, 2015</b>   |
| Signature<br>  | Printed Name<br><b>Dina Barron</b><br>Title<br><b>Mktg. Contracts Administrator</b> |

|                               |                                      |                                     |
|-------------------------------|--------------------------------------|-------------------------------------|
| Above Signature Witnessed By: | Printed Name                         | Title                               |
| Signature<br>                 | Printed Name<br><b>Jeremy Harris</b> | Title<br><b>Marketing Scheduler</b> |

|                              |                      |  |
|------------------------------|----------------------|--|
| FOR STATE USE ONLY           |                      |  |
| Date Approved                | <b>SEP 18 2015</b>   |  |
| By                           |                      |  |
| Title                        | <b>Erie Peterson</b> |  |
| Oil & Gas Production Analyst |                      |  |



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFSN 5749 (09-2006)



Well File No.

28633TA  
28634TA  
28635  
28636TA  
28648TA  
28637TA  
28649TA

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |  |
|---|--|
| <input type="checkbox"/> Notice of Intent   | Approximate Start Date                       |
| <input checked="" type="checkbox"/> Report of Work Done   | Date Work Completed<br><b>March 14, 2015</b> |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. | Approximate Start Date                       |

- |   |   |
|---|---|
| <input type="checkbox"/> Drilling Prognosis   | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting                 |
| <input type="checkbox"/> Casing or Liner      | <input type="checkbox"/> Acidizing                |
| <input type="checkbox"/> Plug Well            | <input type="checkbox"/> Fracture Treatment       |
| <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon  | <input checked="" type="checkbox"/> Reclamation   |
| <input type="checkbox"/> Other                | <u>Reserve pit reclamation</u>                    |

Well Name and Number  
**See below**

| Footages              | F N L                 | F E L | Qtr-Qtr | Section                   | Township | Range |
|-----------------------|-----------------------|-------|---------|---------------------------|----------|-------|
|                       |                       |       | LOT2    | 19                        | 153 N    | 100 W |
| Field<br><b>Baker</b> | Pool<br><b>Bakken</b> |       |         | County<br><b>McKenzie</b> |          |       |

## 24-HOUR PRODUCTION RATE

| Before | After |
|--------|-------|
| Oil    | Bbls  |
| Water  | Bbls  |
| Gas    | MCF   |

Name of Contractor(s)  
**Neu Construction**

|                                     |                         |                    |                          |
|-------------------------------------|-------------------------|--------------------|--------------------------|
| Address<br><b>602 W. 9th Street</b> | City<br><b>Fairview</b> | State<br><b>MT</b> | Zip Code<br><b>59221</b> |
|-------------------------------------|-------------------------|--------------------|--------------------------|

## DETAILS OF WORK

Oasis Petroleum North America LLC plans to reclaim the reserve pit for the below referenced wells as follows:

Chalmers 5300 21-19 5T (28633)  
Chalmers 5300 21-19 6B (28634)  
Chalmers 5300 21-19 7T2 (28635)  
Chalmers 5300 21-19 8T (28636)  
Chalmers 5300 21-19 9B (28648)  
Chalmers 5300 21-19 10T (28637)  
Chalmers 5300 21-19 11T (28649)

The NDIC field inspector, Rick Dunn (NDIC) was notified on 03/06/2015

The surface owners, Wesley and Barbara Lindvig, 14075 41st Street NW, Alexander, ND 58831, were contacted on 03/06/2015

Spread material out in pit, cut top edge of liner and fold over cuttings, cover entire pit with liner, back fill with clay  
stone and contour well site to ensure proper drainage

|   |   |                          |
|---|---|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b> | Telephone Number<br><b>281-404-9436</b> |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>           |   |                          |
| City<br><b>Houston</b>                              | State<br><b>TX</b>                      | Zip Code<br><b>77002</b> |
| Signature<br>                                       | Printed Name<br><b>Jennifer Swenson</b> |                          |
| Title<br><b>Regulatory Specialist</b>               | Date<br><b>June 4, 2015</b>             |                          |
| Email Address<br><b>jswenson@oasispetroleum.com</b> |   |                          |

## FOR STATE USE ONLY

|  |                                   |
|--|-----------------------------------|
| <input checked="" type="checkbox"/> Received | <input type="checkbox"/> Approved |
| Date<br><b>9-23-15</b>                       |                                   |
| By<br>                                       |                                   |
| Title<br>                                    |                                   |



**WELL COMPLETION OR RECOMPLETION REPORT - FORM 6**

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SEN 2468 (04-2010)

**PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.**

A circular stamp with an upward-pointing arrow at the top. The text "JUN 2015" is in the center, surrounded by the words "RECEIVED", "ND OIL & GAS", and "DIVISION".

Well File No.  
**28649**

**Designate Type of Completion**

- Oil Well       EOR Well       Recompletion       Deepened Well       Added Horizontal Leg       Extended Horizontal Leg  
 Gas Well       SWD Well       Water Supply Well       Other:

|  |                                   |  |  |   |  |  |  |
|--|-----------------------------------|--|--|---|--|--|--|
| Designate Type of Completion                           |                                   |  |  |   |  |  |  |
| <input checked="" type="checkbox"/> Oil Well           | <input type="checkbox"/> EOR Well | <input type="checkbox"/> Recompletion      | <input type="checkbox"/> Deepened Well   | <input type="checkbox"/> Added Horizontal Leg             | <input type="checkbox"/> Extended Horizontal Leg |  |  |
| <input type="checkbox"/> Gas Well                      | <input type="checkbox"/> SWD Well | <input type="checkbox"/> Water Supply Well | <input type="checkbox"/> Other:  |   |  |  |  |
| Well Name and Number<br><b>Chalmers 5300 21-19 11B</b> |                                   |  |  | Spacing Unit Description<br><b>Sec. 19/20 T153N R100W</b> |  |  |  |
| Operator<br><b>Oasis Petroleum North America</b>       |                                   | Telephone Number<br><b>(281) 404-9591</b>  |  | Field<br><b>Baker</b>                                     |  |  |  |
| Address<br><b>1001 Fannin, Suite 1500</b>              |                                   |  |  | Pool<br><b>Bakken</b>                                     |  |  |  |
| City<br><b>Houston</b>                                 | State<br><b>TX</b>                | Zip Code<br><b>77002</b>                   | Permit Type<br><input type="checkbox"/> Wildcat <input checked="" type="checkbox"/> Development <input type="checkbox"/> Extension |   |  |  |  |

**LOCATION OF WELL**

|                                      |  |   |                        |                      |                                  |                                      |                           |
|--------------------------------------|--|---|------------------------|----------------------|----------------------------------|--------------------------------------|---------------------------|
| At Surface<br><b>2325</b>            | F N L                                      | 327 F WL  | Qtr-Qtr<br><b>Lot2</b> | Section<br><b>19</b> | Township<br><b>153 N</b>         | Range<br><b>100 W</b>                | County<br><b>McKenzie</b> |
| Spud Date<br><b>December 2, 2014</b> | Date TD Reached<br><b>February 9, 2015</b> | Drilling Contractor and Rig Number<br><b>Nabors B22</b> |                        |                      | KB Elevation (Ft)<br><b>2071</b> | Graded Elevation (Ft)<br><b>2046</b> |                           |

Type of Electric and Other Logs Run (See Instructions)

**MWD/GR from KOP to TD; CBL from int. TD to surface**

**CASING & TUBULARS RECORD (Report all strings set in well)**

#### **PERFORATION & OPEN HOLE INTERVALS**

## **PRODUCTION**

|   |                               |                             |                                    |                             |                          |                             |  |                                   |
|---|-------------------------------|-----------------------------|------------------------------------|-----------------------------|--------------------------|-----------------------------|--|-----------------------------------|
| Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)<br><b>Lateral 1- 11065' to 20675'</b> |                               |                             |                                    |                             |                          |                             | Name of Zone (If Different from Pool Name)             |                                   |
| Date Well Completed (SEE INSTRUCTIONS)<br><b>May 10, 2015</b>   |                               |                             | Producing Method<br><b>Flowing</b> | Pumping-Size & Type of Pump |                          |                             | Well Status (Producing or Shut-In)<br><b>Producing</b> |                                   |
| Date of Test<br><b>05/11/2015</b>   | Hours Tested<br><b>24</b>     | Choke Size<br><b>42 /64</b> | Production for Test                | Oil (Bbls)<br><b>2169</b>   | Gas (MCF)<br><b>1479</b> | Water (Bbls)<br><b>4049</b> | Oil Gravity-API (Corr.)<br>°                           | Disposition of Gas<br><b>Sold</b> |
| Flowing Tubing Pressure (PSI)   | Flowing Casing Pressure (PSI) |                             | Calculated<br>24-Hour Rate         | Oil (Bbls)<br><b>2169</b>   | Gas (MCF)<br><b>1479</b> | Water (Bbls)<br><b>4049</b> | Gas-Oil Ratio<br><b>1466</b>                           |                                   |
| 1200  |                               |                             |                                    |                             |                          |                             |  |                                   |

## GEOLOGICAL MARKERS

## **PLUG BACK INFORMATION**

CORES CUT

| Top (Ft) | Bottom (Ft) | Formation | Top (Ft) | Bottom (Ft) | Formation |
|----------|-------------|-----------|----------|-------------|-----------|
|          |             |           |          |             |           |
|          |             |           |          |             |           |
|          |             |           |          |             |           |

## Drill Stem Test

**Well Specific Stimulation**

|   |                                       |                                |   |                             |                                 |  |                                |
|---|---------------------------------------|--------------------------------|---|-----------------------------|---------------------------------|--|--------------------------------|
| Date Stimulated<br><b>04/07/2015</b>  | Stimulated Formation<br><b>Bakken</b> |                                | Top (Ft)<br><b>11065</b>                        | Bottom (Ft)<br><b>20675</b> | Stimulation Stages<br><b>36</b> | Volume<br><b>209363</b>                          | Volume Units<br><b>Barrels</b> |
| Type Treatment<br><b>Sand Frac</b>  | Acid %                                | Lbs Proppant<br><b>3768710</b> | Maximum Treatment Pressure (PSI)<br><b>9499</b> |                             |                                 | Maximum Treatment Rate (BBLS/Min)<br><b>75.0</b> |                                |
| Details<br>100 Mesh White: 270990<br>40/70 Ceramic: 1404730<br>30/50 Ceramic: 2092990 |                                       |                                |   |                             |                                 |  |                                |
| Date Stimulated   | Stimulated Formation                  |                                | Top (Ft)  | Bottom (Ft)                 | Stimulation Stages              | Volume   | Volume Units                   |
| Type Treatment  | Acid %                                | Lbs Proppant                   | Maximum Treatment Pressure (PSI)                |                             |                                 | Maximum Treatment Rate (BBLS/Min)                |                                |
| Details   |                                       |                                |   |                             |                                 |  |                                |
| Date Stimulated   | Stimulated Formation                  |                                | Top (Ft)  | Bottom (Ft)                 | Stimulation Stages              | Volume   | Volume Units                   |
| Type Treatment  | Acid %                                | Lbs Proppant                   | Maximum Treatment Pressure (PSI)                |                             |                                 | Maximum Treatment Rate (BBLS/Min)                |                                |
| Details   |                                       |                                |   |                             |                                 |  |                                |
| Date Stimulated   | Stimulated Formation                  |                                | Top (Ft)  | Bottom (Ft)                 | Stimulation Stages              | Volume   | Volume Units                   |
| Type Treatment  | Acid %                                | Lbs Proppant                   | Maximum Treatment Pressure (PSI)                |                             |                                 | Maximum Treatment Rate (BBLS/Min)                |                                |
| Details   |                                       |                                |   |                             |                                 |  |                                |
| Date Stimulated   | Stimulated Formation                  |                                | Top (Ft)  | Bottom (Ft)                 | Stimulation Stages              | Volume   | Volume Units                   |
| Type Treatment  | Acid %                                | Lbs Proppant                   | Maximum Treatment Pressure (PSI)                |                             |                                 | Maximum Treatment Rate (BBLS/Min)                |                                |
| Details   |                                       |                                |   |                             |                                 |  |                                |

**ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS**

|  |   |                                       |
|--|---|---------------------------------------|
| I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. | Email Address<br><b>jswenson@oasispetroleum.com</b> | Date<br><b>06/23/2015</b>             |
| Signature<br>                               | Printed Name<br><b>Jennifer Swenson</b>             | Title<br><b>Regulatory Specialist</b> |

Industrial Commission of North Dakota  
Oil and Gas Division

Well or Facility No

**28649**

Verbal Approval To Purchase and Transport Oil

Tight Hole Yes

**OPERATOR**

|   |                                      |                                    |
|---|--------------------------------------|------------------------------------|
| Operator<br><b>OASIS PETROLEUM NORTH AMERICA LL</b> | Representative<br><b>Todd Hanson</b> | Rep Phone<br><b>(701) 577-1632</b> |
|---|--------------------------------------|------------------------------------|

**WELL INFORMATION**

|   |                                  |
|---|----------------------------------|
| Well Name<br><b>CHALMERS 5300 21-19 11B</b>                                 | Inspector<br><b>Richard Dunn</b> |
| Well Location<br>Well Location QQ Sec Twp Rng<br><b>LOT2 19 153 N 100 W</b> | County<br><b>MCKENZIE</b>        |
| Footages<br>2325 Feet From the N Line<br>327 Feet From the W Line           | Field<br><b>BAKER</b>            |
| Date of First Production Through Permanent Wellhead                         | Pool<br><b>BAKKEN</b>            |
|   | <b>This Is The First Sales</b>   |

**PURCHASER / TRANSPORTER**

|   |   |
|---|---|
| Purchaser<br><b>OASIS PETROLEUM MARKETING LLC</b> | Transporter<br><b>HOFMANN TRUCKING, LLC</b> |
|---|---|

**TANK BATTERY**

|                                   |
|-----------------------------------|
| Single Well Tank Battery Number : |
|-----------------------------------|

**SALES INFORMATION This Is The First Sales**

| ESTIMATED BARRELS TO BE SOLD |      | ACTUAL BARRELS SOLD |      | DATE      |
|------------------------------|------|---------------------|------|-----------|
| 15000                        | BBLS | 233                 | BBLS | 5/10/2015 |
|                              | BBLS |                     | BBLS |           |

**DETAILS**

|  |
|--|
| Must also forward Forms 6 & 8 to State prior to reaching 15000 Bbl estimate or no later than required time frame for submitting those forms. |
|--|

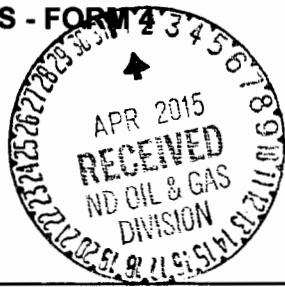
|               |                     |
|---------------|---------------------|
| Start Date    | <b>5/10/2015</b>    |
| Date Approved | <b>5/12/2015</b>    |
| Approved By   | <b>Richard Dunn</b> |



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.  
**28649**



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |   |   |   |
|---|---|---|---|
| <input checked="" type="checkbox"/> Notice of Intent  | Approximate Start Date<br><b>March 31, 2015</b> | <input type="checkbox"/> Drilling Prognosis   | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Report of Work Done  | Date Work Completed                             | <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting                 |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. |   | <input type="checkbox"/> Casing or Liner      | <input type="checkbox"/> Acidizing                |
| Approximate Start Date  |   | <input type="checkbox"/> Plug Well            | <input type="checkbox"/> Fracture Treatment       |
|   |   | <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
|   |   | <input type="checkbox"/> Temporarily Abandon  | <input type="checkbox"/> Reclamation              |
|   |   | <input checked="" type="checkbox"/> Other     | <u>Change well status to CONFIDENTIAL</u>         |

|  |                       |                             |             |                      |                          |
|--|-----------------------|-----------------------------|-------------|----------------------|--------------------------|
| Well Name and Number<br><b>Chalmers 5300 21-19 11B</b> |                       |                             |             |                      |                          |
| Footages<br><b>2325 F N L</b>                          | <b>327</b>            | Qtr-Qtr<br><b>328 F W L</b> | <b>LOT2</b> | Section<br><b>19</b> | Township<br><b>153 N</b> |
| Range<br><b>100 W</b>                                  |                       |                             |             |                      |                          |
| Field<br><b>Baker</b>                                  | Pool<br><b>BAKKEN</b> | County<br><b>McKenzie</b>   |             |                      |                          |

| 24-HOUR PRODUCTION RATE |      |       |      |
|-------------------------|------|-------|------|
| Before                  |      | After |      |
| Oil                     | Bbls | Oil   | Bbls |
| Water                   | Bbls | Water | Bbls |
| Gas                     | MCF  | Gas   | MCF  |

|                       |  |      |          |
|-----------------------|--|------|----------|
| Name of Contractor(s) |  |      |          |
| Address               |  | City | State    |
|                       |  |      | Zip Code |

## DETAILS OF WORK

Effective immediately, we request CONFIDENTIAL STATUS for the above referenced well.

This well has not been completed.

*OFF CONFIDENTIAL 10/01/15.*

|   |   |   |                          |
|---|---|---|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b> |   | Telephone Number<br><b>281-404-9436</b> |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>           |   |   |                          |
| City<br><b>Houston</b>                              |   | State<br><b>TX</b>                      | Zip Code<br><b>77002</b> |
| Signature<br>                                       | Printed Name<br><b>Jennifer Swenson</b> |   |                          |
| Title<br><b>Regulatory Specialist</b>               | Date<br><b>March 31, 2015</b>           |   |                          |
| Email Address<br><b>jswenson@oasispetroleum.com</b> |   |   |                          |

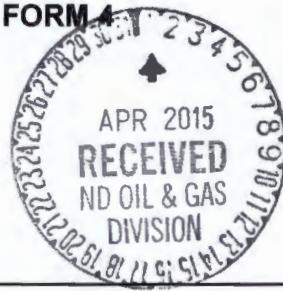
|  |  |
|--|--|
| <input type="checkbox"/> Received      | <input checked="" type="checkbox"/> Approved |
| Date<br><b>4/08/15</b>                 |  |
| By<br>                                 |  |
| Title<br><b>Engineering Technician</b> |  |



# SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFSN 5749 (09-2006)

Well File No.  
**28649**



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |   |   |   |
|---|---|---|---|
| <input checked="" type="checkbox"/> Notice of Intent  | Approximate Start Date<br><b>March 31, 2015</b> | <input type="checkbox"/> Drilling Prognosis   | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Report of Work Done  | Date Work Completed                             | <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting                 |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. |   | <input type="checkbox"/> Casing or Liner      | <input type="checkbox"/> Acidizing                |
| Approximate Start Date  |   | <input type="checkbox"/> Plug Well            | <input type="checkbox"/> Fracture Treatment       |
|   |   | <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
|   |   | <input type="checkbox"/> Temporarily Abandon  | <input type="checkbox"/> Reclamation              |
|   |   | <input type="checkbox"/> Other                | <b>Waiver from tubing/packer requirement</b>      |

#### Well Name and Number

**Chalmers 5300 21-19 11B**

|          |           |             |         |                 |                |             |
|----------|-----------|-------------|---------|-----------------|----------------|-------------|
| Footages | 325 F N L | 326 F W L   | Qtr-Qtr | Section 19      | Township 153 N | Range 100 W |
| Field    | Baker     | Pool Bakken |         | County McKenzie |                |             |

#### 24-HOUR PRODUCTION RATE

| Before |      | After |      |
|--------|------|-------|------|
| Oil    | Bbls | Oil   | Bbls |
| Water  | Bbls | Water | Bbls |
| Gas    | MCF  | Gas   | MCF  |

#### Name of Contractor(s)

|         |      |       |          |
|---------|------|-------|----------|
| Address | City | State | Zip Code |
|---------|------|-------|----------|

#### DETAILS OF WORK

Oasis Petroleum North America LLC requests a variance to NDAC 43-02-03-21 for the tubing/packer requirement: Casing, tubing, and cementing requirements during the completion period immediately following the upcoming fracture stimulation.

The following assurances apply:

1. the well is equipped with new 29# and 32# casing at surface with an API burst rating of 11,220 psi;
2. The Frac design will use a safety factor of 0.85 API burst rating to determine the maximum pressure;
3. Damage to the casing during the frac would be detected immediately by monitoring equipment;
4. The casing is exposed to significantly lower rates and pressures during flowback than during the frac job;
5. The frac fluid and formation fluids have very low corrosion and erosion rates;
6. Production equipment will be installed as soon as possible after the well ceases flowing;
7. A 300# gauge will be installed on the surface casing during the flowback period

|   |   |                          |
|---|---|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b> | Telephone Number<br><b>281-404-9436</b> |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>           |   |                          |
| City<br><b>Houston</b>                              | State<br><b>TX</b>                      | Zip Code<br><b>77002</b> |
| Signature<br>                                       | Printed Name<br><b>Jennifer Swenson</b> |                          |
| Title<br><b>Regulatory Specialist</b>               | Date<br><b>March 31, 2015</b>           |                          |
| Email Address<br><b>jswenson@oasispetroleum.com</b> |   |                          |

#### FOR STATE USE ONLY

|                                    |  |
|------------------------------------|--|
| <input type="checkbox"/> Received  | <input checked="" type="checkbox"/> Approved |
| Date<br><b>April 1, 2015</b>       |  |
| By<br>                             |  |
| Title<br><b>PETROLEUM ENGINEER</b> |  |



## Oasis Petroleum North America, LLC

Chalmers 5300 21-19 11B

2,325' FNL & 327' FWL

Lot 2 Sec. 19, 153N, 100W

Baker / Middle Bakken Member

McKenzie County, North Dakota

### **BOTTOM HOLE LOCATION:**

899.37' S & 9,903.83' E of surface location or approx.

2,039.19' FSL & 282.54' FEL, NE SE Sec. 20, T153N, R100W

#### **Prepared for:**

Nathan Gabelman  
Oasis Petroleum North America, LLC  
1001 Fannin Suite 1500  
Houston, TX 77002

#### **Prepared by:**

Michelle Baker, G. Wayne Peterson, Zachary Moses  
PO Box 80507; Billings, MT 59108  
(406) 259-4124  
[geology@sunburstconsulting.com](mailto:geology@sunburstconsulting.com)  
[www.sunburstconsulting.com](http://www.sunburstconsulting.com)

## **WELL EVALUATION**



**Figure 1. Nabors B22 drilling the Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11B during January and February, 2015 in Baker Field, McKenzie County, North Dakota.**  
**(G. Wayne Peterson, Sunburst Consulting)**

### **INTRODUCTION**

The **Oasis Petroleum North America, LLC Chalmers 5300 21-19 11B** [Lot 2 Section 19, T153N, R100W] is located approximately 7 miles south of the town of Williston in McKenzie County, North Dakota. The Chalmers 5300 21-19 11B is a horizontal Middle Bakken well within the Williston Basin consisting of one 9,615' lateral drilled toward the east. The vertical hole was planned to be drilled to approximately 10,230'. The curve would be built at 12 degrees per 100' to land within the Middle Bakken. This well is a two section lateral which originates in the northwest quarter of section 19, then drilled east to the southeast quarter of section 20. Directional drilling technologies and geo-steering techniques were used to land in the Middle Bakken reservoir and maintain exposure to the ideal target rock.

## OFFSET WELLS

Offset well data used for depth correlation during curve operations are found in the ‘Control Data’ section appended to this report. Offset well control was essential in curve operations, to successfully land within the Middle Bakken. Formation thicknesses expressed by gamma ray signatures in these wells were compared to gamma data collected during drilling operations in order to successfully land the curve. The target landing true vertical depth (TVD) was periodically updated during drilling to ensure accurate landing of the curve.

## GEOLOGY

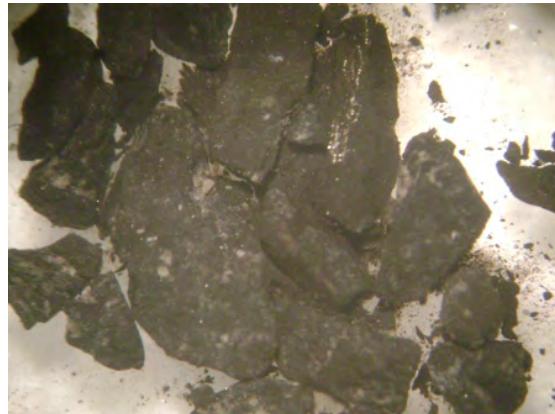
The Charles Formation [Mississippian Madison Group] was logged 8,536' MD 8,535' TVD (-6,459' SS). Samples in the lower portion of the Charles Formation consisted of a lime mudstone, which was light brown, light gray brown, light gray brown, off white in color. It was microcrystalline, friable, laminated, with an earthy texture. A trace of intercrystalline porosity was observed as was *occasional to rare spotty light brown oil stain*. Occasionally noted was a dolo-mudstone, which was light brown, light gray, light gray brown in color. It was microcrystalline, friable-firm, laminated, with an earthy texture. Also noted was a trace of intercrystalline porosity, and *occasional spotty light brown oil stain*. Rarely noted was anhydrite, which was off white, cream in color. It was soft, microcrystalline, and massive with an earthy to amorphous texture. Following connections or periods of non-circulation, gas peaks of 35 to 54 units were noted, as were drilling gas shows of 62 to 89 units.

The Mission Canyon Formation [Mississippian Madison Group] was logged 9,431' MD 9,430' TVD (-7,354' SS). The Mission Canyon Formation consisted of a lime mudstone that was described as light gray, light brown to brown, gray brown, trace dark gray in color. The lime mudstone was predominately friable to firm, with an earthy to rarely crystalline in texture. Some intervals contained a trace of black-brown algal material, a trace of fossil fragments, and traces of disseminated pyrite. Also present was an argillaceous lime mudstone that was described as light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray in color. The argillaceous lime mudstone was predominately firm to friable, crystalline to chalky texture. Some intervals contained a trace of disseminated pyrite. Following connections or periods of non-circulation, gas peaks of 35 to 191 units were noted, as were drilling gas shows of 40 to 109 units. Rare intercrystalline porosity was noted as well as traces to occasional *spotty light brown oil stain* was occasionally observed while logging the Mission Canyon Formation.



Figure 2. Limestone with spotty light to medium brown staining from the Mission Canyon Formation.

The Upper Bakken Shale [Mississippian-Bakken Formation] was drilled at 10,842' MD 10,728' TVD (-8,652' SS). Entry into this member was characterized by high gamma, elevated background gas and increased rates of penetration. The black to black gray carbonaceous and *petroliferous* shale was hard with a sub blocky to sub platy texture. Fracture porosity was noted, and trace minerals were observed to include disseminated pyrite and calcite fracture fill. Hydrocarbons evaluated in this interval reached a maximum of 532 units drilling gas, with a connection gas of 388 units.



**Figure 3. Black carbonaceous and petroliferous shale from the Upper Bakken Shale.**

The Middle Bakken [Mississippian-Devonian Bakken Formation] was reached at 10,884' MD 10,744' TVD (-8,668' SS) which was -1' low to the Oasis Petroleum NA LLC Chalmers 5300 21-19 9B. The target zone of the Middle Bakken was to be drilled in a predominately 10 foot zone beginning 12 feet below the Upper Bakken Shale.

Samples in the Middle Bakken were predominantly silty sandstone which was described as light-medium brown, occasional light gray brown, rare light gray in color. It was very fine grained, firm-friable, sub rounded to sub angular, smooth, moderately sorted, calcite cement, and moderately cemented. A trace of disseminated and nodular pyrite was noted as was occasional intergranular porosity. Also noted was *common light to medium brown spotty to even oil stain*.



**Figures 4 and 5. Predominately silty sandstone sample from the target zone (left), and sample from below the target zone (right).**

## Hydrocarbon Shows

Gas monitoring and fluid gains provided evidence of a hydrocarbon saturated reservoir during the drilling of the Chalmers 5300 21-19 11B. Oil and gas shows at the shakers and in samples were continuously monitored. In the closed mud system, hydrostatic conditions were maintained near balance, this allowed for gas and fluid gains from the well to be evaluated. Gas on the Chalmers 5300 21-19 11B varied according to stratigraphic position and penetration rates which may have reflected increased porosity. During the vertical, connection gas peaks of 35 to 191 units were noted, as were drilling gas shows of 31 to 109 units, against a 10-11.5 lb/gal diesel-invert mud weight. Background concentrations in the lateral ranged from 470 to 2,200 units, against a 9.6-9.7 lb/gal saltwater gel drilling fluid. Connection peaks of 2,000 to 3,000 units were observed, as were drilling gas shows of 2,500 units to 5,490 units coinciding with the best shows. Drilling out of casing at 11,085 MD' yielded a trip gas of 984 units. The lateral was completed with one bottom hole assembly, consequently no other trip gasses were noted. Chromatography of gas revealed typical concentrations of methane, characteristic of Middle Bakken Member gas.

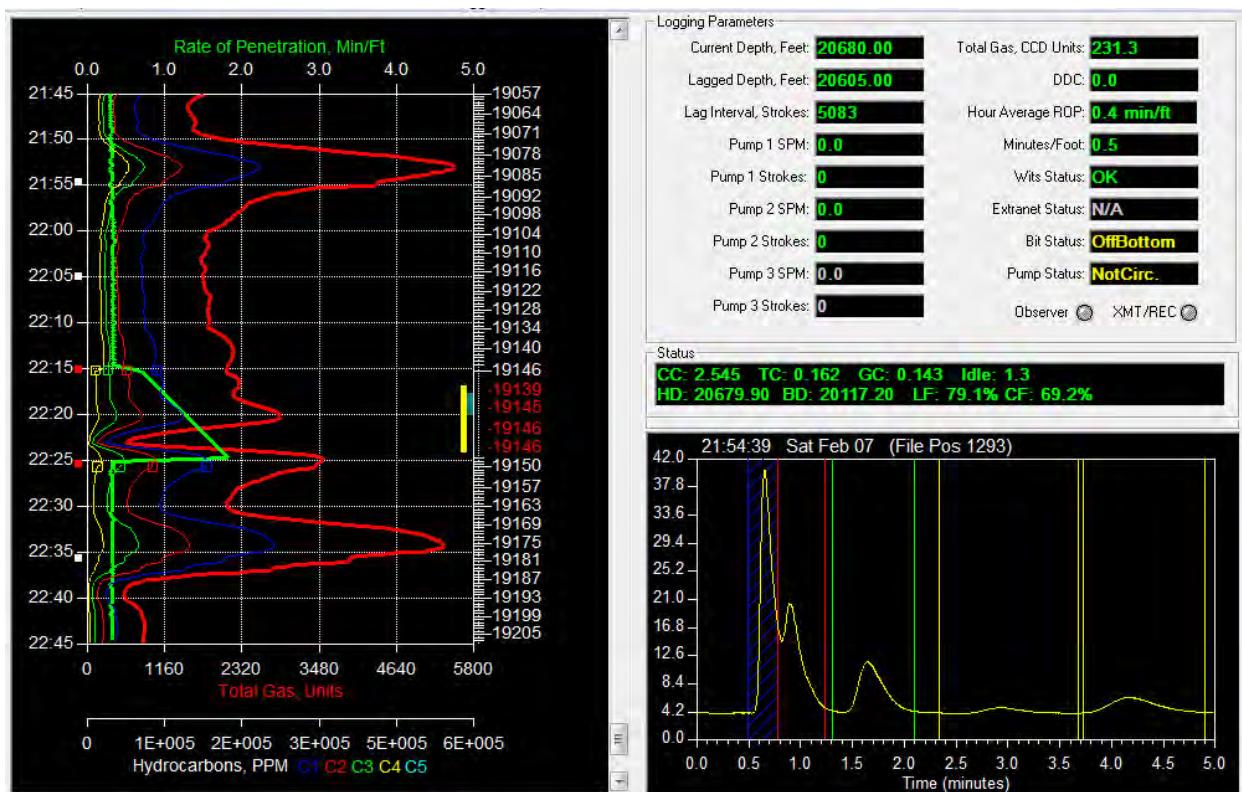
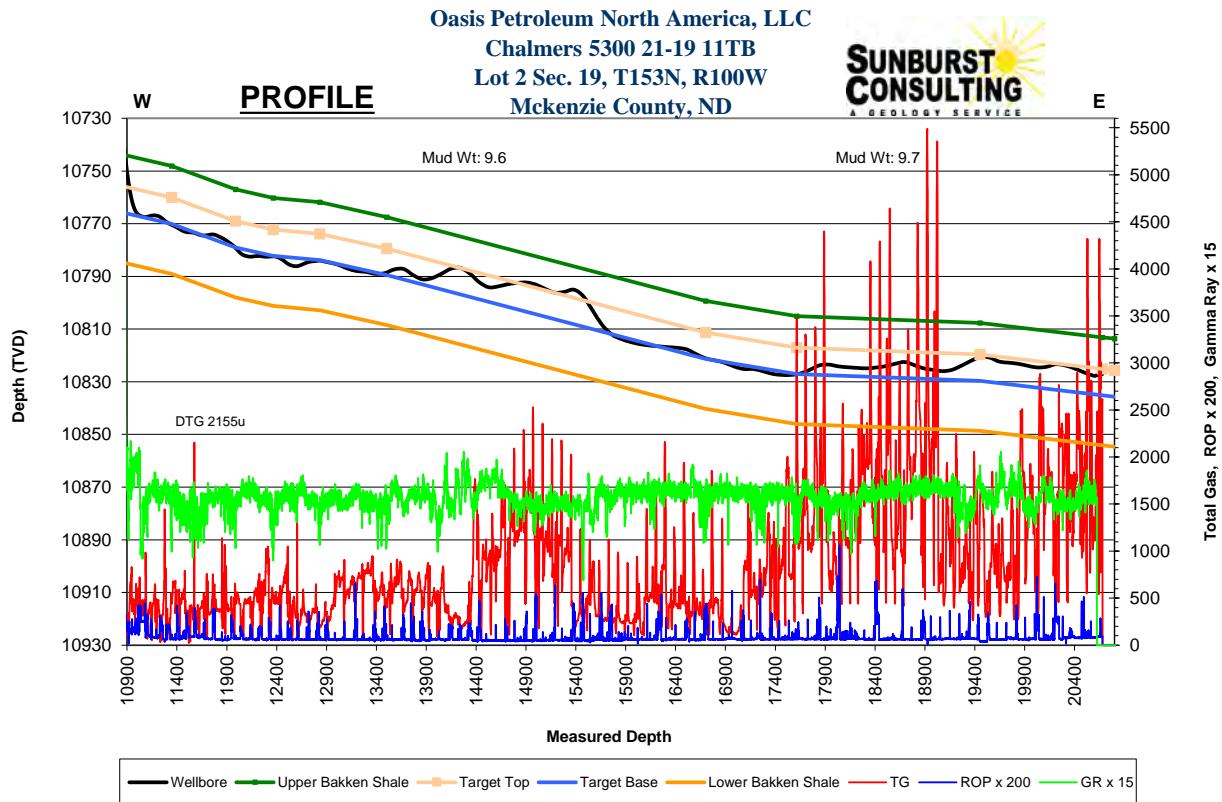


Figure 6. Gas chromatography of a 5,490 unit connection gas peak.



**Figure 7.** Profile displaying total gas, gamma ray and rate of penetration.

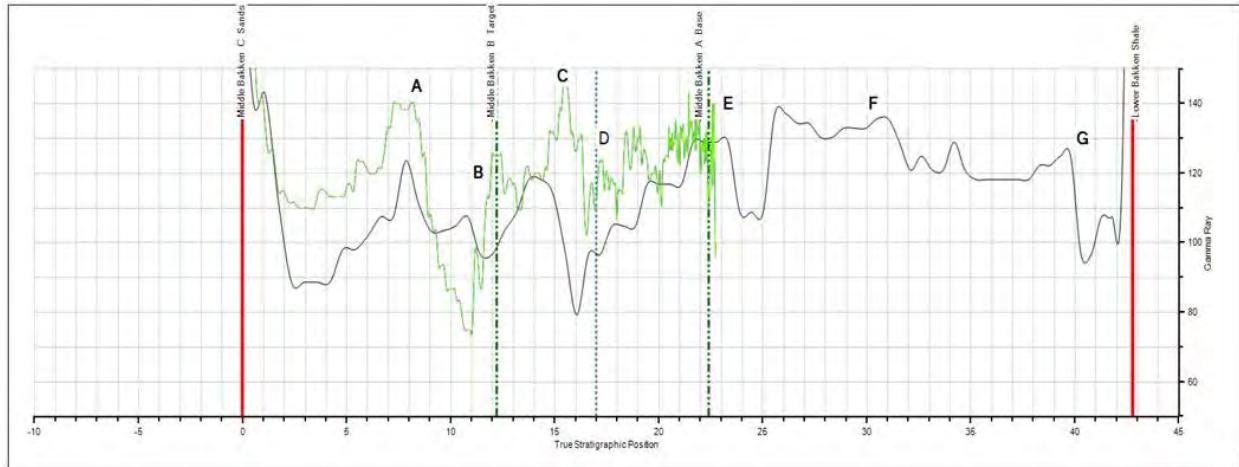
## Geosteering

Ryan Energy Technologies provided personnel and equipment for measurement-while-drilling (MWD) services. The RPM directional driller and MWD, and Sunburst Consulting personnel worked closely together throughout the project to evaluate data and make steering decisions to maximize the amount of borehole in the targeted zones and increase rate of penetration (ROP) of the formation.

The 855' curve was drilled in 23 hours. It was first drilled with a bottom hole assembly (BHA) consisting of bit #3, a Ulterra U516M PDC bit, attached to a 2.38 degree fixed NOV 7/8 5.0 motor and MWD tools. Poor build rates caused this BHA to be replaced with bit # 4, a Smith F30T Tri-cone bit attached to a 2.60 degree Cavare 6/7 5.0 motor. Excessive build rates caused this assembly to be replaced. The previously run Cavare motor was adjusted to 2.45 degrees and attached to bit #5, a Security MMD55M PDC bit. The curve was successfully landed at 11,085' MD and 10,767' TVD, approximately 23' into the Middle Bakken. Seven inch diameter 32# HCP-110 casing was set to 11,065' MD.

Geologic structure maps of the Chalmers 5300 21-19 11B and surrounding control wells had estimated formation dip to be a down dip at approximately  $-0.5^\circ$  down to the TD of the lateral. The preferred drilling interval of the Chalmers 5300 21-19 11B consisted of a 10 foot zone located approximately 12 feet into the Middle Bakken. Penetration rates, gas shows, gamma ray data, and sample observations were utilized to keep the wellbore in the preferred stratigraphic

position in the target zone. Using offset well data provided by Oasis representatives, projected porosity zones were identified in the preferred drilling areas.



**Figure 8. Offset well target definition, Indian Hills Prospect (Oasis).**

Steering decisions were made by using gamma markers identified by Oasis representatives. The high gamma (C) in the upper portion of the drilling zone was useful in identifying the well-bore placement in formation. The slightly lower gamma (B) was observed as the well-bore moved to the top of the target zone, followed by lower gamma as the well-bore moved higher, out of the target zone. Low gamma in the middle of the target zone (D) was noted as the well-bore moved to the middle of the target zone. As the well-bore moved lower in formation, the higher gamma (E) was noted. Samples collected when drilling below the target zone tended to have a greater concentration of the light gray to gray silty sandstone than did the samples collected when the well-bore was higher in the target zone. The TD of 20,680' MD was achieved at 14:30 hours CST February 8, 2015. The well site team worked together to maintain the well bore in the desired target interval for 90% of the lateral, opening 9,615' of potentially productive reservoir rock. During the drilling of the lateral to avoid unnecessary doglegs it was decided not to steer the well-bore into the target zone for the sole purpose of reentering the target zone. The hole was then circulated and reamed for completion.

## SUMMARY

The Chalmers 5300 21-19 11B is a successful well in Oasis Petroleum's horizontal Middle Bakken development program in Baker Field. The project was drilled from surface casing to TD in 16 days. The TD of 20,860' MD was achieved at 14:30 hours CST February 8, 2015. The well site team worked together to maintain the well-bore in the desired target interval for 90% of the lateral, opening 9,615' of potentially productive reservoir rock. During the drilling of the lateral to avoid unnecessary doglegs it was decided not to steer the well-bore into the target zone for the sole purpose of regaining the target zone.

Samples in the Middle Bakken were predominantly silty sandstone which was described as light-medium brown, occasional light gray brown, rare light gray in color. It was very fine grained, firm-friable, sub rounded to sub angular, smooth, moderately sorted, calcite cement moderately cemented. A trace of disseminated and nodular pyrite was noted as was occasional intergranular porosity. Also noted was *common light to medium brown spotty to even oil stain*.

Gas on the Chalmers 5300 21-19 11B varied according to stratigraphic position and penetration rates which may have reflected increased porosity. The overall gas and hydrocarbon shows were encouraging and indicate a hydrocarbon rich system in the Middle Bakken.

The Oasis Petroleum North America, LLC. Chalmers 5300 21-19 11B awaits completion operations to determine its ultimate production potential.

Respectfully submitted,

*G. Wayne Peterson*  
Sunburst Consulting, Inc.  
9 February, 2015

# **WELL DATA SUMMARY**

**OPERATOR:** Oasis Petroleum North America, LLC

**ADDRESS:** 1001 Fannin Suite 1500  
Houston, TX 77002

**WELL NAME:** Chalmers 5300 21-19 11B

**API #:** 33-053-06024

**WELL FILE #:** 28649

**SURFACE LOCATION:** 2,325' FNL & 327' FWL  
Lot 2 Sec. 19, 153N, 100W

**FIELD/ PROSPECT:** Baker / Middle Bakken Member

**COUNTY, STATE** McKenzie County, North Dakota

**BASIN:** Williston

**WELL TYPE:** Middle Bakken Member Horizontal Lateral

**ELEVATION:** GL: 2,051'  
KB: 2,076'

**SPUD/ RE-ENTRY DATE:** January 24, 2014

**BOTTOM HOLE LOCATION** 899.37' S & 9,903.83' E of surface location or approx.  
2,039.19' FSL & 282.54' FEL, NE SE Sec. 20, T153N, R100W

**CLOSURE COORDINATE** Closure Direction: 95.19°  
Closure Distance: 9,944.58'

**TOTAL DEPTH / DATE:** 20,680' on February 8, 2015  
90% within target interval

**TOTAL DRILLING DAYS:** 16 days

**CONTRACTOR:** Nabors #B22

**PUMPS:** H&H Triplex (stroke length - 12")

|                              |   |
|------------------------------|---|
| <u>TOOLPUSHERS:</u>          | Jessie Tibbets, Mark Rollins  |
| <u>FIELD SUPERVISORS:</u>    | John Gordon, Doug Rakstad   |
| <u>CHEMICAL COMPANY:</u>     | NOV   |
| <u>MUD ENGINEER:</u>         | Ken Rockeman, Adam Fallis   |
| <u>MUD TYPE:</u>             | Fresh water in surface hole<br>Diesel invert in curve; Salt water in lateral  |
| <u>MUD LOSSES:</u>           | Invert Mud: 468 bbls, Salt Water: 0 bbls  |
| <u>PROSPECT GEOLOGIST:</u>   | Nathan Gabelman   |
| <u>WELLSITE GEOLOGISTS:</u>  | Michelle Baker, G. Wayne Peterson, Zachary Moses  |
| <u>GEOSTEERING SYSTEM:</u>   | Sunburst Digital Wellsite Geological System   |
| <u>ROCK SAMPLING:</u>        | 30' from 8,240' - 20,680 (TD)   |
| <u>SAMPLE EXAMINATION:</u>   | Binocular microscope & fluoroscope  |
| <u>SAMPLE CUTS:</u>          | Trichloroethylene (Carbo-Sol)   |
| <u>GAS DETECTION:</u>        | MSI (Mudlogging Systems, Inc.) TGC - total gas with chromatograph<br>Serial Number(s): ML-134                                   |
| <u>ELECTRIC LOGS:</u>        | n/a   |
| <u>DRILL STEM TESTS:</u>     | n/a   |
| <u>DIRECTIONAL DRILLERS:</u> | RPM, Inc.<br>John Gordon, Doug Rakstad, Robert Jasper   |
| <u>MWD:</u>                  | Ryan<br>Mike McCommond, Ronald Maddalena, Jake Creech   |
| <u>CASING:</u>               | Surface: 13 3/8" 54# J-55 set to 2,183'<br>Second: 9 5/8" 40# HCL-80 set to 6,066'<br>Intermediate: 7" 32# P-110 set to 11,065' |

**KEY OFFSET WELLS:**

**Oasis Petroleum North America, LLC**

**Chalmers 5300 31-19H**

NW SW Sec. 19 T153N R100W

McKenzie County, ND

**Oasis Petroleum North America, LLC**

**Chalmers 5300 21-19 8T**

Lot 2, Sec. 19, T153N, R100W

McKenzie County, ND

**Oasis Petroleum North America, LLC**

**Chalmers 5300 21-19 7T2**

Lot 2, Sec. 19, T153N, R101W

McKenzie County, ND

**Oasis Petroleum North America, LLC**

**Chalmers 5300 21-19 9B**

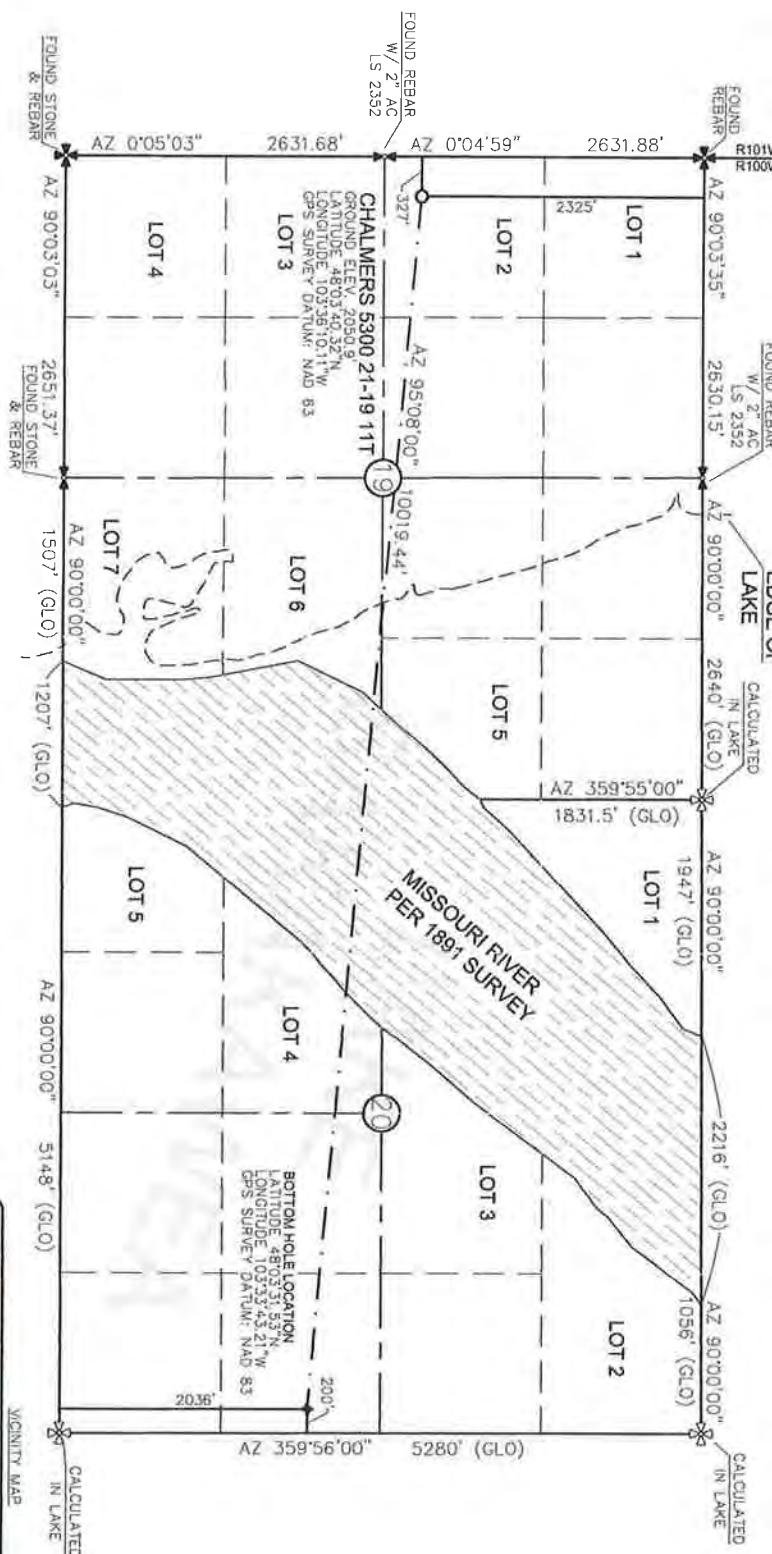
Lot 2, Sec. 19, T153N, R100W

McKenzie County, ND

WELL LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

2325 FEET FROM NORTH LINE AND 2377 FEET FROM WEST LINE  
SECTION 19, T153N R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY ISSUED  
AND SEALED BY DARYL D. KASEMAN,  
PLS., REGISTRATION NUMBER 3880 ON  
5/07/14 AND THE ORIGINAL  
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STAKED ON 1/29/14  
VERTICAL CONTROL DATUM WAS BASED UPON  
CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'  
THIS SURVEY AND PLAT IS BEING PROVIDED AT THE  
REQUEST OF ERIC BAYES OF OASIS PETROLEUM  
THAT THIS PLAT CORRECTLY REPRESENTS WORK  
PERFORMED BY ME OR UNDER MY SUPERVISION  
AND IS TRUE AND CORRECT TO THE BEST OF MY  
KNOWLEDGE AND BELIEF.

LIBRARY  
AND SURVEY

 - MONUMENT - RECOVERED  
 - MONUMENT - NOT RECOVERED

DARL D. KASEMAN LS-3880

## SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC

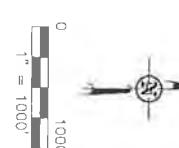
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

SECTIONS 19 & 20, T15SN, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE

5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

- MONUMENT - RECOVERED
- MONUMENT - NOT RECOVERED



THIS DOCUMENT WAS ORIGINALLY ISSUED  
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PLS. REGISTRATION NUMBER 3880 ON  
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Interstate Engineering, Inc.  
P.O. Box 1000  
425 Main Street  
Sidney, Montana 59270  
Ph: (406) 433-5617  
Fax: (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)

OASIS PETROLEUM NORTH AMERICA, LLC  
SECTION BREAKDOWN  
SECTIONS 19 & 20, T15SN, R100W  
MCKENZIE COUNTY, NORTH DAKOTA  
Drawn By: B.H.U. Project No: S15-09-282.01  
Checked By: D.D.K. Date: JAN 2014

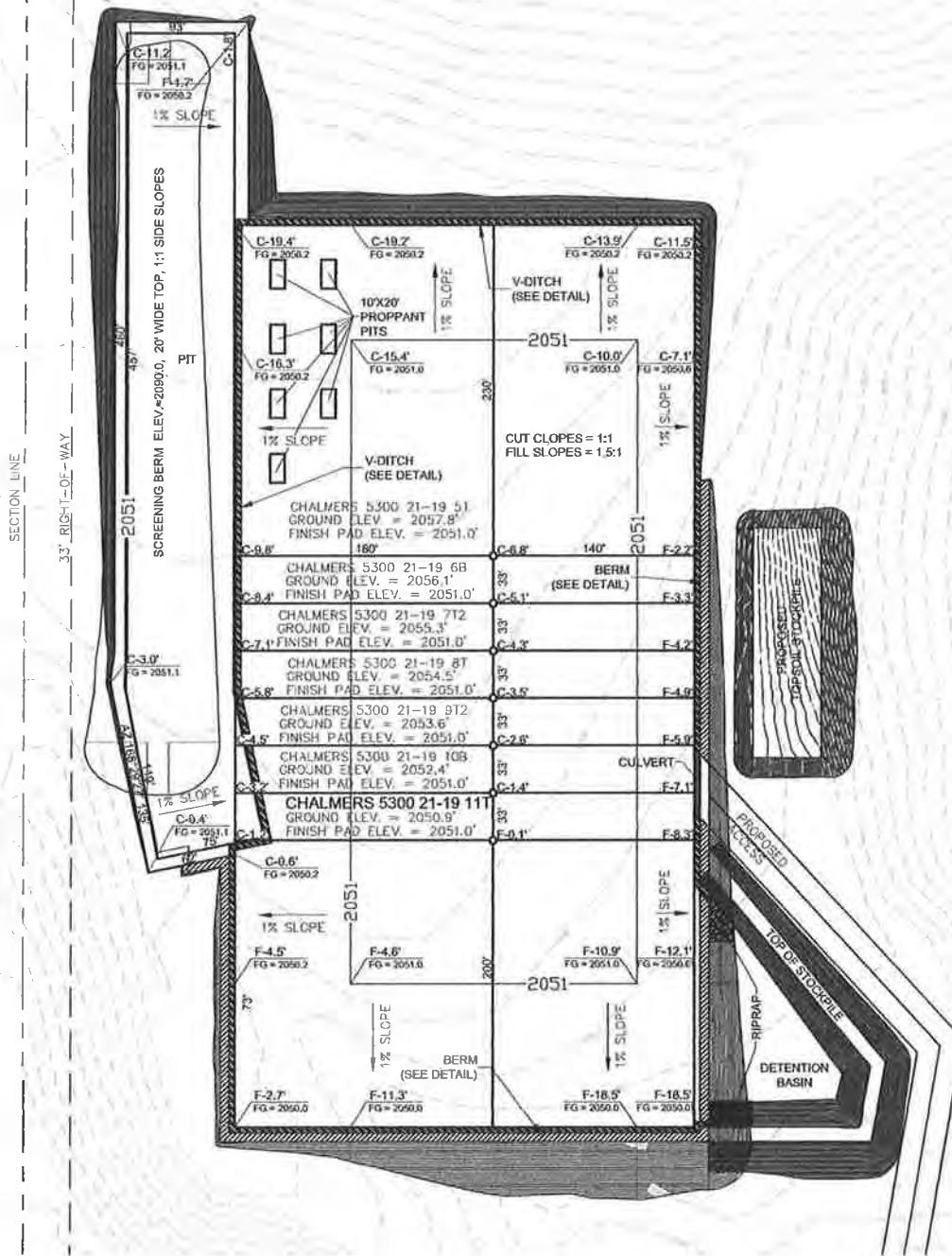
| Revised No. | Date    | By  | Description                    |
|-------------|---------|-----|--------------------------------|
| REV 1       | 1/12/14 | US  | MOVED WELLS ON PAD             |
| REV 2       | 1/22/14 | DRH | Moved wells on pad/revised pad |
| REV 3       | 1/22/14 | DRH | Moved wells on pad/revised pad |

2/8

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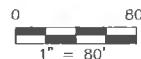
**PAD LAYOUT**  
 OASIS PETROLEUM NORTH AMERICA, LLC  
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
 "CHALMERS 5300 21-19 11T"  
 2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
 SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



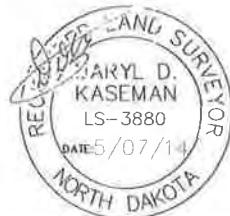
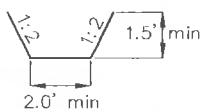
NOTE 1: Pad dimensions shown are to usable area, the v-ditch and berm areas shall be built to the outside of the pad dimensions.

NOTE 2 : Screening berm is to be built after drilling operations are complete.

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V-DITCH DETAIL



Proposed Contours      - BERM  
 Original Contours      - DITCH

NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

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Interstate Engineering, Inc.  
 P.O. Box 648  
 425 East Main Street  
 Sturgis, SD 57701  
 Ph (605) 431-5917  
 Fax (606) 431-5618  
[www.interstateeng.com](http://www.interstateeng.com)

Our offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
 PAD LAYOUT  
 SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.J.      Project No.: 513-09-282.06

Checked By: D.D.K.      Date: JAN 2014

| Report No. | Date   | By  | Description                    |
|------------|--------|-----|--------------------------------|
| REV 1      | 3/1/14 | AJS | MOVED WELLS ON PAD             |
| REV 2      | 4/7/14 | MMW | MOVED WELLS ON PAD/REVISED PAD |
| REV 3      | 5/2/14 | MMW | MOVED WELLS ON PAD/REVISED PAD |

2076

OASIS PETROLEUM NORTH AMERICA, LLC  
 CHALMERS 5300 21-19 11T  
 2325' FNL/327' FWL  
 QUAD LOCATION MAP  
 SECTION 19, T153N, R100W  
 MCKENZIE COUNTY, NORTH DAKOTA

W I

18

17

R T

**CHALMERS 5300**  
**21-19 11T**

PROPOSED  
ACCESS ROAD  
OPTION B

R101W  
R100W

19

PROPOSED  
ACCESS ROAD  
OPTION B

CHALMERS  
5300 21-19H

PROPOSED  
ACCESS ROAD  
OPTION C

Indian Creek Bay  
Retention Area

EX LEASE ROAD

WADE 5300 21-30H

R

MISSOURI

20



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Interstate Engineering, Inc.  
 P.O. Box 648  
 425 East Main Street  
 Sidney, Montana 59270  
 Ph. (406) 433-5617  
 Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)

Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
 QUAD LOCATION MAP  
 SECTION 19, T153N, R100W  
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06  
 Checked By: D.D.K. Date: JAN. 2014

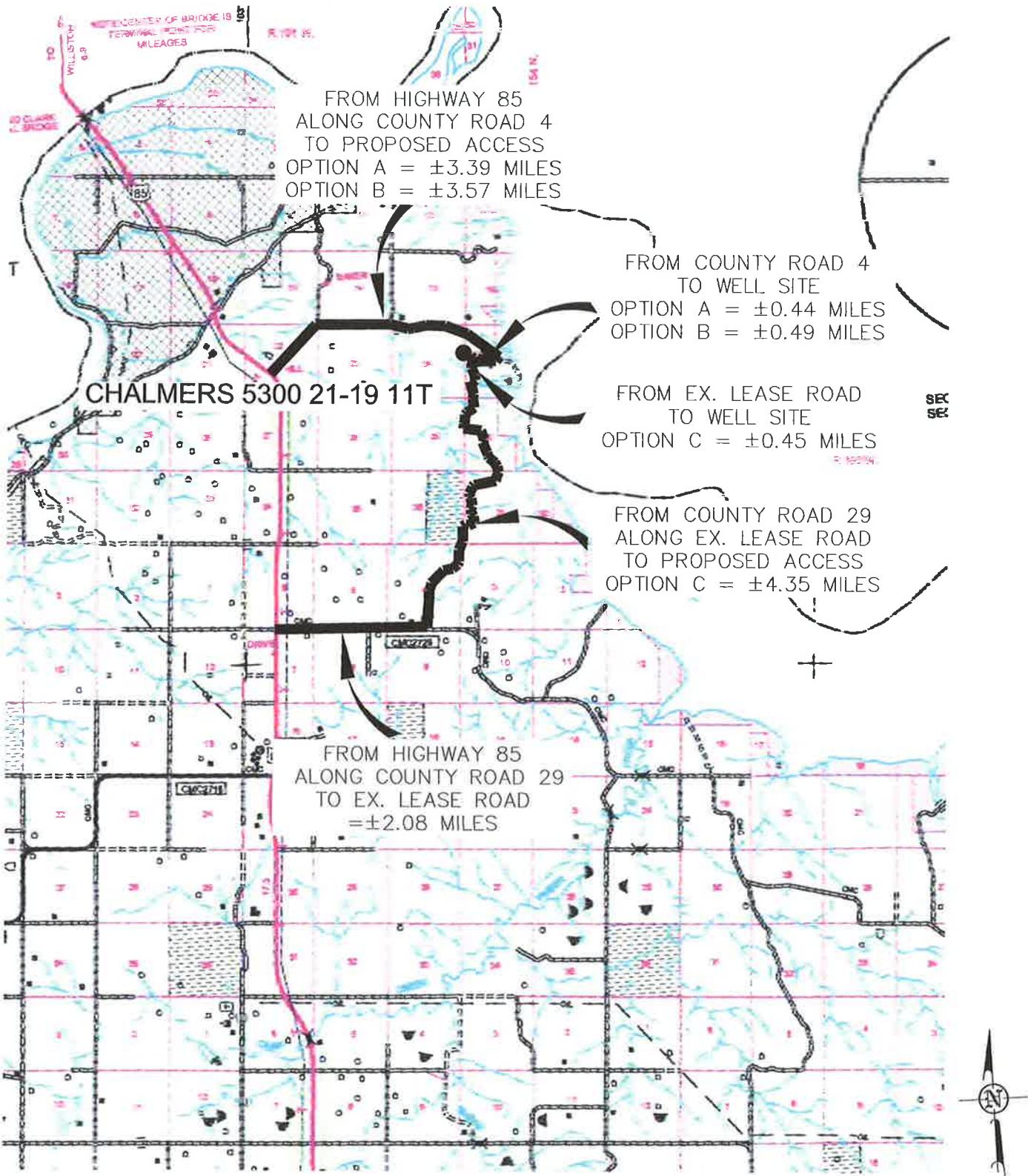
| Revision No. | Date    | By  | Description                    |
|--------------|---------|-----|--------------------------------|
| REV 1        | 3/12/14 | JHS | Moved wells on pad             |
| REV 2        | 4/22/14 | JHS | Moved wells on pad/revised pad |
| REV 3        | 5/2/14  | JHS | Moved wells on pad/revised pad |

## COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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SCALE: 1" = 2 MILE

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**INTERSTATE  
ENGINEERING**

SHEET NO.

**Interstate Engineering, Inc.**  
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Sidney, Montana 59270  
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Fax (406) 433-5618  
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OASIS PETROLEUM NORTH AMERICA INC

PETROLEUM NORTH AMERICA  
COUNTY ROAD MAP

**SECTION 19, T153N, R100W**

**MCKENZIE COUNTY, NORTH DAKOTA**

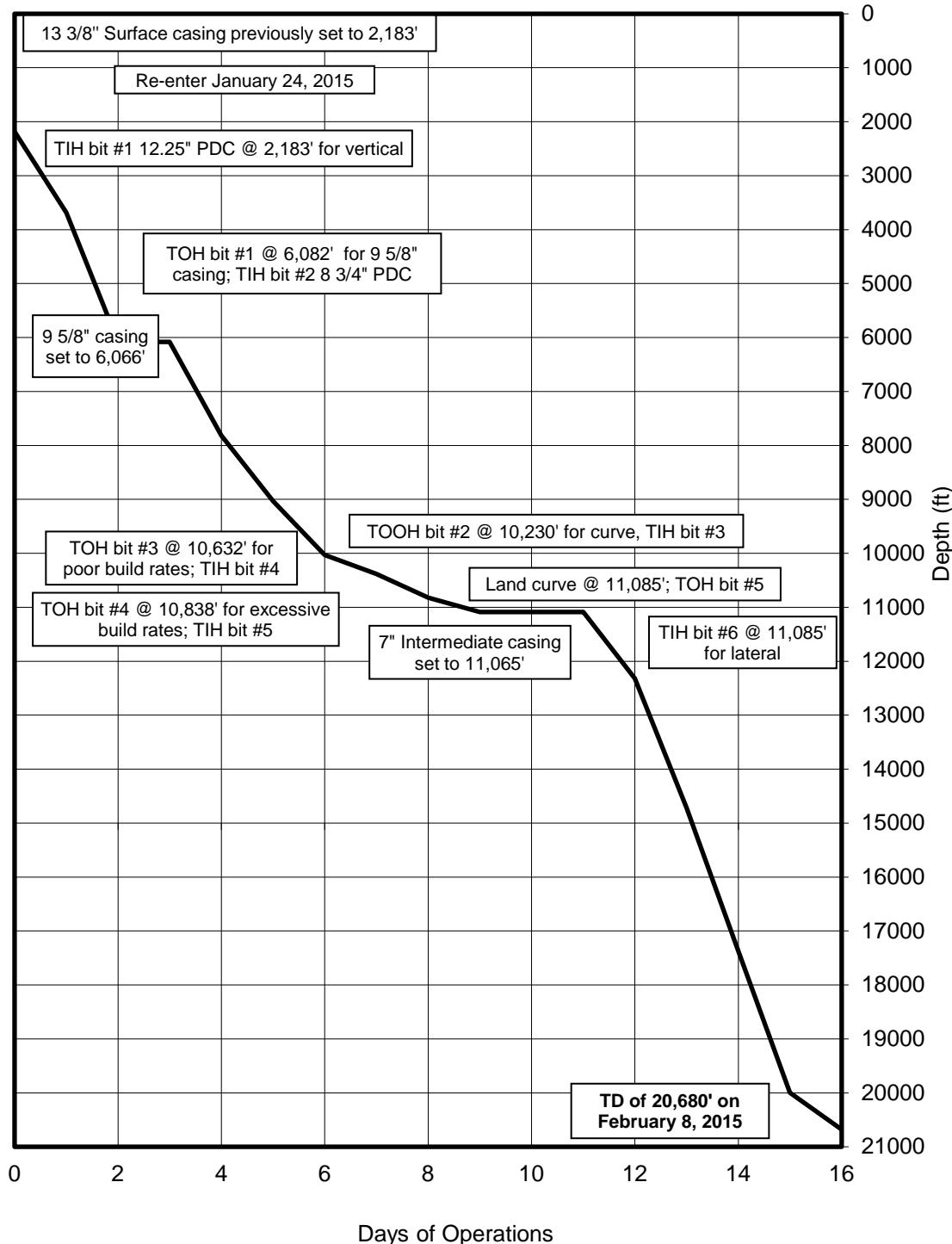
Drawn By: B.H.H. | Project No.: S13-09-282.06

Checked By: D.D.K. Date: JAN. 2014

| Revision No. | Date    | By  | Description                    |
|--------------|---------|-----|--------------------------------|
| REV 1        | 3/12/14 | JAS | MIXED WELLS ON PAD             |
| REV 2        | 4/22/14 | JAS | MIXED WELLS ON PAD/REVISED PAD |
| REV 3        | 5/2/14  | JAS | MIXED WELLS ON PAD/REVISED PAD |

# TIME VS DEPTH

Oasis Petroleum North America, LLC  
Chalmers 5300 21-19 11B



# DAILY DRILLING SUMMARY

| Day | Date<br>2015 | Depth<br>(0600<br>Hrs) | 24 Hr<br>Footage | Bit # | WOB<br>(Klbs)<br>RT | RPM<br>(RT) | WOB<br>(Klbs)<br>MM | RPM<br>(MM) | 24 Hr Activity |          |          | Formation |
|-----|--------------|------------------------|------------------|-------|---------------------|-------------|---------------------|-------------|----------------|----------|----------|-----------|
|     |              |                        |                  |       |                     |             |                     |             | PP             | SPM<br>1 | SPM<br>2 |           |
| 0   | 1/24         | 2,183'                 | -                | -     | -                   | -           | -                   | -           | -              | -        | -        | Surface   |
| 1   | 1/25         | 3,687'                 | 1,504            | 1     | 25                  | 50          | -                   | -           | 3,900          | 95       | 95       | 669       |
| 2   | 1/26         | 6,082'                 | 2,395            | 1     | 25                  | 50          | -                   | -           | 3,900          | 95       | 95       | 669       |
| 3   | 1/27         | 6,082'                 | 0                | -     | -                   | -           | -                   | -           | -              | -        | -        | Dakota    |
| 4   | 1/28         | 7,819'                 | 1,737            | 2     | 15                  | 50          | 30                  | -           | 3200           | 71       | 71       | 500       |
| 5   | 1/29         | 9,032'                 | 1,213            | 2     | 15                  | 50          | 20                  | 130         | 3500           | 77       | 77       | 542       |
| 6   | 1/30         | 10,028'                | 996              | 2     | 40                  | 55          | 35                  | 130         | 3500           | 77       | 77       | 542       |
| 7   | 1/31         | 10,381'                | 353              | 2/3   | 25                  | 25          | 40                  | 145         | 3650           | 71       | 71       | 500       |

## DAILY DRILLING SUMMARY

| Day | Date<br>2015 | Depth<br>(0600<br>Hrs) | 24 Hr<br>Footage | Bit # | WOB<br>(Klbs)<br>RT | RPM<br>(RT) | WOB<br>(Klbs)<br>MM | RPM<br>(MM) | PP   | SPM<br>1 | SPM<br>2 | GPM | 24 Hr Activity   | Formation            |
|-----|--------------|------------------------|------------------|-------|---------------------|-------------|---------------------|-------------|------|----------|----------|-----|--|----------------------|
| 8   | 2/1          | 10,822'                | 441              | 3/4   | 50                  | 20          | 70                  | 159         | 3650 | 78       | 78       | 549 | Drill and survey curve, sliding from 10,381'-10,630'. Circulate and condition, pump pill. TOOH for build rates. Lay down BHA. Pick up a roller bit and a 2.6° bend motor. TIH. Fill pipe and test MWD. Remove trip nipple, install rotating head. Test MWD. TIH. Slide curve from 10,630-10,822'.  | Lodgepole            |
| 9   | 2/2          | 11,085'                | 263              | 4/5   | 20                  | 25          | 50                  | 147         | 3800 | 72       | 72       | 507 | Drill and survey curve, from 10,822'-10,838'. Circulate and condition, pump pill. TOOH for build rates. Lay down BHA. Change out bit and MWD, adjust motor. TIH. Slip and cut drill line. TIH. Fill pipe and test MWD. Remove trip nipple, install rotating head. TIH. Drill curve from 10,838'-11,085'. Circulate bottoms up. Wiper trip. TOOH. Prepare for casing.   | Middle Bakken Member |
| 10  | 2/3          | 11,085'                | 0                | -     | -                   | -           | -                   | -           | -    | -        | -        | -   | Lay down drill pipe. Lay down BHA. Pull wear bushing. Rig up to run casing, rig up casing crew. Held safety meeting. Run 7" casing. Service rig. Down time top drive. Run casing, wash to bottom. Circulate and condition. Circulate and work casing.  | Middle Bakken Member |
| 11  | 2/4          | 11,085'                | 0                | -     | -                   | -           | -                   | -           | -    | -        | -        | -   | Circulate and condition. Held safety meeting with cementers. Rig up cement head. Cement. Rig down cementers. Nipple down BOPS. Rig up BOP winches. Break BOP with Weatherford. Pick up BOP, set casing slips, cut off casing, set BOP back down. Test BOP, rig up tester, fill stack, test BOP. Rig down tester. Center stack, install bushings. Pic up BHA, bit, motor, UBHO, 3 monels, MWD, reamer. Service rig. TIH, pick up 4" drill pipe. Fill pipe, test MWD. TIH. | Middle Bakken Member |
| 12  | 2/5          | 12,320'                | 1,235            | 6     | 11                  | 40          | 30                  | 10          | 3600 | 88       | -        | 310 | Pick up drill pipe. Test casing 1,500 psi for 30 min. pick up drill pipe. Drilling cement from 10,960-11,104', float at 10,975', shoe at 11,057'. Fit test 1,959 psi at 11,104' for 30 min. Drilling and survey when needed from 11,104-11,297'. Change out swivel packing- change out black jack. Drilling and survey when needed from 11,276'-11,570'. Service rig. Downtime- top drive. Drilling and survey when needed from 11,570-12,320'                           | Middle Bakken Member |
| 13  | 2/6          | 14,721'                | 2,401            | 6     | 20                  | 40          | 50                  | 305         | 3600 | 84       | -        | 296 | Drilling and sliding when needed from 12,320-12,605'. Service top drive, change out lower well control valve. Drilling and sliding when needed from 12,605'-13,931'. Service rig, grease washpipe, spr @ 13,931' 30 stk 670 psi, pipes 6 sec. Drilling and sliding when needed from 13,931'-14,721'.   | Middle Bakken Member |
| 14  | 2/7          | 17,375'                | 2,654            | 6     | 20                  | 40          | 60                  | 289         | 3800 | 80       | -        | 281 | Drilling and sliding when needed from 14,721'-15,448'. Service Rig. Drilling and sliding when needed from 15,448'-16,016'. Drilling and sliding when needed from 16,016'-17,375'   | Middle Bakken Member |

## DAILY DRILLING SUMMARY

| Day | Date<br>2015 | Depth<br>(ft) | 24 Hr<br>Footage | Bit # | WOB<br>(Klbs)<br>RT | RPM<br>(RT) | WOB<br>(Klbs)<br>MM | RPM<br>(MM) | PP   | SPM<br>1 | SPM<br>2 | GPM | 24 Hr Activity   | Formation            |
|-----|--------------|---------------|------------------|-------|---------------------|-------------|---------------------|-------------|------|----------|----------|-----|--|----------------------|
|     |              |               |                  |       |                     |             |                     |             |      |          |          |     | Drilling and sliding when needed from 17,375'-18,007'. Service rig.  |                      |
| 15  | 2/8          | 19,997'       | 2,622            | 6     | 20                  | 45          | 55                  | 261         | 3900 | 72       | -        | 253 | Drilling and sliding when needed from 18,007'-19807'. Service rig, spr @ 19,807' 40 stk 1270 psi. Drilling and sliding when needed from 19807'-19,997' | Middle Bakken Member |
| 16  | 2/9          | 20,680'       | 683              | 6     | 20                  | 45          | 55                  | 261         | 3900 | 72       | -        | 253 | Drilling and sliding when needed from 19,997'-20,680'. Circulate and condition. TOH  | Middle Bakken Member |

## DAILY MUD SUMMARY

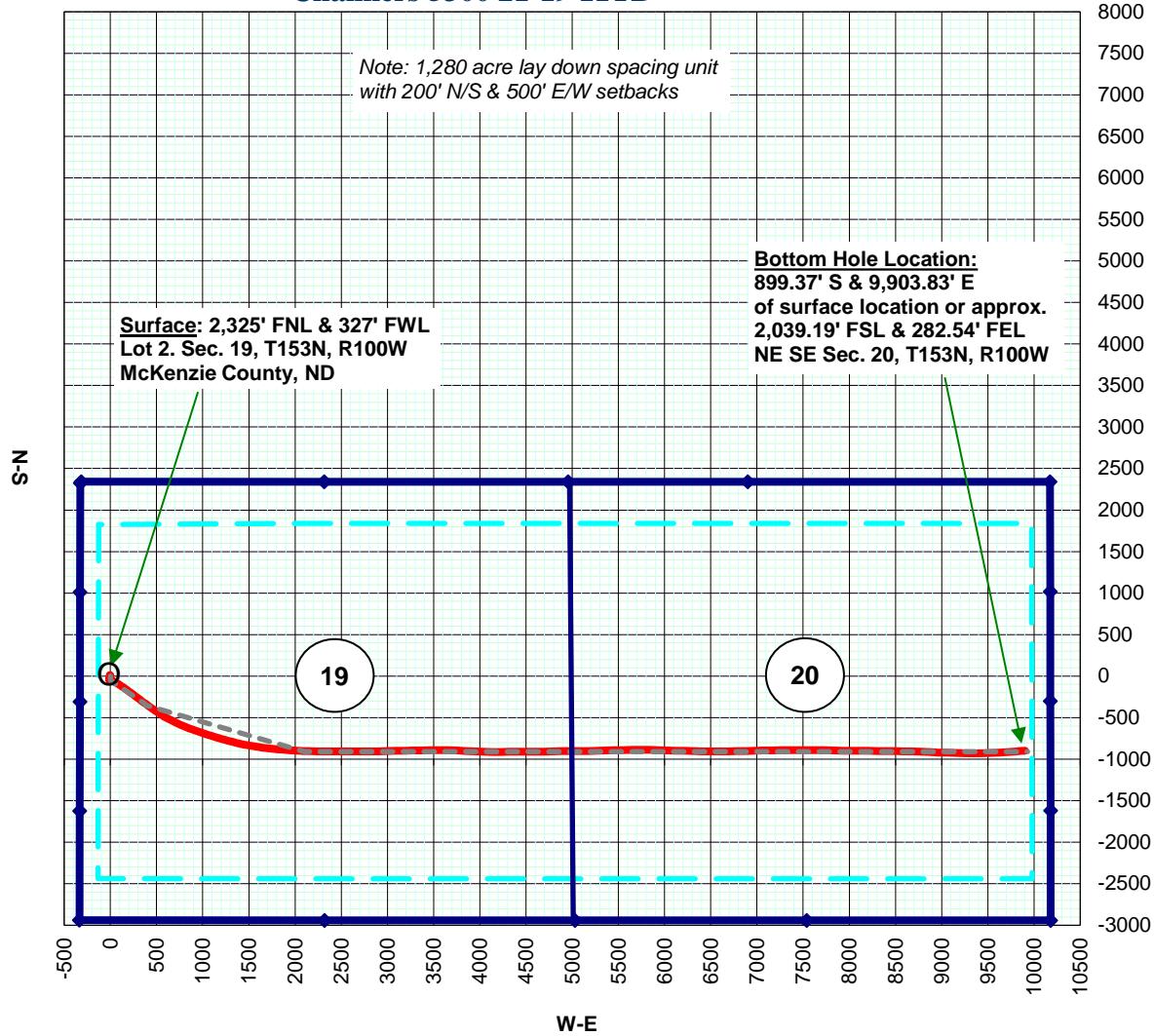
| Day | Date<br>2015 | Mud<br>Depth | Drilling<br>Fluid | Mud<br>WT<br>(ppg) | Vis<br>(sec/<br>qt) | PV<br>(cP) | YP<br>(lbs/<br>100 ft <sup>2</sup> ) | Gels/<br>(lbs/ 100<br>ft <sup>2</sup> ) | 600/<br>300 | NAP/H <sub>2</sub> O<br>(ratio) | NAP/H <sub>2</sub> O<br>(% by vol) | Cake<br>(API/<br>HTHP) | Cor.<br>Solids<br>(%) | Alk | pH | Excess<br>Lime<br>(lb/bbl) | Cl <sup>-</sup><br>(mg/L) | HGS/<br>LGS (%) | Salinity<br>(ppm) | Electrical<br>Stability | Gain/<br>Loss<br>(bbls) |
|-----|--------------|--------------|-------------------|--------------------|---------------------|------------|--------------------------------------|---|-------------|---------------------------------|------------------------------------|------------------------|-----------------------|-----|----|----------------------------|---------------------------|-----------------|-------------------|-------------------------|-------------------------|
| 0   | 01/24        | 2,183'       | invert            | 11.1               | 78                  | 20         | 10                                   | 11/14/-                                 | 50/30       | 71.4/28.6                       | 60/24                              | 2                      | 13.2                  | 2.1 | -  | 2.7                        | 46k                       | 12.2/1          | 240,045           | 420                     | -                       |
| 1   | 01/25        | 3,687'       | invert            | 11.1               | 78                  | 20         | 10                                   | 11/14/-                                 | 50/30       | 71.4/28.6                       | 60/24                              | 2                      | 13.2                  | 2.1 | -  | 2.7                        | 46k                       | 12.2/1          | 240,045           | 420                     | -                       |
| 2   | 01/26        | 4,060'       | invert            | 11.5               | 66                  | 24         | 10                                   | 13/21/-                                 | 58/34       | 70.7/29.3                       | 58/24                              | 2                      | 15.2                  | 2.2 | -  | 2.8                        | 46k                       | 13.5/1.7        | 240,045           | 370                     | -73                     |
| 3   | 01/27        | 6,082'       | invert            | 11.5               | 66                  | 21         | 10                                   | 12/17/-                                 | 52/31       | 72.4/27.6                       | 59/22.5                            | 2                      | 15.6                  | 2.1 | -  | 2.7                        | 48k                       | 13.2/2.4        | 260,122           | 400                     | -46                     |
| 4   | 01/28        | 6,413'       | invert            | 10.6               | 64                  | 21         | 11                                   | 11/17/-                                 | 53/32       | 68.6/31.4                       | 59/27                              | 2                      | 11.4                  | 2   | -  | 2.6                        | 43k                       | 10.2/1.2        | 207,595           | 667                     | -63                     |
| 5   | 01/29        | 7,932'       | invert            | 10                 | 50                  | 16         | 10                                   | 10/16/-                                 | 42/26       | 72.7/27.3                       | 64/24                              | 3                      | 9.4                   | 2.1 | -  | 2.7                        | 43k                       | 8.1/1.3         | 227,958           | 790                     | -210                    |
| 6   | 01/30        | 9,310'       | invert            | 10                 | 58                  | 18         | 10                                   | 10/14/16                                | 46/28       | 75.6/24.4                       | 65/21                              | 2                      | 112.2                 | 3.6 | -  | 4.7                        | 50k                       | 6.8/4.4         | 255,583           | 473                     | -10                     |
| 7   | 01/31        | 10,230'      | invert            | 10.3               | 56                  | 11         | 11                                   | 12/15/16                                | 45/28       | 77.6/22.4                       | 66/19                              | 2                      | 12.5                  | 3.8 | -  | 4.9                        | 55k                       | 7.9/4.5         | 264,320           | 535                     | -109                    |
| 8   | 02/01        | 10,630'      | invert            | 10.35              | 62                  | 19         | 10                                   | 10/13/15                                | 48/29       | 77.6/22.4                       | 66/19                              | 2                      | 12.5                  | 3.9 | -  | 5.1                        | 54k                       | 8.5/4.0         | 264,320           | 570                     | -38                     |
| 9   | 02/02        | 11,085'      | invert            | 10.35              | 62                  | 19         | 10                                   | 10/13/15                                | 48/29       | 77.6/22.4                       | 66/19                              | 2                      | 12.5                  | 3.9 | -  | 5.1                        | 54k                       | 8.5/4.0         | 264,320           | 570                     | -/-                     |
| 10  | 02/03        | 11,085'      | invert            | 10.35              | 62                  | 19         | 10                                   | 10/13/15                                | 48/29       | 77.6/22.4                       | 66/19                              | 2                      | 12.5                  | 3.9 | -  | 5.1                        | 54k                       | 8.5/4.0         | 264,320           | 570                     | -/-                     |
| 11  | 02/04        | 11,085'      | invert            | 10.5               | 87                  | 22         | 12                                   | 11/15/17                                | 56/34       | 76.2/23.8                       | 64/20                              | 2                      | 13.3                  | 2.8 | -  | 3.6                        | 52k                       | 8.7/4.6         | 246,320           | 534                     | -/-                     |
| 12  | 02/05        | 12,320'      | saltwater         | 9.6                | 27                  | 2          | 1                                    | 1/1/1                                   | 5/3         | -                               | 2/89                               | -                      | 9                     | -   | 9  | -                          | 140k                      | 0/0.8           | -                 | -                       | -/-                     |
| 13  | 02/06        | 14,721'      | saltwater         | 9.6                | 27                  | 2          | 1                                    | 1/1/1                                   | 5/3         | -                               | 2/89                               | -                      | 9                     | -   | 9  | -                          | 140k                      | 0/0.8           | -                 | -                       | -/-                     |
| 14  | 02/07        | 17,375'      | saltwater         | 9.6                | 27                  | 2          | 1                                    | 1/1/1                                   | 5/3         | -                               | 2/89                               | -                      | 9                     | -   | 9  | -                          | 140k                      | 0/0.8           | -                 | -                       | -/-                     |
| 15  | 02/08        | 19,997'      | saltwater         | 9.7                | 28                  | 2          | 1                                    | 1/1/1                                   | 5/3         | -                               | 0/89                               | -                      | -                     | -   | 7  | -                          | 154k                      | -/-             | -                 | -                       | -/-                     |
| 16  | 02/09        | 20,680'      | saltwater         | 9.7                | 28                  | 2          | 1                                    | 1/1/1                                   | 5/3         | -                               | 0/89                               | -                      | -                     | -   | 7  | -                          | 154k                      | -/-             | -                 | -                       | -/-                     |

## BOTTOM HOLE ASSEMBLY RECORD

| BHA Run | Depth In | Depth Out | Footage | Hours | Accum. Hours | Vert. Dev. | Bit Data |            |          |          |        | Motor Data |      |       |         |        |         |       |    |      |
|---------|----------|-----------|---------|-------|--------------|------------|----------|------------|----------|----------|--------|------------|------|-------|---------|--------|---------|-------|----|------|
|         |          |           |         |       |              |            | Bit #    | Size (in.) | Type     | Make     | Model  | Serial #   | Jets | Hours | Motor # | Make   | Model   |       |    |      |
| 1       | 2,183'   | 6,082'    | 3,899'  | 27    | 27.00        | Vertical   | 1        | 12 1/4     | PDC      | Varel    | V619PD | 4008019    | 5x20 | 27    | 1       | NOV    | 6/5 5.0 | 2.12° | 27 | 0.13 |
| 2       | 6,082'   | 10,230'   | 4,148'  | 61    | 88.00        | Vertical   | 2        | 8 3/4      | PDC      | Ulterra  | U616M  | 27806      | 6x16 | 61    | 2       | NOV    | 7/8 5.7 | 1.50° | 61 | 0.24 |
| 3       | 10,230'  | 10,632'   | 402'    | 9     | 97.00        | Curve      | 3        | 8 3/4      | PDC      | Ulterra  | U516M  | 27451      | 5x18 | 9     | 3       | NOV    | 7/8 5.0 | 2.38° | 9  | 0.29 |
| 4       | 10,632'  | 10,838'   | 206'    | 9     | 106.00       | Curve      | 4        | 8 3/4      | Tri-cone | Smith    | F30T   | RD6694     | 22x3 | 9     | 4       | Cavare | 6/7 5.0 | 2.60° | 9  | 0.29 |
| 5       | 10,838'  | 11,085'   | 247'    | 5     | 111.00       | Curve      | 5        | 8 3/4      | PDC      | Security | MMD55M | 12564961   | 5x18 | 5     | 5/RR4   | Cavare | 6/7 5.0 | 2.45° | 5  | 0.29 |
| 6       | 11,085'  | 20,680'   | 9,595'  | 92    | 203.00       | Lateral    | 6        | 6          | PDC      | Hughes   | T406   | TX20503R   | 6x18 | 92    | 6       | Baker  | XLP     | 1.50° | 92 | 1.03 |

## PLAN VIEW

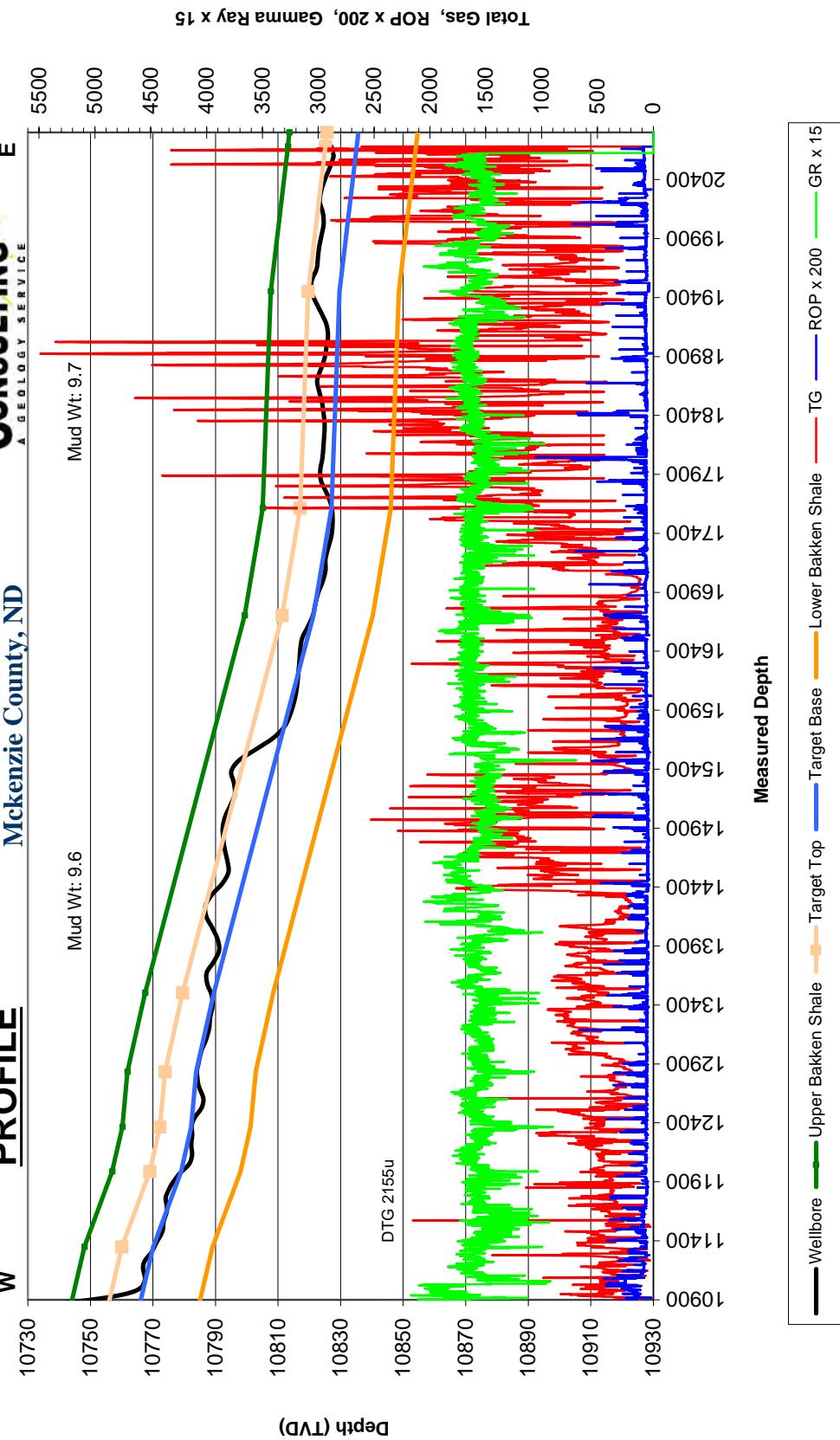
Oasis Petroleum North America, LLC  
Chalmers 5300 21-19 11TB



Oasis Petroleum North America, LLC  
 Chalmers 5300 21-19 11TB  
 Lot 2 Sec. 19, T153N, R100W  
 McKenzie County, ND



## PROFILE

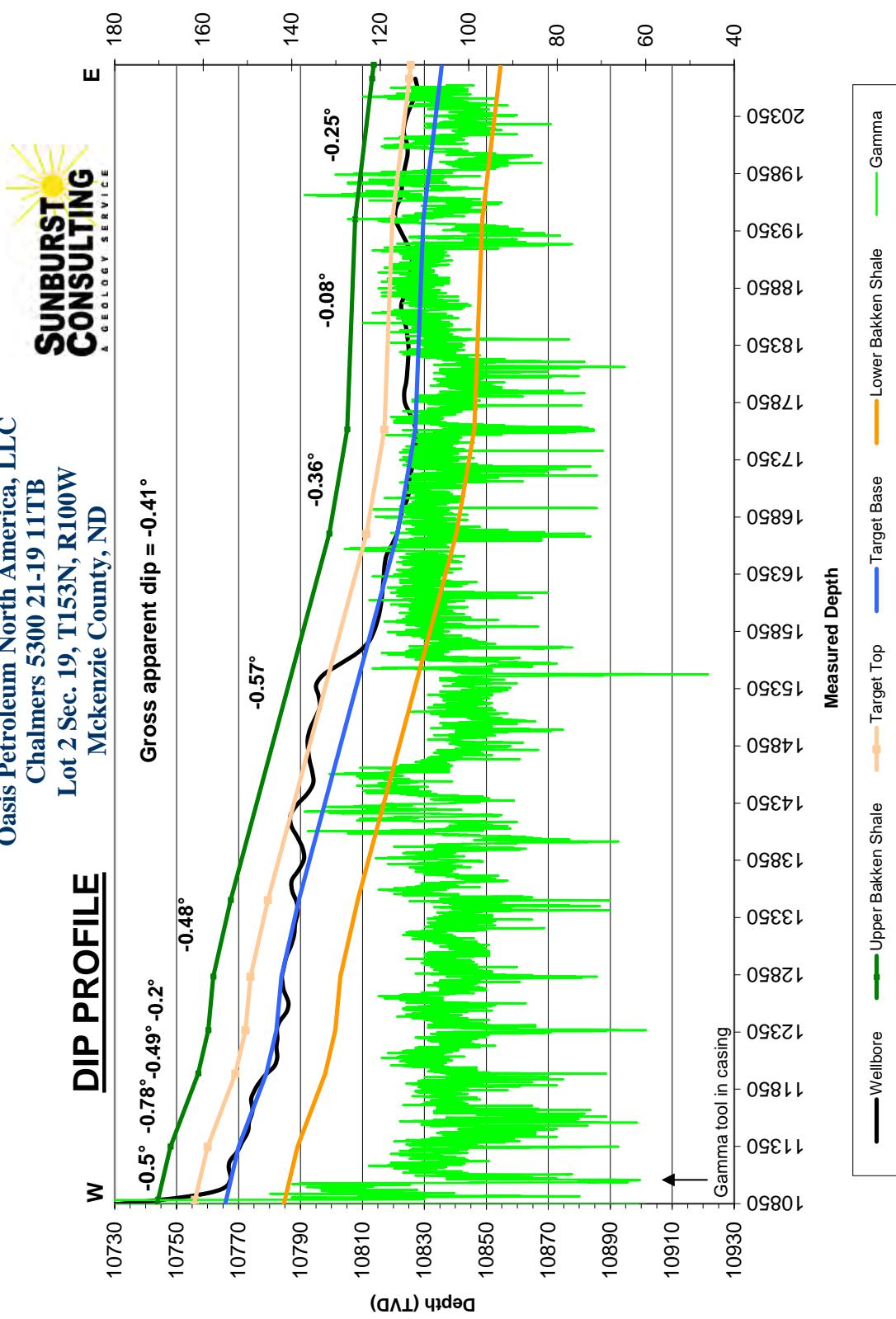


# FORMATION MARKERS & DIP ESTIMATES

Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11TB

| Dip Change Points              | MD      | TVD       | TVD diff. | MD diff. | Dip          | Dipping up/down | Type of Marker |
|--------------------------------|---------|-----------|-----------|----------|--------------|-----------------|----------------|
| Marker                         |         |           |           |          |              |                 |                |
| Zone entry                     | 10,884' | 10,755.00 |           |          |              |                 | Gamma          |
| Target bottom                  | 11,105  | 10,756.91 | 1.91      | 221.00   | <b>-0.50</b> | Down            | Gamma          |
| Target bottom                  | 11,988' | 10,768.99 | 12.08     | 883.00   | <b>-0.78</b> | Down            | Gamma          |
| Target bottom                  | 12,365' | 10,772.22 | 3.23      | 377.00   | <b>-0.49</b> | Down            | Gamma          |
| Target bottom                  | 12,833' | 10,773.85 | 1.63      | 468.00   | <b>-0.20</b> | Down            | Gamma          |
| Target bottom                  | 13,503' | 10,779.46 | 5.61      | 670.00   | <b>-0.48</b> | Down            | Gamma          |
| Target bottom                  | 16,703' | 10,811.30 | 31.84     | 3200.00  | <b>-0.57</b> | Down            | Gamma          |
| Target bottom                  | 17,614' | 10,817.10 | 5.80      | 911.00   | <b>-0.36</b> | Down            | Gamma          |
| Target top                     | 19,451' | 10,819.66 | 2.56      | 1837.00  | <b>-0.08</b> | Down            | Gamma          |
| TD                             | 20,680' | 10,825.12 | 5.46      | 1229.00  | <b>-0.25</b> | Down            | Gamma          |
| <b>Gross Dip</b>               |         |           |           |          |              |                 |                |
| Initial Target Contact         | 10,884' | 10,755.00 |           |          |              |                 |                |
| Projected Final Target Contact | 20,680' | 10,825.12 | 70.12     | 9796.00  | <b>-0.41</b> | Down            | Projection     |

Oasis Petroleum North America, LLC  
 Chalmers 5300 21-19 11TB  
 Lot 2 Sec. 19, T153N, R100W  
 Mckenzie County, ND



&lt;

# SUNBURST CONSULTING, INC.

&gt;

|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
| Township: | 153                                | N/S: N      |
| Range:    | 100                                | E/W: W      |
| Footages: | 2325                               | FN/SL: N    |
|           | 327                                | FE/WL: W    |

|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |
|                          |                           |

Date: 2/17/2015  
 Time: 10:16  
**F9 to re-calculate**

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD      | INC  | TRUE   |         |        |       | SECT  | DLS/<br>100 |
|-----|---------|------|--------|---------|--------|-------|-------|-------------|
|     |         |      | AZM    | TVD     | N-S    | E-W   |       |             |
| Tie | 2148.00 | 0.70 | 242.30 | 2147.61 | 11.61  | -0.75 | -0.75 | 0.46        |
| 1   | 2230.00 | 0.90 | 250.90 | 2229.60 | 11.17  | -1.80 | -2.81 | 0.28        |
| 2   | 2323.00 | 1.00 | 251.50 | 2322.59 | 10.67  | -3.26 | -4.22 | 0.11        |
| 3   | 2417.00 | 0.90 | 247.70 | 2416.58 | 10.13  | -4.72 | -5.63 | 0.13        |
| 4   | 2510.00 | 1.10 | 235.30 | 2509.56 | 9.34   | -6.13 | -6.96 | 0.32        |
| 5   | 2603.00 | 2.10 | 177.00 | 2602.53 | 7.13   | -6.78 | -7.40 | 1.92        |
| 6   | 2697.00 | 2.30 | 175.60 | 2696.46 | 3.53   | -6.54 | -6.84 | 0.22        |
| 7   | 2790.00 | 1.40 | 166.50 | 2789.41 | 0.57   | -6.13 | -6.16 | 1.01        |
| 8   | 2884.00 | 1.40 | 172.60 | 2883.38 | -1.69  | -5.72 | -5.54 | 0.16        |
| 9   | 2977.00 | 1.50 | 175.80 | 2976.35 | -4.03  | -5.48 | -5.09 | 0.14        |
| 10  | 3071.00 | 1.60 | 178.70 | 3070.32 | -6.57  | -5.36 | -4.74 | 0.14        |
| 11  | 3164.00 | 1.60 | 178.10 | 3163.28 | -9.16  | -5.29 | -4.43 | 0.02        |
| 12  | 3257.00 | 1.50 | 176.80 | 3256.25 | -11.68 | -5.18 | -4.09 | 0.11        |
| 13  | 3350.00 | 1.50 | 177.40 | 3349.22 | -14.11 | -5.06 | -3.75 | 0.02        |
| 14  | 3444.00 | 1.60 | 174.50 | 3443.18 | -16.64 | -4.87 | -3.34 | 0.14        |
| 15  | 3537.00 | 0.70 | 147.20 | 3536.16 | -18.41 | -4.44 | -2.75 | 1.11        |
| 16  | 3631.00 | 0.80 | 146.90 | 3630.16 | -19.44 | -3.77 | -1.98 | 0.11        |
| 17  | 3724.00 | 0.80 | 145.50 | 3723.15 | -20.52 | -3.05 | -1.17 | 0.02        |
| 18  | 3817.00 | 0.80 | 141.90 | 3816.14 | -21.57 | -2.28 | -0.31 | 0.05        |
| 19  | 3911.00 | 0.90 | 147.70 | 3910.13 | -22.71 | -1.48 | 0.59  | 0.14        |
| 20  | 4004.00 | 0.70 | 147.90 | 4003.12 | -23.81 | -0.79 | 1.38  | 0.22        |
| 21  | 4097.00 | 0.70 | 141.30 | 4096.11 | -24.73 | -0.13 | 2.12  | 0.09        |
| 22  | 4191.00 | 0.70 | 145.30 | 4190.10 | -25.65 | 0.55  | 2.89  | 0.05        |
| 23  | 4284.00 | 0.20 | 159.10 | 4283.10 | -26.27 | 0.93  | 3.32  | 0.55        |
| 24  | 4377.00 | 0.10 | 254.60 | 4376.10 | -26.44 | 0.91  | 3.32  | 0.25        |
| 25  | 4471.00 | 0.10 | 202.10 | 4470.10 | -26.54 | 0.80  | 3.22  | 0.09        |
| 26  | 4564.00 | 0.30 | 223.90 | 4563.10 | -26.79 | 0.60  | 3.04  | 0.23        |
| 27  | 4657.00 | 0.30 | 255.10 | 4656.10 | -27.03 | 0.20  | 2.66  | 0.17        |
| 28  | 4751.00 | 0.20 | 257.20 | 4750.10 | -27.13 | -0.20 | 2.28  | 0.11        |
| 29  | 4844.00 | 0.20 | 259.70 | 4843.10 | -27.20 | -0.52 | 1.97  | 0.01        |
| 30  | 4937.00 | 0.20 | 234.00 | 4936.10 | -27.32 | -0.81 | 1.69  | 0.10        |
| 31  | 5031.00 | 0.40 | 223.60 | 5030.10 | -27.65 | -1.17 | 1.36  | 0.22        |
| 32  | 5124.00 | 0.40 | 241.50 | 5123.09 | -28.04 | -1.68 | 0.89  | 0.13        |
| 33  | 5217.00 | 0.40 | 254.20 | 5216.09 | -28.29 | -2.27 | 0.32  | 0.10        |
| 34  | 5311.00 | 0.50 | 262.40 | 5310.09 | -28.43 | -2.99 | -0.39 | 0.13        |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
| Township: | 153                                | N/S: N      |
| Range:    | 100                                | E/W: W      |
| Footages: | 2325                               | FN/SL: N    |
|           | 327                                | FE/WL: W    |

|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |

Date: 2/17/2015  
 Time: 10:16  
**F9 to re-calculate**

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD      | INC  | TRUE   |         |        |        | SECT  | DLS/<br>100 |
|-----|---------|------|--------|---------|--------|--------|-------|-------------|
|     |         |      | AZM    | TVD     | N-S    | E-W    |       |             |
| 35  | 5404.00 | 0.40 | 257.50 | 5403.09 | -28.56 | -3.71  | -1.10 | 0.12        |
| 36  | 5498.00 | 0.40 | 257.80 | 5497.08 | -28.70 | -4.36  | -1.72 | 0.00        |
| 37  | 5591.00 | 0.40 | 228.40 | 5590.08 | -28.98 | -4.92  | -2.25 | 0.22        |
| 38  | 5684.00 | 0.40 | 252.00 | 5683.08 | -29.30 | -5.47  | -2.77 | 0.18        |
| 39  | 5777.00 | 0.20 | 270.40 | 5776.08 | -29.39 | -5.94  | -3.23 | 0.24        |
| 40  | 5871.00 | 0.10 | 288.60 | 5870.08 | -29.37 | -6.18  | -3.48 | 0.12        |
| 41  | 5964.00 | 0.20 | 266.80 | 5963.08 | -29.35 | -6.42  | -3.72 | 0.12        |
| 42  | 6026.00 | 0.30 | 245.80 | 6025.08 | -29.42 | -6.67  | -3.96 | 0.22        |
| 43  | 6114.00 | 0.40 | 317.80 | 6113.07 | -29.29 | -7.09  | -4.39 | 0.48        |
| 44  | 6208.00 | 0.40 | 340.70 | 6207.07 | -28.74 | -7.42  | -4.77 | 0.17        |
| 45  | 6301.00 | 0.50 | 1.10   | 6300.07 | -28.03 | -7.52  | -4.93 | 0.20        |
| 46  | 6394.00 | 0.50 | 128.90 | 6393.07 | -27.87 | -7.20  | -4.63 | 0.97        |
| 47  | 6488.00 | 0.70 | 142.60 | 6487.06 | -28.59 | -6.53  | -3.89 | 0.26        |
| 48  | 6581.00 | 1.00 | 177.60 | 6580.05 | -29.85 | -6.15  | -3.40 | 0.63        |
| 49  | 6675.00 | 1.10 | 183.20 | 6674.04 | -31.57 | -6.16  | -3.26 | 0.15        |
| 50  | 6768.00 | 1.20 | 187.80 | 6767.02 | -33.43 | -6.35  | -3.27 | 0.15        |
| 51  | 6861.00 | 1.20 | 190.90 | 6860.00 | -35.35 | -6.66  | -3.41 | 0.07        |
| 52  | 6955.00 | 1.10 | 200.00 | 6953.98 | -37.16 | -7.16  | -3.74 | 0.22        |
| 53  | 7048.00 | 1.20 | 196.40 | 7046.96 | -38.94 | -7.74  | -4.16 | 0.13        |
| 54  | 7141.00 | 1.20 | 187.10 | 7139.94 | -40.84 | -8.13  | -4.38 | 0.21        |
| 55  | 7235.00 | 1.30 | 189.90 | 7233.92 | -42.86 | -8.44  | -4.50 | 0.12        |
| 56  | 7328.00 | 0.50 | 191.90 | 7326.91 | -44.30 | -8.70  | -4.63 | 0.86        |
| 57  | 7421.00 | 0.60 | 49.80  | 7419.90 | -44.38 | -8.42  | -4.33 | 1.12        |
| 58  | 7515.00 | 0.50 | 47.40  | 7513.90 | -43.79 | -7.74  | -3.71 | 0.11        |
| 59  | 7608.00 | 0.40 | 38.60  | 7606.90 | -43.26 | -7.24  | -3.26 | 0.13        |
| 60  | 7701.00 | 0.30 | 15.50  | 7699.89 | -42.77 | -6.97  | -3.04 | 0.18        |
| 61  | 7795.00 | 0.30 | 339.90 | 7793.89 | -42.30 | -6.99  | -3.10 | 0.20        |
| 62  | 7888.00 | 0.40 | 286.80 | 7886.89 | -41.98 | -7.38  | -3.52 | 0.35        |
| 63  | 7981.00 | 0.40 | 269.30 | 7979.89 | -41.89 | -8.02  | -4.17 | 0.13        |
| 64  | 8075.00 | 0.60 | 271.40 | 8073.89 | -41.88 | -8.84  | -4.98 | 0.21        |
| 65  | 8168.00 | 0.70 | 333.90 | 8166.88 | -41.36 | -9.57  | -5.76 | 0.73        |
| 66  | 8261.00 | 0.90 | 335.20 | 8259.87 | -40.19 | -10.13 | -6.43 | 0.22        |
| 67  | 8355.00 | 0.90 | 27.50  | 8353.86 | -38.86 | -10.10 | -6.51 | 0.84        |
| 68  | 8448.00 | 0.90 | 34.80  | 8446.85 | -37.61 | -9.35  | -5.88 | 0.12        |
| 69  | 8542.00 | 0.90 | 39.50  | 8540.84 | -36.44 | -8.45  | -5.10 | 0.08        |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
| Township: | 153                                | N/S: N      |
| Range:    | 100                                | E/W: W      |
| Footages: | 2325                               | FN/SL: N    |
|           | 327                                | FE/WL: W    |

|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |
|                          |                           |

Date: 2/17/2015  
 Time: 10:16  
**F9 to re-calculate**

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD       | INC   | TRUE   |          |         |        | SECT   | DLS/<br>100 |
|-----|----------|-------|--------|----------|---------|--------|--------|-------------|
|     |          |       | AZM    | TVD      | N-S     | E-W    |        |             |
| 70  | 8635.00  | 1.00  | 84.30  | 8633.83  | -35.79  | -7.18  | -3.89  | 0.78        |
| 71  | 8728.00  | 1.00  | 101.90 | 8726.81  | -35.88  | -5.58  | -2.29  | 0.33        |
| 72  | 8822.00  | 1.30  | 102.80 | 8820.79  | -36.29  | -3.74  | -0.41  | 0.32        |
| 73  | 8915.00  | 1.30  | 98.10  | 8913.77  | -36.67  | -1.66  | 1.68   | 0.11        |
| 74  | 9008.00  | 1.30  | 106.70 | 9006.75  | -37.12  | 0.39   | 3.77   | 0.21        |
| 75  | 9102.00  | 1.10  | 107.60 | 9100.73  | -37.70  | 2.27   | 5.70   | 0.21        |
| 76  | 9195.00  | 1.50  | 142.60 | 9193.70  | -38.94  | 3.86   | 7.39   | 0.94        |
| 77  | 9288.00  | 1.30  | 159.70 | 9286.68  | -40.89  | 4.97   | 8.67   | 0.50        |
| 78  | 9382.00  | 0.60  | 168.60 | 9380.66  | -42.37  | 5.43   | 9.27   | 0.76        |
| 79  | 9475.00  | 0.50  | 172.90 | 9473.66  | -43.25  | 5.58   | 9.50   | 0.12        |
| 80  | 9569.00  | 0.60  | 184.70 | 9567.65  | -44.15  | 5.59   | 9.59   | 0.16        |
| 81  | 9662.00  | 0.70  | 188.80 | 9660.65  | -45.20  | 5.46   | 9.56   | 0.12        |
| 82  | 9755.00  | 0.60  | 184.40 | 9753.64  | -46.25  | 5.34   | 9.53   | 0.12        |
| 83  | 9849.00  | 0.50  | 175.10 | 9847.64  | -47.15  | 5.34   | 9.61   | 0.14        |
| 84  | 9942.00  | 0.60  | 174.30 | 9940.63  | -48.03  | 5.42   | 9.78   | 0.11        |
| 85  | 10035.00 | 0.40  | 179.60 | 10033.63 | -48.84  | 5.47   | 9.90   | 0.22        |
| 86  | 10129.00 | 0.30  | 199.50 | 10127.63 | -49.40  | 5.39   | 9.87   | 0.17        |
| 87  | 10175.00 | 0.30  | 220.90 | 10173.63 | -49.61  | 5.27   | 9.77   | 0.24        |
| 88  | 10226.00 | 0.20  | 214.20 | 10224.63 | -49.78  | 5.13   | 9.65   | 0.20        |
| 89  | 10257.00 | 1.40  | 107.90 | 10255.62 | -49.94  | 5.46   | 9.99   | 4.74        |
| 90  | 10288.00 | 4.40  | 112.70 | 10286.58 | -50.52  | 6.92   | 11.50  | 9.70        |
| 91  | 10319.00 | 8.50  | 114.40 | 10317.38 | -51.93  | 10.11  | 14.80  | 13.24       |
| 92  | 10350.00 | 13.00 | 117.20 | 10347.83 | -54.47  | 15.30  | 20.20  | 14.61       |
| 93  | 10382.00 | 16.30 | 117.90 | 10378.78 | -58.21  | 22.47  | 27.68  | 10.33       |
| 94  | 10413.00 | 18.70 | 119.40 | 10408.34 | -62.69  | 30.64  | 36.23  | 7.88        |
| 95  | 10444.00 | 20.80 | 120.60 | 10437.52 | -67.93  | 39.71  | 45.74  | 6.90        |
| 96  | 10475.00 | 22.70 | 120.50 | 10466.31 | -73.77  | 49.61  | 56.12  | 6.13        |
| 97  | 10506.00 | 25.30 | 122.10 | 10494.63 | -80.33  | 60.37  | 67.44  | 8.65        |
| 98  | 10537.00 | 28.90 | 123.20 | 10522.22 | -87.95  | 72.26  | 79.97  | 11.72       |
| 99  | 10568.00 | 31.30 | 123.10 | 10549.04 | -96.45  | 85.27  | 93.71  | 7.74        |
| 100 | 10602.00 | 33.00 | 122.70 | 10577.82 | -106.28 | 100.46 | 109.73 | 5.04        |
| 101 | 10633.00 | 35.60 | 123.80 | 10603.43 | -115.86 | 115.07 | 125.15 | 8.62        |
| 102 | 10664.00 | 39.60 | 126.60 | 10627.99 | -126.78 | 130.50 | 141.52 | 14.03       |
| 103 | 10695.00 | 44.60 | 128.30 | 10650.98 | -139.42 | 146.99 | 159.09 | 16.54       |
| 104 | 10727.00 | 50.30 | 128.80 | 10672.61 | -154.11 | 165.41 | 178.77 | 17.85       |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
| Township: | 153                                | N/S: N      |
| Range:    | 100                                | E/W: W      |
| Footages: | 2325                               | FN/SL: N    |
|           | 327                                | FE/WL: W    |

|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |
| Date:                    | 2/17/2015                 |
| Time:                    | 10:16                     |
| F9 to re-calculate       |                           |

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD       | INC   | TRUE   |          |         |         | SECT    | DLS/<br>100 |
|-----|----------|-------|--------|----------|---------|---------|---------|-------------|
|     |          |       | AZM    | TVD      | N-S     | E-W     |         |             |
| 105 | 10758.00 | 57.00 | 130.20 | 10690.98 | -169.99 | 184.66  | 199.39  | 21.92       |
| 106 | 10789.00 | 63.00 | 129.90 | 10706.47 | -187.26 | 205.20  | 221.42  | 19.37       |
| 107 | 10820.00 | 65.50 | 129.80 | 10719.94 | -205.15 | 226.64  | 244.39  | 8.07        |
| 108 | 10851.00 | 65.90 | 130.10 | 10732.70 | -223.29 | 248.30  | 267.62  | 1.56        |
| 109 | 10882.00 | 69.50 | 129.90 | 10744.46 | -241.72 | 270.26  | 291.17  | 11.63       |
| 110 | 10913.00 | 75.30 | 128.80 | 10753.83 | -260.44 | 293.11  | 315.63  | 19.01       |
| 111 | 10945.00 | 80.20 | 128.80 | 10760.61 | -280.03 | 317.47  | 341.67  | 15.31       |
| 112 | 10976.00 | 85.40 | 129.50 | 10764.50 | -299.44 | 341.31  | 367.19  | 16.92       |
| 113 | 11007.00 | 87.80 | 129.30 | 10766.34 | -319.08 | 365.22  | 392.79  | 7.77        |
| 114 | 11021.00 | 88.70 | 129.80 | 10766.76 | -328.00 | 376.01  | 404.35  | 7.35        |
| 115 | 11066.00 | 89.60 | 127.30 | 10767.43 | -356.03 | 411.20  | 441.94  | 5.90        |
| 116 | 11096.00 | 90.50 | 129.50 | 10767.41 | -374.67 | 434.71  | 467.05  | 7.92        |
| 117 | 11127.00 | 90.60 | 129.50 | 10767.11 | -394.38 | 458.63  | 492.67  | 0.32        |
| 118 | 11159.00 | 90.30 | 128.50 | 10766.86 | -414.52 | 483.49  | 519.27  | 3.26        |
| 119 | 11191.00 | 89.60 | 128.40 | 10766.88 | -434.42 | 508.56  | 546.04  | 2.21        |
| 120 | 11222.00 | 89.10 | 126.60 | 10767.24 | -453.29 | 533.15  | 572.25  | 6.03        |
| 121 | 11254.00 | 88.00 | 123.20 | 10768.05 | -471.59 | 559.38  | 600.04  | 11.16       |
| 122 | 11284.00 | 88.20 | 123.00 | 10769.04 | -487.96 | 584.50  | 626.54  | 0.94        |
| 123 | 11314.00 | 88.90 | 121.30 | 10769.80 | -503.92 | 609.89  | 653.28  | 6.13        |
| 124 | 11345.00 | 88.90 | 119.30 | 10770.40 | -519.56 | 636.65  | 681.36  | 6.45        |
| 125 | 11377.00 | 89.10 | 119.30 | 10770.95 | -535.22 | 664.55  | 710.57  | 0.63        |
| 126 | 11407.00 | 88.50 | 117.80 | 10771.58 | -549.55 | 690.89  | 738.11  | 5.38        |
| 127 | 11439.00 | 88.90 | 117.20 | 10772.31 | -564.32 | 719.27  | 767.72  | 2.25        |
| 128 | 11470.00 | 89.00 | 116.90 | 10772.88 | -578.42 | 746.87  | 796.49  | 1.02        |
| 129 | 11502.00 | 89.80 | 115.70 | 10773.21 | -592.59 | 775.56  | 826.35  | 4.51        |
| 130 | 11533.00 | 90.00 | 115.00 | 10773.27 | -605.87 | 803.57  | 855.46  | 2.35        |
| 131 | 11565.00 | 89.50 | 113.80 | 10773.41 | -619.09 | 832.72  | 885.68  | 4.06        |
| 132 | 11596.00 | 89.10 | 112.20 | 10773.78 | -631.20 | 861.25  | 915.20  | 5.32        |
| 133 | 11628.00 | 89.30 | 112.60 | 10774.23 | -643.39 | 890.83  | 945.77  | 1.40        |
| 134 | 11658.00 | 89.80 | 112.20 | 10774.47 | -654.82 | 918.57  | 974.43  | 2.13        |
| 135 | 11689.00 | 90.30 | 111.40 | 10774.44 | -666.33 | 947.35  | 1004.14 | 3.04        |
| 136 | 11721.00 | 90.40 | 111.00 | 10774.24 | -677.91 | 977.18  | 1034.91 | 1.29        |
| 137 | 11751.00 | 90.30 | 110.60 | 10774.06 | -688.56 | 1005.23 | 1063.81 | 1.37        |
| 138 | 11783.00 | 89.10 | 109.20 | 10774.23 | -699.45 | 1035.31 | 1094.76 | 5.76        |
| 139 | 11814.00 | 89.00 | 109.10 | 10774.74 | -709.62 | 1064.59 | 1124.85 | 0.46        |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
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| Kick-off:                | 1/31/2015                 |
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| Directional Supervision: | Ryan Directional Services |
| Date:                    | 2/17/2015                 |
| Time:                    | 10:16                     |
| F9 to re-calculate       |                           |

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

Proposed dir: 95.23

| No. | MD       | INC   | TRUE   |          |         |         | SECT    | DLS/<br>100 |
|-----|----------|-------|--------|----------|---------|---------|---------|-------------|
|     |          |       | AZM    | TVD      | N-S     | E-W     |         |             |
| 140 | 11845.00 | 89.00 | 109.30 | 10775.28 | -719.81 | 1093.87 | 1154.93 | 0.65        |
| 141 | 11876.00 | 88.70 | 109.10 | 10775.91 | -730.01 | 1123.14 | 1185.00 | 1.16        |
| 142 | 11907.00 | 88.30 | 108.80 | 10776.72 | -740.07 | 1152.45 | 1215.11 | 1.61        |
| 143 | 11937.00 | 88.60 | 108.90 | 10777.53 | -749.76 | 1180.83 | 1244.25 | 1.05        |
| 144 | 11968.00 | 88.00 | 107.10 | 10778.45 | -759.33 | 1210.29 | 1274.47 | 6.12        |
| 145 | 12000.00 | 87.60 | 107.20 | 10779.68 | -768.76 | 1240.85 | 1305.76 | 1.29        |
| 146 | 12031.00 | 87.70 | 106.40 | 10780.95 | -777.71 | 1270.50 | 1336.10 | 2.60        |
| 147 | 12063.00 | 89.10 | 105.40 | 10781.84 | -786.48 | 1301.26 | 1367.54 | 5.38        |
| 148 | 12094.00 | 89.40 | 105.70 | 10782.25 | -794.79 | 1331.13 | 1398.03 | 1.37        |
| 149 | 12126.00 | 89.70 | 105.40 | 10782.50 | -803.36 | 1361.95 | 1429.51 | 1.33        |
| 150 | 12158.00 | 90.40 | 103.80 | 10782.47 | -811.43 | 1392.92 | 1461.08 | 5.46        |
| 151 | 12189.00 | 90.20 | 103.20 | 10782.31 | -818.67 | 1423.06 | 1491.76 | 2.04        |
| 152 | 12221.00 | 90.00 | 102.40 | 10782.25 | -825.76 | 1454.27 | 1523.48 | 2.58        |
| 153 | 12252.00 | 89.60 | 100.90 | 10782.36 | -832.02 | 1484.63 | 1554.29 | 5.01        |
| 154 | 12284.00 | 89.80 | 101.30 | 10782.53 | -838.18 | 1516.03 | 1586.12 | 1.40        |
| 155 | 12315.00 | 90.20 | 100.90 | 10782.53 | -844.15 | 1546.45 | 1616.96 | 1.82        |
| 156 | 12347.00 | 90.20 | 99.80  | 10782.42 | -849.89 | 1577.93 | 1648.83 | 3.44        |
| 157 | 12379.00 | 89.80 | 99.10  | 10782.42 | -855.15 | 1609.49 | 1680.74 | 2.52        |
| 158 | 12410.00 | 89.10 | 99.30  | 10782.71 | -860.10 | 1640.09 | 1711.66 | 2.35        |
| 159 | 12442.00 | 88.80 | 97.40  | 10783.30 | -864.75 | 1671.74 | 1743.61 | 6.01        |
| 160 | 12473.00 | 88.30 | 97.20  | 10784.08 | -868.69 | 1702.48 | 1774.58 | 1.74        |
| 161 | 12505.00 | 88.30 | 96.90  | 10785.03 | -872.61 | 1734.23 | 1806.55 | 0.94        |
| 162 | 12537.00 | 89.30 | 96.10  | 10785.70 | -876.24 | 1766.01 | 1838.53 | 4.00        |
| 163 | 12568.00 | 89.50 | 95.70  | 10786.03 | -879.42 | 1796.85 | 1869.53 | 1.44        |
| 164 | 12600.00 | 90.10 | 95.60  | 10786.14 | -882.57 | 1828.69 | 1901.53 | 1.90        |
| 165 | 12631.00 | 90.90 | 95.10  | 10785.87 | -885.46 | 1859.56 | 1932.53 | 3.04        |
| 166 | 12663.00 | 90.90 | 95.40  | 10785.37 | -888.39 | 1891.42 | 1964.52 | 0.94        |
| 167 | 12695.00 | 90.90 | 95.30  | 10784.86 | -891.37 | 1923.27 | 1996.52 | 0.31        |
| 168 | 12726.00 | 90.50 | 94.20  | 10784.49 | -893.94 | 1954.17 | 2027.52 | 3.78        |
| 169 | 12758.00 | 90.20 | 94.30  | 10784.29 | -896.31 | 1986.08 | 2059.51 | 0.99        |
| 170 | 12789.00 | 90.20 | 94.00  | 10784.18 | -898.56 | 2017.00 | 2090.50 | 0.97        |
| 171 | 12821.00 | 90.40 | 92.50  | 10784.01 | -900.37 | 2048.94 | 2122.48 | 4.73        |
| 172 | 12853.00 | 89.30 | 91.80  | 10784.10 | -901.57 | 2080.92 | 2154.44 | 4.07        |
| 173 | 12884.00 | 89.60 | 92.40  | 10784.40 | -902.71 | 2111.90 | 2185.39 | 2.16        |
| 174 | 12916.00 | 89.50 | 90.60  | 10784.65 | -903.54 | 2143.88 | 2217.32 | 5.63        |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
| Township: | 153                                | N/S: N      |
| Range:    | 100                                | E/W: W      |
| Footages: | 2325                               | FN/SL: N    |
|           | 327                                | FE/WL: W    |

|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |
| Date:                    | 2/17/2015                 |
| Time:                    | 10:16                     |
| F9 to re-calculate       |                           |

Minimum Curvature Method (SPE-3362)

Proposed dir: 95.23

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD       | INC   | TRUE  |          |         |         | SECT    | DLS/<br>100 |
|-----|----------|-------|-------|----------|---------|---------|---------|-------------|
|     |          |       | AZM   | TVD      | N-S     | E-W     |         |             |
| 175 | 13011.00 | 89.50 | 90.70 | 10785.48 | -904.62 | 2238.87 | 2312.01 | 0.11        |
| 176 | 13105.00 | 88.70 | 89.40 | 10786.95 | -904.70 | 2332.86 | 2405.61 | 1.62        |
| 177 | 13200.00 | 90.10 | 90.30 | 10787.95 | -904.45 | 2427.85 | 2500.19 | 1.75        |
| 178 | 13295.00 | 89.50 | 90.50 | 10788.28 | -905.12 | 2522.85 | 2594.85 | 0.67        |
| 179 | 13389.00 | 89.60 | 90.30 | 10789.02 | -905.77 | 2616.84 | 2688.51 | 0.24        |
| 180 | 13484.00 | 90.70 | 90.20 | 10788.77 | -906.19 | 2711.84 | 2783.15 | 1.16        |
| 181 | 13579.00 | 91.00 | 89.90 | 10787.36 | -906.27 | 2806.83 | 2877.75 | 0.45        |
| 182 | 13674.00 | 89.20 | 88.10 | 10787.19 | -904.61 | 2901.81 | 2972.18 | 2.68        |
| 183 | 13768.00 | 88.00 | 88.70 | 10789.49 | -901.99 | 2995.74 | 3065.49 | 1.43        |
| 184 | 13863.00 | 90.00 | 89.00 | 10791.15 | -900.08 | 3090.70 | 3159.88 | 2.13        |
| 185 | 13958.00 | 90.60 | 88.50 | 10790.65 | -898.01 | 3185.68 | 3254.27 | 0.82        |
| 186 | 14053.00 | 91.40 | 88.70 | 10788.99 | -895.69 | 3280.63 | 3348.62 | 0.87        |
| 187 | 14148.00 | 90.90 | 88.80 | 10787.09 | -893.62 | 3375.59 | 3442.99 | 0.54        |
| 188 | 14242.00 | 89.50 | 88.80 | 10786.76 | -891.65 | 3469.57 | 3536.40 | 1.49        |
| 189 | 14337.00 | 87.90 | 90.30 | 10788.91 | -890.90 | 3564.53 | 3630.90 | 2.31        |
| 190 | 14432.00 | 88.10 | 91.30 | 10792.23 | -892.23 | 3659.46 | 3725.56 | 1.07        |
| 191 | 14527.00 | 89.60 | 92.60 | 10794.14 | -895.46 | 3754.39 | 3820.38 | 2.09        |
| 192 | 14621.00 | 90.80 | 93.60 | 10793.81 | -900.54 | 3848.24 | 3914.31 | 1.66        |
| 193 | 14716.00 | 90.20 | 92.70 | 10792.98 | -905.76 | 3943.10 | 4009.24 | 1.14        |
| 194 | 14811.00 | 90.40 | 92.00 | 10792.48 | -909.66 | 4038.01 | 4104.12 | 0.77        |
| 195 | 14906.00 | 89.80 | 91.00 | 10792.32 | -912.15 | 4132.98 | 4198.92 | 1.23        |
| 196 | 15000.00 | 89.20 | 89.20 | 10793.14 | -912.31 | 4226.97 | 4292.54 | 2.02        |
| 197 | 15095.00 | 88.80 | 88.60 | 10794.79 | -910.49 | 4321.94 | 4386.94 | 0.76        |
| 198 | 15190.00 | 89.50 | 89.80 | 10796.20 | -909.16 | 4416.92 | 4481.40 | 1.46        |
| 199 | 15285.00 | 90.90 | 91.10 | 10795.87 | -909.91 | 4511.91 | 4576.07 | 2.01        |
| 200 | 15380.00 | 90.10 | 89.40 | 10795.04 | -910.32 | 4606.90 | 4670.70 | 1.98        |
| 201 | 15474.00 | 86.90 | 88.00 | 10797.50 | -908.19 | 4700.83 | 4764.04 | 3.72        |
| 202 | 15569.00 | 86.50 | 88.30 | 10802.97 | -905.13 | 4795.62 | 4858.16 | 0.53        |
| 203 | 15664.00 | 86.90 | 89.60 | 10808.44 | -903.39 | 4890.45 | 4952.43 | 1.43        |
| 204 | 15759.00 | 88.80 | 89.90 | 10812.00 | -902.98 | 4985.37 | 5046.93 | 2.02        |
| 205 | 15854.00 | 89.10 | 89.60 | 10813.74 | -902.56 | 5080.36 | 5141.48 | 0.45        |
| 206 | 15948.00 | 89.50 | 89.20 | 10814.89 | -901.58 | 5174.35 | 5234.99 | 0.60        |
| 207 | 16043.00 | 89.50 | 88.20 | 10815.72 | -899.42 | 5269.32 | 5329.36 | 1.05        |
| 208 | 16138.00 | 89.90 | 87.40 | 10816.22 | -895.78 | 5364.24 | 5423.56 | 0.94        |
| 209 | 16233.00 | 89.70 | 88.10 | 10816.55 | -892.05 | 5459.17 | 5517.76 | 0.77        |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
| Operator: | Oasis Petroleum North America, LLC |             |
| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
| Township: | 153                                | N/S: N      |
| Range:    | 100                                | E/W: W      |
| Footages: | 2325                               | FN/SL: N    |
|           | 327                                | FE/WL: W    |

|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |
| Date:                    | 2/17/2015                 |
| Time:                    | 10:16                     |
| F9 to re-calculate       |                           |

Minimum Curvature Method (SPE-3362)

Proposed dir: 95.23

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD       | INC   | TRUE  |          |         |         | SECT    | DLS/<br>100 |
|-----|----------|-------|-------|----------|---------|---------|---------|-------------|
|     |          |       | AZM   | TVD      | N-S     | E-W     |         |             |
| 210 | 16328.00 | 89.90 | 89.50 | 10816.88 | -890.06 | 5554.15 | 5612.15 | 1.49        |
| 211 | 16422.00 | 89.80 | 89.10 | 10817.13 | -888.91 | 5648.14 | 5705.65 | 0.44        |
| 212 | 16517.00 | 89.40 | 90.30 | 10817.79 | -888.41 | 5743.13 | 5800.20 | 1.33        |
| 213 | 16612.00 | 88.40 | 90.30 | 10819.62 | -888.91 | 5838.11 | 5894.83 | 1.05        |
| 214 | 16707.00 | 89.70 | 91.80 | 10821.19 | -890.65 | 5933.08 | 5989.56 | 2.09        |
| 215 | 16801.00 | 89.40 | 92.50 | 10821.93 | -894.18 | 6027.01 | 6083.42 | 0.81        |
| 216 | 16896.00 | 89.50 | 91.50 | 10822.84 | -897.49 | 6121.95 | 6178.27 | 1.06        |
| 217 | 16991.00 | 88.80 | 91.80 | 10824.25 | -900.23 | 6216.89 | 6273.07 | 0.80        |
| 218 | 17086.00 | 90.10 | 91.40 | 10825.16 | -902.88 | 6311.85 | 6367.87 | 1.43        |
| 219 | 17180.00 | 89.90 | 90.80 | 10825.16 | -904.68 | 6405.83 | 6461.63 | 0.67        |
| 220 | 17275.00 | 89.10 | 90.10 | 10825.99 | -905.43 | 6500.83 | 6556.29 | 1.12        |
| 221 | 17370.00 | 89.70 | 90.00 | 10826.99 | -905.51 | 6595.82 | 6650.90 | 0.64        |
| 222 | 17465.00 | 89.80 | 88.90 | 10827.40 | -904.60 | 6690.81 | 6745.42 | 1.16        |
| 223 | 17559.00 | 90.20 | 88.90 | 10827.40 | -902.80 | 6784.80 | 6838.84 | 0.43        |
| 224 | 17654.00 | 90.50 | 88.70 | 10826.82 | -900.81 | 6879.77 | 6933.24 | 0.38        |
| 225 | 17749.00 | 91.20 | 87.90 | 10825.41 | -897.99 | 6974.72 | 7027.54 | 1.12        |
| 226 | 17844.00 | 90.80 | 88.90 | 10823.75 | -895.34 | 7069.67 | 7121.85 | 1.13        |
| 227 | 17939.00 | 89.50 | 88.50 | 10823.50 | -893.18 | 7164.64 | 7216.23 | 1.43        |
| 228 | 18033.00 | 89.70 | 89.60 | 10824.16 | -891.62 | 7258.62 | 7309.68 | 1.19        |
| 229 | 18128.00 | 89.90 | 90.10 | 10824.49 | -891.37 | 7353.62 | 7404.26 | 0.57        |
| 230 | 18223.00 | 89.80 | 89.30 | 10824.74 | -890.88 | 7448.62 | 7498.82 | 0.85        |
| 231 | 18318.00 | 90.00 | 89.30 | 10824.91 | -889.72 | 7543.61 | 7593.31 | 0.21        |
| 232 | 18412.00 | 90.40 | 91.00 | 10824.58 | -889.96 | 7637.61 | 7686.93 | 1.86        |
| 233 | 18507.00 | 90.20 | 92.10 | 10824.08 | -892.53 | 7732.57 | 7781.73 | 1.18        |
| 234 | 18602.00 | 90.90 | 91.70 | 10823.17 | -895.68 | 7827.51 | 7876.57 | 0.85        |
| 235 | 18697.00 | 89.90 | 91.20 | 10822.51 | -898.08 | 7922.48 | 7971.36 | 1.18        |
| 236 | 18791.00 | 88.70 | 89.90 | 10823.65 | -898.99 | 8016.46 | 8065.03 | 1.88        |
| 237 | 18886.00 | 89.80 | 90.30 | 10824.90 | -899.15 | 8111.45 | 8159.64 | 1.23        |
| 238 | 18981.00 | 89.50 | 90.90 | 10825.48 | -900.15 | 8206.45 | 8254.33 | 0.71        |
| 239 | 19076.00 | 89.90 | 90.80 | 10825.98 | -901.56 | 8301.43 | 8349.05 | 0.43        |
| 240 | 19171.00 | 90.70 | 90.60 | 10825.48 | -902.72 | 8396.42 | 8443.75 | 0.87        |
| 241 | 19265.00 | 91.20 | 90.20 | 10823.92 | -903.37 | 8490.41 | 8537.41 | 0.68        |
| 242 | 19360.00 | 91.00 | 91.10 | 10822.10 | -904.45 | 8585.38 | 8632.09 | 0.97        |
| 243 | 19455.00 | 90.80 | 92.10 | 10820.60 | -907.10 | 8680.33 | 8726.88 | 1.07        |
| 244 | 19550.00 | 88.90 | 92.50 | 10820.85 | -910.92 | 8775.25 | 8821.75 | 2.04        |

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# SUNBURST CONSULTING, INC.

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|           |                                    |             |
|-----------|------------------------------------|-------------|
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| Well :    | Chalmers 5300 21-19 11TB           |             |
| County:   | Mckenzie                           | State: ND   |
| QQ:       | Lot 2                              | Section: 19 |
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|                          |                           |
|--------------------------|---------------------------|
| Kick-off:                | 1/31/2015                 |
| Finish:                  | 2/8/2015                  |
| Directional Supervision: | Ryan Directional Services |

Date: 2/17/2015  
 Time: 10:16  
**F9 to re-calculate**

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

| No. | MD       | INC   | TRUE  |          |         |         | SECT    | DLS/<br>100 |
|-----|----------|-------|-------|----------|---------|---------|---------|-------------|
|     |          |       | AZM   | TVD      | N-S     | E-W     |         |             |
| 245 | 19645.00 | 89.30 | 92.70 | 10822.34 | -915.22 | 8870.14 | 8916.64 | 0.47        |
| 246 | 19739.00 | 90.20 | 92.40 | 10822.76 | -919.41 | 8964.05 | 9010.54 | 1.01        |
| 247 | 19834.00 | 89.30 | 91.70 | 10823.17 | -922.81 | 9058.98 | 9105.39 | 1.20        |
| 248 | 19929.00 | 89.80 | 91.60 | 10823.92 | -925.54 | 9153.94 | 9200.20 | 0.54        |
| 249 | 20024.00 | 89.40 | 91.10 | 10824.58 | -927.78 | 9248.91 | 9294.98 | 0.67        |
| 250 | 20118.00 | 90.90 | 91.20 | 10824.33 | -929.67 | 9342.89 | 9388.74 | 1.60        |
| 251 | 20213.00 | 90.30 | 88.50 | 10823.34 | -929.42 | 9437.88 | 9483.30 | 2.91        |
| 252 | 20308.00 | 89.10 | 86.50 | 10823.84 | -925.27 | 9532.78 | 9577.43 | 2.46        |
| 253 | 20403.00 | 89.50 | 86.60 | 10825.00 | -919.56 | 9627.60 | 9671.34 | 0.43        |
| 254 | 20498.00 | 88.70 | 85.50 | 10826.49 | -913.01 | 9722.36 | 9765.11 | 1.43        |
| 255 | 20593.00 | 89.80 | 85.60 | 10827.73 | -905.64 | 9817.06 | 9858.75 | 1.16        |
| 256 | 20612.00 | 90.50 | 85.90 | 10827.68 | -904.24 | 9836.01 | 9877.49 | 4.01        |
| 257 | 20680.00 | 90.50 | 85.90 | 10827.09 | -899.37 | 9903.83 | 9944.58 | 0.00        |

# DEVIATION SURVEYS

| Depth | Inclination | Azimuth |
|-------|-------------|---------|
| 160   | 0.90        | 215.30  |
| 251   | 0.70        | 262.00  |
| 344   | 0.40        | 86.60   |
| 428   | 0.40        | 85.90   |
| 515   | 0.40        | 109.10  |
| 599   | 0.50        | 84.50   |
| 687   | 0.70        | 91.90   |
| 773   | 0.90        | 127.20  |
| 860   | 0.90        | 124.60  |
| 945   | 0.50        | 113.70  |
| 1035  | 0.50        | 91.20   |
| 1125  | 1.10        | 43.40   |
| 1210  | 1.20        | 20.40   |
| 1301  | 1.20        | 8.70    |
| 1391  | 1.20        | 354.60  |
| 1477  | 1.80        | 350.90  |
| 1564  | 2.50        | 344.60  |
| 1656  | 2.60        | 334.50  |
| 1746  | 1.10        | 323.20  |
| 1835  | 0.70        | 251.10  |
| 1922  | 0.90        | 211.10  |
| 2011  | 0.50        | 221.00  |
| 2102  | 0.90        | 237.10  |

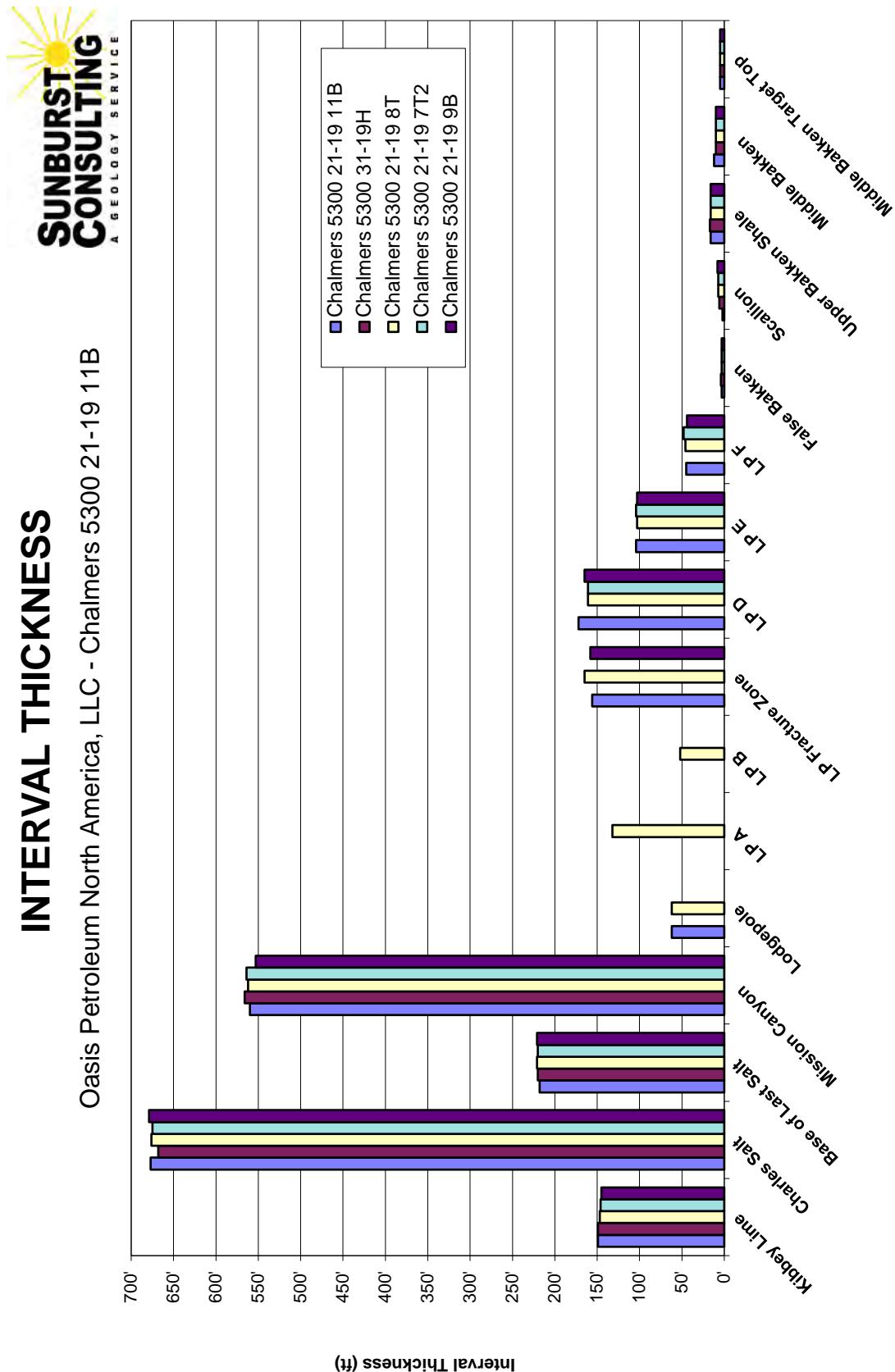
## FORMATION TOPS & STRUCTURAL RELATIONSHIPS

## CONTROL DATA

| Operator:                 | Oasis Petroleum North America, LLC<br>Chalmers 5300 31-19H | Oasis Petroleum North America, LLC<br>Chalmers 5300 21-19 7T2 | Oasis Petroleum North America, LLC<br>Chalmers 5300 21-19 9B |
|---------------------------|--|---|--|
| Well Name:                | NW SW Sec. 19 T153N R100W                                  | Lot 2, Sec. 19, T153N, R101W                                  | Lot 2, Sec. 19, T153N, R100W                                 |
| Location:                 | McKenzie County, ND  | McKenzie County, ND   | McKenzie County, ND  |
| Elevation:                | ~1/4 mile S of subject well<br>KB: 1,929'                  | Shares pad with subject well<br>KB: 2,076'                    | Shares pad with subject well<br>KB: 2,076'                   |
| Formation/<br>Zone        | E-Log<br>Top   | Datum<br>(MSL)  | Interval<br>Thickness  |
|                           |  |   | Thickness to<br>Target<br>Landing                            |
| Kibbey Lime               | 8,243'   | -6,314'   | 2,355'   |
| Charles Salt              | 8,392'   | -6,463'   | 2,206'   |
| Base of Last Salt         | 9,060'   | -7,131'   | 220'   |
| Mission Canyon            | 9,280'   | -7,351'   | 566'   |
| Lodgepole                 | 9,846'   | -7,917'   | 752'   |
| LP A                      | -  | -   | -  |
| LP B                      | -  | -   | -  |
| LP Fracture Zone          | -  | -   | -  |
| LP D                      | -  | -   | -  |
| LP E                      | -  | -   | -  |
| LP F                      | -  | -   | -  |
| False Bakken              | 10,556'  | -8,627'   | 4'   |
| Scallion                  | 10,560'  | -8,631'   | 6'   |
| Upper Bakken Shale        | 10,566'  | -8,637'   | 17'  |
| Middle Bakken             | 10,583'  | -8,654'   | 10'  |
| Middle Bakken Target Top  | 10,593'  | -8,664'   | 5'   |
| Landing Target            | 10,598'  | -8,669'   | 5'   |
| Middle Bakken Target Base | 10,603'  | -8,674'   | 13'  |
| Lower Bakken Shale        | 10,616'  | -8,687'   | 33'  |
| Three Forks               | 10,649'  | -8,720'   | -  |

# INTERVAL THICKNESS

Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11B



# LANDING PROJECTION

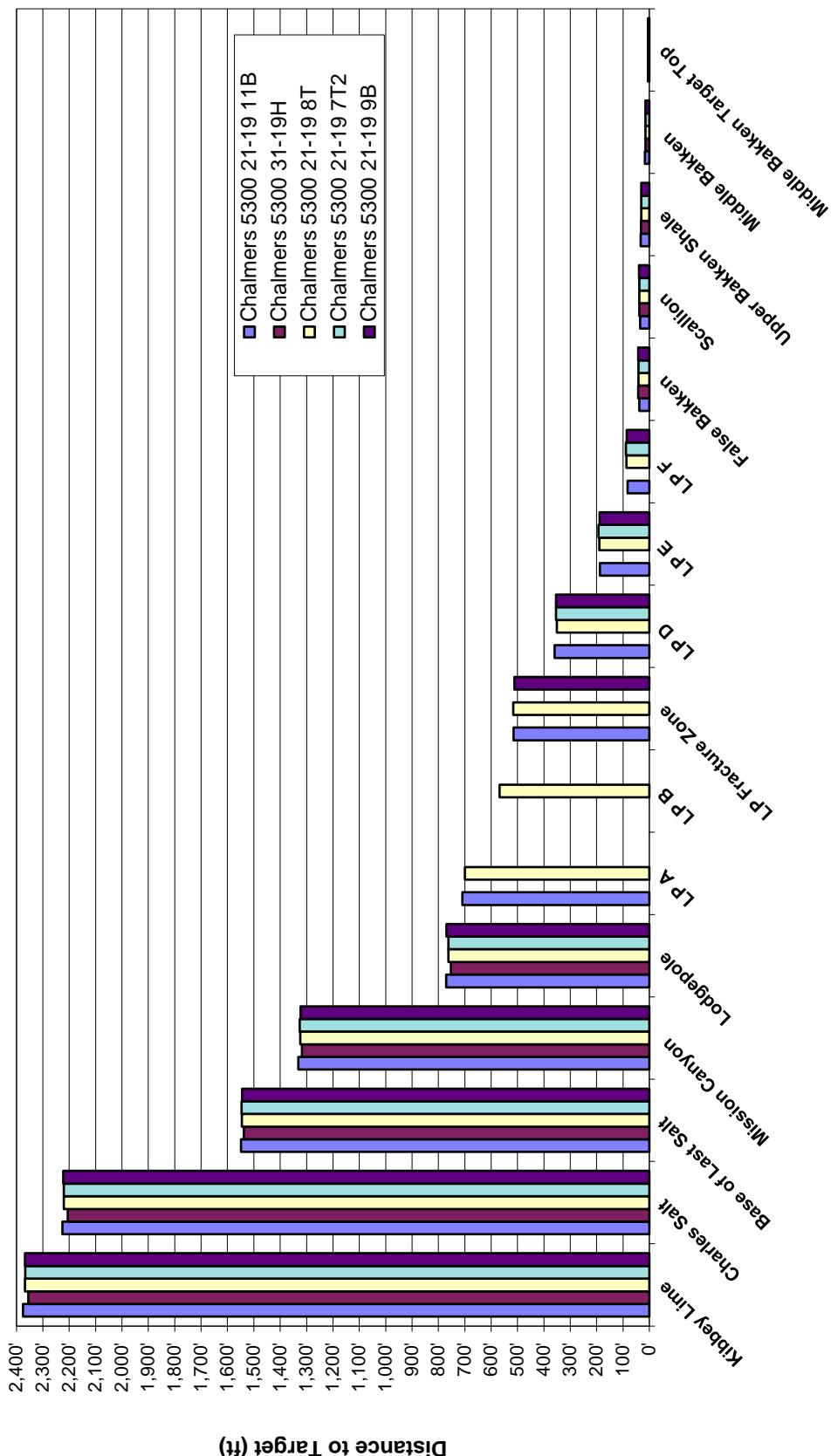
| Formation/Zone:          | Proposed Target Landing From: |                        |                         |                        |                         |
|--------------------------|-------------------------------|------------------------|-------------------------|------------------------|-------------------------|
|                          | Chalmers 5300 31-19H          | Chalmers 5300 21-19 8T | Chalmers 5300 21-19 7T2 | Chalmers 5300 21-19 9B | Average of Offset Wells |
| Kibbey Lime              | 10,741'                       | 10,754'                | 10,753'                 | 10,754'                | 10,751'                 |
| Charles Salt             | 10,741'                       | 10,756'                | 10,756'                 | 10,758'                | 10,753'                 |
| Base of Last Salt        | 10,750'                       | 10,757'                | 10,758'                 | 10,756'                | 10,755'                 |
| Mission Canyon           | 10,748'                       | 10,754'                | 10,756'                 | 10,753'                | 10,753'                 |
| Lodgepole                | 10,742'                       | 10,752'                | 10,752'                 | 10,760'                | 10,752'                 |
| LP A                     | -                             | 10,752'                | -                       | -                      | -                       |
| LP B                     | -                             | -                      | -                       | -                      | -                       |
| LP Fracture Zone         | -                             | 10,762'                | -                       | 10,758'                | 10,760'                 |
| LP D                     | -                             | 10,753'                | 10,756'                 | 10,756'                | 10,755'                 |
| LP E                     | -                             | 10,764'                | 10,767'                 | 10,763'                | 10,765'                 |
| LP F                     | -                             | 10,765'                | 10,767'                 | 10,764'                | 10,765'                 |
| False Bakken             | 10,765'                       | 10,764'                | 10,764'                 | 10,765'                | 10,765'                 |
| Scallion                 | 10,764'                       | 10,764'                | 10,764'                 | 10,765'                | 10,764'                 |
| Upper Bakken Shale       | 10,760'                       | 10,759'                | 10,759'                 | 10,759'                | 10,759'                 |
| Middle Bakken            | 10,759'                       | 10,759'                | 10,759'                 | 10,759'                | 10,759'                 |
| Middle Bakken Target Top | 10,761'                       | 10,761'                | 10,761'                 | 10,761'                | 10,761'                 |
| Landing Target           | 10,761'                       | 10,761'                | 10,761'                 | 10,761'                | 10,761'                 |

**Current Landing Target (17` below base of UBS): 10,761'**

Landing targets are subject to change as new formation tops are available

## ISOPACH TO TARGET

Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11B



# LITHOLOGY

Oasis Petroleum North America, LLC  
Chalmers 5300 21-19 11B

Rig crews caught 30' sample intervals, under the supervision of Sunburst geologists, from 8,240' to the TD of the lateral at 20,680'. Formation tops and lithologic markers have been inserted into the sample descriptions below for reference. Sample descriptions begin in the Kibbey Formation just prior to the Kibbey Lime. Samples were examined wet and dry under a binocular microscope. Sample fluorescent cuts are masked by invert mud through intermediate casing. Quantifiers in order of increasing abundance are trace, rare, occasional, common and abundant.

## Drilling in the Kibbey Formation [Mississippian Big Snowy Group]

8,240-8,270 SILTSTONE: red brown, soft, sub blocky, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; rare ANHYDRITE: milky pink, crystalline, soft, massive, earthy

8,270-8,300 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, off white, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,300-8,330 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, off white, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,330-8,360 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

## Kibbey "Lime" 8,387' MD / 8,386' TVD (-6,310')

8,360-8,390 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented; ANHYDRITE: off white, light gray, soft, amorphous texture

8,390-8,420 LIMESTONE: mudstone, light brown, light gray-gray brown, micro crystalline, firm-hard, argillaceous in part, dense, crystalline-chalky texture, no visible porosity; rare ANHYDRITE: off white, light gray, soft, amorphous texture; trace SILTSTONE: red brown, tan, light orange, soft, sub blocky, calcite cement, poorly cemented

8,420-8,450 SILTSTONE: dark-light brown, tan, light orange, soft, sub blocky, calcite cement, poorly cement; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,450-8,480 SILTSTONE: dark-light brown, tan, light orange, soft, sub blocky, calcite cement, poorly cement; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,480-8,510 SILTSTONE: light brown, tan, soft, sub blocky, calcite cement, poorly cement; trace SILTY SANDSTONE: tan, off white, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

## Charles Formation [Mississippian Madison Group] 8,536' MD / 8,535' TVD (-6,459')

8,510-8,540 SALT: clear-translucent, frosted, crystalline, firm, euhedral; trace LIMESTONE: mudstone, off white, gray, rare tan, fine crystalline, firm, laminated, crystalline-chalky texture, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: as above

- 8,540-8,570 SALT: clear-translucent, frosted, crystalline, firm, euhedral; trace ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy
- 8,570-8,600 SALT: clear-translucent, frosted, crystalline, firm, euhedral
- 8,600-8,630 SALT: clear-translucent, frosted, crystalline, firm, euhedral; rare ARGILLACEOUS LIMESTONE: as above; trace ANHYDRITE: as above
- 8,630-8,660 SALT: clear-translucent, frosted, crystalline, firm, euhedral; trace ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy
- 8,660-8,690 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline
- 8,690-8,720 ANHYDRITE: off white, soft, amorphous texture; occasional ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy
- 8,720-8,750 ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy; rare SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; trace ANHYDRITE: off white, soft, amorphous texture
- 8,750-8,780 ARGILLACEOUS LIMESTONE: mudstone, gray, off white, rare cream-tan, very fine crystalline, firm, laminated, crystalline-chalky texture, possible intercrystalline porosity, no visible oil stain; SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline
- 8,780-8,810 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; occasional ARGILLACEOUS LIMESTONE: mudstone, gray, off white, rare cream, very fine crystalline, firm, laminated, crystalline-chalky texture, possible intercrystalline porosity, no visible oil stain; rare DOLOMITE: medium-light brown, micro crystalline, firm, crystalline, occasional intercrystalline porosity, common medium-light brown spotty oil stain
- 8,810-8,840 LIMESTONE: mudstone, tan, cream, light brown, very fine crystalline, firm, laminated, crystalline, rare intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace DOLOMITE: medium-light brown, micro crystalline, firm, crystalline, occasional intercrystalline porosity, common medium-light brown spotty oil stain
- 8,840-8,870 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; rare DOLOMITE: medium-light brown, micro crystalline, firm, rare intercrystalline porosity, rare medium-light brown spotty oil stain
- 8,870-8,900 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; occasional ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy; rare LIMESTONE: mudstone, tan, cream, light brown, very fine crystalline, firm, laminated, crystalline, rare intercrystalline porosity, occasional spotty light-medium brown oil stain
- 8,900-8,930 LIMESTONE: mudstone, light brown, light gray, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare even-spotty light-medium brown oil stain; common DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy
- 8,930-8,960 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare even-spotty light-medium brown oil stain; common DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy
- 8,960-8,990 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare even-spotty light-medium brown oil stain; common DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy
- 8,990-9,020 SALT: clear-translucent, rarely frosted, crystalline, firm, euhedral, crystalline

9,020-9,050 ANHYDRITE: off white, cream-light orange, soft, microcrystalline, anhedral, earthy; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light-medium brown oil stain; trace SALT: as above

9,050-9,080 ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light-medium brown oil stain; rare LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, trace spotty light-medium brown oil stain

9,080-9,110 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare spotty light brown oil stain; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain

9,110-9,140 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare spotty light brown oil stain; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain; rare ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,140-9,170 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, trace spotty light brown oil stain; rare ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,170-9,200 SALT: clear-translucent, rarely frosted, crystalline, firm, euhedral, crystalline

**Base Last Salt [Charles Formation]**

**9,213' MD / 9,212' TVD (-7,136')**

9,200-9,230 ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous; DOLOMITE: mudstone, light brown, light gray brown, rare light gray, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain

9,230-9,260 ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous; DOLOMITE: mudstone, light brown, light gray brown, rare light gray, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain

9,260-9,290 DOLOMITE: mudstone, light brown, light gray, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain; ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,290-9,320 LIMESTONE: mudstone, light brown-brown, microcrystalline, firm, earthy-crystalline texture, trace intercrystalline porosity, trace spotty light brown oil stain; rare ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,320-9,350 LIMESTONE: mudstone, light gray, light gray brown, rare light brown, firm, earthy-crystalline texture, trace intercrystalline porosity, trace disseminated pyrite, trace spotty light brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,350-9,380 LIMESTONE: mudstone, gray-light gray, gray brown, rare light brown, firm-friable, earthy-crystalline texture, trace intercrystalline porosity, trace disseminated pyrite, no visible oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,380-9,410 LIMESTONE: mudstone, gray-light gray, gray brown, rare light brown, firm-friable, earthy-crystalline texture, trace intercrystalline porosity, trace disseminated pyrite, no visible oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

**Mission Canyon Formation /Mississippian Madison Group**

**9,431' MD / 9,430' TVD (-7,354')**

9,410-9,440      LIMESTONE-ARGILLACEOUS LIMESTONE: mudstone, light brown-off white, light gray brown, trace gray, firm-friable, earthy-crystalline texture, possible intercrystalline porosity, trace disseminated pyrite, argillaceous in part, no visible oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,440-9,470      LIMESTONE: mudstone, light brown-brown, gray brown, trace gray, firm-friable, earthy-crystalline texture, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,470-9,500      LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,500-9,530      ARGILLACEOUS LIMESTONE: mudstone, light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray, firm-friable, crystalline-chalky texture, trace disseminated pyrite, possible intercrystalline porosity, trace light brown spotty oil stain

9,530-9,560      LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,560-9,590      LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,590-9,620      ARGILLACEOUS LIMESTONE: mudstone, light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray, firm-friable, crystalline-chalky texture, trace disseminated pyrite, trace fossil fragments, trace light brown spotty oil stain

9,620-9,650      LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,650-9,680      LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,680-9,710      LIMESTONE: mudstone, gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,710-9,740      LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,740-9,770      LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,770-9,800      LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,800-9,830      LIMESTONE: tan-light brown gray, off white, microcrystalline, fine crystalline, rare intercrystalline porosity, argillaceous in part, trace light brown spotty oil stain; rare ARGILLACEOUS LIMESTONE: mudstone, cream-tan, gray, trace off white, micro crystalline, friable-firm, dense, massive, trace laminated, occasional Algal laminated, earthy, trace calcite, trace pyrite, no visible porosity, trace dead oil stain

9,830-9,860 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,860-9,890 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,890-9,920 ARGILLACEOUS LIMESTONE: mudstone, light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray, firm-friable, crystalline-chalky texture, trace disseminated pyrite, no visible porosity, no visible oil stain; LIMESTONE: mudstone, light gray, rare off white, trace dark gray, trace brown, friable-firm, dense, earthy, possible intercrystalline porosity, trace light brown spotty oil stain

9,920-9,950 LIMESTONE: mudstone, light gray-gray brown, trace dark gray, firm, earthy, rare crystalline texture, trace disseminated pyrite, trace fossil fragments, possible intercrystalline porosity, trace light brown spotty oil stain

9,950-9,980 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments

**Lodgepole [Mississippian Madison Group]**      **9,991' MD / 9,990' TVD (-7,914')**

9,980-10,010 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, no visible porosity, no visible oil stain

10,010-10,040 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,040-10,070 LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,070-10,100 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,100-10,130 LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,130-10,160 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,160-10,190 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,190-10,220 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,230-10,250 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,250-10,280 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,280-10,310 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,310-10,340 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,340-10,370 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,370-10,400 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,400-10,430 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,430-10,460 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,460-10,490 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,490-10,520 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,520-10,550 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,550-10,580 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,580-10,610 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,610-10,640 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,640-10,670 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,670-10,700 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,700-10,730 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,730-10,760 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,760-10,790 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,790-10,820 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

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| <u><b>False Bakken Member [Lodgepole]</b></u>                              | <u><b>10,831' MD / 10,723' TVD (-8,647')</b></u> |
| <u><b>Scallion [Lodgepole]</b></u>   | <u><b>10,835' MD / 10,726' TVD (-8,650')</b></u> |
| <u><b>Upper Bakken Shale [Mississippian-Devonian Bakken Formation]</b></u> | <u><b>10,842' MD / 10,728' TVD (-8,652')</b></u> |

10,820-10,850 ARGILLACEOUS LIMESTONE: as above; occasional SHALE: black, black gray, hard, splintery, smooth, pyritic, carbonaceous, fracture porosity; trace LIMESTONE: as above

10,850-10,880 SHALE: black, black gray, hard, sub blocky-sub platy, earthy, pyritic, carbonaceous, fracture porosity, black oil stain

**Middle Bakken Member [Mississippian-Devonian Bakken Formation] 10,884' MD / 10,744' TVD (-8,668')**

10,880-10,910 SILTY SANDSTONE: light brown-tan, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, intercrystalline porosity, occasional light brown spotty oil stain; trace SHALE: as above

10,910-10,940 SILTY SANDSTONE: light brown-tan, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, intercrystalline porosity, occasional light brown spotty oil stain

10,940-10,970 SILTY SANDSTONE: light brown-tan, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, intercrystalline porosity, occasional light brown spotty oil stain

10,970-11,000 SILTY SANDSTONE: medium brown, trace light brown-gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, occasional intercrystalline porosity, common medium-light brown spotty oil stain

11,000-11,030 SILTY SANDSTONE: medium brown, trace light brown-gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, occasional intercrystalline porosity, common medium-light brown spotty oil stain

11,030-11,060 SILTY SANDSTONE: medium brown, trace light brown-gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, occasional intercrystalline porosity, common medium-light brown spotty oil stain

11,060-11,085 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain

11,085-11,120 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain











12,920-12,950 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

12,950-12,980 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

12,980-13,010 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,010-13,040 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,040-13,070 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,070-13,100 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,100-13,130 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,130-13,160 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,160-13,190 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,190-13,220 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence





13,820-13,850 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,850-13,880 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,880-13,910 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,910-13,940 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,940-13,970 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,970-14,000 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,000-14,030 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,030-14,060 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,060-14,090 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,090-14,120 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence



14,420-14,450 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,450-14,480 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,480-14,510 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,510-14,540 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,540-14,570 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,570-14,600 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,600-14,630 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,630-14,660 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,660-14,690 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,690-14,720 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,720-14,750 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,750-14,780 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,780-14,810 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,810-14,840 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,840-14,870 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,870-14,900 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,900-14,930 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,930-14,960 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,960-14,990 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,990-15,020 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,020-15,050 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,050-15,080 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,080-15,110 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,110-15,140 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,140-15,170 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,170-15,200 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,200-15,230 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,230-15,260 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,260-15,290 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,290-15,320 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,320-15,350 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,350-15,380 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,380-15,410 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,410-15,440 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,440-15,470 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,470-15,500 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,500-15,530 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,530-15,560 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,560-15,590 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,590-15,620 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,620-15,650 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,650-15,680 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,680-15,710 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,710-15,740 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,740-15,770 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,770-15,800 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,800-15,830 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,830-15,860 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,860-15,890 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,890-15,920 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,920-15,950 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,950-15,980 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,980-16,010 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,010-16,040 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,040-16,070 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,070-16,100 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,100-16,130 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,130-16,160 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,160-16,190 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,190-16,220 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence



16,520-16,550 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,550-16,580 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,580-16,610 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,610-16,640 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,640-16,670 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,670-16,700 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,700-16,730 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,730-16,760 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,760-16,790 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,790-16,820 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,820-16,850 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,850-16,880 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,880-16,910 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,910-16,940 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,940-16,970 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,970-17,000 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,000-17,030 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,030-17,060 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,060-17,090 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,090-17,120 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,120-17,150 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,150-17,180 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,180-17,210 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,210-17,240 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,240-17,270 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,270-17,300 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,300-17,330 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,330-17,360 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,360-17,390 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,390-17,420 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence







18,320-18,350 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,350-18,380 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,380-18,410 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,410-18,440 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,440-18,470 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,470-18,500 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,500-18,530 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,530-18,560 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,560-18,590 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,590-18,620 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence



18,920-18,950 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,950-18,980 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,980-19,010 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,010-19,040 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,040-19,070 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,070-19,100 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,100-19,130 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,130-19,160 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,160-19,190 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,190-19,220 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,220-19,250 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,250-19,280 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,280-19,310 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,310-19,340 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,340-19,370 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,370-19,400 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,400-19,430 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,430-19,460 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,460-19,490 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,490-19,520 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,520-19,550 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,550-19,580 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,580-19,610 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,610-19,640 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,640-19,670 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,670-19,700 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,700-19,730 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,730-19,760 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,760-19,790 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,790-19,820 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,820-19,850 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,850-19,880 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,880-19,910 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,910-19,940 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,940-19,970 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,970-20,000 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,000-20,030 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,030-20,060 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,060-20,090 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,090-20,120 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence



20,420-20,450 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,450-20,480 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,480-20,510 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,510-20,540 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,540-20,570 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,570-20,600 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,600-20,630 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,630-120,660 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,660-20,680 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence



## Directional Survey Certification

**Operator:** Oasis Petroleum LLC    **Well Name:** Chalmers 5300 21-19 11T    **API:** 33-053-06024

**Enseco Job#:** S14004-02    **Job Type:** MWD D&I    **County, State:** McKenzie County, N. Dakota

**Well Surface Hole Location (SHL):** Lot 2 , Sec. 19, T1153N, R100W (2,325' FNL & 326 FWL)

**Latitude:** 48° 03' 40.32 N    **Longitude:** 103° 36' 10.11 W    **Datum:** Nad 83

**Final MWD Report Date:** Dec. 05, 2014    **MWD Survey Run Date:** Dec. 01, 2014 to Dec. 01, 2014

**Tied In to Surveys Provided By:** Enseco Directional Drilling D&I MWD    **MD:** Surface

**MWD Surveyed from** 00 ft **to** 2,148.0 ft **MD**    **Survey Type:** Positive Pulse D&I MWD    **Sensor to Bit:** 35 ft

**Rig Contractor:** Nabors    **Rig Number:** B22    **RKB Height:** 2,079.0 ft    **GL Elevation:** 2,054.0 ft

**MWD Surveyor Name:** David Hopper

"The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Enseco Energy Services USA Corp. I am authorized and qualified to review the data, calculations and this report and that the report represents a true and correct Directional Survey of this well based on the original data corrected to True North and obtained at the well site. Wellbore coordinates are calculated using the minimum curvature method."

Jonathan Hovland, Well Planner

**Enseco Representative Name, Title**

Jonathan Hovland

Signature

**December 9th 2014**

Date Signed

On this the    day of   , 20  , before me personally appeared First & Last Name, to me known as the person described in and who executed the foregoing instrument and acknowledged the (s)he executed the same as his/her free act and deed.

**Seal:** \_\_\_\_\_

Notary Public

Commission Expiry



## Enseco Survey Report

09 December, 2014

### Continental Resources

McKenzie County, N. Dakota  
Lot 2 Sec.19 Twp.153N Rge.100W  
Chalmers 5300 21-19 11T  
Job # S14004-02  
API#: 33-053-06024

Survey: Final Surveys Vertical Section





## Survey Report



|           |                                |                              |                                  |
|-----------|--------------------------------|------------------------------|----------------------------------|
| Company:  | Continental Resources          | Local Co-ordinate Reference: | Well Chalmers 5300 21-19 11T     |
| Project:  | McKenzie County, N. Dakota     | Ground Level Elevation:      | 2,054.00usft                     |
| Site:     | Lot 2 Sec.19 Twp.153N Rge.100W | Wellhead Elevation:          | KB 25 @ 2079.00usft (Nabors B22) |
| Well:     | Chalmers 5300 21-19 11T        | North Reference:             | True                             |
| Wellbore: | Job # S14004-02                | Survey Calculation Method:   | Minimum Curvature                |
| Design:   | Final Surveys Vertical Section | Database:                    | EDM5000                          |

|             |                            |               |                             |
|-------------|----------------------------|---------------|-----------------------------|
| Project     | McKenzie County, N. Dakota |               |                             |
| Map System: | US State Plane 1983        | System Datum: | Mean Sea Level              |
| Geo Datum:  | North American Datum 1983  |               |                             |
| Map Zone:   | North Dakota Northern Zone |               | Using geodetic scale factor |

|                       |                                |                        |                              |
|-----------------------|--------------------------------|------------------------|------------------------------|
| Site                  | Lot 2 Sec.19 Twp.153N Rge.100W |                        |                              |
| Site Position:        | Northing:                      | 402,374.71 usft        | Latitude: 48° 3' 40.320 N    |
| From: Lat/Long        | Easting:                       | 1,209,981.92 usft      | Longitude: 103° 36' 10.110 W |
| Position Uncertainty: | 0.00 usft                      | Slot Radius: 13-3/16 " | Grid Convergence: -2.309°    |

|                      |                         |                    |   |   |              |
|----------------------|-------------------------|--------------------|---|---|--------------|
| Well                 | Chalmers 5300 21-19 11T | API#: 33-053-06024 |   |   |              |
| Well Position        | +N/-S<br>+E/-W          | 0.00 usft          | Northing: 402,374.71 usft<br>Easting: 1,209,981.92 usft | Latitude: 48° 3' 40.320 N<br>Longitude: 103° 36' 10.110 W |              |
| Position Uncertainty |                         | 0.00 usft          | Wellhead Elevation: 2,079.00 usft                       | Ground Level:   | 2,054.00usft |

|           |                 |             |                 |               |                     |
|-----------|-----------------|-------------|-----------------|---------------|---------------------|
| Wellbore  | Job # S14004-02 |             |                 |               |                     |
| Magnetics | Model Name      | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | IGRF2010        | 12/9/2014   | 8.181           | 72.957        | 56,376              |

|                   |                                |                            |                          |                 |               |
|-------------------|--------------------------------|----------------------------|--------------------------|-----------------|---------------|
| Design:           | Final Surveys Vertical Section | Survey Error Model:        | Standard ISCWSA MWD Tool |                 |               |
| Audit Notes:      |                                |                            |                          |                 |               |
| Version:          | 1.0                            | Phase:                     | ACTUAL                   | Tie On Depth:   | 0.00          |
| Vertical Section: |                                | Depth From (TVD)<br>(usft) | +N/-S<br>(usft)          | +E/-W<br>(usft) | Direction (°) |
|                   |                                | 0.00                       | 0.00                     | 0.00            | 356.30        |



## Survey Report



|                  |                                |                                     |                                  |
|------------------|--------------------------------|-------------------------------------|----------------------------------|
| <b>Company:</b>  | Continental Resources          | <b>Local Co-ordinate Reference:</b> | Well Chalmers 5300 21-19 11T     |
| <b>Project:</b>  | McKenzie County, N. Dakota     | <b>Ground Level Elevation:</b>      | 2,054.00usft                     |
| <b>Site:</b>     | Lot 2 Sec.19 Twp.153N Rge.100W | <b>Wellhead Elevation:</b>          | KB 25 @ 2079.00usft (Nabors B22) |
| <b>Well:</b>     | Chalmers 5300 21-19 11T        | <b>North Reference:</b>             | True                             |
| <b>Wellbore:</b> | Job # S14004-02                | <b>Survey Calculation Method:</b>   | Minimum Curvature                |
| <b>Design:</b>   | Final Surveys Vertical Section | <b>Database:</b>                    | EDM5000                          |

| Survey                     |            |            |               |              |                |                |                               |                               |                              |                             |
|----------------------------|------------|------------|---------------|--------------|----------------|----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| MD<br>(usft)               | Inc<br>(°) | Azi<br>(°) | TVD<br>(usft) | SS<br>(usft) | +N-S<br>(usft) | +E/W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(%/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
| <b>Tie-in from Surface</b> |            |            |               |              |                |                |                               |                               |                              |                             |
| 0.00                       | 0.00       | 0.00       | 0.00          | 2,079.00     | 0.00           | 0.00           | 0.00                          | 0.00                          | 0.00                         | 0.00                        |
| 160.00                     | 0.90       | 215.30     | 159.99        | 1,919.01     | -1.03          | -0.73          | -0.98                         | 0.56                          | 0.56                         | 0.00                        |
| 251.00                     | 0.70       | 262.00     | 250.99        | 1,828.01     | -1.69          | -1.69          | -1.57                         | 0.73                          | -0.22                        | 51.32                       |
| 344.00                     | 0.40       | 86.60      | 343.98        | 1,735.02     | -1.75          | -1.93          | -1.62                         | 1.18                          | -0.32                        | -188.60                     |
| 428.00                     | 0.40       | 85.90      | 427.98        | 1,651.02     | -1.71          | -1.34          | -1.62                         | 0.01                          | 0.00                         | -0.83                       |
| 515.00                     | 0.40       | 109.10     | 514.98        | 1,564.02     | -1.79          | -0.75          | -1.73                         | 0.18                          | 0.00                         | 26.67                       |
| 599.00                     | 0.50       | 84.50      | 598.98        | 1,480.02     | -1.85          | -0.11          | -1.84                         | 0.26                          | 0.12                         | -29.29                      |
| 687.00                     | 0.70       | 91.90      | 686.97        | 1,392.03     | -1.83          | 0.81           | -1.88                         | 0.24                          | 0.23                         | 8.41                        |
| 773.00                     | 0.90       | 127.20     | 772.96        | 1,306.04     | -2.25          | 1.87           | -2.37                         | 0.61                          | 0.23                         | 41.05                       |
| 860.00                     | 0.90       | 124.60     | 859.95        | 1,219.05     | -3.05          | 2.98           | -3.24                         | 0.05                          | 0.00                         | -2.99                       |
| 945.00                     | 0.50       | 113.70     | 944.95        | 1,134.05     | -3.58          | 3.87           | -3.82                         | 0.49                          | -0.47                        | -12.82                      |
| 1,035.00                   | 0.50       | 91.20      | 1,034.94      | 1,044.06     | -3.75          | 4.62           | -4.04                         | 0.22                          | 0.00                         | -25.00                      |
| 1,125.00                   | 1.10       | 43.40      | 1,124.94      | 954.06       | -3.13          | 5.61           | -3.48                         | 0.94                          | 0.67                         | -53.11                      |
| 1,210.00                   | 1.20       | 20.40      | 1,209.92      | 869.08       | -1.70          | 6.48           | -2.12                         | 0.55                          | 0.12                         | -27.06                      |
| 1,301.00                   | 1.20       | 8.70       | 1,300.90      | 778.10       | 0.13           | 6.95           | -0.32                         | 0.27                          | 0.00                         | -12.86                      |
| 1,391.00                   | 1.20       | 354.60     | 1,390.88      | 688.12       | 2.00           | 7.01           | 1.55                          | 0.33                          | 0.00                         | -15.67                      |
| 1,477.00                   | 1.80       | 350.90     | 1,476.85      | 602.15       | 4.23           | 6.71           | 3.79                          | 0.71                          | 0.70                         | -4.30                       |
| 1,564.00                   | 2.50       | 344.60     | 1,563.79      | 515.21       | 7.41           | 5.99           | 7.01                          | 0.85                          | 0.80                         | -7.24                       |
| 1,656.00                   | 2.60       | 334.50     | 1,655.70      | 423.30       | 11.23          | 4.56           | 10.91                         | 0.50                          | 0.11                         | -10.98                      |
| 1,746.00                   | 1.10       | 323.20     | 1,745.65      | 333.35       | 13.76          | 3.16           | 13.53                         | 1.71                          | -1.67                        | -12.56                      |
| 1,835.00                   | 0.70       | 251.10     | 1,834.64      | 244.36       | 14.27          | 2.13           | 14.10                         | 1.24                          | -0.45                        | -81.01                      |
| 1,922.00                   | 0.90       | 211.10     | 1,921.63      | 157.37       | 13.51          | 1.28           | 13.40                         | 0.67                          | 0.23                         | -45.98                      |
| 2,011.00                   | 0.50       | 221.00     | 2,010.62      | 68.38        | 12.62          | 0.66           | 12.55                         | 0.47                          | -0.45                        | 11.12                       |
| 2,102.00                   | 0.90       | 237.10     | 2,101.62      | -22.62       | 11.94          | -0.20          | 11.92                         | 0.49                          | 0.44                         | 17.69                       |
| <b>Last MWD Survey</b>     |            |            |               |              |                |                |                               |                               |                              |                             |
| 2,148.00                   | 0.70       | 242.30     | 2,147.61      | -68.61       | 11.61          | -0.75          | 11.63                         | 0.46                          | -0.43                        | 11.30                       |

| Survey Annotations |               |                |                |                     |  |
|--------------------|---------------|----------------|----------------|---------------------|--|
| Local Coordinates  |               |                |                |                     |  |
| MD<br>(usft)       | TVD<br>(usft) | +N-S<br>(usft) | +E/W<br>(usft) | Comment             |  |
| 0.00               | 0.00          | 0.00           | 0.00           | Tie-in from Surface |  |
| 2,148.00           | 2,147.61      | 11.61          | -0.75          | Last MWD Survey     |  |



19510 Oil Center Blvd  
Houston, TX 77073  
Bus 281.443.1414  
Fax 281.443.1676

Wednesday, February 11, 2015

State of North Dakota

Subject: **Surveys**

Re: **Oasis**  
**Chalmers 5300 21-19 11B**  
**McKenzie, ND**

Enclosed, please find the original and one copy of the survey performed on the above-referenced well by Ryan Directional Services, Inc.. Other information required by your office is as follows:

| <b>Surveyor Name</b> | <b>Surveyor Title</b> | <b>Borehole Number</b> | <b>Start Depth</b> | <b>End Depth</b> | <b>Start Date</b> | <b>End Date</b> | <b>Type of</b> | <b>TD Straight Line Projection</b> |
|----------------------|-----------------------|------------------------|--------------------|------------------|-------------------|-----------------|----------------|------------------------------------|
| Jake Creech          | MWD Operator          | O.H.                   | 2148'              | 20612'           | 01/24/15          | 02/08/15        | MWD            | 20680'                             |

If any other information is required please contact the undersigned at the letterhead address or phone number.

A handwritten signature in black ink that reads "Douglas Hudson".

---

**Douglas Hudson**  
Well Planner



Ryan Directional Services, Inc.  
19510 Oil Center Blvd.  
Houston, Texas 77073  
Bus: 281.443.1414  
Fax: 281.443.1676

Sunday, February 08, 2015

State of North Dakota  
County of McKenzie

Subject: **Survey Certification Letter**

Survey Company: Ryan Directional Services, Inc.

Job Number: 8552

Surface: 48 3' 40.320 N / 103 36' 10.110 W

Survey Job Type: Ryan MWD

A.P.I. No: 33-053-06024

Customer: Oasis Petroleum

Location: McKenzie, North Dakota

Well Name: Chalmers 5300 21-19 11B

RKB Height: 25'

Rig Name: Nabors B-22

Distance to Bit: 68'

| <i>Surveyor Name</i> | <i>Surveyor Title</i> | <i>Borehole Number</i> | <i>Start Depth</i> | <i>End Depth</i> | <i>Start Date</i> | <i>End Date</i> | <i>Type of</i> | <i>TD Straight Line Projection</i> |
|----------------------|-----------------------|------------------------|--------------------|------------------|-------------------|-----------------|----------------|------------------------------------|
| Jake Creech          | MWD Supervisor        | OH                     | 2230'              | 20612'           | 01/24/15          | 02/08/15        | MWD            | 20680'                             |

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Ryan Directional Services, Inc. I am authorized and qualified to review the data, calculations and these reports; the reports represents true and correct Directional Surveys of this well based on the original data, the minimum curvature method, corrected to True North and obtained at the well site.



Jake Creech  
MWD Supervisor  
Ryan Directional Services, Inc.



### SURVEY REPORT

Customer: **Oasis Petroleum**  
Well Name: **Chalmers 5300 21-19 11B**  
Rig #: **Nabors B-22**  
API #: **33-053-06024**  
Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**  
Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**  
Survey Corrected To: **True North**  
Vertical Section Direction: **95.23**  
Total Correction: **8.17**  
Temperature Forecasting Model (Chart Only): **Logarithmic**

| Survey #                      | MD          | Inc         | Azm           | Temp          | TVD            | VS           | N/S           | E/W          | DLS         |
|-------------------------------|-------------|-------------|---------------|---------------|----------------|--------------|---------------|--------------|-------------|
| <b>Tie in to Gyro Surveys</b> |             |             |               |               |                |              |               |              |             |
| <b>Tie In</b>                 | <b>2148</b> | <b>0.70</b> | <b>242.30</b> | <b>32.00</b>  | <b>2147.61</b> | <b>-0.75</b> | <b>11.61</b>  | <b>-0.75</b> | <b>0.46</b> |
| 1                             | 2230        | 0.90        | 250.90        | 71.00         | 2229.60        | -2.81        | 11.17         | -1.80        | 0.28        |
| 2                             | 2323        | 1.00        | 251.50        | 77.00         | 2322.59        | -4.22        | 10.67         | -3.26        | 0.11        |
| 3                             | 2417        | 0.90        | 247.70        | 78.00         | 2416.58        | -5.63        | 10.13         | -4.72        | 0.13        |
| 4                             | 2510        | 1.10        | 235.30        | 82.00         | 2509.56        | -6.96        | 9.34          | -6.13        | 0.32        |
| <b>5</b>                      | <b>2603</b> | <b>2.10</b> | <b>177.00</b> | <b>86.00</b>  | <b>2602.53</b> | <b>-7.40</b> | <b>7.13</b>   | <b>-6.78</b> | <b>1.92</b> |
| 6                             | 2697        | 2.30        | 175.60        | 89.00         | 2696.46        | -6.84        | 3.53          | -6.54        | 0.22        |
| 7                             | 2790        | 1.40        | 166.50        | 91.00         | 2789.41        | -6.16        | 0.57          | -6.13        | 1.01        |
| 8                             | 2884        | 1.40        | 172.60        | 95.00         | 2883.38        | -5.54        | -1.69         | -5.72        | 0.16        |
| 9                             | 2977        | 1.50        | 175.80        | 98.00         | 2976.35        | -5.09        | -4.03         | -5.48        | 0.14        |
| <b>10</b>                     | <b>3071</b> | <b>1.60</b> | <b>178.70</b> | <b>102.00</b> | <b>3070.32</b> | <b>-4.74</b> | <b>-6.57</b>  | <b>-5.36</b> | <b>0.14</b> |
| 11                            | 3164        | 1.60        | 178.10        | 104.00        | 3163.28        | -4.43        | -9.16         | -5.29        | 0.02        |
| 12                            | 3257        | 1.50        | 176.80        | 105.00        | 3256.25        | -4.09        | -11.68        | -5.18        | 0.11        |
| 13                            | 3350        | 1.50        | 177.40        | 109.00        | 3349.22        | -3.75        | -14.11        | -5.06        | 0.02        |
| 14                            | 3444        | 1.60        | 174.50        | 111.00        | 3443.18        | -3.34        | -16.64        | -4.87        | 0.14        |
| <b>15</b>                     | <b>3537</b> | <b>0.70</b> | <b>147.20</b> | <b>114.00</b> | <b>3536.16</b> | <b>-2.75</b> | <b>-18.41</b> | <b>-4.44</b> | <b>1.11</b> |
| 16                            | 3631        | 0.80        | 146.90        | 116.00        | 3630.16        | -1.98        | -19.44        | -3.77        | 0.11        |
| 17                            | 3724        | 0.80        | 145.50        | 118.00        | 3723.15        | -1.17        | -20.52        | -3.05        | 0.02        |
| 18                            | 3817        | 0.80        | 141.90        | 120.00        | 3816.14        | -0.31        | -21.57        | -2.28        | 0.05        |
| 19                            | 3911        | 0.90        | 147.70        | 122.00        | 3910.13        | 0.59         | -22.71        | -1.48        | 0.14        |
| <b>20</b>                     | <b>4004</b> | <b>0.70</b> | <b>147.90</b> | <b>123.00</b> | <b>4003.12</b> | <b>1.38</b>  | <b>-23.81</b> | <b>-0.79</b> | <b>0.22</b> |
| 21                            | 4097        | 0.70        | 141.30        | 122.00        | 4096.11        | 2.12         | -24.73        | -0.13        | 0.09        |
| 22                            | 4191        | 0.70        | 145.30        | 123.00        | 4190.10        | 2.89         | -25.65        | 0.55         | 0.05        |
| 23                            | 4284        | 0.20        | 159.10        | 127.00        | 4283.10        | 3.32         | -26.27        | 0.93         | 0.55        |
| 24                            | 4377        | 0.10        | 254.60        | 127.00        | 4376.10        | 3.32         | -26.44        | 0.91         | 0.25        |
| <b>25</b>                     | <b>4471</b> | <b>0.10</b> | <b>202.10</b> | <b>131.00</b> | <b>4470.10</b> | <b>3.22</b>  | <b>-26.54</b> | <b>0.80</b>  | <b>0.09</b> |
| 26                            | 4564        | 0.30        | 223.90        | 134.00        | 4563.10        | 3.04         | -26.79        | 0.60         | 0.23        |
| 27                            | 4657        | 0.30        | 255.10        | 136.00        | 4656.10        | 2.66         | -27.03        | 0.20         | 0.17        |
| 28                            | 4751        | 0.20        | 257.20        | 140.00        | 4750.10        | 2.28         | -27.13        | -0.20        | 0.11        |
| 29                            | 4844        | 0.20        | 259.70        | 141.00        | 4843.10        | 1.97         | -27.20        | -0.52        | 0.01        |
| <b>30</b>                     | <b>4937</b> | <b>0.20</b> | <b>234.00</b> | <b>143.00</b> | <b>4936.10</b> | <b>1.69</b>  | <b>-27.32</b> | <b>-0.81</b> | <b>0.10</b> |
| 31                            | 5031        | 0.40        | 223.60        | 145.00        | 5030.10        | 1.36         | -27.65        | -1.17        | 0.22        |
| 32                            | 5124        | 0.40        | 241.50        | 147.00        | 5123.09        | 0.89         | -28.04        | -1.68        | 0.13        |
| 33                            | 5217        | 0.40        | 254.20        | 149.00        | 5216.09        | 0.32         | -28.29        | -2.27        | 0.10        |
| 34                            | 5311        | 0.50        | 262.40        | 150.00        | 5310.09        | -0.39        | -28.43        | -2.99        | 0.13        |
| <b>35</b>                     | <b>5404</b> | <b>0.40</b> | <b>257.50</b> | <b>152.00</b> | <b>5403.09</b> | <b>-1.10</b> | <b>-28.56</b> | <b>-3.71</b> | <b>0.12</b> |
| 36                            | 5498        | 0.40        | 257.80        | 143.00        | 5497.08        | -1.72        | -28.70        | -4.36        | 0.00        |
| 37                            | 5591        | 0.40        | 228.40        | 145.00        | 5590.08        | -2.25        | -28.98        | -4.92        | 0.22        |
| 38                            | 5684        | 0.40        | 252.00        | 149.00        | 5683.08        | -2.77        | -29.30        | -5.47        | 0.18        |
| 39                            | 5777        | 0.20        | 270.40        | 152.00        | 5776.08        | -3.23        | -29.39        | -5.94        | 0.24        |
| <b>40</b>                     | <b>5871</b> | <b>0.10</b> | <b>288.60</b> | <b>154.00</b> | <b>5870.08</b> | <b>-3.48</b> | <b>-29.37</b> | <b>-6.18</b> | <b>0.12</b> |
| 41                            | 5964        | 0.20        | 266.80        | 156.00        | 5963.08        | -3.72        | -29.35        | -6.42        | 0.12        |
| 42                            | 6026        | 0.30        | 245.80        | 158.00        | 6025.08        | -3.96        | -29.42        | -6.67        | 0.22        |
| 43                            | 6114        | 0.40        | 317.80        | 127.00        | 6113.07        | -4.39        | -29.29        | -7.09        | 0.48        |
| 44                            | 6208        | 0.40        | 340.70        | 131.00        | 6207.07        | -4.77        | -28.74        | -7.42        | 0.17        |
| <b>45</b>                     | <b>6301</b> | <b>0.50</b> | <b>1.10</b>   | <b>136.00</b> | <b>6300.07</b> | <b>-4.93</b> | <b>-28.03</b> | <b>-7.52</b> | <b>0.20</b> |
| 46                            | 6394        | 0.50        | 128.90        | 141.00        | 6393.07        | -4.63        | -27.87        | -7.20        | 0.97        |
| 47                            | 6488        | 0.70        | 142.60        | 145.00        | 6487.06        | -3.89        | -28.59        | -6.53        | 0.26        |
| 48                            | 6581        | 1.00        | 177.60        | 150.00        | 6580.05        | -3.40        | -29.85        | -6.15        | 0.63        |
| 49                            | 6675        | 1.10        | 183.20        | 152.00        | 6674.04        | -3.26        | -31.57        | -6.16        | 0.15        |
| <b>50</b>                     | <b>6768</b> | <b>1.20</b> | <b>187.80</b> | <b>156.00</b> | <b>6767.02</b> | <b>-3.27</b> | <b>-33.43</b> | <b>-6.35</b> | <b>0.15</b> |
| 51                            | 6861        | 1.20        | 190.90        | 159.00        | 6860.00        | -3.41        | -35.35        | -6.66        | 0.07        |
| 52                            | 6955        | 1.10        | 200.00        | 163.00        | 6953.98        | -3.74        | -37.16        | -7.16        | 0.22        |
| 53                            | 7048        | 1.20        | 196.40        | 165.00        | 7046.96        | -4.16        | -38.94        | -7.74        | 0.13        |
| 54                            | 7141        | 1.20        | 187.10        | 168.00        | 7139.94        | -4.38        | -40.84        | -8.13        | 0.21        |
| <b>55</b>                     | <b>7235</b> | <b>1.30</b> | <b>189.90</b> | <b>170.00</b> | <b>7233.92</b> | <b>-4.50</b> | <b>-42.86</b> | <b>-8.44</b> | <b>0.12</b> |
| 56                            | 7328        | 0.50        | 191.90        | 172.00        | 7326.91        | -4.63        | -44.30        | -8.70        | 0.86        |
| <b>57</b>                     | <b>7421</b> | <b>0.60</b> | <b>49.80</b>  | <b>176.00</b> | <b>7419.90</b> | <b>-4.33</b> | <b>-44.38</b> | <b>-8.42</b> | <b>1.12</b> |
| 58                            | 7515        | 0.50        | 47.40         | 177.00        | 7513.90        | -3.71        | -43.79        | -7.74        | 0.11        |
| 59                            | 7608        | 0.40        | 38.60         | 176.00        | 7606.90        | -3.26        | -43.26        | -7.24        | 0.13        |
| <b>60</b>                     | <b>7701</b> | <b>0.30</b> | <b>15.50</b>  | <b>168.00</b> | <b>7699.89</b> | <b>-3.04</b> | <b>-42.77</b> | <b>-6.97</b> | <b>0.18</b> |
| 61                            | 7795        | 0.30        | 339.90        | 168.00        | 7793.89        | -3.10        | -42.30        | -6.99        | 0.20        |
| 62                            | 7888        | 0.40        | 286.80        | 172.00        | 7886.89        | -3.52        | -41.98        | -7.38        | 0.35        |
| 63                            | 7981        | 0.40        | 269.30        | 174.00        | 7979.89        | -4.17        | -41.89        | -8.02        | 0.13        |
| 64                            | 8075        | 0.60        | 271.40        | 176.00        | 8073.89        | -4.98        | -41.88        | -8.84        | 0.21        |
| <b>65</b>                     | <b>8168</b> | <b>0.70</b> | <b>333.90</b> | <b>176.00</b> | <b>8166.88</b> | <b>-5.76</b> | <b>-41.36</b> | <b>-9.57</b> | <b>0.73</b> |



## SURVEY REPORT

|                     |                               |
|---------------------|-------------------------------|
| Customer:           | Oasis Petroleum               |
| Well Name:          | Chalmers 5300 21-19 11B       |
| Rig #:              | Nabors B-22                   |
| API #:              | 33-053-06024                  |
| Calculation Method: | Minimum Curvature Calculation |

|   |                                  |
|---|----------------------------------|
| MWD Operator:                               | J. Creech, R. Maddalena          |
| Directional Drillers:                       | D. Rakstad, J. Gordon, R. Jasper |
| Survey Corrected To:                        | True North                       |
| Vertical Section Direction:                 | 95.23                            |
| Total Correction:                           | 8.17                             |
| Temperature Forecasting Model (Chart Only): | Logarithmic                      |

| Survey #   | MD           | Inc          | Azm           | Temp          | TVD             | VS            | N/S            | E/W           | DLS          |
|------------|--------------|--------------|---------------|---------------|-----------------|---------------|----------------|---------------|--------------|
| 66         | 8261         | 0.90         | 335.20        | 177.00        | 8259.87         | -6.43         | -40.19         | -10.13        | 0.22         |
| 67         | 8355         | 0.90         | 27.50         | 183.00        | 8353.86         | -6.51         | -38.86         | -10.10        | 0.84         |
| 68         | 8448         | 0.90         | 34.80         | 181.00        | 8446.85         | -5.88         | -37.61         | -9.35         | 0.12         |
| 69         | 8542         | 0.90         | 39.50         | 181.00        | 8540.84         | -5.10         | -36.44         | -8.45         | 0.08         |
| <b>70</b>  | <b>8635</b>  | <b>1.00</b>  | <b>84.30</b>  | <b>181.00</b> | <b>8633.83</b>  | <b>-3.89</b>  | <b>-35.79</b>  | <b>-7.18</b>  | <b>0.78</b>  |
| 71         | 8728         | 1.00         | 101.90        | 181.00        | 8726.81         | -2.29         | -35.88         | -5.58         | 0.33         |
| 72         | 8822         | 1.30         | 102.80        | 185.00        | 8820.79         | -0.41         | -36.29         | -3.74         | 0.32         |
| 73         | 8915         | 1.30         | 98.10         | 186.00        | 8913.77         | 1.68          | -36.67         | -1.66         | 0.11         |
| 74         | 9008         | 1.30         | 106.70        | 186.00        | 9006.75         | 3.77          | -37.12         | 0.39          | 0.21         |
| <b>75</b>  | <b>9102</b>  | <b>1.10</b>  | <b>107.60</b> | <b>190.00</b> | <b>9100.73</b>  | <b>5.70</b>   | <b>-37.70</b>  | <b>2.27</b>   | <b>0.21</b>  |
| 76         | 9195         | 1.50         | 142.60        | 192.00        | 9193.70         | 7.39          | -38.94         | 3.86          | 0.94         |
| 77         | 9288         | 1.30         | 159.70        | 195.00        | 9286.68         | 8.67          | -40.89         | 4.97          | 0.50         |
| 78         | 9382         | 0.60         | 168.60        | 197.00        | 9380.66         | 9.27          | -42.37         | 5.43          | 0.76         |
| 79         | 9475         | 0.50         | 172.90        | 201.00        | 9473.66         | 9.50          | -43.25         | 5.58          | 0.12         |
| <b>80</b>  | <b>9569</b>  | <b>0.60</b>  | <b>184.70</b> | <b>203.00</b> | <b>9567.65</b>  | <b>9.59</b>   | <b>-44.15</b>  | <b>5.59</b>   | <b>0.16</b>  |
| 81         | 9662         | 0.70         | 188.80        | 204.00        | 9660.65         | 9.56          | -45.20         | 5.46          | 0.12         |
| 82         | 9755         | 0.60         | 184.40        | 204.00        | 9753.64         | 9.53          | -46.25         | 5.34          | 0.12         |
| 83         | 9849         | 0.50         | 175.10        | 204.00        | 9847.64         | 9.61          | -47.15         | 5.34          | 0.14         |
| 84         | 9942         | 0.60         | 174.30        | 208.00        | 9940.63         | 9.78          | -48.03         | 5.42          | 0.11         |
| <b>85</b>  | <b>10035</b> | <b>0.40</b>  | <b>179.60</b> | <b>208.00</b> | <b>10033.63</b> | <b>9.90</b>   | <b>-48.84</b>  | <b>5.47</b>   | <b>0.22</b>  |
| 86         | 10129        | 0.30         | 199.50        | 210.00        | 10127.63        | 9.87          | -49.40         | 5.39          | 0.17         |
| <b>87</b>  | <b>10175</b> | <b>0.30</b>  | <b>220.90</b> | <b>210.00</b> | <b>10173.63</b> | <b>9.77</b>   | <b>-49.61</b>  | <b>5.27</b>   | <b>0.24</b>  |
| 88         | 10226        | 0.20         | 214.20        | 179.00        | 10224.63        | 9.65          | -49.78         | 5.13          | 0.20         |
| 89         | 10257        | 1.40         | 107.90        | 183.00        | 10255.62        | 9.99          | -49.94         | 5.46          | 4.74         |
| <b>90</b>  | <b>10288</b> | <b>4.40</b>  | <b>112.70</b> | <b>183.00</b> | <b>10286.58</b> | <b>11.50</b>  | <b>-50.52</b>  | <b>6.92</b>   | <b>9.70</b>  |
| 91         | 10319        | 8.50         | 114.40        | 185.00        | 10317.38        | 14.80         | -51.93         | 10.11         | 13.24        |
| 92         | 10350        | 13.00        | 117.20        | 186.00        | 10347.83        | 20.20         | -54.47         | 15.30         | 14.61        |
| 93         | 10382        | 16.30        | 117.90        | 188.00        | 10378.78        | 27.68         | -58.21         | 22.47         | 10.33        |
| 94         | 10413        | 18.70        | 119.40        | 188.00        | 10408.34        | 36.23         | -62.69         | 30.64         | 7.88         |
| <b>95</b>  | <b>10444</b> | <b>20.80</b> | <b>120.60</b> | <b>190.00</b> | <b>10437.52</b> | <b>45.74</b>  | <b>-67.93</b>  | <b>39.71</b>  | <b>6.90</b>  |
| 96         | 10475        | 22.70        | 120.50        | 188.00        | 10466.31        | 56.12         | -73.77         | 49.61         | 6.13         |
| 97         | 10506        | 25.30        | 122.10        | 190.00        | 10494.63        | 67.44         | -80.33         | 60.37         | 8.65         |
| 98         | 10537        | 28.90        | 123.20        | 190.00        | 10522.22        | 79.97         | -87.95         | 72.26         | 11.72        |
| 99         | 10568        | 31.30        | 123.10        | 190.00        | 10549.04        | 93.71         | -96.45         | 85.27         | 7.74         |
| <b>100</b> | <b>10602</b> | <b>33.00</b> | <b>122.70</b> | <b>179.00</b> | <b>10577.82</b> | <b>109.73</b> | <b>-106.28</b> | <b>100.46</b> | <b>5.04</b>  |
| 101        | 10633        | 35.60        | 123.80        | 185.00        | 10603.43        | 125.15        | -115.86        | 115.07        | 8.62         |
| 102        | 10664        | 39.60        | 126.60        | 183.00        | 10627.99        | 141.52        | -126.78        | 130.50        | 14.03        |
| 103        | 10695        | 44.60        | 128.30        | 186.00        | 10650.98        | 159.09        | -139.42        | 146.99        | 16.54        |
| 104        | 10727        | 50.30        | 128.80        | 190.00        | 10672.61        | 178.77        | -154.11        | 165.41        | 17.85        |
| <b>105</b> | <b>10758</b> | <b>57.00</b> | <b>130.20</b> | <b>194.00</b> | <b>10690.98</b> | <b>199.39</b> | <b>-169.99</b> | <b>184.66</b> | <b>21.92</b> |
| 106        | 10789        | 63.00        | 129.90        | 199.00        | 10706.47        | 221.42        | -187.26        | 205.20        | 19.37        |
| 107        | 10820        | 65.50        | 129.80        | 181.00        | 10719.94        | 244.39        | -205.15        | 226.64        | 8.07         |
| 108        | 10851        | 65.90        | 130.10        | 181.00        | 10732.70        | 267.62        | -223.29        | 248.30        | 1.56         |
| 109        | 10882        | 69.50        | 129.90        | 183.00        | 10744.46        | 291.17        | -241.72        | 270.26        | 11.63        |
| <b>110</b> | <b>10913</b> | <b>75.30</b> | <b>128.80</b> | <b>185.00</b> | <b>10753.83</b> | <b>315.63</b> | <b>-260.44</b> | <b>293.11</b> | <b>19.01</b> |
| 111        | 10945        | 80.20        | 128.80        | 188.00        | 10760.61        | 341.67        | -280.03        | 317.47        | 15.31        |
| 112        | 10976        | 85.40        | 129.50        | 190.00        | 10764.50        | 367.19        | -299.44        | 341.31        | 16.92        |
| 113        | 11007        | 87.80        | 129.30        | 194.00        | 10766.34        | 392.79        | -319.08        | 365.22        | 7.77         |
| 114        | 11021        | 88.70        | 129.80        | 194.00        | 10766.76        | 404.35        | -328.00        | 376.01        | 7.35         |
| <b>115</b> | <b>11066</b> | <b>89.60</b> | <b>127.30</b> | <b>215.00</b> | <b>10767.43</b> | <b>441.94</b> | <b>-356.03</b> | <b>411.20</b> | <b>5.90</b>  |
| 116        | 11096        | 90.50        | 129.50        | 212.00        | 10767.41        | 467.05        | -374.67        | 434.71        | 7.92         |
| <b>117</b> | <b>11127</b> | <b>90.60</b> | <b>129.50</b> | <b>212.00</b> | <b>10767.11</b> | <b>492.67</b> | <b>-394.38</b> | <b>458.63</b> | <b>0.32</b>  |
| 118        | 11159        | 90.30        | 128.50        | 212.00        | 10766.86        | 519.27        | -414.52        | 483.49        | 3.26         |
| 119        | 11191        | 89.60        | 128.40        | 208.00        | 10766.88        | 546.04        | -434.42        | 508.56        | 2.21         |
| <b>120</b> | <b>11222</b> | <b>89.10</b> | <b>126.60</b> | <b>217.00</b> | <b>10767.24</b> | <b>572.25</b> | <b>-453.29</b> | <b>533.15</b> | <b>6.03</b>  |
| 121        | 11254        | 88.00        | 123.20        | 212.00        | 10768.05        | 600.04        | -471.59        | 559.38        | 11.16        |
| 122        | 11284        | 88.20        | 123.00        | 212.00        | 10769.04        | 626.54        | -487.96        | 584.50        | 0.94         |
| 123        | 11314        | 88.90        | 121.30        | 210.00        | 10769.80        | 653.28        | -503.92        | 609.89        | 6.13         |
| 124        | 11345        | 88.90        | 119.30        | 210.00        | 10770.40        | 681.36        | -519.56        | 636.65        | 6.45         |
| <b>125</b> | <b>11377</b> | <b>89.10</b> | <b>119.30</b> | <b>210.00</b> | <b>10770.95</b> | <b>710.57</b> | <b>-535.22</b> | <b>664.55</b> | <b>0.63</b>  |
| 126        | 11407        | 88.50        | 117.80        | 210.00        | 10771.58        | 738.11        | -549.55        | 690.89        | 5.38         |
| 127        | 11439        | 88.90        | 117.20        | 212.00        | 10772.31        | 767.72        | -564.32        | 719.27        | 2.25         |
| 128        | 11470        | 89.00        | 116.90        | 221.00        | 10772.88        | 796.49        | -578.42        | 746.87        | 1.02         |
| 129        | 11502        | 89.80        | 115.70        | 221.00        | 10773.21        | 826.35        | -592.59        | 775.56        | 4.51         |
| <b>130</b> | <b>11533</b> | <b>90.00</b> | <b>115.00</b> | <b>215.00</b> | <b>10773.27</b> | <b>855.46</b> | <b>-605.87</b> | <b>803.57</b> | <b>2.35</b>  |

**SURVEY REPORT**

Customer: **Oasis Petroleum**  
 Well Name: **Chalmers 5300 21-19 11B**  
 Rig #: **Nabors B-22**  
 API #: **33-053-06024**  
 Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**  
 Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**  
 Survey Corrected To: **True North**  
 Vertical Section Direction: **95.23**  
 Total Correction: **8.17**  
 Temperature Forecasting Model (Chart Only): **Logarithmic**

| Survey #   | MD           | Inc          | Azm           | Temp          | TVD             | VS             | N/S            | E/W            | DLS         |
|------------|--------------|--------------|---------------|---------------|-----------------|----------------|----------------|----------------|-------------|
| 131        | 11565        | 89.50        | 113.80        | 215.00        | 10773.41        | 885.68         | -619.09        | 832.72         | 4.06        |
| 132        | 11596        | 89.10        | 112.20        | 215.00        | 10773.78        | 915.20         | -631.20        | 861.25         | 5.32        |
| 133        | 11628        | 89.30        | 112.60        | 215.00        | 10774.23        | 945.77         | -643.39        | 890.83         | 1.40        |
| 134        | 11658        | 89.80        | 112.20        | 215.00        | 10774.47        | 974.43         | -654.82        | 918.57         | 2.13        |
| <b>135</b> | <b>11689</b> | <b>90.30</b> | <b>111.40</b> | <b>215.00</b> | <b>10774.44</b> | <b>1004.14</b> | <b>-666.33</b> | <b>947.35</b>  | <b>3.04</b> |
| 136        | 11721        | 90.40        | 111.00        | 217.00        | 10774.24        | 1034.91        | -677.91        | 977.18         | 1.29        |
| 137        | 11751        | 90.30        | 110.60        | 217.00        | 10774.06        | 1063.81        | -688.56        | 1005.23        | 1.37        |
| 138        | 11783        | 89.10        | 109.20        | 215.00        | 10774.23        | 1094.76        | -699.45        | 1035.31        | 5.76        |
| 139        | 11814        | 89.00        | 109.10        | 219.00        | 10774.74        | 1124.85        | -709.62        | 1064.59        | 0.46        |
| <b>140</b> | <b>11845</b> | <b>89.00</b> | <b>109.30</b> | <b>219.00</b> | <b>10775.28</b> | <b>1154.93</b> | <b>-719.81</b> | <b>1093.87</b> | <b>0.65</b> |
| 141        | 11876        | 88.70        | 109.10        | 219.00        | 10775.91        | 1185.00        | -730.01        | 1123.14        | 1.16        |
| 142        | 11907        | 88.30        | 108.80        | 219.00        | 10776.72        | 1215.11        | -740.07        | 1152.45        | 1.61        |
| 143        | 11937        | 88.60        | 108.90        | 219.00        | 10777.53        | 1244.25        | -749.76        | 1180.83        | 1.05        |
| 144        | 11968        | 88.00        | 107.10        | 219.00        | 10778.45        | 1274.47        | -759.33        | 1210.29        | 6.12        |
| <b>145</b> | <b>12000</b> | <b>87.60</b> | <b>107.20</b> | <b>221.00</b> | <b>10779.68</b> | <b>1305.76</b> | <b>-768.76</b> | <b>1240.85</b> | <b>1.29</b> |
| 146        | 12031        | 87.70        | 106.40        | 221.00        | 10780.95        | 1336.10        | -777.71        | 1270.50        | 2.60        |
| 147        | 12063        | 89.10        | 105.40        | 221.00        | 10781.84        | 1367.54        | -786.48        | 1301.26        | 5.38        |
| 148        | 12094        | 89.40        | 105.70        | 222.00        | 10782.25        | 1398.03        | -794.79        | 1331.13        | 1.37        |
| 149        | 12126        | 89.70        | 105.40        | 222.00        | 10782.50        | 1429.51        | -803.36        | 1361.95        | 1.33        |
| <b>150</b> | <b>12158</b> | <b>90.40</b> | <b>103.80</b> | <b>222.00</b> | <b>10782.47</b> | <b>1461.08</b> | <b>-811.43</b> | <b>1392.92</b> | <b>5.46</b> |
| 151        | 12189        | 90.20        | 103.20        | 222.00        | 10782.31        | 1491.76        | -818.67        | 1423.06        | 2.04        |
| <b>152</b> | <b>12221</b> | <b>90.00</b> | <b>102.40</b> | <b>222.00</b> | <b>10782.25</b> | <b>1523.48</b> | <b>-825.76</b> | <b>1454.27</b> | <b>2.58</b> |
| 153        | 12252        | 89.60        | 100.90        | 222.00        | 10782.36        | 1554.29        | -832.02        | 1484.63        | 5.01        |
| 154        | 12284        | 89.80        | 101.30        | 224.00        | 10782.53        | 1586.12        | -838.18        | 1516.03        | 1.40        |
| <b>155</b> | <b>12315</b> | <b>90.20</b> | <b>100.90</b> | <b>224.00</b> | <b>10782.53</b> | <b>1616.96</b> | <b>-844.15</b> | <b>1546.45</b> | <b>1.82</b> |
| 156        | 12347        | 90.20        | 99.80         | 224.00        | 10782.42        | 1648.83        | -849.89        | 1577.93        | 3.44        |
| 157        | 12379        | 89.80        | 99.10         | 226.00        | 10782.42        | 1680.74        | -855.15        | 1609.49        | 2.52        |
| 158        | 12410        | 89.10        | 99.30         | 226.00        | 10782.71        | 1711.66        | -860.10        | 1640.09        | 2.35        |
| 159        | 12442        | 88.80        | 97.40         | 226.00        | 10783.30        | 1743.61        | -864.75        | 1671.74        | 6.01        |
| <b>160</b> | <b>12473</b> | <b>88.30</b> | <b>97.20</b>  | <b>226.00</b> | <b>10784.08</b> | <b>1774.58</b> | <b>-868.69</b> | <b>1702.48</b> | <b>1.74</b> |
| 161        | 12505        | 88.30        | 96.90         | 226.00        | 10785.03        | 1806.55        | -872.61        | 1734.23        | 0.94        |
| 162        | 12537        | 89.30        | 96.10         | 226.00        | 10785.70        | 1838.53        | -876.24        | 1766.01        | 4.00        |
| 163        | 12568        | 89.50        | 95.70         | 230.00        | 10786.03        | 1869.53        | -879.42        | 1796.85        | 1.44        |
| 164        | 12600        | 90.10        | 95.60         | 230.00        | 10786.14        | 1901.53        | -882.57        | 1828.69        | 1.90        |
| <b>165</b> | <b>12631</b> | <b>90.90</b> | <b>95.10</b>  | <b>230.00</b> | <b>10785.87</b> | <b>1932.53</b> | <b>-885.46</b> | <b>1859.56</b> | <b>3.04</b> |
| 166        | 12663        | 90.90        | 95.40         | 230.00        | 10785.37        | 1964.52        | -888.39        | 1891.42        | 0.94        |
| <b>167</b> | <b>12695</b> | <b>90.90</b> | <b>95.30</b>  | <b>230.00</b> | <b>10784.86</b> | <b>1996.52</b> | <b>-891.37</b> | <b>1923.27</b> | <b>0.31</b> |
| 168        | 12726        | 90.50        | 94.20         | 230.00        | 10784.49        | 2027.52        | -893.94        | 1954.17        | 3.78        |
| 169        | 12758        | 90.20        | 94.30         | 230.00        | 10784.29        | 2059.51        | -896.31        | 1986.08        | 0.99        |
| <b>170</b> | <b>12789</b> | <b>90.20</b> | <b>94.00</b>  | <b>230.00</b> | <b>10784.18</b> | <b>2090.50</b> | <b>-898.56</b> | <b>2017.00</b> | <b>0.97</b> |
| 171        | 12821        | 90.40        | 92.50         | 230.00        | 10784.01        | 2122.48        | -900.37        | 2048.94        | 4.73        |
| 172        | 12853        | 89.30        | 91.80         | 231.00        | 10784.10        | 2154.44        | -901.57        | 2080.92        | 4.07        |
| 173        | 12884        | 89.60        | 92.40         | 231.00        | 10784.40        | 2185.39        | -902.71        | 2111.90        | 2.16        |
| 174        | 12916        | 89.50        | 90.60         | 231.00        | 10784.65        | 2217.32        | -903.54        | 2143.88        | 5.63        |
| <b>175</b> | <b>13011</b> | <b>89.50</b> | <b>90.70</b>  | <b>233.00</b> | <b>10785.48</b> | <b>2312.01</b> | <b>-904.62</b> | <b>2238.87</b> | <b>0.11</b> |
| 176        | 13105        | 88.70        | 89.40         | 235.00        | 10786.95        | 2405.61        | -904.70        | 2332.86        | 1.62        |
| 177        | 13200        | 90.10        | 90.30         | 235.00        | 10787.95        | 2500.19        | -904.45        | 2427.85        | 1.75        |
| 178        | 13295        | 89.50        | 90.50         | 239.00        | 10788.28        | 2594.85        | -905.12        | 2522.85        | 0.67        |
| 179        | 13389        | 89.60        | 90.30         | 239.00        | 10789.02        | 2688.51        | -905.77        | 2616.84        | 0.24        |
| <b>180</b> | <b>13484</b> | <b>90.70</b> | <b>90.20</b>  | <b>239.00</b> | <b>10788.77</b> | <b>2783.15</b> | <b>-906.19</b> | <b>2711.84</b> | <b>1.16</b> |
| 181        | 13579        | 91.00        | 89.90         | 240.00        | 10787.36        | 2877.75        | -906.27        | 2806.83        | 0.45        |
| 182        | 13674        | 89.20        | 88.10         | 240.00        | 10787.19        | 2972.18        | -904.61        | 2901.81        | 2.68        |
| 183        | 13768        | 88.00        | 88.70         | 240.00        | 10789.49        | 3065.49        | -901.99        | 2995.74        | 1.43        |
| 184        | 13863        | 90.00        | 89.00         | 240.00        | 10791.15        | 3159.88        | -900.08        | 3090.70        | 2.13        |
| <b>185</b> | <b>13958</b> | <b>90.60</b> | <b>88.50</b>  | <b>244.00</b> | <b>10790.65</b> | <b>3254.27</b> | <b>-898.01</b> | <b>3185.68</b> | <b>0.82</b> |
| 186        | 14053        | 91.40        | 88.70         | 244.00        | 10788.99        | 3348.62        | -895.69        | 3280.63        | 0.87        |
| 187        | 14148        | 90.90        | 88.80         | 244.00        | 10787.09        | 3442.99        | -893.62        | 3375.59        | 0.54        |
| 188        | 14242        | 89.50        | 88.80         | 244.00        | 10786.76        | 3536.40        | -891.65        | 3469.57        | 1.49        |
| 189        | 14337        | 87.90        | 90.30         | 244.00        | 10788.91        | 3630.90        | -890.90        | 3564.53        | 2.31        |
| <b>190</b> | <b>14432</b> | <b>88.10</b> | <b>91.30</b>  | <b>244.00</b> | <b>10792.23</b> | <b>3725.56</b> | <b>-892.23</b> | <b>3659.46</b> | <b>1.07</b> |
| 191        | 14527        | 89.60        | 92.60         | 246.00        | 10794.14        | 3820.38        | -895.46        | 3754.39        | 2.09        |
| 192        | 14621        | 90.80        | 93.60         | 248.00        | 10793.81        | 3914.31        | -900.54        | 3848.24        | 1.66        |
| 193        | 14716        | 90.20        | 92.70         | 248.00        | 10792.98        | 4009.24        | -905.76        | 3943.10        | 1.14        |
| 194        | 14811        | 90.40        | 92.00         | 249.00        | 10792.48        | 4104.12        | -909.66        | 4038.01        | 0.77        |
| <b>195</b> | <b>14906</b> | <b>89.80</b> | <b>91.00</b>  | <b>249.00</b> | <b>10792.32</b> | <b>4198.92</b> | <b>-912.15</b> | <b>4132.98</b> | <b>1.23</b> |



### SURVEY REPORT

Customer: **Oasis Petroleum**  
Well Name: **Chalmers 5300 21-19 11B**  
Rig #: **Nabors B-22**  
API #: **33-053-06024**  
Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**  
Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**  
Survey Corrected To: **True North**  
Vertical Section Direction: **95.23**  
Total Correction: **8.17**  
Temperature Forecasting Model (Chart Only): **Logarithmic**

| Survey #   | MD           | Inc          | Azm          | Temp          | TVD             | VS             | N/S            | E/W            | DLS         |
|------------|--------------|--------------|--------------|---------------|-----------------|----------------|----------------|----------------|-------------|
| 196        | 15000        | 89.20        | 89.20        | 248.00        | 10793.14        | 4292.54        | -912.31        | 4226.97        | 2.02        |
| 197        | 15095        | 88.80        | 88.60        | 251.00        | 10794.79        | 4386.94        | -910.49        | 4321.94        | 0.76        |
| 198        | 15190        | 89.50        | 89.80        | 249.00        | 10796.20        | 4481.40        | -909.16        | 4416.92        | 1.46        |
| 199        | 15285        | 90.90        | 91.10        | 251.00        | 10795.87        | 4576.07        | -909.91        | 4511.91        | 2.01        |
| <b>200</b> | <b>15380</b> | <b>90.10</b> | <b>89.40</b> | <b>251.00</b> | <b>10795.04</b> | <b>4670.70</b> | <b>-910.32</b> | <b>4606.90</b> | <b>1.98</b> |
| 201        | 15474        | 86.90        | 88.00        | 251.00        | 10797.50        | 4764.04        | -908.19        | 4700.83        | 3.72        |
| 202        | 15569        | 86.50        | 88.30        | 253.00        | 10802.97        | 4858.16        | -905.13        | 4795.62        | 0.53        |
| 203        | 15664        | 86.90        | 89.60        | 253.00        | 10808.44        | 4952.43        | -903.39        | 4890.45        | 1.43        |
| 204        | 15759        | 88.80        | 89.90        | 253.00        | 10812.00        | 5046.93        | -902.98        | 4985.37        | 2.02        |
| <b>205</b> | <b>15854</b> | <b>89.10</b> | <b>89.60</b> | <b>255.00</b> | <b>10813.74</b> | <b>5141.48</b> | <b>-902.56</b> | <b>5080.36</b> | <b>0.45</b> |
| 206        | 15948        | 89.50        | 89.20        | 257.00        | 10814.89        | 5234.99        | -901.58        | 5174.35        | 0.60        |
| 207        | 16043        | 89.50        | 88.20        | 257.00        | 10815.72        | 5329.36        | -899.42        | 5269.32        | 1.05        |
| 208        | 16138        | 89.90        | 87.40        | 257.00        | 10816.22        | 5423.56        | -895.78        | 5364.24        | 0.94        |
| 209        | 16233        | 89.70        | 88.10        | 257.00        | 10816.55        | 5517.76        | -892.05        | 5459.17        | 0.77        |
| <b>210</b> | <b>16328</b> | <b>89.90</b> | <b>89.50</b> | <b>258.00</b> | <b>10816.88</b> | <b>5612.15</b> | <b>-890.06</b> | <b>5554.15</b> | <b>1.49</b> |
| 211        | 16422        | 89.80        | 89.10        | 258.00        | 10817.13        | 5705.65        | -888.91        | 5648.14        | 0.44        |
| 212        | 16517        | 89.40        | 90.30        | 258.00        | 10817.79        | 5800.20        | -888.41        | 5743.13        | 1.33        |
| 213        | 16612        | 88.40        | 90.30        | 258.00        | 10819.62        | 5894.83        | -888.91        | 5838.11        | 1.05        |
| 214        | 16707        | 89.70        | 91.80        | 258.00        | 10821.19        | 5989.56        | -890.65        | 5933.08        | 2.09        |
| <b>215</b> | <b>16801</b> | <b>89.40</b> | <b>92.50</b> | <b>260.00</b> | <b>10821.93</b> | <b>6083.42</b> | <b>-894.18</b> | <b>6027.01</b> | <b>0.81</b> |
| 216        | 16896        | 89.50        | 91.50        | 260.00        | 10822.84        | 6178.27        | -897.49        | 6121.95        | 1.06        |
| 217        | 16991        | 88.80        | 91.80        | 260.00        | 10824.25        | 6273.07        | -900.23        | 6216.89        | 0.80        |
| 218        | 17086        | 90.10        | 91.40        | 258.00        | 10825.16        | 6367.87        | -902.88        | 6311.85        | 1.43        |
| 219        | 17180        | 89.90        | 90.80        | 258.00        | 10825.16        | 6461.63        | -904.68        | 6405.83        | 0.67        |
| <b>220</b> | <b>17275</b> | <b>89.10</b> | <b>90.10</b> | <b>260.00</b> | <b>10825.99</b> | <b>6556.29</b> | <b>-905.43</b> | <b>6500.83</b> | <b>1.12</b> |
| 221        | 17370        | 89.70        | 90.00        | 258.00        | 10826.99        | 6650.90        | -905.51        | 6595.82        | 0.64        |
| 222        | 17465        | 89.80        | 88.90        | 260.00        | 10827.40        | 6745.42        | -904.60        | 6690.81        | 1.16        |
| 223        | 17559        | 90.20        | 88.90        | 260.00        | 10827.40        | 6838.84        | -902.80        | 6784.80        | 0.43        |
| 224        | 17654        | 90.50        | 88.70        | 260.00        | 10826.82        | 6933.24        | -900.81        | 6879.77        | 0.38        |
| <b>225</b> | <b>17749</b> | <b>91.20</b> | <b>87.90</b> | <b>262.00</b> | <b>10825.41</b> | <b>7027.54</b> | <b>-897.99</b> | <b>6974.72</b> | <b>1.12</b> |
| 226        | 17844        | 90.80        | 88.90        | 258.00        | 10823.75        | 7121.85        | -895.34        | 7069.67        | 1.13        |
| 227        | 17939        | 89.50        | 88.50        | 260.00        | 10823.50        | 7216.23        | -893.18        | 7164.64        | 1.43        |
| 228        | 18033        | 89.70        | 89.60        | 260.00        | 10824.16        | 7309.68        | -891.62        | 7258.62        | 1.19        |
| 229        | 18128        | 89.90        | 90.10        | 260.00        | 10824.49        | 7404.26        | -891.37        | 7353.62        | 0.57        |
| <b>230</b> | <b>18223</b> | <b>89.80</b> | <b>89.30</b> | <b>262.00</b> | <b>10824.74</b> | <b>7498.82</b> | <b>-890.88</b> | <b>7448.62</b> | <b>0.85</b> |
| 231        | 18318        | 90.00        | 89.30        | 262.00        | 10824.91        | 7593.31        | -889.72        | 7543.61        | 0.21        |
| 232        | 18412        | 90.40        | 91.00        | 260.00        | 10824.58        | 7686.93        | -889.96        | 7637.61        | 1.86        |
| 233        | 18507        | 90.20        | 92.10        | 262.00        | 10824.08        | 7781.73        | -892.53        | 7732.57        | 1.18        |
| 234        | 18602        | 90.90        | 91.70        | 262.00        | 10823.17        | 7876.57        | -895.68        | 7827.51        | 0.85        |
| <b>235</b> | <b>18697</b> | <b>89.90</b> | <b>91.20</b> | <b>264.00</b> | <b>10822.51</b> | <b>7971.36</b> | <b>-898.08</b> | <b>7922.48</b> | <b>1.18</b> |
| 236        | 18791        | 88.70        | 89.90        | 264.00        | 10823.65        | 8065.03        | -898.99        | 8016.46        | 1.88        |
| 237        | 18886        | 89.80        | 90.30        | 262.00        | 10824.90        | 8159.64        | -899.15        | 8111.45        | 1.23        |
| 238        | 18981        | 89.50        | 90.90        | 264.00        | 10825.48        | 8254.33        | -900.15        | 8206.45        | 0.71        |
| 239        | 19076        | 89.90        | 90.80        | 264.00        | 10825.98        | 8349.05        | -901.56        | 8301.43        | 0.43        |
| <b>240</b> | <b>19171</b> | <b>90.70</b> | <b>90.60</b> | <b>264.00</b> | <b>10825.48</b> | <b>8443.75</b> | <b>-902.72</b> | <b>8396.42</b> | <b>0.87</b> |
| 241        | 19265        | 91.20        | 90.20        | 264.00        | 10823.92        | 8537.41        | -903.37        | 8490.41        | 0.68        |
| 242        | 19360        | 91.00        | 91.10        | 262.00        | 10822.10        | 8632.09        | -904.45        | 8585.38        | 0.97        |
| 243        | 19455        | 90.80        | 92.10        | 262.00        | 10820.60        | 8726.88        | -907.10        | 8680.33        | 1.07        |
| 244        | 19550        | 88.90        | 92.50        | 262.00        | 10820.85        | 8821.75        | -910.92        | 8775.25        | 2.04        |
| <b>245</b> | <b>19645</b> | <b>89.30</b> | <b>92.70</b> | <b>264.00</b> | <b>10822.34</b> | <b>8916.64</b> | <b>-915.22</b> | <b>8870.14</b> | <b>0.47</b> |
| 246        | 19739        | 90.20        | 92.40        | 264.00        | 10822.76        | 9010.54        | -919.41        | 8964.05        | 1.01        |
| 247        | 19834        | 89.30        | 91.70        | 262.00        | 10823.17        | 9105.39        | -922.81        | 9058.98        | 1.20        |
| 248        | 19929        | 89.80        | 91.60        | 264.00        | 10823.92        | 9200.20        | -925.54        | 9153.94        | 0.54        |
| 249        | 20024        | 89.40        | 91.10        | 262.00        | 10824.58        | 9294.98        | -927.78        | 9248.91        | 0.67        |
| <b>250</b> | <b>20118</b> | <b>90.90</b> | <b>91.20</b> | <b>264.00</b> | <b>10824.33</b> | <b>9388.74</b> | <b>-929.67</b> | <b>9342.89</b> | <b>1.60</b> |
| 251        | 20213        | 90.30        | 88.50        | 260.00        | 10823.34        | 9483.30        | -929.42        | 9437.88        | 2.91        |
| 252        | 20308        | 89.10        | 86.50        | 262.00        | 10823.84        | 9577.43        | -925.27        | 9532.78        | 2.46        |
| 253        | 20403        | 89.50        | 86.60        | 264.00        | 10825.00        | 9671.34        | -919.56        | 9627.60        | 0.43        |
| 254        | 20498        | 88.70        | 85.50        | 262.00        | 10826.49        | 9765.11        | -913.01        | 9722.36        | 1.43        |
| <b>255</b> | <b>20593</b> | <b>89.80</b> | <b>85.60</b> | <b>264.00</b> | <b>10827.73</b> | <b>9858.75</b> | <b>-905.64</b> | <b>9817.06</b> | <b>1.16</b> |
| 256        | 20612        | 90.50        | 85.90        | 262.00        | 10827.68        | 9877.49        | -904.24        | 9836.01        | 4.01        |
| Projection | 20680        | 90.50        | 85.90        | 262.00        | 10827.09        | 9944.58        | -899.37        | 9903.83        | 0.00        |



# SUNDRY NOTICES AND REPORTS ON WELLS FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)



Well File No.  
**28649**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |  |   |   |
|---|--|---|---|
| <input checked="" type="checkbox"/> Notice of Intent  | Approximate Start Date<br><b>December 31, 2014</b> | <input type="checkbox"/> Drilling Prognosis         | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Report of Work Done  | Date Work Completed                                | <input type="checkbox"/> Redrilling or Repair       | <input type="checkbox"/> Shooting                 |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. |  | <input checked="" type="checkbox"/> Casing or Liner | <input type="checkbox"/> Acidizing                |
| Approximate Start Date  |  | <input type="checkbox"/> Plug Well                  | <input type="checkbox"/> Fracture Treatment       |
|   |  | <input type="checkbox"/> Supplemental History       | <input type="checkbox"/> Change Production Method |
|   |  | <input type="checkbox"/> Temporarily Abandon        | <input type="checkbox"/> Reclamation              |
|   |  | <input type="checkbox"/> Other                      | Name and Formation Change                         |

## Well Name and Number

**Chalmers 5300 21-19 11T**

| Footages       | Qtr-Qtr        | Section | Township           | Range       |
|----------------|----------------|---------|--------------------|-------------|
| 2325' F N L    | 326' F W L     | LOT2    | 19                 | 153 N 100 W |
| Field<br>Baker | Pool<br>Bakken |         | County<br>McKenzie |             |

## 24-HOUR PRODUCTION RATE

| Before |      | After |      |
|--------|------|-------|------|
| Oil    | Bbls | Oil   | Bbls |
| Water  | Bbls | Water | Bbls |
| Gas    | MCF  | Gas   | MCF  |

## Name of Contractor(s)

|         |      |       |          |
|---------|------|-------|----------|
| Address | City | State | Zip Code |
|---------|------|-------|----------|

## DETAILS OF WORK

Oasis Petroleum respectfully requests to change the above referenced well:

Name Change to: Chalmers 5300 21-19 11B

Formation change to: Bakken

Surface Hole Change: 2325' FNL & 327' FWL (old SHL 2325' FNL & 326' FWL)

*Surface casings changed to 2121'*

Casing Depth Change: 2660' FNL & 708' FWL; MD11018 TVD 10749

Bottom Hole Depth Change: 2036 FSL & 250 FEL; MD 20695 TVD 10825

*cc 25.00 1-5-15 KB*

Revised drill plan, well summary, directional plan and plot attached.

*CC 25.00*

|   |  |                          |
|---|--|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b>   | Telephone Number<br><b>281-404-9500</b>  |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>             |  |                          |
| City<br><b>Houston</b>                                | State<br><b>TX</b>                       | Zip Code<br><b>77002</b> |
| Signature<br><i>Chelsea Covington</i>                 | Printed Name<br><b>Chelsea Covington</b> |                          |
| Title<br><b>Regulatory Assistant</b>                  | Date<br><b>December 31, 2014</b>         |                          |
| Email Address<br><b>ccovington@oasispetroleum.com</b> |  |                          |

## FOR STATE USE ONLY

|                                   |  |
|-----------------------------------|--|
| <input type="checkbox"/> Received | <input checked="" type="checkbox"/> Approved |
| Date<br><b>01-02-2014</b>         |  |
| By<br><i>David Burns</i>          |  |
| Title<br><b>Engineering Tech.</b> |  |

**David Burns**  
Engineering Tech.

WELL LOCATION PLAT  
SIS PETROLEUM NORTH AMERICA, INC.  
FANNIN SUITE 1500 HOUSTON TX 77002

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

CHALMERS 5300 21-19 11B

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

SECTION IS, FIG.  
EDGE OF

**EDGES OF LAKE**

**FOUND REBAR W/ 2" AC LS 2352**

**FOUND REBAR R/100W**

**FOUND STONE & REBAR**

**FOUND STONE & REBAR**

**EDGE OF LAKE**

**CALCULATED IN LAKE**

**LOT 1**

**LOT 2**

**LOT 3**

**LOT 4**

**LOT 5**

**LOT 6**

**LOT 7**

**CHALMERS 5300 21-19 11B**

**GROUND ELEV. 2050.9'**

**LATITUDE 48°03'40.32"N**

**LONGITUDE 103°36'10.11"W**

**GPS SURVEY DATUM: NAD 83**

**MISSOURI RIVER PER 1891 SURVEY**

**SAKAKAWEA**

**BOTTOM HOLE LOCATION**

**LATITUDE 48°02'31.53"N**

**LONGITUDE 103°33'43.21"W**

**GPS SURVEY DATUM: NAD 83**

**2631.88'**

**2325'**

**AZ 0'04'59"**

**AZ 90'03'35"**

**2631.68'**

**2631.03"**

**AZ 90'03'03"**

**2651.37'**

**2630.15'**

**AZ 90'00'00"**

**1507' (GLO)**

**1207' (GLO)**

**AZ 90'00'00"**

**1947' (GLO)**

**AZ 359'55.00"**

**1831.5'**

**AZ 90'00'00"**

**2216' (GLO)**

**AZ 90'00'00"**

**1056' (GLO)**

**AZ 90'00'00"**

**5148' (GLO)**

**AZ 359'55.00"**

**5280' (GLO)**

**250'**

**2036'**

**CALCULATED IN LAKE**

**VICINITY MAP**

THIS DOCUMENT WAS ORIGINALLY ISSUED  
AND SEALED BY DARYL D. KASEMAN,  
PLS. REGISTRATION NUMBER 3880 ON  
5/07/14 AND THE ORIGINAL  
DOCUMENTS ARE STORED AT THE  
OFFICES OF INTERSTATE ENGINEERING,  
INC.

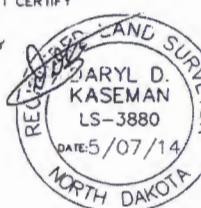


 - MONUMENT - RECOVERED  
 - MONUMENT - NOT RECOVERED

STAKED ON 1/29/14  
VERTICAL CONTROL DATUM WAS BASED UPON  
CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST OF ERIC BAYES OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DARYL D. KASEMAN LS-3880



© 2014 INTERSTATE ENGINEERING INC

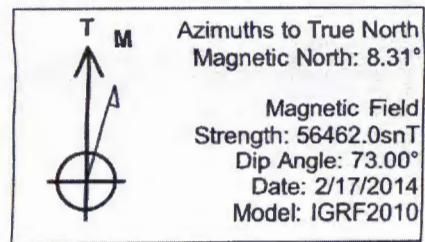
|                        |                                       |            |                                       |                               |
|------------------------|---------------------------------------|------------|---------------------------------------|-------------------------------|
| PRODUCER               | OKLAHOMA PETROLEUM NORTH AMERICA, LLC | CLASS      | By                                    | Drillers/Opns                 |
| WELL LOCATION PLAT     | SECTION 11, T11S, R2W                 | KEY #      | 1-1072-14                             | BLK 10-3 DRILLING IN PROGRESS |
| SECTION 11, T11S, R2W  |                                       | OWNER      | OKLAHOMA PETROLEUM NORTH AMERICA, LLC | BLK 10-3 DRILLING IN PROGRESS |
| MCKEE COUNTY, OKLAHOMA |                                       | DRILLER    | OKLAHOMA PETROLEUM NORTH AMERICA, LLC | BLK 10-3 DRILLING IN PROGRESS |
|                        |                                       | DATE       | 08/24/2018                            | BLK 10-3 DRILLING IN PROGRESS |
|                        |                                       | PROD. NO.  | 813450-251-08                         | BLK 10-3 DRILLING IN PROGRESS |
|                        |                                       | DATE       | 08/24/2018                            | BLK 10-3 DRILLING IN PROGRESS |
|                        |                                       | BY         | B-AH                                  | BLK 10-3 DRILLING IN PROGRESS |
|                        |                                       | PERMIT NO. | D-2056                                | BLK 10-3 DRILLING IN PROGRESS |

Interstate Engineering, Inc.  
 P.O. Box 646  
 4725 East Main Street  
 Sidney, Montana 59270  
 Ph. (406) 433-5617  
 Fax (406) 433-5618  
[www.interstateengineering.com](http://www.interstateengineering.com)  
Interstate is a registered trademark of Interstate Engineering, Inc.



THE END.

| DRILLING PLAN  |                                 |   |            |  |                     |                       |                          |
|--|---------------------------------|---|------------|--|---------------------|-----------------------|--------------------------|
| OPERATOR   | Oasis Petroleum                 |   |            | COUNTY/STATE   | McKenzie Co., ND    |                       |                          |
| WELL NAME  | Chalmers 5300 21-19 11B         |   |            | RIG  | B 22                |                       |                          |
| WELL TYPE  | Middle Bakken                   |   |            | LOCATION   | SW NW 19-153N-100W  |                       |                          |
| EST. T.D.  | 20,695'                         | Surface Location (survey plat): 2325' FNL |            | 327 FWL  | GROUND ELEV:        | 2,046'                |                          |
| TOTAL LATERAL:   | 9,677'                          |   |            | KB ELEV:   | Sub Height:         | 25'                   |                          |
| MARKER   | TVD                             | Subsea TVD                                | LOGS:      | Type   | Interval            |                       |                          |
| Pierre   | NDIC MAP                        | 2,021                                     |            | OH Logs: Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to 8 sec 19 153N 100W |                     |                       |                          |
| Greenhorn  |                                 | 4,824                                     | -2,553     | CBL/GPR: Above top of cement/GPR to base of casing   |                     |                       |                          |
| Mowry  |                                 | 5,029                                     | -2,958     | MWD GR: KOP to lateral TD  |                     |                       |                          |
| Dakota   |                                 | 5,417                                     | -3,346     |  |                     |                       |                          |
| Riordan  |                                 | 6,463                                     | -4,392     | DEVIATION: Surf: 3 deg. max., 1 deg / 100'; svny every 500'  |                     |                       |                          |
| Dunham Salt  |                                 | 6,881                                     | -4,820     | Prod: 5 deg. max., 1 deg / 100'; svny every 100'   |                     |                       |                          |
| Dunham Salt Base   |                                 | 6,960                                     | -4,889     |  |                     |                       |                          |
| Pine Salt  |                                 | 7,257                                     | -5,166     |  |                     |                       |                          |
| Pine Salt Base   |                                 | 7,290                                     | -5,219     |  |                     |                       |                          |
| Opache Salt  |                                 | 7,351                                     | -5,280     |  |                     |                       |                          |
| Opache Salt Base   |                                 | 7,426                                     | -5,355     |  |                     |                       |                          |
| Amesden  |                                 | 7,682                                     | -5,591     |  |                     |                       |                          |
| Tyler  |                                 | 7,828                                     | -5,757     |  |                     |                       |                          |
| Otter/Base Minnelusa   |                                 | 8,032                                     | -5,961     | DSTS: None planned   |                     |                       |                          |
| Kibbey Lime  |                                 | 8,383                                     | -6,312     |  |                     |                       |                          |
| Charles Salt   |                                 | 8,529                                     | -6,458     | CORES: None planned  |                     |                       |                          |
| Base Last Salt   |                                 | 9,204                                     | -7,133     |  |                     |                       |                          |
| Mission Canyon   |                                 | 9,424                                     | -7,353     |  |                     |                       |                          |
| Lodgepole  |                                 | 9,988                                     | -7,917     |  |                     |                       |                          |
| False Bakken   |                                 | 10,709                                    | -8,838     |  |                     |                       |                          |
| Upper Bakken Shale   |                                 | 10,719                                    | -8,846     | MUDLOGGING: Two-Man: Begin 200' above Kibbey   |                     |                       |                          |
| Middle Bakken  |                                 | 10,735                                    | -8,664     | 30' samples in curve and lateral   |                     |                       |                          |
| Top of Target  |                                 | 10,745                                    | -8,674     |  |                     |                       |                          |
| Landing Target   |                                 | 10,751                                    | -8,680     |  |                     |                       |                          |
| Base of target   |                                 | 10,755                                    | -8,684     |  |                     |                       |                          |
| Lower Bakken Shale   |                                 | 10,777                                    | -8,706     |  |                     |                       |                          |
| BOP: 11" 5000 psi blind, pipe & annular  |                                 |   |            |  |                     |                       |                          |
| Est. Dip Rate:   | 0.45                            |   |            |  |                     |                       |                          |
| Max. Anticipated BHP:  | 0                               |   |            |  |                     |                       |                          |
| Surface Formation: Glacial till  |                                 |   |            |  |                     |                       |                          |
| MUD:   | Interval                        | Type                                      | WT         | VIS  | WL                  | Remarks               |                          |
| Surface:   | 0' -                            | 2,121'                                    | FW         | 8.4-9.0  | 28-32               | NC Circ Mud Tanks     |                          |
| Intermediate:  | 2,121' -                        | 11,018'                                   | Invert     | 9.5-10.4   | 40-50               | 30+HHp Circ Mud Tanks |                          |
| Lateral:   | 11,018' -                       | 20,695'                                   | Salt Water | 9.8-10.2   | 28-32               | NC Circ Mud Tanks     |                          |
| CASING:  | Size                            | Wt pcf                                    | Hole       | Depth  | Cement              | WOC                   | Remarks                  |
| Surface:   | 13-3/8"                         | 54.5#                                     | 17-1/2"    | 2,121'   | To Surface          | 12                    | 100' into Pierre         |
| Intermediate: (Dakota)   | 9-5/8"                          | 40#                                       | 12-1/4"    | 6,000'   | To Surface          | 24                    | Set Casing across Dakota |
| Intermediate:  | 7"                              | 32#                                       | 8-3/4"     | 11,018'  | 3917                | 24                    | 1500' above Oakota       |
| Production Liner:  | 4.5"                            | 13.5#                                     | 6"         | 20,695'  | TOL @ 10,222'       |                       | 50' above KOP            |
| PROBABLE PLUGS, IF REQ'D:  |                                 |   |            |  |                     |                       |                          |
| OTHER:   | MD                              | TVD                                       | FNL/FSL    | FEL/FWL  | S-T-R               | AZI                   |                          |
|  | Surface: 2,121                  | 2,121                                     | 2325 FNL   | 327 FWL  | SEC. 19 T163N R100W |                       | Build Rate: 12 Deg/100'  |
|  | KOP: 10,272'                    | 10,272'                                   | 2375 FNL   | 327 FWL  | SEC. 19 T163N R100W |                       |                          |
|  | EOC: 11,018'                    | 10,749'                                   | 2660 FNL   | 706 FWL  | SEC. 19 T163N R100W | 126.9                 |                          |
|  | Casing Point: 11,018'           | 10,749'                                   | 2660 FNL   | 706 FWL  | SEC. 19 T163N R100W | 126.9                 |                          |
|  | Three Forks Lateral TD: 20,695' | 10,825'                                   | 2036 FSL   | 250 FEL  | SEC. 20 T163N R100W | 90.0                  |                          |
| Comments:  |                                 |   |            |  |                     |                       |                          |
| Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to 8 sec 19 153N 100W                              |                                 |   |            |  |                     |                       |                          |
| No frac string planned   |                                 |   |            |  |                     |                       |                          |
| 35 packers and 25 sleeves planned 3.6MM lbs 30% ceramic  |                                 |   |            |  |                     |                       |                          |
| Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.        |                                 |   |            |  |                     |                       |                          |
| 68334-30-6 (Primary Name: Fuels, diesel) 68476-34-6 (Primary Name: Fuels, diesel, No. 2) 68476-30-2 (Primary Name: Fuel oil No. 2) |                                 |   |            |  |                     |                       |                          |
| 68476-31-3 (Primary Name: Fuel oil, No. 4) 68008-20-8 (Primary Name: Kerosene)   |                                 |   |            |  |                     |                       |                          |
| <b>OASIS</b><br>PETROLEUM  |                                 |   |            |  |                     |                       |                          |
| Geology: N. Gabelman   | 2/4/2014                        |   |            | Engineering: TR 12/29/14   |                     |                       |                          |
| Revised: N. Gabelman   | 12/31/2014                      |   |            | TR 12/31/14  |                     |                       |                          |

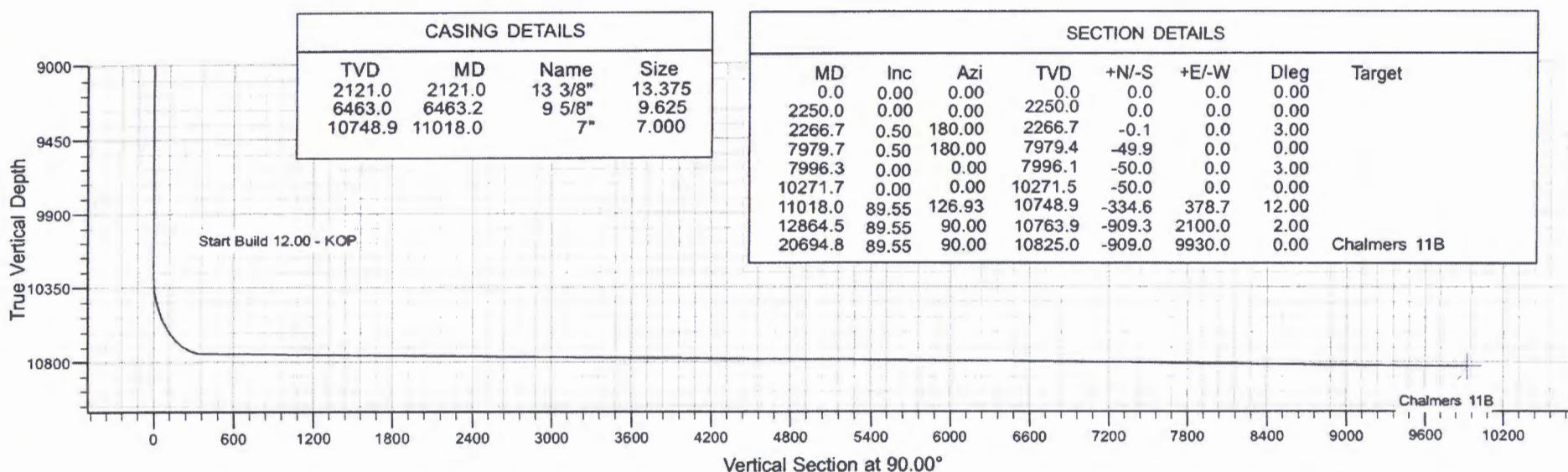
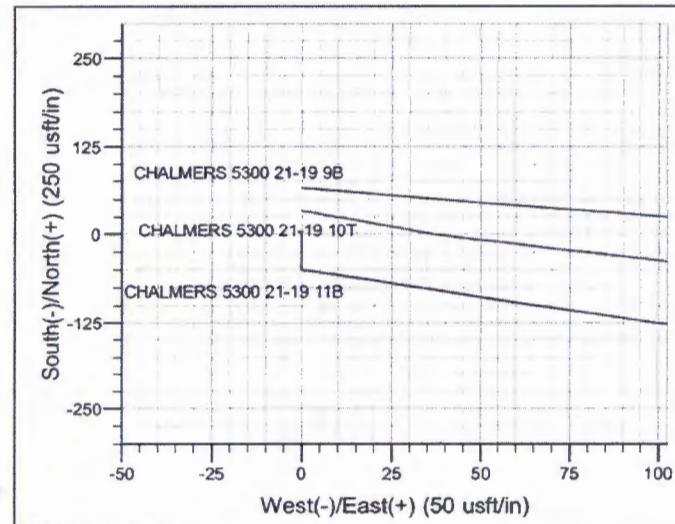
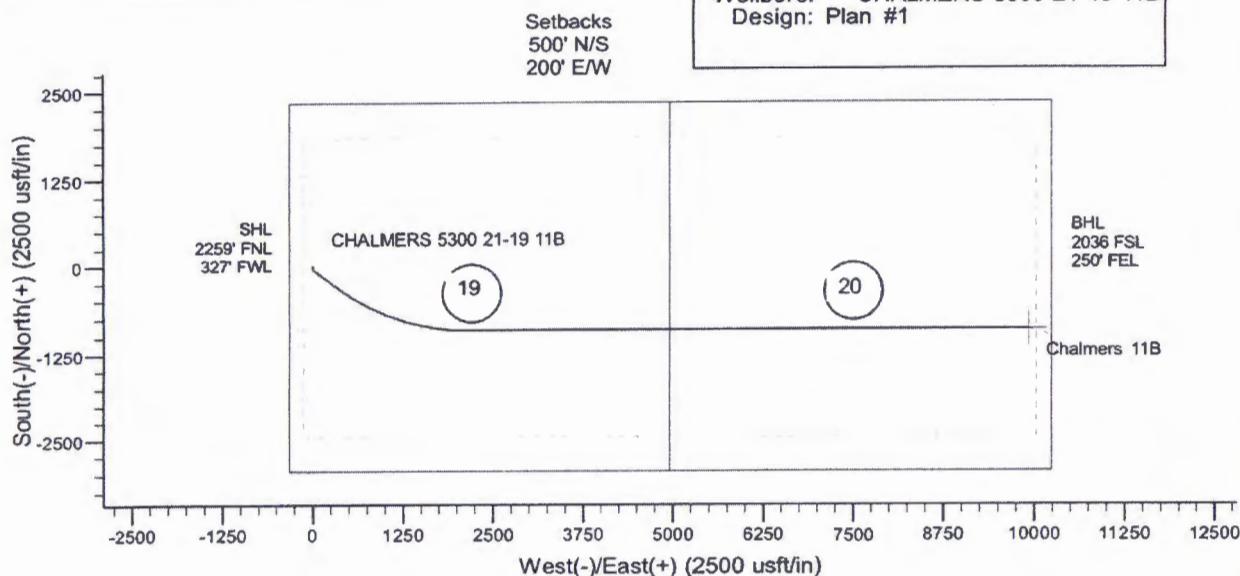


Project: Indian Hills  
Site: 153N-100W-19/20  
Well: CHALMERS 5300 21-19 11B  
Wellbore: CHALMERS 5300 21-19 11B  
Design: Plan #1

**SITE DETAILS: 153N-100W-19/20**

Well Centre Latitude: 48° 3' 40.320 N  
Longitude: 103° 36' 10.110 W

Positional Uncertainty: 0.0  
Convergence: -2.31  
Local North: True



**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11B**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

SURFACE CASING AND CEMENT DESIGN

| Size    | Interval   | Weight | Grade | Coupling | I.D.    | Drift   | Make-up Torque (ft-lbs) |         |      |
|---------|------------|--------|-------|----------|---------|---------|-------------------------|---------|------|
|         |            |        |       |          |         |         | Minimum                 | Optimum | Max  |
| 13-3/8" | 0' - 2121' | 54.5   | J-55  | LTC      | 12.615" | 12.459" | 4100                    | 5470    | 6840 |

| Interval   | Description                    | Collapse    | Burst       | Tension        |
|------------|--------------------------------|-------------|-------------|----------------|
|            |                                | (psi) / a   | (psi) / b   | (1000 lbs) / c |
| 0' - 2121' | 13-3/8", 54.5#, J-55, LTC, 8rd | 1130 / 1.13 | 2730 / 1.90 | 514 / 2.57     |

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 9 ppg fluid on backside (2121' setting)
- b) Burst pressure based on 13 ppg fluid with no fluid on backside (2121' setting depth).
- c) Based on string weight in 9 ppg fluid at 2121' TVD plus 100k# overpull. (Buoyed weight equals 100k lbs.)

Cement volumes are based on 13-3/8" casing set in 17-1/2" hole with 60% excess to circulate cement back to surface.  
Mix and pump the following slurry.

**Pre-flush (Spacer):** 20 bbls fresh water

**Lead Slurry:** 695 sks (359 bbls), 2.90 ft<sup>3</sup>/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl<sub>2</sub> and 0.250 lb/sk D130 lost circulation control agent.

**Tail Slurry:** 349 sks (72 bbls), 1.16 ft<sup>3</sup>/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl<sub>2</sub>, and 0.250 lb/sk lost circulation control agent

**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11B**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

Contingency INTERMEDIATE CASING AND CEMENT DESIGN

| Size   | Interval   | Weight | Grade | Coupling | I.D.   | Drift  | Make-up Torque (ft-lbs) |         |      |
|--------|------------|--------|-------|----------|--------|--------|-------------------------|---------|------|
|        |            |        |       |          |        |        | Minimum                 | Optimum | Max  |
| 9-5/8" | 0' - 6463' | 36     | J-55  | LTC      | 8.921" | 8.765" | 3400                    | 4530    | 5660 |

| Interval   | Description                 | Collapse<br>(psi) / a | Burst<br>(psi) / b | Tension<br>(1000 lbs) / c |
|------------|-----------------------------|-----------------------|--------------------|---------------------------|
| 0' - 6463' | 9-5/8", 36#, J-55, LTC, 8rd | 2020 / 2.14           | 3520 / 1.28        | 453 / 1.53                |

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 10.4 ppg fluid on backside (6463' setting depth).
- b) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 15.2#/ft fracture gradient. Backup of 9 ppg fluid..
- c) Tension based on string weight in 10.4 ppg fluid at 6463' TVD plus 100k# overpull. (Buoyed weight equals 196k lbs.)

Cement volumes are based on 9-5/8" casing set in 12-1/4 " hole with 10% excess to circulate cement back to surface.  
Mix and pump the following slurry.

**Pre-flush (Spacer):**      **20 bbls Chem wash**

**Lead Slurry:**      **565 sks** (292 bbls), 2.90 ft3/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl2 and 0.250 lb/sk D130 lost circulation control agent.

**Tail Slurry:**      **624 sks** (129 bbls), 1.16 ft3/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl2, and 0.250 lb/sk lost circulation control agent

**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11B**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

**INTERMEDIATE CASING AND CEMENT DESIGN**

| Size | Interval        | Weight | Grade   | Coupling | I.D.   | Drift**  | Make-up Torque (ft-lbs) |         |      |
|------|-----------------|--------|---------|----------|--------|----------|-------------------------|---------|------|
|      |                 |        |         |          |        |          | Minimum                 | Optimum | Max  |
| 7"   | 0' - 6741'      | 29     | P-110   | LTC      | 6.184" | 6.059"   | 5980                    | 7970    | 8770 |
| 7"   | 6741' - 10272'  | 32     | HCP-110 | LTC      | 6.094" | 6.000*** | 6730                    | 8970    | 9870 |
| 7"   | 10272' - 11018' | 29     | P-110   | LTC      | 6.184" | 6.059"   | 5980                    | 7970    | 8770 |

\*\*Special Drift 7" 32# to 6.0"

| Interval        | Length | Description                | Collapse<br>(psi) a | Burst<br>(psi) b | Tension<br>(1000 lbs) c |
|-----------------|--------|----------------------------|---------------------|------------------|-------------------------|
| 0' - 6741'      | 6741'  | 7", 29#, P-110, LTC, 8rd   | 8530 / 2.43*        | 11220 / 1.19     | 797 / 2.08              |
| 6741' - 10272'  | 3531'  | 7", 32#, HCP-110, LTC, 8rd | 11820 / 2.21*       | 12460 / 1.29     |                         |
| 6741' - 10272'  | 3531'  | 7", 32#, HCP-110, LTC, 8rd | 11820 / 1.06**      | 12460 / 1.29     |                         |
| 10272' - 11018' | 746'   | 7", 29#, P-110, LTC, 8rd   | 8530 / 1.52*        | 11220 / 1.16     |                         |

**API Rating & Safety Factor**

- a) Assume full casing evacuation with 10 ppg fluid on backside. \*\*Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10749' TVD.
- c) Based on string weight in 10 ppg fluid, (280k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

Mix and pump the following slurry

**Pre-flush (Spacer):**      100 bbls Saltwater  
                                 20bbls CW8  
                                 20bbls Fresh Water

**Lead Slurry:**      219 sks (86 bbls), 11.8 lb/gal, 2.59 ft3/sk yield, Conventional system with 61 lb/sk cement, 10% NaCl, 23 lb/sk extender, 0.2% D046 Anti Foam, 0.25lb/sk D130 Lost Circulation, 0.8% D112 Fluid Loss, 6% D035 Extender.

**Tall Slurry:**      600 sks (165 bbls), 15.8 lb/gal, 1.55 ft3/sk yield, Conventional system with 94 lb/sk cement, 10% NaCl, 35% Silica, 0.2% fluid loss agent D167, 0.27% Retarder D198, 0.25 lb/sk D130 lost circulation control, 0.2% Anti Foam D046.

**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11B**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

**PRODUCTION LINER**

| Size   | Interval        | Weight | Grade | Coupling | I.D.   | Drift  | Make-up Torque (ft-lbs) |         |      |
|--------|-----------------|--------|-------|----------|--------|--------|-------------------------|---------|------|
|        |                 |        |       |          |        |        | Minimum                 | Optimum | Max  |
| 4-1/2" | 10222' - 20695' | 11.6   | P-110 | BTC      | 4.000" | 3.875" | 2270                    | 3020    | 3780 |

| Interval        | Length | Description                 | Collapse<br>(psi) a | Burst<br>(psi) b | Tension<br>(1000 lbs) c |
|-----------------|--------|-----------------------------|---------------------|------------------|-------------------------|
| 10222' - 20695' | 10473  | 4-1/2", 11.6 lb, P-110, BTC | 7560 / 1.41         | 10690 / 1.10     | 385 / 1.88              |

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10825' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10825' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 104k lbs.) plus 100k lbs overpull.

# **Oasis**

**Indian Hills**

**153N-100W-19/20**

**CHALMERS 5300 21-19 11B**

**T153N R100W SECTION 19**

**CHALMERS 5300 21-19 11B**

**Plan: Plan #1**

# **Standard Planning Report**

**31 December, 2014**

# Oasis Petroleum

## Planning Report

| <b>Database:</b>             | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11B  |                         |                               |                       |                      |                     |         |              |
|------------------------------|-----------------------------|-------------------------------------|---|-------------------------|-------------------------------|-----------------------|----------------------|---------------------|---------|--------------|
| <b>Company:</b>              | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev)                                  |                         |                               |                       |                      |                     |         |              |
| <b>Project:</b>              | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev)                                  |                         |                               |                       |                      |                     |         |              |
| <b>Site:</b>                 | 153N-100W-19/20             | <b>North Reference:</b>             | True  |                         |                               |                       |                      |                     |         |              |
| <b>Well:</b>                 | CHALMERS 5300 21-19 11B     | <b>Survey Calculation Method:</b>   | Minimum Curvature   |                         |                               |                       |                      |                     |         |              |
| <b>Wellbore:</b>             | CHALMERS 5300 21-19 11B     |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Design:</b>               | Plan #1                     |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Project</b>               | Indian Hills                |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Map System:</b>           | US State Plane 1983         | <b>System Datum:</b>                | Mean Sea Level  |                         |                               |                       |                      |                     |         |              |
| <b>Geo Datum:</b>            | North American Datum 1983   |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Map Zone:</b>             | North Dakota Northern Zone  |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Site</b>                  | 153N-100W-19/20             |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Site Position:</b>        |                             | <b>Northing:</b>                    | 402,776.24 usft   |                         |                               |                       |                      |                     |         |              |
| <b>From:</b>                 | Lat/Long                    | <b>Easting:</b>                     | 1,209,958.00 usft   |                         |                               |                       |                      |                     |         |              |
| <b>Position Uncertainty:</b> | 0.0 usft                    | <b>Slot Radius:</b>                 | 13.200 in   |                         |                               |                       |                      |                     |         |              |
|                              |                             |                                     | <b>Latitude:</b> 48° 3' 44.270 N  |                         |                               |                       |                      |                     |         |              |
|                              |                             |                                     | <b>Longitude:</b> 103° 36' 10.700 W                                     |                         |                               |                       |                      |                     |         |              |
|                              |                             |                                     | <b>Grid Convergence:</b> -2.31 °  |                         |                               |                       |                      |                     |         |              |
| <b>Well</b>                  | CHALMERS 5300 21-19 11B     |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Well Position</b>         | +N/S<br>+E/W                | -400.2 usft<br>40.1 usft            | <b>Northing:</b> 402,374.70 usft<br><b>Easting:</b> 1,209,981.92 usft   |                         |                               |                       |                      |                     |         |              |
| <b>Position Uncertainty</b>  | 2.0 usft                    |                                     | <b>Latitude:</b> 48° 3' 40.320 N<br><b>Longitude:</b> 103° 36' 10.110 W |                         |                               |                       |                      |                     |         |              |
|                              |                             |                                     | <b>Wellhead Elevation:</b> Ground Level: 2,048.0 usft                   |                         |                               |                       |                      |                     |         |              |
| <b>Wellbore</b>              | CHALMERS 5300 21-19 11B     |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Magnetics</b>             | <b>Model Name</b>           | <b>Sample Date</b>                  | <b>Declination</b><br>(°)   | <b>Dip Angle</b><br>(°) | <b>Field Strength</b><br>(nT) |                       |                      |                     |         |              |
|                              | IGRF2010                    | 2/17/2014                           | 8.31  | 73.00                   | 56,462                        |                       |                      |                     |         |              |
| <b>Design</b>                | Plan #1                     |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Audit Notes:</b>          |                             |                                     |   |                         |                               |                       |                      |                     |         |              |
| <b>Version:</b>              |                             | <b>Phase:</b>                       | <b>PROTOTYPE</b>  | <b>Tie On Depth:</b>    | 0.0                           |                       |                      |                     |         |              |
| <b>Vertical Section:</b>     |                             | <b>Depth From (TVD)</b><br>(usft)   | <b>+N/S</b><br>(usft)   | <b>+E/W</b><br>(usft)   | <b>Direction</b><br>(°)       |                       |                      |                     |         |              |
|                              |                             | 0.0                                 | 0.0   | 0.0                     | 90.00                         |                       |                      |                     |         |              |
| <b>Plan Sections</b>         |                             |                                     |   |                         |                               |                       |                      |                     |         |              |
| Measured Depth (usft)        | Inclination (°)             | Azimuth (°)                         | Vertical Depth (usft)   | +N/S (usft)             | +E/W (usft)                   | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target       |
| 0.0                          | 0.00                        | 0.00                                | 0.0   | 0.0                     | 0.0                           | 0.00                  | 0.00                 | 0.00                | 0.00    | 0.00         |
| 2,250.0                      | 0.00                        | 0.00                                | 2,250.0   | 0.0                     | 0.0                           | 0.00                  | 0.00                 | 0.00                | 0.00    | 0.00         |
| 2,266.7                      | 0.50                        | 180.00                              | 2,266.7   | -0.1                    | 0.0                           | 3.00                  | 3.00                 | 0.00                | 0.00    | 180.00       |
| 7,979.7                      | 0.50                        | 180.00                              | 7,979.4   | -49.9                   | 0.0                           | 0.00                  | 0.00                 | 0.00                | 0.00    | 0.00         |
| 7,996.3                      | 0.00                        | 0.00                                | 7,996.1   | -50.0                   | 0.0                           | 3.00                  | -3.00                | 0.00                | 0.00    | 180.00       |
| 10,271.7                     | 0.00                        | 0.00                                | 10,271.5  | -50.0                   | 0.0                           | 0.00                  | 0.00                 | 0.00                | 0.00    | 0.00         |
| 11,018.0                     | 89.55                       | 126.93                              | 10,748.9  | -334.6                  | 378.7                         | 12.00                 | 12.00                | 0.00                | 126.93  |              |
| 12,864.5                     | 89.55                       | 90.00                               | 10,763.9  | -909.3                  | 2,100.0                       | 2.00                  | 0.00                 | -2.00               | -90.15  |              |
| 20,694.8                     | 89.55                       | 90.00                               | 10,825.0  | -909.0                  | 9,930.0                       | 0.00                  | 0.00                 | 0.00                | 0.00    | Chalmers 11B |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11B           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11B     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11B     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

| Planned Survey                        |                 |             |                       |             |             |                         |                      |                     |                    |      |
|---------------------------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|----------------------|---------------------|--------------------|------|
| Measured Depth (usft)                 | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (/100ft) | Build Rate (/100ft) | Turn Rate (/100ft) |      |
| 2,250.0                               | 0.00            | 0.00        | 2,250.0               | 0.0         | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| <b>Start Build 3.00</b>               |                 |             |                       |             |             |                         |                      |                     |                    |      |
| 2,266.7                               | 0.50            | 180.00      | 2,266.7               | -0.1        | 0.0         | 0.0                     | 3.00                 | 3.00                | 0.00               | 0.00 |
| <b>Start 5713.0 hold at 2266.7 MD</b> |                 |             |                       |             |             |                         |                      |                     |                    |      |
| 2,300.0                               | 0.50            | 180.00      | 2,300.0               | -0.4        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 2,400.0                               | 0.50            | 160.00      | 2,400.0               | -1.2        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 2,500.0                               | 0.50            | 180.00      | 2,500.0               | -2.1        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 2,600.0                               | 0.50            | 180.00      | 2,600.0               | -3.0        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 2,700.0                               | 0.50            | 180.00      | 2,700.0               | -3.9        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 2,800.0                               | 0.50            | 180.00      | 2,800.0               | -4.7        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 2,900.0                               | 0.50            | 180.00      | 2,900.0               | -5.6        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,000.0                               | 0.50            | 180.00      | 3,000.0               | -8.5        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,100.0                               | 0.50            | 180.00      | 3,100.0               | -7.3        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,200.0                               | 0.50            | 180.00      | 3,200.0               | -8.2        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,300.0                               | 0.50            | 180.00      | 3,300.0               | -9.1        | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,400.0                               | 0.50            | 180.00      | 3,400.0               | -10.0       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,500.0                               | 0.50            | 180.00      | 3,500.0               | -10.8       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,600.0                               | 0.50            | 180.00      | 3,599.9               | -11.7       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,700.0                               | 0.50            | 180.00      | 3,699.9               | -12.6       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,800.0                               | 0.50            | 180.00      | 3,799.9               | -13.5       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 3,900.0                               | 0.50            | 180.00      | 3,899.9               | -14.3       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,000.0                               | 0.50            | 180.00      | 3,999.9               | -15.2       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,100.0                               | 0.50            | 180.00      | 4,099.9               | -16.1       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,200.0                               | 0.50            | 180.00      | 4,199.9               | -16.9       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,300.0                               | 0.50            | 180.00      | 4,299.9               | -17.8       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,400.0                               | 0.50            | 180.00      | 4,399.9               | -18.7       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,500.0                               | 0.50            | 180.00      | 4,499.9               | -19.6       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,600.0                               | 0.50            | 180.00      | 4,599.9               | -20.4       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,700.0                               | 0.50            | 180.00      | 4,699.9               | -21.3       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,800.0                               | 0.50            | 180.00      | 4,799.9               | -22.2       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 4,900.0                               | 0.50            | 180.00      | 4,899.9               | -23.1       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,000.0                               | 0.50            | 180.00      | 4,999.9               | -23.9       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,100.0                               | 0.50            | 180.00      | 5,099.9               | -24.8       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,200.0                               | 0.50            | 180.00      | 5,199.9               | -25.7       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,300.0                               | 0.50            | 180.00      | 5,299.9               | -26.5       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,400.0                               | 0.50            | 180.00      | 5,399.9               | -27.4       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,500.0                               | 0.50            | 180.00      | 5,499.9               | -28.3       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,600.0                               | 0.50            | 180.00      | 5,599.9               | -29.2       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,700.0                               | 0.50            | 180.00      | 5,699.9               | -30.0       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,800.0                               | 0.50            | 180.00      | 5,799.9               | -30.9       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 5,900.0                               | 0.50            | 180.00      | 5,899.9               | -31.8       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,000.0                               | 0.50            | 180.00      | 5,999.9               | -32.7       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,100.0                               | 0.50            | 180.00      | 6,099.9               | -33.5       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,200.0                               | 0.50            | 180.00      | 6,199.8               | -34.4       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,300.0                               | 0.50            | 180.00      | 6,299.8               | -35.3       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,400.0                               | 0.50            | 180.00      | 6,399.8               | -36.1       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,463.2                               | 0.50            | 180.00      | 6,463.0               | -36.7       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| <b>9 5/8"</b>                         |                 |             |                       |             |             |                         |                      |                     |                    |      |
| 6,500.0                               | 0.50            | 180.00      | 6,499.8               | -37.0       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,600.0                               | 0.50            | 180.00      | 6,599.8               | -37.9       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,700.0                               | 0.50            | 180.00      | 6,699.8               | -38.8       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,800.0                               | 0.50            | 180.00      | 6,799.8               | -39.6       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 6,900.0                               | 0.50            | 180.00      | 6,899.8               | -40.5       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 7,000.0                               | 0.50            | 180.00      | 6,999.8               | -41.4       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |
| 7,100.0                               | 0.50            | 180.00      | 7,099.8               | -42.3       | 0.0         | 0.0                     | 0.00                 | 0.00                | 0.00               | 0.00 |

# Oasis Petroleum

## Planning Report

| Database:                                   | OpenWellsCompass - EDM Prod | Local Co-ordinate Reference: | Well CHALMERS 5300 21-19 11B           |             |             |                         |                       |                      |                     |
|---|-----------------------------|------------------------------|--|-------------|-------------|-------------------------|-----------------------|----------------------|---------------------|
| Company:                                    | Oasis                       | TVD Reference:               | WELL @ 2071.0usft (Original Well Elev) |             |             |                         |                       |                      |                     |
| Project:                                    | Indian Hills                | MD Reference:                | WELL @ 2071.0usft (Original Well Elev) |             |             |                         |                       |                      |                     |
| Site:                                       | 153N-100W-19/20             | North Reference:             | True                                   |             |             |                         |                       |                      |                     |
| Well:                                       | CHALMERS 5300 21-19 11B     | Survey Calculation Method:   | Minimum Curvature                      |             |             |                         |                       |                      |                     |
| Wellbore:                                   | CHALMERS 5300 21-19 11B     |                              |  |             |             |                         |                       |                      |                     |
| Design:                                     | Plan #1                     |                              |  |             |             |                         |                       |                      |                     |
| <b>Planned Survey</b>                       |                             |                              |  |             |             |                         |                       |                      |                     |
| Measured Depth (usft)                       | Inclination (°)             | Azimuth (°)                  | Vertical Depth (usft)                  | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 7,200.0                                     | 0.50                        | 180.00                       | 7,199.8                                | -43.1       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,300.0                                     | 0.50                        | 180.00                       | 7,299.8                                | -44.0       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,400.0                                     | 0.50                        | 180.00                       | 7,399.8                                | -44.9       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,500.0                                     | 0.50                        | 180.00                       | 7,499.8                                | -45.7       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,600.0                                     | 0.50                        | 180.00                       | 7,599.8                                | -46.5       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,700.0                                     | 0.50                        | 180.00                       | 7,699.8                                | -47.5       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,800.0                                     | 0.50                        | 180.00                       | 7,799.8                                | -48.4       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,900.0                                     | 0.50                        | 180.00                       | 7,899.8                                | -49.2       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| 7,979.7                                     | 0.50                        | 180.00                       | 7,979.4                                | -49.9       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| <b>Start Drop -3.00</b>                     |                             |                              |  |             |             |                         |                       |                      |                     |
| 7,998.3                                     | 0.00                        | 0.00                         | 7,996.1                                | -50.0       | 0.0         | 0.0                     | 3.00                  | -3.00                | 0.00                |
| <b>Start 2275.4 hold at 7996.3 MD</b>       |                             |                              |  |             |             |                         |                       |                      |                     |
| 10,271.7                                    | 0.00                        | 0.00                         | 10,271.5                               | -50.0       | 0.0         | 0.0                     | 0.00                  | 0.00                 | 0.00                |
| <b>Start Build 12.00 - KOP</b>              |                             |                              |  |             |             |                         |                       |                      |                     |
| 10,300.0                                    | 3.39                        | 126.93                       | 10,299.8                               | -50.5       | 0.7         | 0.7                     | 12.00                 | 12.00                | 0.00                |
| 10,400.0                                    | 15.39                       | 126.93                       | 10,398.2                               | -60.3       | 13.7        | 13.7                    | 12.00                 | 12.00                | 0.00                |
| 10,500.0                                    | 27.39                       | 126.93                       | 10,491.2                               | -82.2       | 42.8        | 42.8                    | 12.00                 | 12.00                | 0.00                |
| 10,600.0                                    | 39.39                       | 126.93                       | 10,574.5                               | -115.2      | 86.7        | 86.7                    | 12.00                 | 12.00                | 0.00                |
| 10,700.0                                    | 51.39                       | 126.93                       | 10,644.8                               | -157.9      | 143.5       | 143.5                   | 12.00                 | 12.00                | 0.00                |
| 10,800.0                                    | 63.39                       | 126.93                       | 10,698.4                               | -208.4      | 210.7       | 210.7                   | 12.00                 | 12.00                | 0.00                |
| 10,900.0                                    | 75.39                       | 126.93                       | 10,733.5                               | -264.5      | 285.4       | 285.4                   | 12.00                 | 12.00                | 0.00                |
| 11,000.0                                    | 87.39                       | 126.93                       | 10,748.5                               | -323.8      | 364.3       | 364.3                   | 12.00                 | 12.00                | 0.00                |
| 11,018.0                                    | 89.55                       | 126.93                       | 10,748.9                               | -334.6      | 378.7       | 378.7                   | 11.98                 | 11.98                | 0.00                |
| <b>Start DLS 2.00 TFO -90.15 + EOC + 7"</b> |                             |                              |  |             |             |                         |                       |                      |                     |
| 11,100.0                                    | 89.55                       | 125.29                       | 10,749.6                               | -383.0      | 444.9       | 444.9                   | 2.00                  | 0.00                 | -2.00               |
| 11,200.0                                    | 89.54                       | 123.29                       | 10,750.4                               | -439.3      | 527.6       | 527.6                   | 2.00                  | 0.00                 | -2.00               |
| 11,300.0                                    | 89.54                       | 121.29                       | 10,751.2                               | -492.7      | 612.1       | 612.1                   | 2.00                  | 0.00                 | -2.00               |
| 11,400.0                                    | 89.53                       | 119.29                       | 10,752.0                               | -543.1      | 698.4       | 698.4                   | 2.00                  | 0.00                 | -2.00               |
| 11,500.0                                    | 89.53                       | 117.29                       | 10,752.8                               | -590.5      | 786.5       | 786.5                   | 2.00                  | 0.00                 | -2.00               |
| 11,600.0                                    | 89.53                       | 115.29                       | 10,753.6                               | -634.8      | 876.1       | 876.1                   | 2.00                  | 0.00                 | -2.00               |
| 11,700.0                                    | 89.53                       | 113.29                       | 10,754.5                               | -676.0      | 987.3       | 987.3                   | 2.00                  | 0.00                 | -2.00               |
| 11,800.0                                    | 89.53                       | 111.29                       | 10,755.3                               | -713.9      | 1,059.8     | 1,059.8                 | 2.00                  | 0.00                 | -2.00               |
| 11,900.0                                    | 89.53                       | 109.29                       | 10,756.1                               | -748.5      | 1,153.6     | 1,153.6                 | 2.00                  | 0.00                 | -2.00               |
| 12,000.0                                    | 89.53                       | 107.29                       | 10,756.9                               | -779.9      | 1,248.5     | 1,248.5                 | 2.00                  | 0.00                 | -2.00               |
| 12,100.0                                    | 89.53                       | 105.29                       | 10,757.8                               | -808.0      | 1,344.5     | 1,344.5                 | 2.00                  | 0.00                 | -2.00               |
| 12,200.0                                    | 89.53                       | 103.29                       | 10,758.6                               | -832.6      | 1,441.4     | 1,441.4                 | 2.00                  | 0.00                 | -2.00               |
| 12,300.0                                    | 89.53                       | 101.29                       | 10,759.4                               | -853.9      | 1,539.1     | 1,539.1                 | 2.00                  | 0.00                 | -2.00               |
| 12,400.0                                    | 89.53                       | 99.29                        | 10,760.2                               | -871.8      | 1,637.5     | 1,637.5                 | 2.00                  | 0.00                 | -2.00               |
| 12,500.0                                    | 89.54                       | 97.29                        | 10,761.0                               | -886.2      | 1,738.4     | 1,738.4                 | 2.00                  | 0.00                 | -2.00               |
| 12,600.0                                    | 89.54                       | 95.29                        | 10,761.8                               | -897.2      | 1,835.8     | 1,835.8                 | 2.00                  | 0.00                 | -2.00               |
| 12,700.0                                    | 89.54                       | 93.29                        | 10,762.6                               | -904.6      | 1,935.5     | 1,935.5                 | 2.00                  | 0.00                 | -2.00               |
| 12,800.0                                    | 89.55                       | 91.29                        | 10,763.4                               | -908.6      | 2,035.4     | 2,035.4                 | 2.00                  | 0.00                 | -2.00               |
| 12,864.5                                    | 89.55                       | 90.00                        | 10,763.9                               | -909.3      | 2,100.0     | 2,100.0                 | 2.00                  | 0.01                 | -2.00               |
| <b>Start 7830.3 hold at 12864.5 MD</b>      |                             |                              |  |             |             |                         |                       |                      |                     |
| 12,900.0                                    | 89.55                       | 90.00                        | 10,764.2                               | -909.3      | 2,135.4     | 2,135.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,000.0                                    | 89.55                       | 90.00                        | 10,765.0                               | -909.3      | 2,235.4     | 2,235.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,100.0                                    | 89.55                       | 90.00                        | 10,765.8                               | -909.3      | 2,335.4     | 2,335.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,200.0                                    | 89.55                       | 90.00                        | 10,766.5                               | -909.3      | 2,435.4     | 2,435.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,300.0                                    | 89.55                       | 90.00                        | 10,767.3                               | -909.3      | 2,535.4     | 2,535.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,400.0                                    | 89.55                       | 90.00                        | 10,768.1                               | -909.3      | 2,635.4     | 2,635.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,500.0                                    | 89.55                       | 90.00                        | 10,768.9                               | -909.3      | 2,735.4     | 2,735.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,600.0                                    | 89.55                       | 90.00                        | 10,789.7                               | -909.3      | 2,835.4     | 2,835.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,700.0                                    | 89.55                       | 90.00                        | 10,770.4                               | -909.3      | 2,935.4     | 2,935.4                 | 0.00                  | 0.00                 | 0.00                |
| 13,800.0                                    | 89.55                       | 90.00                        | 10,771.2                               | -909.3      | 3,035.4     | 3,035.4                 | 0.00                  | 0.00                 | 0.00                |

# Oasis Petroleum

## Planning Report

|           |                             |                              |  |
|-----------|-----------------------------|------------------------------|--|
| Database: | OpenWellsCompass - EDM Prod | Local Co-ordinate Reference: | Well CHALMERS 5300 21-19 11B           |
| Company:  | Oasis                       | TVD Reference:               | WELL @ 2071.0usft (Original Well Elev) |
| Project:  | Indian Hills                | MD Reference:                | WELL @ 2071.0usft (Original Well Elev) |
| Site:     | 153N-100W-19/20             | North Reference:             | True                                   |
| Well:     | CHALMERS 5300 21-19 11B     | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | CHALMERS 5300 21-19 11B     |                              |  |
| Design:   | Plan #1                     |                              |  |

| Planned Survey        |                 |             |                       |             |             |                         |                       |                      |                     |      |
|-----------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-----------------------|----------------------|---------------------|------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |      |
| 13,900.0              | 89.55           | 90.00       | 10,772.0              | -909.3      | 3,135.4     | 3,135.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,000.0              | 89.55           | 90.00       | 10,772.8              | -909.3      | 3,235.4     | 3,235.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,100.0              | 89.55           | 90.00       | 10,773.6              | -909.3      | 3,335.4     | 3,335.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,200.0              | 89.55           | 90.00       | 10,774.3              | -909.3      | 3,435.4     | 3,435.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,300.0              | 89.55           | 90.00       | 10,775.1              | -909.3      | 3,535.4     | 3,535.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,400.0              | 89.55           | 90.00       | 10,775.9              | -909.3      | 3,635.4     | 3,635.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,500.0              | 89.55           | 90.00       | 10,776.7              | -909.3      | 3,735.4     | 3,735.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,600.0              | 89.55           | 90.00       | 10,777.5              | -909.3      | 3,835.4     | 3,835.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,700.0              | 89.55           | 90.00       | 10,778.2              | -909.3      | 3,935.4     | 3,935.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,800.0              | 89.55           | 90.00       | 10,779.0              | -909.3      | 4,035.4     | 4,035.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 14,900.0              | 89.55           | 90.00       | 10,779.8              | -909.3      | 4,135.4     | 4,135.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,000.0              | 89.55           | 90.00       | 10,780.6              | -909.3      | 4,235.4     | 4,235.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,100.0              | 89.55           | 90.00       | 10,781.4              | -909.2      | 4,335.4     | 4,335.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,200.0              | 89.55           | 90.00       | 10,782.1              | -909.2      | 4,435.4     | 4,435.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,300.0              | 89.55           | 90.00       | 10,782.9              | -909.2      | 4,535.4     | 4,535.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,400.0              | 89.55           | 90.00       | 10,783.7              | -909.2      | 4,635.4     | 4,635.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,500.0              | 89.55           | 90.00       | 10,784.5              | -909.2      | 4,735.4     | 4,735.4                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,600.0              | 89.55           | 90.00       | 10,785.3              | -909.2      | 4,835.3     | 4,835.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,700.0              | 89.55           | 90.00       | 10,786.0              | -909.2      | 4,935.3     | 4,935.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,800.0              | 89.55           | 90.00       | 10,786.8              | -909.2      | 5,035.3     | 5,035.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 15,900.0              | 89.55           | 90.00       | 10,787.6              | -909.2      | 5,135.3     | 5,135.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,000.0              | 89.55           | 90.00       | 10,788.4              | -909.2      | 5,235.3     | 5,235.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 16,100.0              | 89.55           | 90.00       | 10,789.2              | -909.2      | 5,335.3     | 5,335.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,200.0              | 89.55           | 90.00       | 10,789.9              | -909.2      | 5,435.3     | 5,435.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 16,300.0              | 89.55           | 90.00       | 10,790.7              | -909.2      | 5,535.3     | 5,535.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,400.0              | 89.55           | 90.00       | 10,791.5              | -909.2      | 5,635.3     | 5,635.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,500.0              | 89.55           | 90.00       | 10,792.3              | -909.2      | 5,735.3     | 5,735.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 16,600.0              | 89.55           | 90.00       | 10,793.1              | -909.2      | 5,835.3     | 5,835.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 16,700.0              | 89.55           | 90.00       | 10,793.8              | -909.2      | 5,935.3     | 5,935.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,800.0              | 89.55           | 90.00       | 10,794.6              | -909.2      | 8,035.3     | 8,035.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 16,900.0              | 89.55           | 90.00       | 10,795.4              | -909.2      | 6,135.3     | 6,135.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,000.0              | 89.55           | 90.00       | 10,796.2              | -909.2      | 6,235.3     | 6,235.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,100.0              | 89.55           | 90.00       | 10,797.0              | -909.2      | 6,335.3     | 6,335.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,200.0              | 89.55           | 90.00       | 10,797.7              | -909.2      | 6,435.3     | 6,435.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,300.0              | 89.55           | 90.00       | 10,798.5              | -909.2      | 6,535.3     | 6,535.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,400.0              | 89.55           | 90.00       | 10,799.3              | -909.1      | 6,635.3     | 6,635.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,500.0              | 89.55           | 90.00       | 10,800.1              | -909.1      | 6,735.3     | 6,735.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,600.0              | 89.55           | 90.00       | 10,800.9              | -909.1      | 6,835.3     | 6,835.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,700.0              | 89.55           | 90.00       | 10,801.6              | -909.1      | 6,935.3     | 6,935.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,800.0              | 89.55           | 90.00       | 10,802.4              | -909.1      | 7,035.3     | 7,035.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 17,900.0              | 89.55           | 90.00       | 10,803.2              | -909.1      | 7,135.3     | 7,135.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,000.0              | 89.55           | 90.00       | 10,804.0              | -909.1      | 7,235.3     | 7,235.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,100.0              | 89.55           | 90.00       | 10,804.8              | -909.1      | 7,335.3     | 7,335.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,200.0              | 89.55           | 90.00       | 10,805.5              | -909.1      | 7,435.3     | 7,435.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,300.0              | 89.55           | 90.00       | 10,808.3              | -909.1      | 7,535.3     | 7,535.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,400.0              | 89.55           | 90.00       | 10,807.1              | -909.1      | 7,635.3     | 7,635.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,500.0              | 89.55           | 90.00       | 10,807.9              | -909.1      | 7,735.3     | 7,735.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,600.0              | 89.55           | 90.00       | 10,808.7              | -909.1      | 7,835.3     | 7,835.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,700.0              | 89.55           | 90.00       | 10,809.4              | -909.1      | 7,935.3     | 7,935.3                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 16,800.0              | 89.55           | 90.00       | 10,810.2              | -909.1      | 8,035.2     | 8,035.2                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 18,900.0              | 89.55           | 90.00       | 10,811.0              | -909.1      | 8,135.2     | 8,135.2                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 19,000.0              | 89.55           | 90.00       | 10,811.8              | -909.1      | 8,235.2     | 8,235.2                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 19,100.0              | 89.55           | 90.00       | 10,812.6              | -909.1      | 8,335.2     | 8,335.2                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 19,200.0              | 89.55           | 90.00       | 10,813.3              | -909.1      | 8,435.2     | 8,435.2                 | 0.00                  | 0.00                 | 0.00                | 0.00 |
| 19,300.0              | 89.55           | 90.00       | 10,814.1              | -909.1      | 8,535.2     | 8,535.2                 | 0.00                  | 0.00                 | 0.00                | 0.00 |

# Oasis Petroleum

## Planning Report

|           |                             |                              |  |
|-----------|-----------------------------|------------------------------|--|
| Database: | OpenWellsCompass - EDM Prod | Local Co-ordinate Reference: | Well CHALMERS 5300 21-19 11B           |
| Company:  | Oasis                       | TVD Reference:               | WELL @ 2071.0usft (Original Well Elev) |
| Project:  | Indian Hills                | MD Reference:                | WELL @ 2071.0usft (Original Well Elev) |
| Site:     | 153N-100W-19/20             | North Reference:             | True                                   |
| Well:     | CHALMERS 5300 21-19 11B     | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | CHALMERS 5300 21-19 11B     |                              |  |
| Design:   | Plan #1                     |                              |  |

| Planned Survey        |                 |             |                       |             |             |                         |                       |                      |                     |  |
|-----------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/S (usft) | +E/W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |  |
| 19,400.0              | 89.55           | 90.00       | 10,814.9              | -909.1      | 8,635.2     | 8,635.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 19,500.0              | 89.55           | 90.00       | 10,815.7              | -909.1      | 8,735.2     | 8,735.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 19,600.0              | 89.55           | 90.00       | 10,818.5              | -909.0      | 8,835.2     | 8,835.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 19,700.0              | 89.55           | 90.00       | 10,817.2              | -909.0      | 8,935.2     | 8,935.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 19,800.0              | 89.55           | 90.00       | 10,818.0              | -909.0      | 9,035.2     | 9,035.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 19,900.0              | 89.55           | 90.00       | 10,818.8              | -909.0      | 9,135.2     | 9,135.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,000.0              | 89.55           | 90.00       | 10,819.6              | -909.0      | 9,235.2     | 9,235.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,100.0              | 89.55           | 90.00       | 10,820.4              | -909.0      | 9,335.2     | 9,335.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,200.0              | 89.55           | 90.00       | 10,821.1              | -909.0      | 9,435.2     | 9,435.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,300.0              | 89.55           | 90.00       | 10,821.9              | -909.0      | 9,535.2     | 9,535.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,400.0              | 89.55           | 90.00       | 10,822.7              | -909.0      | 9,635.2     | 9,635.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,500.0              | 89.55           | 90.00       | 10,823.5              | -909.0      | 9,735.2     | 9,735.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,600.0              | 89.55           | 90.00       | 10,824.3              | -909.0      | 9,835.2     | 9,835.2                 | 0.00                  | 0.00                 | 0.00                |  |
| 20,694.8              | 89.55           | 90.00       | 10,825.0              | -909.0      | 9,930.0     | 9,930.0                 | 0.00                  | 0.00                 | 0.00                |  |

TD at 20694.8 - Chalmers 11B

| Design Targets |               |              |            |             |             |                 |                |                 |                   |                                      |
|----------------|---------------|--------------|------------|-------------|-------------|-----------------|----------------|-----------------|-------------------|--------------------------------------|
| Target Name    | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/S (usft) | +E/W (usft) | Northing (usft) | Easting (usft) | Latitude        | Longitude         |                                      |
| Chalmers 11B   | 0.00          | 0.00         | 10,825.0   | -909.0      | 9,930.0     | 401,066.39      | 1,219,867.23   | 48° 3' 31.323 N | 103° 33' 43.925 W | - plan hits target center<br>- Point |

| Casing Points         |                       |         |  |  |  |  |                      |                    |  |  |
|-----------------------|-----------------------|---------|--|--|--|--|----------------------|--------------------|--|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name    |  |  |  |  | Casing Diameter (in) | Hole Diameter (in) |  |  |
| 2,121.0               | 2,121.0               | 13 3/8" |  |  |  |  | 13.375               | 17.500             |  |  |
| 6,463.2               | 8,463.0               | 9 5/8"  |  |  |  |  | 9.625                | 12.250             |  |  |
| 11,018.0              | 10,748.9              | 7"      |  |  |  |  | 7.000                | 8.750              |  |  |

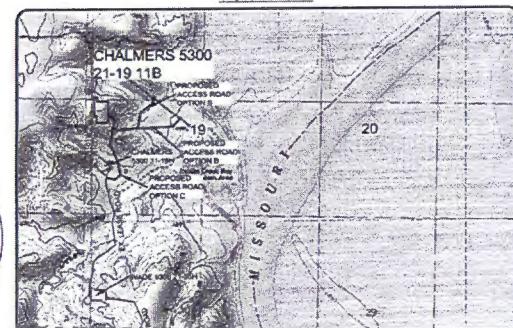
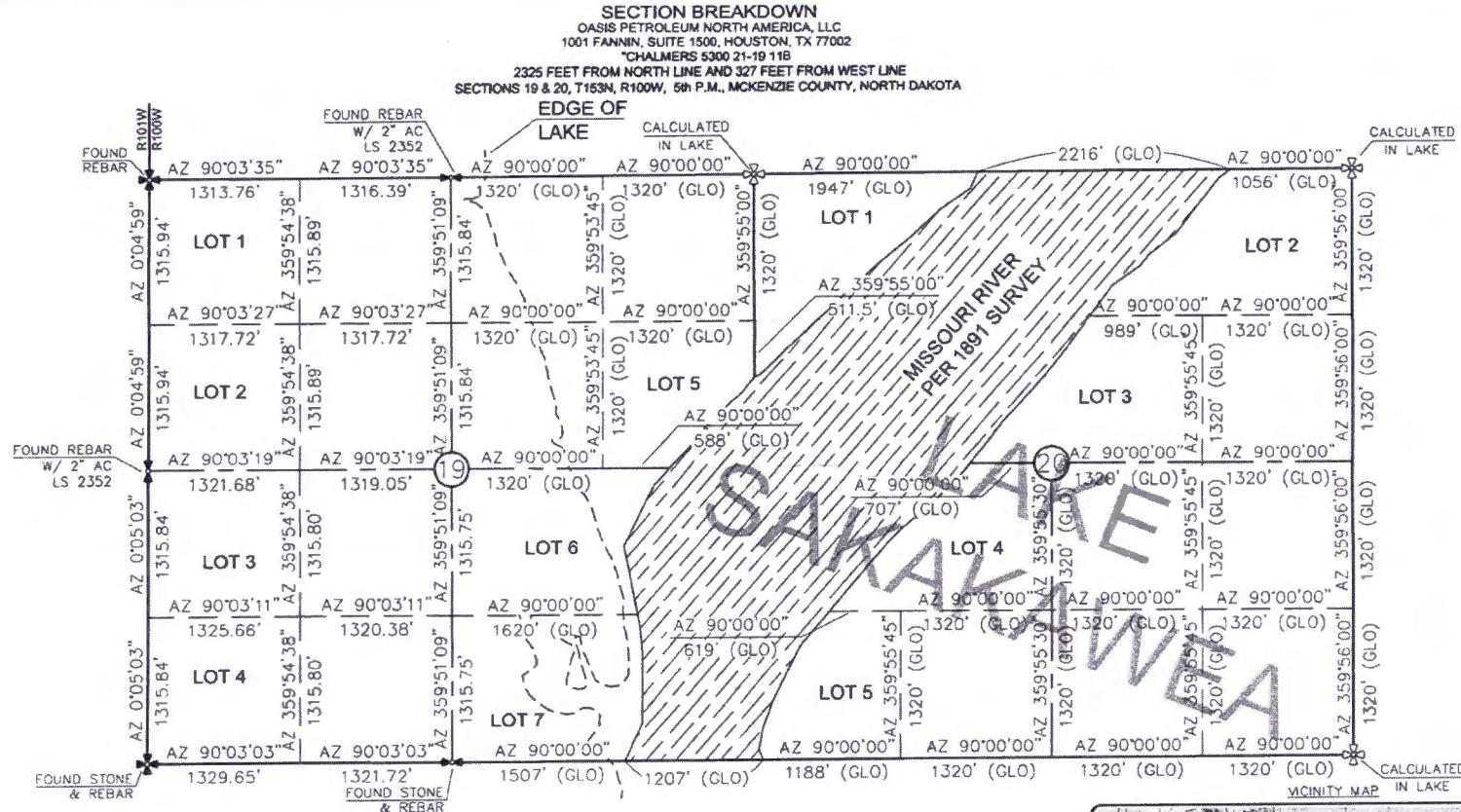
# Oasis Petroleum

## Planning Report

|           |                             |                              |  |
|-----------|-----------------------------|------------------------------|--|
| Database: | OpenWellsCompass - EDM Prod | Local Co-ordinate Reference: | Well CHALMERS 5300 21-19 11B           |
| Company:  | Oasis                       | TVD Reference:               | WELL @ 2071.0usft (Original Well Elev) |
| Project:  | Indian Hills                | MD Reference:                | WELL @ 2071.0usft (Original Well Elev) |
| Site:     | 153N-100W-19/20             | North Reference:             | True                                   |
| Well:     | CHALMERS 5300 21-19 11B     | Survey Calculation Method:   | Minimum Curvature                      |
| Wellbore: | CHALMERS 5300 21-19 11B     |                              |  |
| Design:   | Plan #1                     |                              |  |

| Formations | Measured Depth (usft) | Vertical Depth (usft) | Name                           | Lithology | Dip (°) | Dip Direction (°) |
|------------|-----------------------|-----------------------|--------------------------------|-----------|---------|-------------------|
|            | 2,021.0               | 2,021.0               | Pierre                         |           |         |                   |
|            | 4,624.1               | 4,624.0               | Greenhorn                      |           |         |                   |
|            | 5,029.1               | 5,029.0               | Mowry                          |           |         |                   |
|            | 5,417.1               | 5,417.0               | Dakota                         |           |         |                   |
|            | 6,463.2               | 6,463.0               | Rierdon                        |           |         |                   |
|            | 6,891.2               | 6,891.0               | Dunham Salt                    |           |         |                   |
|            | 6,960.2               | 6,960.0               | Dunham Salt Base               |           |         |                   |
|            | 7,257.2               | 7,257.0               | Pine Salt                      |           |         |                   |
|            | 7,290.2               | 7,290.0               | Pine Salt Base                 |           |         |                   |
|            | 7,351.2               | 7,351.0               | Opeche Salt                    |           |         |                   |
|            | 7,426.2               | 7,426.0               | Opeche Salt Base               |           |         |                   |
|            | 7,662.2               | 7,662.0               | Amsden                         |           |         |                   |
|            | 7,828.2               | 7,828.0               | Tyler                          |           |         |                   |
|            | 8,032.2               | 8,032.0               | Otter/Base Minnelusa           |           |         |                   |
|            | 8,384.2               | 8,384.0               | Kibbey Lime                    |           |         |                   |
|            | 8,534.2               | 8,534.0               | Charles Salt                   |           |         |                   |
|            | 9,209.2               | 9,209.0               | Base Last Salt                 |           |         |                   |
|            | 9,429.2               | 9,429.0               | Mission Canyon                 |           |         |                   |
|            | 9,993.2               | 9,993.0               | Lodgepole                      |           |         |                   |
|            | 10,817.6              | 10,706.0              | False Bakken                   |           |         |                   |
|            | 10,843.3              | 10,718.0              | Upper Bakken Shale             |           |         |                   |
|            | 10,946.2              | 10,743.0              | Middle Bakken (Top of Target)  |           |         |                   |
|            | 11,644.1              | 10,754.0              | Middle Bakken (Base of target) |           |         |                   |
|            | 13,130.7              | 10,766.0              | Lower Bakken Shale             |           |         |                   |
|            | 17,381.5              | 10,799.0              | Threeforks                     |           |         |                   |

| Plan Annotations      |                       |                   |             |                                 |         |
|-----------------------|-----------------------|-------------------|-------------|---------------------------------|---------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |             |                                 | Comment |
|                       |                       | +N/S (usft)       | +E/W (usft) |                                 |         |
| 2,250.0               | 2,250.0               | 0.0               | 0.0         | Start Build 3.00                |         |
| 2,286.7               | 2,266.7               | -0.1              | 0.0         | Start 5713.0 hold at 2286.7 MD  |         |
| 7,979.7               | 7,979.4               | -49.9             | 0.0         | Start Drop -3.00                |         |
| 7,996.3               | 7,996.1               | -50.0             | 0.0         | Start 2275.4 hold at 7996.3 MD  |         |
| 10,271.7              | 10,271.5              | -50.0             | 0.0         | Start Build 12.00 - KOP         |         |
| 11,018.0              | 10,748.9              | -334.6            | 378.7       | Start DLS 2.00 TFO -90.15 - EOC |         |
| 12,864.5              | 10,763.9              | -909.3            | 2,100.0     | Start 7830.3 hold at 12864.5 MD |         |
| 20,694.8              | 10,825.0              | -909.0            | 9,930.0     | TD at 20694.8                   |         |



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| Revised | Date    | By | Description         |
|---------|---------|----|---------------------|
| REV 1   | 5/17/14 | AB | FOUND REBAR IN LAKE |
| REV 2   | 5/22/14 | BH | FOUND REBAR IN LAKE |
| REV 3   | 5/27/14 | BH | FOUND REBAR IN LAKE |

|                                    |
|------------------------------------|
| OASIS PETROLEUM NORTH AMERICA, LLC |
| SECTION BREAKDOWN                  |
| SECTIONS 19 & 20, T153N, R100W     |
| MCKENZIE COUNTY, NORTH DAKOTA      |
| Project #: S153N-R100W             |
| Drawn By: B.A.C.                   |
| Checked By: D.D.K.                 |
| Date: 5/20/14                      |

|  |
|--|
| Interstate Engineering, Inc.<br>P.O. Box 944<br>423 East Main Street<br>Sister Lake, Montana 59270<br>Ph. (406) 446-5411<br>Fax: (406) 446-5411<br>www.interstateinc.com |
| Permittee's Name: CHALMERS 5300<br>Permittee's Address: 21-19 11B<br>Permittee's Phone: 406-446-5411<br>Permittee's Email: info@interstateinc.com                        |



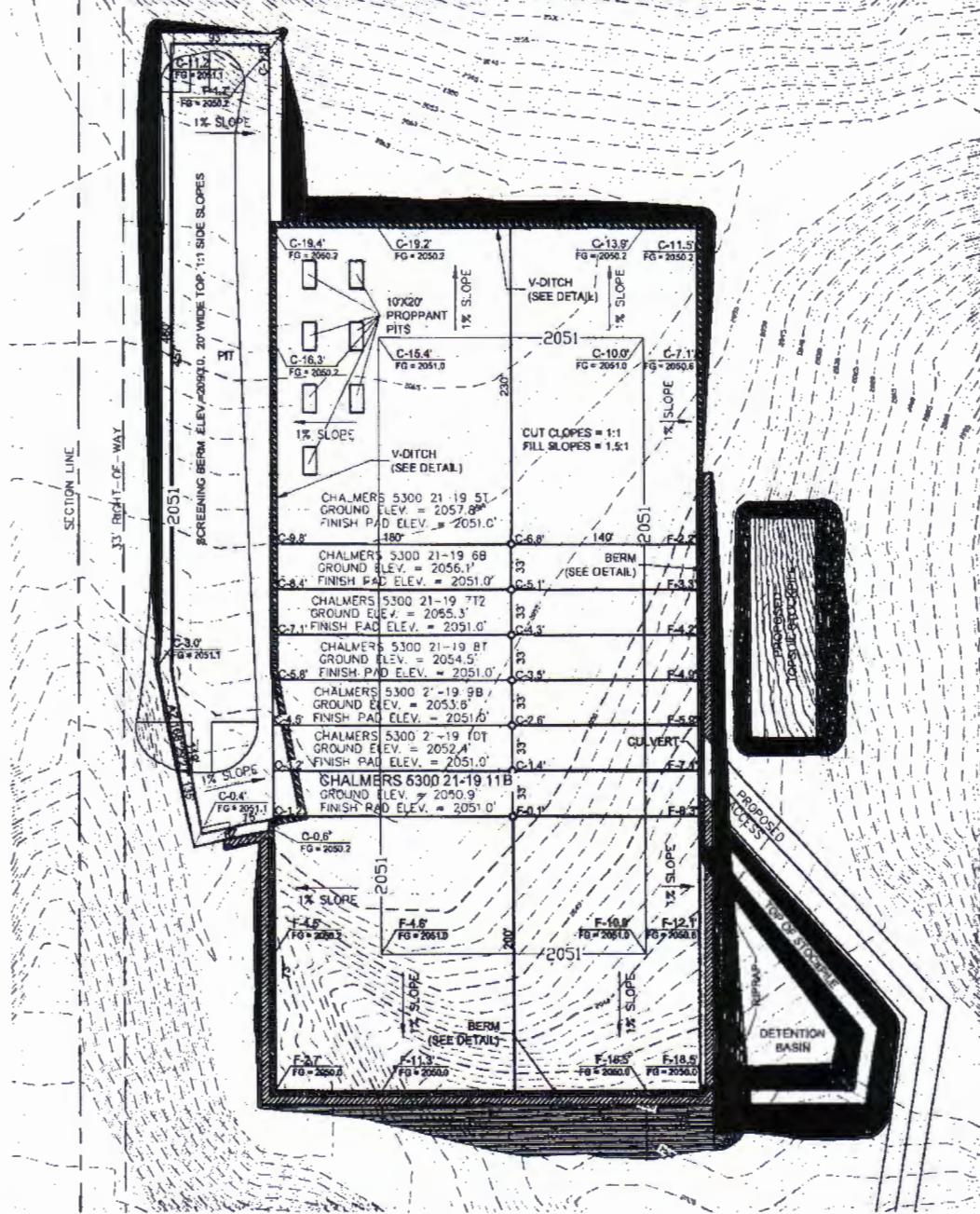
SHEET NO.

PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

\*CHALMERS 5300 21-19 11B

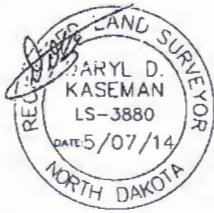
2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



NOTE 1: Pad dimensions shown are to useable area, the v-ditch and berm areas shall be built to the outside of the pad dimensions.

NOTE 2 : Screening berm is to be built after drilling operations are complete.

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, P.S. REGISTRATION NUMBER 3880 ON 5/07/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.



Proposed Contours  
Original Contours

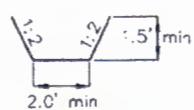
— BERM  
— DITCH

NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

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D 80  
1' = 80'

V-DITCH DETAIL



3/8

SHEET NO.



Project No. 0140-282-02

Interstate Engineering, Inc.

P.O. Box 648  
425 East Main Street  
Sidney, Montana 59270  
(406) 425-3817  
(406) 425-3818  
[www.interstateinc.com](http://www.interstateinc.com)

Other offices in Montana, Wyoming and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC

PAD LAYOUT  
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.J. Project No.: 0140-282-02  
Checked By: D.D.K. Date: JUL 2014

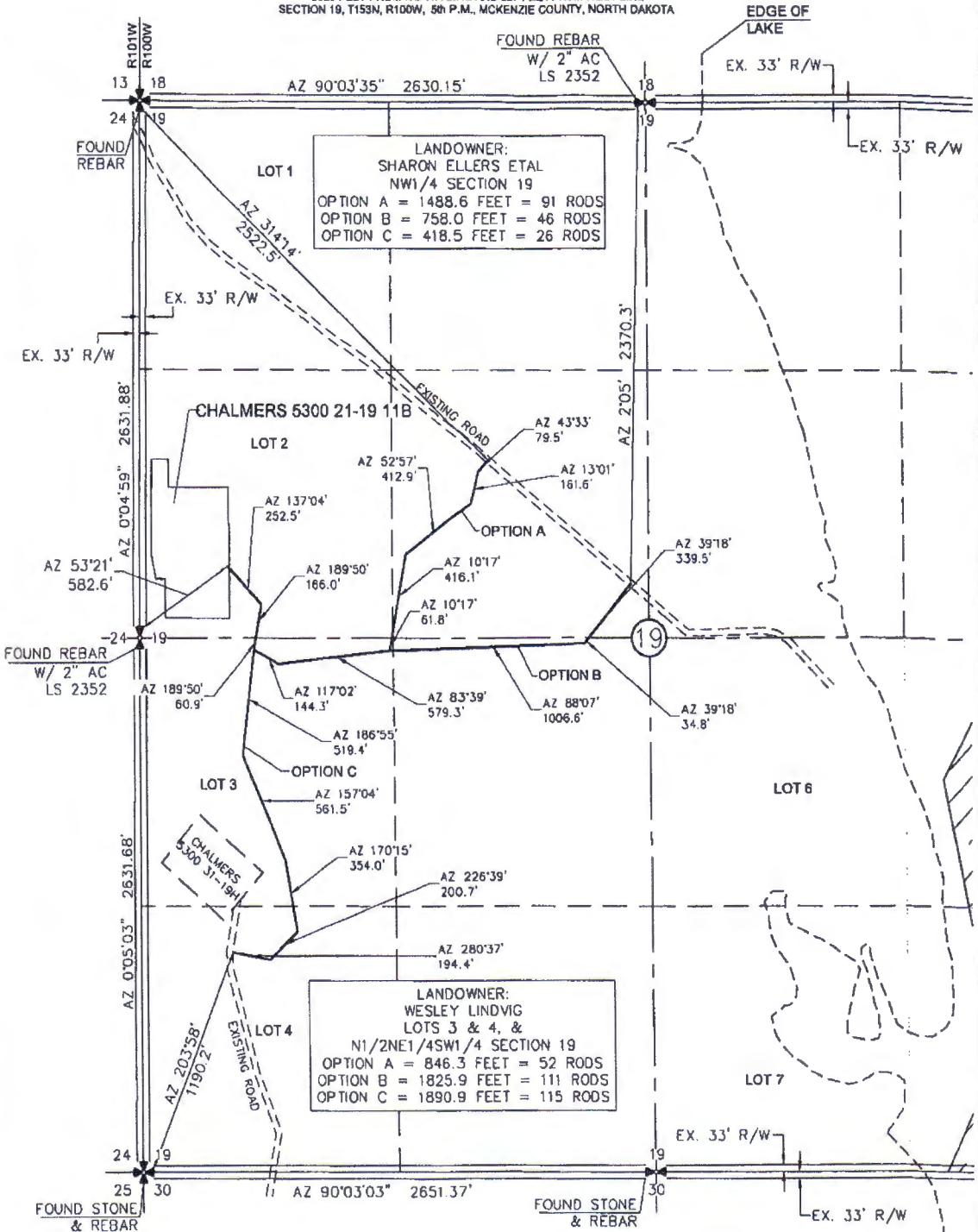
| Revision No. | Date    | By  | Description                     |
|--------------|---------|-----|---------------------------------|
| REV 1        | 5/12/14 | BHJ | MOVED WELLS ON PAD              |
| REV 2        | 5/12/14 | BHJ | MOVED WELLS ON PAD, REVISED PAD |
| REV 3        | 5/12/14 | BHJ | MOVED WELLS ON PAD, REVISED PAD |
|              |         |     | Comments/Instructions: None     |

## ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11B"

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 50 P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY  
ISSUED AND SEALED BY DARYL D.  
KASEMAN, PLS, REGISTRATION NUMBER  
3880 ON 5/07/14 AND THE  
ORIGINAL DOCUMENTS ARE STORED AT  
THE OFFICES OF INTERSTATE  
ENGINEERING, INC.

NOTE: All utilities shown are preliminary only, a complete  
utilities location is recommended before construction.



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4/8



Interstate Engineering, Inc.  
425 East Main Street  
Billings, Montana 59101  
Ph (406) 333-5617  
Fax (406) 333-5616  
[www.interstateeng.com](http://www.interstateeng.com)

OASIS PETROLEUM NORTH AMERICA, LLC  
ACCESS APPROACH  
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.J.H.

Checked By: D.R.K.

Date: 5/1/14

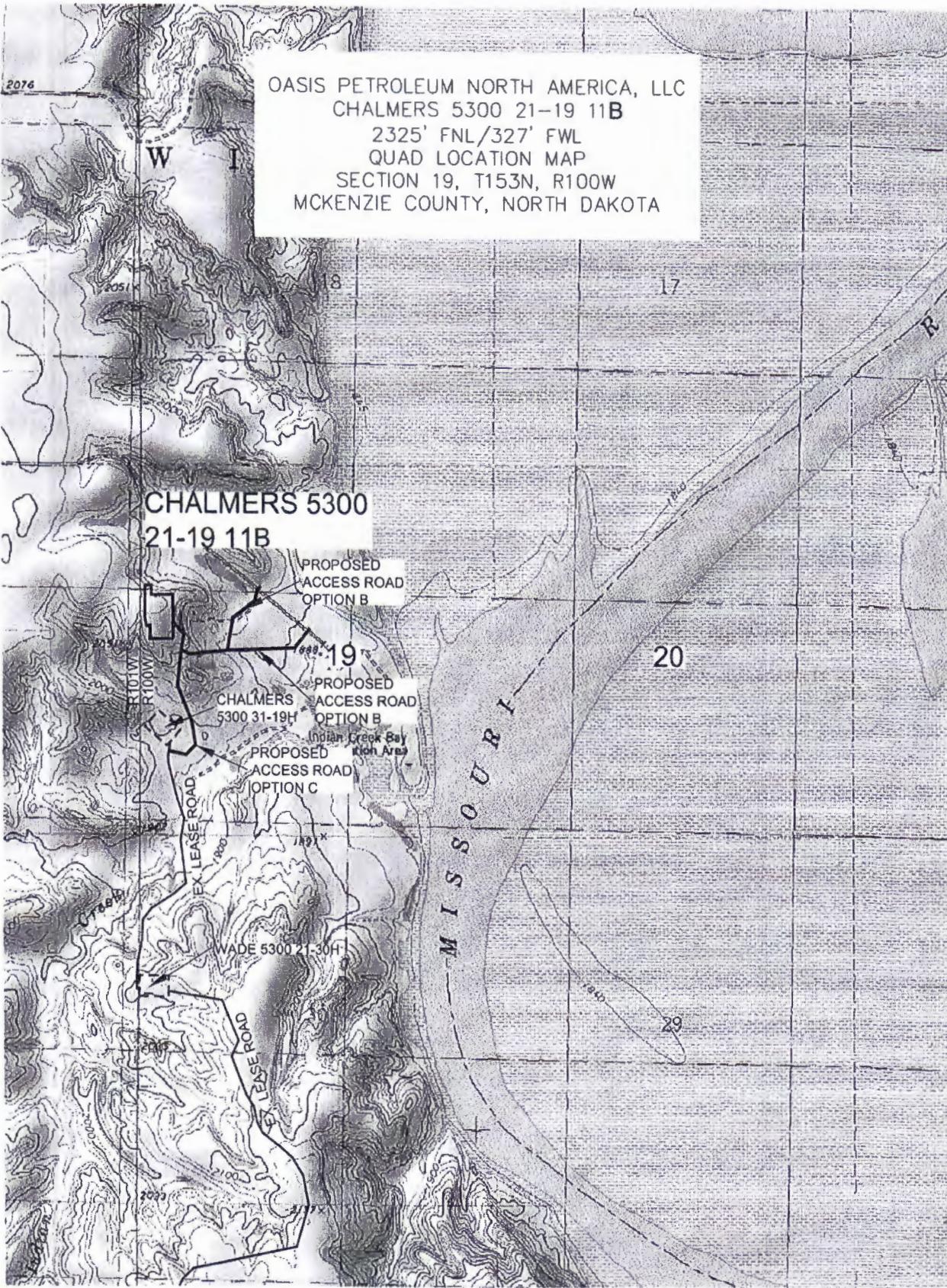
Project No.: 813-09-2020

Drawn By: B.J.H.

Checked By: D.R.K.

Date: JAN 2014

| Permit No. | Date   | By  | Description                    |
|------------|--------|-----|--------------------------------|
| REV I      | 2/2/14 | ABH | Moved wells on pad             |
| REV 2      | 4/2/14 | ABH | Moved wells on pad/revised pad |
| REV J      | 5/1/14 | ABH | Moved wells on pad/revised pad |



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 425 East Main Street  
 Sidney, Montana 59270  
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Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
 QUAD LOCATION MAP  
 SECTION 19, T153N, R100W  
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.00  
 Checked By: D.D.K. Date: JAN 2014

| Revision No. | Date    | By  | Description                    |
|--------------|---------|-----|--------------------------------|
| REV 1        | 1/12/14 | JUS | Moved wells on pad             |
| REV 2        | 1/22/14 | BHH | Moved wells on pad/revised pad |
| REV 3        | 5/7/14  | BHH | Moved wells on pad/revised pad |

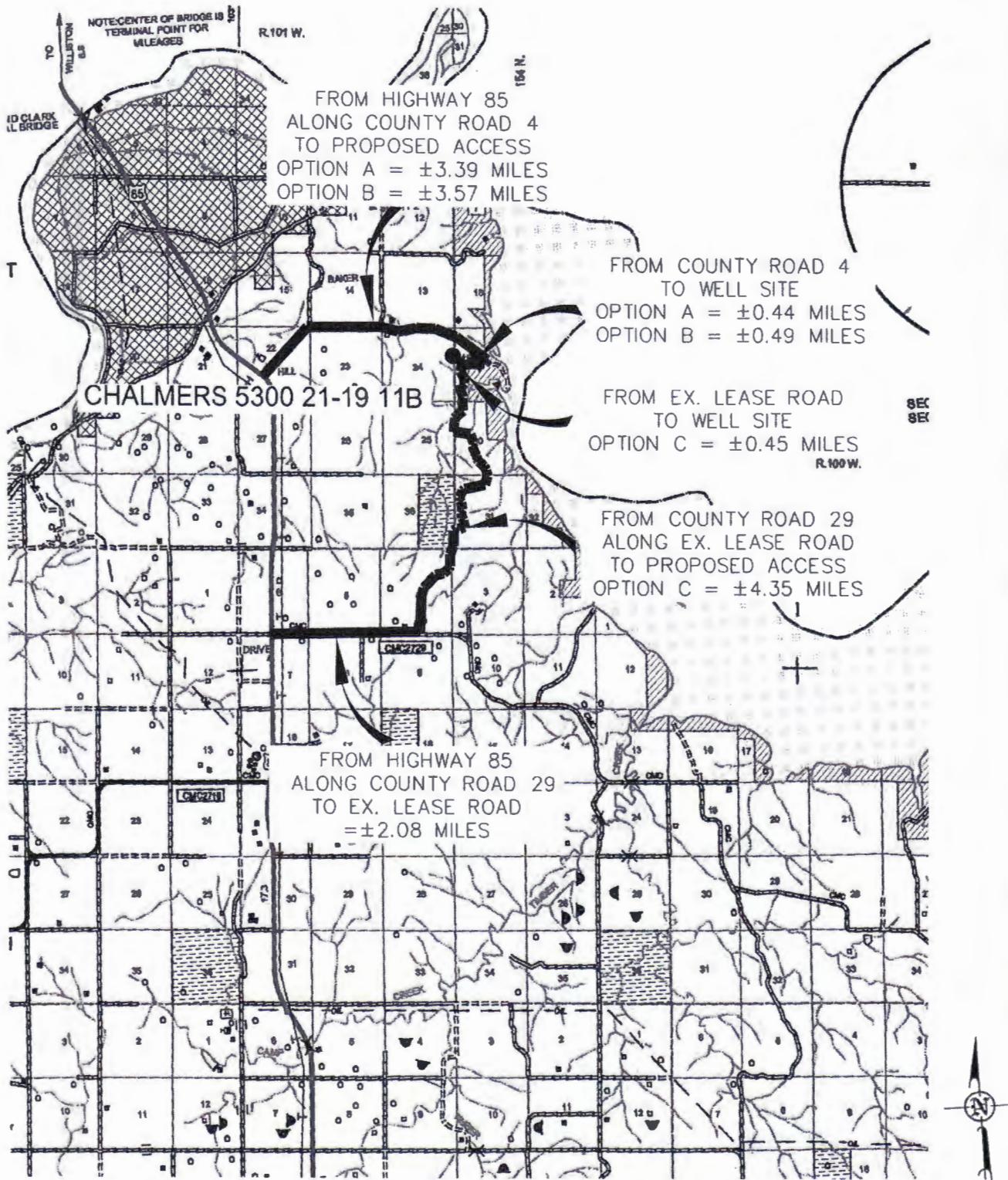
#### COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11B

NORTH LINE AND 327 FEET

232 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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SCALE: 1" = 2 MILE



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OASIS PETROLEUM NORTH AMERICA, LLC  
COUNTY ROAD MAP  
SECTION 19, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

Fax (406) 433-5618  
[www.interstateeng.com](http://www.interstateeng.com)

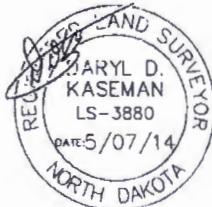
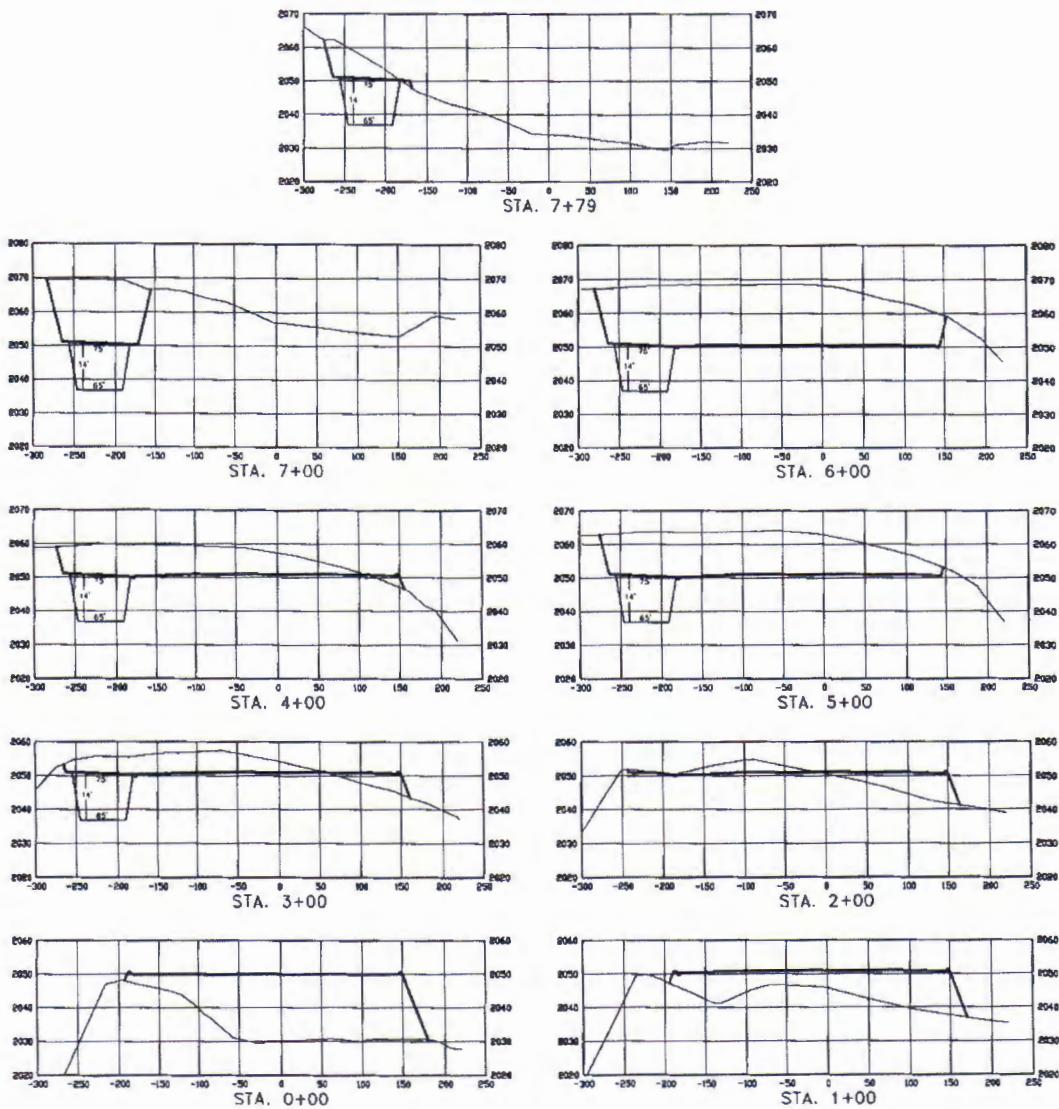
OASIS PETROLEUM NORTH AMERICA, LLC  
COUNTY ROAD MAP  
SECTION 12, T155N, R40W

SECTION 19, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06  
Checked By: D.D.K. Date: JAN, 2014

| Revision No. | Date    | By  | Description                    |
|--------------|---------|-----|--------------------------------|
| REV 1        | 3/12/14 | LJS | Moved wells on pad             |
| REV 2        | 4/23/14 | BHM | Moved wells on pad/revised pad |
| REV 3        | 5/2/14  | BHM | Moved wells on pad/revised pad |

**CROSS SECTIONS**  
 OASIS PETROLEUM NORTH AMERICA, LLC  
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
 "CHALMERS 5300 21-19 11B  
 2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
 SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY ISSUED  
 AND SEALED BY MARYL D. KASEMAN,  
 PLS, REGISTRATION NUMBER 3880 ON  
5/07/14, AND THE ORIGINAL  
 DOCUMENTS ARE STORED AT THE  
 OFFICES OF INTERSTATE ENGINEERING,  
 INC.

SCALE  
 HORIZ 1"=140'  
 VERT 1'=35'

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| SHEET NO.    | <b>INTERSTATE</b><br>ENGINEERING | Interstate Engineering, Inc.<br>P.O. Box 648<br>475 East Main Street<br>Bismarck, ND 58501-6480<br>Ph: (406) 433-5617<br>Fax: (406) 433-5618<br><a href="http://www.interstateeng.com">www.interstateeng.com</a> | OASIS PETROLEUM NORTH AMERICA, LLC<br>CROSS SECTIONS<br>SECTION 19, T153N, R100W<br>MCKENZIE COUNTY, NORTH DAKOTA | <table border="1"> <thead> <tr> <th>Revision No.</th> <th>Date</th> <th>By</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>REV 1</td> <td>3/12/14</td> <td>JWS</td> <td>WELL WELLS ON PAD</td> </tr> <tr> <td>REV 2</td> <td>4/22/14</td> <td>DRW</td> <td>WELL WELLS ON PAD/REMOVED PAD</td> </tr> <tr> <td>REV 3</td> <td>5/1/14</td> <td>DRW</td> <td>WELL WELLS ON PAD/REMOVED PAD</td> </tr> </tbody> </table> <small>Engineering Services Division 5300 P-H 111 Revision 3-21-14wg - 5/07/14 12:00 PM</small> | Revision No. | Date | By | Description | REV 1 | 3/12/14 | JWS | WELL WELLS ON PAD | REV 2 | 4/22/14 | DRW | WELL WELLS ON PAD/REMOVED PAD | REV 3 | 5/1/14 | DRW | WELL WELLS ON PAD/REMOVED PAD |
|--------------|----------------------------------|--|---|---|--------------|------|----|-------------|-------|---------|-----|-------------------|-------|---------|-----|-------------------------------|-------|--------|-----|-------------------------------|
| Revision No. | Date                             | By   | Description   |   |              |      |    |             |       |         |     |                   |       |         |     |                               |       |        |     |                               |
| REV 1        | 3/12/14                          | JWS  | WELL WELLS ON PAD   |   |              |      |    |             |       |         |     |                   |       |         |     |                               |       |        |     |                               |
| REV 2        | 4/22/14                          | DRW  | WELL WELLS ON PAD/REMOVED PAD   |   |              |      |    |             |       |         |     |                   |       |         |     |                               |       |        |     |                               |
| REV 3        | 5/1/14                           | DRW  | WELL WELLS ON PAD/REMOVED PAD   |   |              |      |    |             |       |         |     |                   |       |         |     |                               |       |        |     |                               |

**WELL LOCATION SITE QUANTITIES**  
 OASIS PETROLEUM NORTH AMERICA, LLC  
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
 "CHALMERS 5300 21-19 11B  
 2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE  
 SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

|                         |                   |
|-------------------------|-------------------|
| WELL SITE ELEVATION     | 2050.9            |
| WELL PAD ELEVATION      | 2051.0            |
| EXCAVATION              | 67,041            |
| PLUS PIT                | <u>22,050</u>     |
|                         | 89,091            |
| EMBANKMENT              | 26,714            |
| PLUS SHRINKAGE (25%)    | <u>6,679</u>      |
|                         | 33,393            |
| STOCKPILE PIT           | 22,050            |
| STOCKPILE TOP SOIL (6") | 5,434             |
| BERMS                   | 1,007 LF = 326 CY |
| DITCHES                 | 1,768 LF = 270 CY |
| SCREENING BERM          | 27,464 CY         |
| STOCKPILE MATERIAL      | 694               |
| DISTURBED AREA FROM PAD | 6.74 ACRES        |

NOTE: ALL QUANTITIES ARE IN CUBIC YARDS (UNLESS NOTED)

CUT END SLOPES AT 1:1

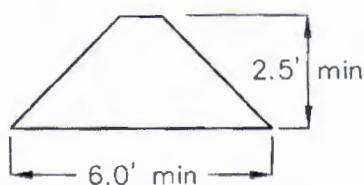
FILL END SLOPES AT 1.5:1

**WELL SITE LOCATION**

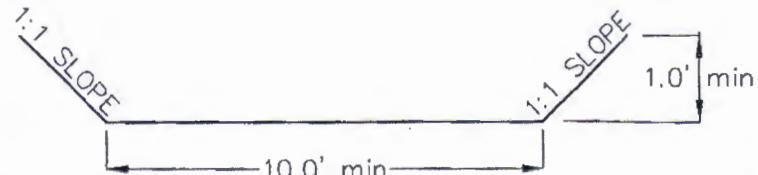
2325' FNL

327' FWL

**BERM DETAIL**



**DITCH DETAIL**



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 425 East Main Street  
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OASIS PETROLEUM NORTH AMERICA, LLC  
 QUANTITIES  
 SECTION 19, T153N, R100W  
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06  
 Checked By: D.O.K. Date: JAN. 2014

| Revision No. | Date    | By  | Description                    |
|--------------|---------|-----|--------------------------------|
| REV 1        | 3/2/14  | JWS | Moved wells on pad             |
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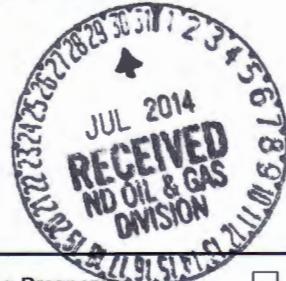


## SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.

28649



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Notice of Intent  | Approximate Start Date<br><b>July 29, 2014</b> |
| <input type="checkbox"/> Report of Work Done  | Date Work Completed                            |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. |  |
| Approximate Start Date  |  |

- |   |   |
|---|---|
| <input type="checkbox"/> Drilling Prognosis         | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Redrilling or Repair       | <input type="checkbox"/> Shooting                 |
| <input checked="" type="checkbox"/> Casing or Liner | <input type="checkbox"/> Acidizing                |
| <input type="checkbox"/> Plug Well                  | <input type="checkbox"/> Fracture Treatment       |
| <input type="checkbox"/> Supplemental History       | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon        | <input type="checkbox"/> Reclamation              |
| <input type="checkbox"/> Other                      | <b>Change casing</b>                              |

|  |                       |                |                   |                           |                    |
|--|-----------------------|----------------|-------------------|---------------------------|--------------------|
| Well Name and Number<br><b>Chalmers 5300 21-19 11T</b> |                       |                |                   |                           |                    |
| Footages<br><b>2325 F N L</b>                          | <b>326 F W L</b>      | <b>Qtr-Qtr</b> | <b>Section 19</b> | <b>Township 153 N</b>     | <b>Range 100 W</b> |
| Field  | Pool<br><b>Bakken</b> |                |                   | County<br><b>McKenzie</b> |                    |

## 24-HOUR PRODUCTION RATE

| Before |      | After |      |
|--------|------|-------|------|
| Oil    | Bbls | Oil   | Bbls |
| Water  | Bbls | Water | Bbls |
| Gas    | MCF  | Gas   | MCF  |

|                       |  |      |          |
|-----------------------|--|------|----------|
| Name of Contractor(s) |  |      |          |
| Address               |  | City | State    |
|                       |  |      | Zip Code |

## DETAILS OF WORK

Oasis Petroleum respectfully requests permission to make the following changes to the above referenced well:

- Surface casing changed to 13 3/8" and depth changed to 2,126'
- Contingency 9 5/8" casing added
- 7' casing changed to all 32#

Attached are revised drill plan, well summary, directional plan and plot

|   |   |                          |
|---|---|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b> | Telephone Number<br><b>281-404-9563</b> |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>           |   |                          |
| City<br><b>Houston</b>                              | State<br><b>TX</b>                      | Zip Code<br><b>77002</b> |
| Signature<br><i>Heather McCowan</i>                 | Printed Name<br><b>Heather McCowan</b>  |                          |
| Title<br><b>Regulatory Assistant</b>                | Date<br><b>July 29, 2014</b>            |                          |
| Email Address<br><b>hmccowan@oasispetroleum.com</b> |   |                          |

## FOR STATE USE ONLY

|   |  |
|---|--|
| <input type="checkbox"/> Received             | <input checked="" type="checkbox"/> Approved |
| Date<br><i>8-15-14</i>                        |  |
| By<br><i>Pathanee Corbele</i>                 |  |
| Title<br><b>Petroleum Resource Specialist</b> |  |

**Oasis Petroleum  
Well Summary**  
**Chalmers 5300 21-19 11T**  
**Sec. 19 T153N R100W**  
**McKenzie County, North Dakota**

**SURFACE CASING AND CEMENT DESIGN**

| Size    | Interval     | Weight | Grade | Coupling | I.D.    | Drift   | Make-up Torque (ft-lbs) |         |       |
|---------|--------------|--------|-------|----------|---------|---------|-------------------------|---------|-------|
|         |              |        |       |          |         |         | Minimum                 | Optimum | Max   |
| 13-3/8" | 0' to 2,126' | 54.5   | J-55  | STC      | 12.615" | 12.459" | 4,100                   | 5,470   | 6,840 |

| Interval     | Description                    | Collapse    | Burst       | Tension      | Cost per ft |
|--------------|--------------------------------|-------------|-------------|--------------|-------------|
|              |                                | (psi) a     | (psi) b     | (1000 lbs) c |             |
| 0' to 2,126' | 13-3/8", 54.5#, J-55, STC, 8rd | 1130 / 1.14 | 2730 / 2.74 | 514 / 2.57   |             |

**API Rating & Safety Factor**

- a) Collapse pressure based on full casing evacuation with 9 ppg fluid on backside (2126' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (2126' setting depth).
- c) Tension based on string weight in 9 ppg fluid at 2126' TVD plus 100k# overpull. (Buoyed weight equals 100k lbs.)

Cement volumes are based on 13-3/8" casing set in 17-1/2" hole with 50% excess to circulate cement back to surface. Mix and pump the following slurry.

**Pre-flush (Spacer):**      **20 bbls** fresh water

**Lead Slurry:**                **629 sks** (325 bbls) 2.9 yield conventional system with 94 lb/sk cement, .25 lb/sk D130 Lost Circulation Control Agent, 2% CaCL2, 4% D079 Extender, and 2% D053 Expanding Agent.

**Tail Slurry:**                **374 sks** (77 bbls) 1.16 yield conventional system with 94 lb/sk cement, .25 lb/sk Lost Circulation Control Agent, and .25% CaCL2.

**Oasis Petroleum  
Well Summary  
Chalmers 5300 21-19 11T  
Sec. 19 T153N R100W  
McKenzie County, North Dakota**

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

| Size   | Interval   | Weight | Grade  | Coupling | I.D.   | Drift   | Make-up Torque (ft-lbs) |         |       |
|--------|------------|--------|--------|----------|--------|---------|-------------------------|---------|-------|
|        |            |        |        |          |        |         | Minimum                 | Optimum | Max   |
| 9-5/8" | 0' - 6000' | 40     | HCL-80 | LTC      | 8.835" | 8.75"** | 5,450                   | 7,270   | 9,090 |

\*\*Special Drift

| Interval   | Description                   | Collapse     | Burst       | Tension      |
|------------|-------------------------------|--------------|-------------|--------------|
|            |                               | (psi) a      | (psi) b     | (1000 lbs) c |
| 0' - 6000' | 9-5/8", 40#, HCL-80, LTC, 8rd | 3090 / 3.96* | 5750 / 1.23 | 837 / 2.75   |

API Rating & Safety Factor

- d) Collapse pressure based on 11.5ppg fluid on backside and 9ppg fluid inside of casing.
- e) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 13.5#/ft fracture gradient. Backup of 9 ppg fluid.
- f) Tension based on string weight in 10 ppg fluid, (217k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 9-5/8" casing set in an 12-1/4" hole with **10%** excess in OH and **0%** excess inside surface casing. TOC at surface.

**Pre-flush (Spacer):**      **20 bbls** Chem wash

**Lead Slurry:**      **540 sks** (280 bbls) Conventional system with 75 lb/sk cement, 0.5lb/sk lost circulation, 10% expanding agent, 2% extender, 2% CaCl<sub>2</sub>, 0.2% anti foam, and 0.4% fluid loss

**Tail Slurry:**      **373 sks** (77 bbls) Conventional system with 94 lb/sk cement, 0.3% anti-settling agent, 0.3% fluid loss agent, 0.3 lb/sk lost circulation control agent, 0.2% anti foam, and 0.1% retarder

**Oasis Petroleum  
Well Summary  
Chalmers 5300 21-19 11T  
Sec. 19 T153N R100W  
McKenzie County, North Dakota**

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

| Size | Interval    | Weight | Grade   | Coupling | I.D.   | Drift    | Make-up Torque (ft-lbs) |         |      |
|------|-------------|--------|---------|----------|--------|----------|-------------------------|---------|------|
|      |             |        |         |          |        |          | Minimum                 | Optimum | Max  |
| 7"   | 0' - 11098' | 32     | HCP-110 | LTC      | 6.094" | 6.000*** | 6730                    | 8970    | 9870 |

\*\*Special Drift

| Interval      | Description                | Collapse       | Burst        | Tension      |
|---------------|----------------------------|----------------|--------------|--------------|
|               |                            | (psi) a        | (psi) b      | (1000 lbs) c |
| 0' - 11098'   | 7", 32#, P-110, LTC, 8rd   | 11820 / 2.10*  | 12460 / 1.28 | 897 / 2.23   |
| 6741' - 9209' | 7", 32#, HCP-110, LTC, 8rd | 11820 / 1.28** | 12460 / 1.30 |              |

API Rating & Safety Factor

- a. \*Assume full casing evacuation with 10 ppg fluid on backside. \*\*Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b. Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10,818' TVD.
- c. Based on string weight in 10 ppg fluid, 301k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

**Pre-flush (Spacer):**      **50 bbls** Saltwater  
**40 bbls** Weighted MudPush Express

**Lead Slurry:**      **219 sks** (86 bbls) 2.21 yield conventional system with 47 lb/sk cement, 37 lb/sk D035 Extender, 3.0% KCl, 3.0% D154 Extender, 0.3% D208 Viscosifier, 0.07% Retarder, 0.2% Anti Foam, 0.5lb/sk D130 LCM

**Tail Slurry:**      **617 sks** (169 bbls) 1.54 yield conventional system with 94 lb/sk cement, 3.0% KCl, 35.0% Silica, 0.5% Retarder, 0.2% Fluid Loss, 0.2% Anti Foam, 0.5 lb/sk LCM

**Oasis Petroleum  
Well Summary**  
**Chalmers 5300 21-19 11T**  
**Sec. 19 T153N R100W**  
**McKenzie County, North Dakota**

PRODUCTION LINER

| Size   | Interval        | Weight | Grade | Coupling | I.D.   | Drift  | Make-up Torque (ft-lbs) |         |      |
|--------|-----------------|--------|-------|----------|--------|--------|-------------------------|---------|------|
|        |                 |        |       |          |        |        | Minimum                 | Optimum | Max  |
| 4-1/2" | 10291' - 20810' | 13.5   | P-110 | BTC      | 3.920" | 3.795" | 2270                    | 3020    | 3780 |

| Interval        | Description                 | Collapse<br>(psi) a | Burst<br>(psi) b | Tension<br>(1000 lbs) c |
|-----------------|-----------------------------|---------------------|------------------|-------------------------|
| 10291' - 20810' | 4-1/2", 13.5 lb, P-110, BTC | 10670 / 1.98        | 12410 / 1.28     | 443 / 2.0               |

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10894' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10894' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 121k lbs.) plus 100k lbs overpull.

Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.

**68334-30-5 (Primary Name: Fuels, diesel)**  
**68476-34-6 (Primary Name: Fuels, diesel, No. 2)**  
**68476-30-2 (Primary Name: Fuel oil No. 2)**  
**68476-31-3 (Primary Name: Fuel oil, No. 4)**  
**8008-20-6 (Primary Name: Kerosene)**



# 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)

28649

BRANDI TERRY  
OASIS PETROLEUM NORTH AMERICA LLC  
1001 FANNIN STE 1500  
HOUSTON, TX 77002 USA

Date: 6/23/2014

**RE: CORES AND SAMPLES**

Well Name: **CHALMERS 5300 21-19 11T** Well File No.: **28649**  
Location: **LOT2 19-153-100** County: **MCKENZIE**  
Permit Type: **Development - HORIZONTAL**  
Field: **BAKER** Target Horizon: **THREE FORKS B1**

Dear BRANDI TERRY:

North Dakota Century Code Section 38-08-04 provides for the preservation of cores and samples and their shipment to the State Geologist when requested. The following is required on the above referenced well:

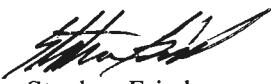
- 1) All cores, core chips and samples must be submitted to the State Geologist as provided for under North Dakota Century Code: Section 38-08-04 and North Dakota Administrative Code: Section 43-02-03-38.1.
- 2) Samples: The Operator is to begin collecting sample drill cuttings no lower than the:  
Base of the Last Charles Salt
  - Sample cuttings shall be collected at:
    - o 30' maximum intervals through all vertical and build sections.
    - o 100' maximum intervals through any horizontal sections.
  - Samples must be washed, dried, placed in standard sample envelopes (3" x 4.5"), packed in the correct order into standard sample boxes (3.5" x 5.25" x 15.25").
  - Samples boxes are to be carefully identified with a label that indicates the operator, well name, well file number, American Petroleum Institute (API) number, location and depth of samples; and forwarded in to the state core and sample library within 30 days of the completion of drilling operations.
- 3) Cores: Any cores cut shall be preserved in correct order, boxed in standard core boxes (4.5", 4.5", 35.75"), and the entire core forwarded to the state core and samples library within 180 days of completion of drilling operations.  
Any extension of time must have approval on a Form 4 Sundry Notice.

All cores, core chips, and samples must be shipped, prepaid, to the state core and samples library at the following address:

**ND Geological Survey Core Library  
2835 Campus Road, Stop 8156  
Grand Forks, ND 58202**

North Dakota Century Code Section 38-08-16 allows for a civil penalty for any violation of Chapter 38 08 not to exceed \$12,500 for each offense, and each day's violation is a separate offense.

Sincerely

  
Stephen Fried  
Geologist



## SUNDRY NOTICES AND REPORTS ON WELLS - FO

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

**PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.  
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.**



Well File No.

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Notice of Intent  | Approximate Start Date<br><b>February 24, 2014</b> |
| <input type="checkbox"/> Report of Work Done  | Date Work Completed                                |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.   | Approximate Start Date                             |
| <input type="checkbox"/> Drilling Prognosis <input type="checkbox"/> Spill Report<br><input type="checkbox"/> Redrilling or Repair <input type="checkbox"/> Shooting<br><input type="checkbox"/> Casing or Liner <input type="checkbox"/> Acidizing<br><input type="checkbox"/> Plug Well <input type="checkbox"/> Fracture Treatment<br><input type="checkbox"/> Supplemental History <input type="checkbox"/> Change Production Method<br><input type="checkbox"/> Temporarily Abandon <input type="checkbox"/> Reclamation<br><input checked="" type="checkbox"/> Other <b>Waiver to rule Rule 43-02-03-31</b> |  |

|  |          |          |          |               |          |                 |          |             |           |
|--|----------|----------|----------|---------------|----------|-----------------|----------|-------------|-----------|
| Well Name and Number<br><b>Chalmers 5300 21-19 11T</b> |          |          |          |               |          |                 |          |             |           |
| Footages   |          |          |          | Qtr-Qtr       | Section  | Township        | Range    |             |           |
| <b>2325</b>  | <b>F</b> | <b>N</b> | <b>L</b> | <b>326</b>    | <b>F</b> | <b>W</b>        | <b>L</b> | <b>LOT2</b> | <b>19</b> |
| Field  |          |          |          | Pool          |          | County          |          |             |           |
|  |          |          |          | <b>Bakken</b> |          | <b>McKenzie</b> |          |             |           |

| 24-HOUR PRODUCTION RATE |      |       |      |
|-------------------------|------|-------|------|
| Before                  |      | After |      |
| Oil                     | Bbls | Oil   | Bbls |
| Water                   | Bbls | Water | Bbls |
| Gas                     | MCF  | Gas   | MCF  |

|                       |      |       |          |
|-----------------------|------|-------|----------|
| Name of Contractor(s) |      |       |          |
| Address               | City | State | Zip Code |

## **DETAILS OF WORK**

Oasis Petroleum respectfully requests a waiver to Rule 43-02-03-31 in regards to running open hole logs for the above referenced well. Justification for this request is as follows:

The Oasis Petroleum/Chalmers 5300 31-19H (NDIC 20407) located within a mile of the subject well.

If this exception is approved, Oasis Petroleum will run a CBL on the intermediate string, and we will also run GR to surface. Oasis Petroleum will also submit two digital copies of each cased hole log and a copy of the mud log containing MWD gamma ray.

|  |  |   |
|--|--|---|
| Company<br><b>Oasis Petroleum North America LLC</b>  |  | Telephone Number<br><b>281-404-9491</b> |
| Address<br><b>1001 Fannin, Suite 1500</b>  |  |   |
| City<br><b>Houston</b>   |  | State<br><b>TX</b>                      |
| Signature<br> |  | Printed Name<br><b>Brandi Terry</b>     |
| Title<br><b>Regulatory Specialist</b>  |  | Date<br><b>March 27, 2014</b>           |
| Email Address<br><b>bterry@oasispetroleum.com</b>  |  |   |

| FOR STATE USE ONLY                |  |
|-----------------------------------|--|
| <input type="checkbox"/> Received | <input checked="" type="checkbox"/> Approved |
| Date                              | 6-17-2014                                    |
| By                                | <i>Stephen Fried</i>                         |
| Title                             | Stephen Fried<br>Geologist                   |



## SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 5749 (09-2006)

Well File No.  
28649

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|   |  |   |   |
|---|--|---|---|
| <input checked="" type="checkbox"/> Notice of Intent  | Approximate Start Date<br><b>February 24, 2014</b> | <input type="checkbox"/> Drilling Prognosis   | <input type="checkbox"/> Spill Report             |
| <input type="checkbox"/> Report of Work Done  | Date Work Completed                                | <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting                 |
| <input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. |  | <input type="checkbox"/> Casing or Liner      | <input type="checkbox"/> Acidizing                |
| Approximate Start Date  |  | <input type="checkbox"/> Plug Well            | <input type="checkbox"/> Fracture Treatment       |
|   |  | <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
|   |  | <input type="checkbox"/> Temporarily Abandon  | <input type="checkbox"/> Reclamation              |
|   |  | <input checked="" type="checkbox"/> Other     | <b>Suspension of Drilling</b>                     |

|  |                       |          |                        |                           |                          |
|--|-----------------------|----------|------------------------|---------------------------|--------------------------|
| Well Name and Number<br><b>Chalmers 5300 21-19 11T</b> |                       |          |                        |                           |                          |
| Footages   | 2325 F N L            | 326 F WL | Qtr-Qtr<br><b>LOT2</b> | Section<br><b>19</b>      | Township<br><b>153 N</b> |
| Range  |                       |          |                        | <b>100 W</b>              |                          |
| Field  | Pool<br><b>Bakken</b> |          |                        | County<br><b>McKenzie</b> |                          |

| 24-HOUR PRODUCTION RATE |      |       |      |
|-------------------------|------|-------|------|
| Before                  |      | After |      |
| Oil                     | Bbls | Oil   | Bbls |
| Water                   | Bbls | Water | Bbls |
| Gas                     | MCF  | Gas   | MCF  |

|  |      |       |          |
|--|------|-------|----------|
| Name of Contractor(s)<br><b>Advanced Energy Services</b> |      |       |          |
| Address  | City | State | Zip Code |

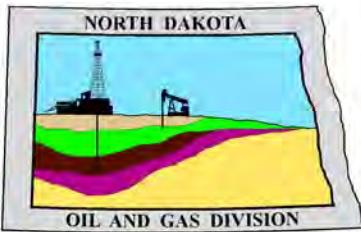
### DETAILS OF WORK

Oasis Petroleum North America LLC requests permission for suspension of drilling for up to 90 days for the referenced well under NDAC 43-02-03-55. Oasis Petroleum North America LLC intends to drill the surface hole with freshwater based drilling mud and set surface casing with a small drilling rig and move off within 3 to 5 days. The casing will be set at a depth pre-approved by the NDIC per the Application for Permit to Drill NDAC 43-02-03-21. No saltwater will be used in the drilling and cementing operations of the surface casing. Once the surface casing is cemented, a plug or mechanical seal will be placed at the top of the casing to prevent any foreign matter from getting into the well. A rig capable of drilling to TD will move onto the location within the 90 days previously outlined to complete the drilling and casing plan as per the APD. The undersigned states that this request for suspension of drilling operations in accordance with the Subsection 4 of Section 43-02-03-55 of the NDAC, is being requested to take advantage of the cost savings and time savings of using an initial rig that is smaller than the rig necessary to drill a well to total depth but is not intended to alter or extend the terms and conditions of, or suspend any obligation under, any oil and gas lease with acreage in or under the spacing or drilling unit for the above-referenced well. Oasis Petroleum North America LLC understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The drilling pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). Oasis Petroleum North America LLC will plug and abandon the well and reclaim the well site if the well is not drilled by the larger rotary rig within 90 days after spudding the well with the smaller drilling rig.

Notify NDIC inspector Richard Dunn at 701-770-3554 with spud and TD info.

|   |   |                          |
|---|---|--------------------------|
| Company<br><b>Oasis Petroleum North America LLC</b> | Telephone Number<br><b>(281) 404-9491</b> |                          |
| Address<br><b>1001 Fannin, Suite 1500</b>           |   |                          |
| City<br><b>Houston</b>                              | State<br><b>TX</b>                        | Zip Code<br><b>77002</b> |
| Signature<br>                                       | Printed Name<br><b>Brandi Terry</b>       |                          |
| Title<br><b>Regulatory Specialist</b>               | Date<br><b>February 24, 2014</b>          |                          |
| Email Address<br><b>bterry@oasispetroleum.com</b>   |   |                          |

|   |  |
|---|--|
| FOR STATE USE ONLY                            |  |
| <input type="checkbox"/> Received             | <input checked="" type="checkbox"/> Approved |
| Date<br><b>6/17/14</b>                        |  |
| By<br><b>Nathaniel Erbele</b>                 |  |
| Title<br><b>Petroleum Resource Specialist</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.oilgas.nd.gov](http://www.oilgas.nd.gov)

June 17, 2014

Brandi Terry  
Regulatory Specialist  
OASIS PETROLEUM NORTH AMERICA LLC  
1001 Fannin Suite 1500  
Houston, TX 77002

**RE: HORIZONTAL WELL  
CHALMERS 5300 21-19 11T  
LOT2 Section 19-153N-100W  
McKenzie County  
Well File # 28649**

Dear Brandi:

Pursuant to Commission Order No. 23752, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the **500' setback** from the north & south boundaries and **200' setback** from the east & west boundaries within the 1280 acre spacing unit consisting of Sections 19 &20 T153N R100W.

**PERMIT STIPULATIONS:** Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. Due to the proximity of Lake Sakakawea to the well site, a dike is required surrounding the entire location. OASIS PETRO NO AMER must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to location construction.

### Drilling pit

NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. Reserve and circulation of mud system through earthen pits are prohibited. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

### Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. Based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 9963' east.

### Location Construction Commencement (Three Day Waiting Period)

Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

### **Permit Fee & Notification**

Payment was received in the amount of \$100 via credit card .The permit fee has been received. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

### **Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells**

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to [certsurvey@nd.gov](mailto:certsurvey@nd.gov).

Survey points shall be of such frequency to accurately determine the entire location of the well bore.

Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

### **Surface casing cement**

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

### **Logs**

NDAC Section 43-02-03-31 requires the running of (1) a suite of open hole logs from which formation tops and porosity zones can be determined, (2) a Gamma Ray Log run from total depth to ground level elevation of the well bore, and (3) a log from which the presence and quality of cement can be determined (Standard CBL or Ultrasonic cement evaluation log) in every well in which production or intermediate casing has been set, this log must be run prior to completing the well. All logs run must be submitted free of charge, as one digital TIFF (tagged image file format) copy and one digital LAS (log ASCII) formatted copy. Digital logs may be submitted on a standard CD, DVD, or attached to an email sent to [digitallogs@nd.gov](mailto:digitallogs@nd.gov)

Thank you for your cooperation.

Sincerely,

Nathaniel Erbele  
Petroleum Resource Specialist



# APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H

INDUSTRIAL COMMISSION OF NORTH DAKOTA  
OIL AND GAS DIVISION  
600 EAST BOULEVARD DEPT 405  
BISMARCK, ND 58505-0840  
SFN 54269 (08-2005)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

|  |                                      |  |   |
|--|--------------------------------------|--|---|
| Type of Work<br><b>New Location</b>                  | Type of Well<br><b>Oil &amp; Gas</b> | Approximate Date Work Will Start<br><b>03 / 1 / 2014</b> | Confidential Status<br><b>No</b>            |
| Operator<br><b>OASIS PETROLEUM NORTH AMERICA LLC</b> |                                      | Telephone Number<br><b>281-404-9491</b>                  |   |
| Address<br><b>1001 Fannin Suite 1500</b>             |                                      | City<br><b>Houston</b>                                   | State<br><b>TX</b> Zip Code<br><b>77002</b> |

Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet.

This well is not located within five hundred feet of an occupied dwelling.

## WELL INFORMATION (If more than one lateral proposed, enter data for additional laterals on page 2)

|  |  |  |  |  |  |                                  |                                     |
|--|--|--|--|--|--|----------------------------------|-------------------------------------|
| Well Name<br><b>CHALMERS</b>   |  |  | Well Number<br><b>5300 21-19 11T</b>                                 |  |  |                                  |                                     |
| Surface Footages<br><b>2325 F N L</b>  |  | Qtr-Qtr<br><b>LOT2</b>   | Section<br><b>19</b>   | Township<br><b>153 N</b>   | Range<br><b>100 W</b>  | County<br><b>McKenzie</b>        |                                     |
| Longstring Casing Point Footages<br><b>2587 F S L</b>  |  | Qtr-Qtr<br><b>LOT3</b>   | Section<br><b>19</b>   | Township<br><b>153 N</b>   | Range<br><b>100 W</b>  | County<br><b>McKenzie</b>        |                                     |
| Longstring Casing Point Coordinates From Well Head<br><b>351 S</b> From WH <b>379 E</b> From WH    |  | Azimuth<br><b>128.5 °</b>  | Longstring Total Depth<br><b>11098</b> Feet MD <b>10818</b> Feet TVD |  |  |                                  |                                     |
| Bottom Hole Footages From Nearest Section Line<br><b>2035 F S L</b>                                |  | Qtr-Qtr<br><b>NESE</b>   | Section<br><b>20</b>   | Township<br><b>153 N</b>   | Range<br><b>100 W</b>  | County<br><b>McKenzie</b>        |                                     |
| Bottom Hole Coordinates From Well Head<br><b>920 S</b> From WH <b>9962 E</b> From WH               |  | KOP Lateral 1<br><b>10341</b> Feet MD  | Azimuth Lateral 1<br><b>90.0 °</b>                                   | Estimated Total Depth Lateral 1<br><b>20810</b> Feet MD <b>10894</b> Feet TVD                  |  |                                  |                                     |
| Latitude of Well Head<br><b>48 ° 03 ' 40.32 "</b>  | Longitude of Well Head<br><b>-103 ° 36 ' 10.11 "</b>     | NAD Reference<br><b>NAD83</b>  |  | Description of Spacing Unit: <b>Sections 19 &amp;20 T153N R100W</b> (Subject to NDIC Approval) |  |                                  |                                     |
| Ground Elevation<br><b>2051</b> Feet Above S.L.  | Acres in Spacing/Drilling Unit<br><b>1280</b>            | Spacing/Drilling Unit Setback Requirement<br><b>500</b> Feet N/S <b>200</b> Feet E/W             |  | Industrial Commission Order<br><b>23752</b>  |  |                                  |                                     |
| North Line of Spacing/Drilling Unit<br><b>10498</b> Feet   | South Line of Spacing/Drilling Unit<br><b>10513</b> Feet | East Line of Spacing/Drilling Unit<br><b>5280</b> Feet   |  | West Line of Spacing/Drilling Unit<br><b>5263</b> Feet   |  |                                  |                                     |
| Objective Horizons<br><b>Three Forks B1</b>  |  |  |  |  |  | Pierre Shale Top<br><b>2021</b>  |                                     |
| Proposed Surface Casing  | Size<br><b>9 - 5/8 "</b>                                 | Weight<br><b>36</b> Lb./Ft.  | Depth<br><b>2150</b> Feet  | Cement Volume<br><b>632</b> Sacks  | NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface. |                                  |                                     |
| Proposed Longstring Casing   | Size<br><b>7 - "</b>                                     | Weight(s)<br><b>29/32</b> Lb./Ft.  | Longstring Total Depth<br><b>11098</b> Feet MD <b>10818</b> Feet TVD |  | Cement Volume<br><b>764</b> Sacks  | Cement Top<br><b>3917</b> Feet   | Top Dakota Sand<br><b>5417</b> Feet |
| Base Last Charles Salt (If Applicable)<br><b>9209</b> Feet   |  | NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand. |  |  |  |                                  |                                     |
| Proposed Logs<br><b>Triple Combo: KOP to Kibby GR/Res to BSC GR to surf CND through the Dakota</b> |  |  |  |  |  |                                  |                                     |
| Drilling Mud Type (Vertical Hole - Below Surface Casing)<br><b>Invert</b>                          |  |  |  | Drilling Mud Type (Lateral)<br><b>Salt Water Gel</b>   |  |                                  |                                     |
| Survey Type in Vertical Portion of Well<br><b>MWD</b> Every 100 Feet                               |  | Survey Frequency: Build Section<br><b>30</b> Feet  |  | Survey Frequency: Lateral<br><b>90</b> Feet  |  | Survey Contractor<br><b>Ryan</b> |                                     |

NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

**REQUIRED ATTACHMENTS:** Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, \$100 fee.

See Page 2 for Comments section and signature block.

**COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS****Documents forwarded by email: Drill plan with drilling fluids, Well Summary with casing/cement plans, Directional Plan & Plot, Plats**

Lateral 2

|   |                        |  |         |                      |  |        |  |
|---|------------------------|--|---------|----------------------|--|--------|--|
| KOP Lateral 2<br>Feet MD                                    | Azimuth Lateral 2<br>° | Estimated Total Depth Lateral 2<br>Feet MD      Feet TVD |         |                      | KOP Coordinates From Well Head<br>From WH      From WH |        |  |
| Formation Entry Point Coordinates From Well Head<br>From WH |                        | Bottom Hole Coordinates From Well Head<br>From WH        |         |                      | From WH  |        |  |
| KOP Footages From Nearest Section Line<br>F      L          |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |
| Bottom Hole Footages From Nearest Section Line<br>F      L  |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |

Lateral 3

|   |                        |  |         |                      |  |        |  |
|---|------------------------|--|---------|----------------------|--|--------|--|
| KOP Lateral 3<br>Feet MD                                    | Azimuth Lateral 3<br>° | Estimated Total Depth Lateral 3<br>Feet MD      Feet TVD |         |                      | KOP Coordinates From Well Head<br>From WH      From WH |        |  |
| Formation Entry Point Coordinates From Well Head<br>From WH |                        | Bottom Hole Coordinates From Well Head<br>From WH        |         |                      | From WH  |        |  |
| KOP Footages From Nearest Section Line<br>F      L          |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |
| Bottom Hole Footages From Nearest Section Line<br>F      L  |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |

Lateral 4

|   |                        |  |         |                      |  |        |  |
|---|------------------------|--|---------|----------------------|--|--------|--|
| KOP Lateral 4<br>Feet MD                                    | Azimuth Lateral 4<br>° | Estimated Total Depth Lateral 4<br>Feet MD      Feet TVD |         |                      | KOP Coordinates From Well Head<br>From WH      From WH |        |  |
| Formation Entry Point Coordinates From Well Head<br>From WH |                        | Bottom Hole Coordinates From Well Head<br>From WH        |         |                      | From WH  |        |  |
| KOP Footages From Nearest Section Line<br>F      L          |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |
| Bottom Hole Footages From Nearest Section Line<br>F      L  |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |

Lateral 5

|   |                        |  |         |                      |  |        |  |
|---|------------------------|--|---------|----------------------|--|--------|--|
| KOP Lateral 5<br>Feet MD                                    | Azimuth Lateral 5<br>° | Estimated Total Depth Lateral 5<br>Feet MD      Feet TVD |         |                      | KOP Coordinates From Well Head<br>From WH      From WH |        |  |
| Formation Entry Point Coordinates From Well Head<br>From WH |                        | Bottom Hole Coordinates From Well Head<br>From WH        |         |                      | From WH  |        |  |
| KOP Footages From Nearest Section Line<br>F      L          |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |
| Bottom Hole Footages From Nearest Section Line<br>F      L  |                        | Qtr-Qtr  | Section | Township<br><b>N</b> | Range<br><b>W</b>                                      | County |  |

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.

Date

06 / 16 / 2014

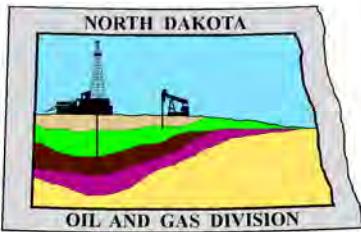
ePermit

Printed Name  
**Brandi Terry**Title  
**Regulatory Specialist****FOR STATE USE ONLY**

|  |                                       |
|--|---------------------------------------|
| Permit and File Number<br><b>28649</b> | API Number<br><b>33 - 053 - 06024</b> |
| Field<br><b>BAKER</b>                  |                                       |
| Pool<br><b>BAKKEN</b>                  | Permit Type<br><b>DEVELOPMENT</b>     |

**FOR STATE USE ONLY**

|   |
|---|
| Date Approved<br><b>6 / 17 / 2014</b>         |
| By<br><b>Nathaniel Erbele</b>                 |
| Title<br><b>Petroleum Resource Specialist</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.oilgas.nd.gov](http://www.oilgas.nd.gov)

April 9, 2014

**RE: Filter Socks and Other Filter Media  
Leakproof Container Required  
Oil and Gas Wells**

Dear Operator,

North Dakota Administrative Code Section 43-02-03-19.2 states in part that all waste material associated with exploration or production of oil and gas must be properly disposed of in an authorized facility in accord with all applicable local, state, and federal laws and regulations.

Filtration systems are commonly used during oil and gas operations in North Dakota. The Commission is very concerned about the proper disposal of used filters (including filter socks) used by the oil and gas industry.

Effective June 1, 2014, a container must be maintained on each well drilled in North Dakota beginning when the well is spud and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. The on-site container must be used to store filters until they can be properly disposed of in an authorized facility. Such containers must be:

- leakproof to prevent any fluids from escaping the container
- covered to prevent precipitation from entering the container
- placard to indicate only filters are to be placed in the container

If the operator will not utilize a filtration system, a waiver to the container requirement will be considered, but only upon the operator submitting a Sundry Notice (Form 4) justifying their request.

As previously stated in our March 13, 2014 letter, North Dakota Administrative Code Section 33-20-02.1-01 states in part that every person who transports solid waste (which includes oil and gas exploration and production wastes) is required to have a valid permit issued by the North Dakota Department of Health, Division of Waste Management. Please contact the Division of Waste Management at (701) 328-5166 with any questions on the solid waste program. Note oil and gas exploration and production wastes include produced water, drilling mud, invert mud, tank bottom sediment, pipe scale, filters, and fly ash.

Thank you for your cooperation.

Sincerely,

*Bruce E. Hicks*

Assistant Director



| DRILLING PLAN  |                         |   |                      |  |  |                          |                    |  |  |  |
|--|-------------------------|---|----------------------|--|--|--------------------------|--------------------|--|--|--|
| OPERATOR   | Oasis Petroleum         |   |                      | COUNTY/STATE   | McKenzie Co., ND   |                          |                    |  |  |  |
| WELL NAME  | Chalmers 5300 21-19 11T |   |                      | RIC  | B 25   |                          |                    |  |  |  |
| WELL TYPE  | Horizontal Three Forks  |   |                      |  |  |                          |                    |  |  |  |
| LOCATION   | SW NW 19-153N-100W      | Surface Location (survey plat): 2325' FNL |                      | 326' FWL   |  |                          |                    |  |  |  |
| EST. T.D.  | 20,810'                 |   |                      | GROUND ELEV:   | 2,046'   | Sub Height: 25           |                    |  |  |  |
| TOTAL LATERAL:   | 9,712'                  |   |                      | KB ELEV:   | 2,071'   |                          |                    |  |  |  |
| MARKER   | TVD                     | Subsea TVD                                | LOGS:                | Type   | Interval   |                          |                    |  |  |  |
| Pierre   | NDIC MAP                | 2,021                                     | 50                   | OH Logs: Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to S sec 19 153N 100W |  |                          |                    |  |  |  |
| Greenhorn  |                         | 4,624                                     | -2,553               | CBL/GR: Above top of cement/GR to base of casing   |  |                          |                    |  |  |  |
| Mowry  |                         | 5,029                                     | -2,958               | MWD GR: KOP to lateral TD  |  |                          |                    |  |  |  |
| Dakota   |                         | 5,417                                     | -3,346               |  |  |                          |                    |  |  |  |
| Rierdon  |                         | 6,463                                     | -4,392               | DEVIATION:   | Surf: 3 deg. max., 1 deg / 100'; svry every 500'<br>Prod: 5 deg. max., 1 deg / 100'; svry every 100' |                          |                    |  |  |  |
| Dunham Salt  |                         | 6,891                                     | -4,820               |  |  |                          |                    |  |  |  |
| Dunham Salt Base   |                         | 6,960                                     | -4,889               |  |  |                          |                    |  |  |  |
| Pine Salt  |                         | 7,257                                     | -5,186               |  |  |                          |                    |  |  |  |
| Pine Salt Base   |                         | 7,290                                     | -5,219               |  |  |                          |                    |  |  |  |
| Opecche Salt   |                         | 7,351                                     | -5,280               |  |  |                          |                    |  |  |  |
| Opecche Salt Base  |                         | 7,426                                     | -5,355               |  |  |                          |                    |  |  |  |
| Amsden   |                         | 7,662                                     | -5,591               |  |  |                          |                    |  |  |  |
| Tyler  |                         | 7,828                                     | -5,757               |  |  |                          |                    |  |  |  |
| Otter/Base Minnelusa   |                         | 8,032                                     | -5,961               | DST'S:   | None planned   |                          |                    |  |  |  |
| Kibbey Lime  |                         | 8,384                                     | -6,313               |  |  |                          |                    |  |  |  |
| Charles Salt   |                         | 8,534                                     | -6,463               | CORES:   | None planned   |                          |                    |  |  |  |
| Base Last Salt   |                         | 9,209                                     | -7,138               |  |  |                          |                    |  |  |  |
| Mission Canyon   |                         | 9,429                                     | -7,358               |  |  |                          |                    |  |  |  |
| Lodgepole  |                         | 9,993                                     | -7,922               |  |  |                          |                    |  |  |  |
| False Bakken   |                         | 10,706                                    | -8,635               |  |  |                          |                    |  |  |  |
| Upper Bakken Shale   |                         | 10,716                                    | -8,645               | MUDLOGGING:  | Two-Man: Begin 200' above Kibbey<br>30' samples in curve and lateral                                 |                          |                    |  |  |  |
| Middle Bakken  |                         | 10,732                                    | -8,661               |  |  |                          |                    |  |  |  |
| Lower Bakken Shale   |                         | 10,766                                    | -8,695               |  |  |                          |                    |  |  |  |
| Pronghorn  |                         | 10,780                                    | -8,709               |  |  |                          |                    |  |  |  |
| Threeforks   |                         | 10,799                                    | -8,728               |  |  |                          |                    |  |  |  |
| Threeforks(Top of Target)  |                         | 10,811                                    | -8,740               |  |  |                          |                    |  |  |  |
| Threeforks(Base of Target)   |                         | 10,822                                    | -8,751               |  |  |                          |                    |  |  |  |
| Claystone  |                         | 10,822                                    | -8,751               | BOP:   | 11" 5000 psi blind, pipe & annular   |                          |                    |  |  |  |
| Est. Dip Rate:   | -0.45                   |   |                      |  |  |                          |                    |  |  |  |
| Max. Anticipated BHP:  | 4689                    |   |                      | Surface Formation: Glacial till  |  |                          |                    |  |  |  |
| MUD:   | Interval                | Type                                      | WT                   | Vis  | WL   | Remarks                  |                    |  |  |  |
| Surface:   | 0' -                    | 2,150' FW                                 | 8.4-9.0              | 28-32  | NC   | Circ Mud Tanks           |                    |  |  |  |
| Intermediate:  | 2,150' -                | 11,098' Invert                            | 9.5-10.4             | 40-50  | 30+HtHp  | Circ Mud Tanks           |                    |  |  |  |
| Laterall:  | 11,098' -               | 20,810' Salt Water                        | 9.8-10.2             | 28-32  | NC   | Circ Mud Tanks           |                    |  |  |  |
| CASING:  | Size                    | Wt pfp                                    | Hole                 | Depth  | Cement   | WOC                      | Remarks            |  |  |  |
| Surface:   | 9-5/8"                  | 36#                                       | 13-1/2"              | 2,150'   | To Surface   | 12                       | 100' into Pierre   |  |  |  |
| Intermediate:  | 7"                      | 32#                                       | 8-3/4"               | 11,098'  | 3917   | 24                       | 1500' above Dakota |  |  |  |
| Production Liner:  | 4.5"                    | 13.5#                                     | 6"                   | 20,810'  | TOL @ 10,291'  |                          | 50' above KOP      |  |  |  |
| PROBABLE PLUGS, IF REQ'D:  |                         |   |                      |  |  |                          |                    |  |  |  |
| OTHER:   | MD                      | TVD                                       | FNL/FSL              | FEL/FWL  | S-T-R  | AZI                      |                    |  |  |  |
| Surface:   | 2,150                   | 2,150                                     | 2325 FNL             | 326 FWL  | SEC. 19 T153N R100W  | Survey Company:          |                    |  |  |  |
| KOP:   | 10,341'                 | 10,341'                                   | 2375 FNL             | 326 FWL  | SEC. 19 T153N R100W  | Build Rate: 12 deg /100' |                    |  |  |  |
| EOC:   | 11,087'                 | 10,818'                                   | 2670 FNL             | 697 FWL  | SEC. 19 T153N R100W  | 128.5                    |                    |  |  |  |
| Casing Point:  | 11,098'                 | 10,818'                                   | 2676 FNL             | 705 FWL  | SEC. 19 T153N R100W  | 128.5                    |                    |  |  |  |
| Three Forks Lateral TD:  | 20,810'                 | 10,894'                                   | 2036 FSL             | 200 FEL  | SEC. 20 T153N R100W  | 90.0                     |                    |  |  |  |
| Comments:  |                         |   |                      |  |  |                          |                    |  |  |  |
| Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to S sec 19 153N 100W                              |                         |   |                      |  |  |                          |                    |  |  |  |
| No frac string planned   |                         |   |                      |  |  |                          |                    |  |  |  |
| 35 packers and 25 sleeves planned 3.6MM lbs 30% ceramic  |                         |   |                      |  |  |                          |                    |  |  |  |
| Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.        |                         |   |                      |  |  |                          |                    |  |  |  |
| 68334-30-5 (Primary Name: Fuels, diesel) 68476-34-6 (Primary Name: Fuels, diesel, No. 2) 68476-30-2 (Primary Name: Fuel oil No. 2) |                         |   |                      |  |  |                          |                    |  |  |  |
| 68476-31-3 (Primary Name: Fuel oil, No. 4) 8008-20-6 (Primary Name: Kerosene)  |                         |   |                      |  |  |                          |                    |  |  |  |
|   |                         |   |                      |  |  |                          |                    |  |  |  |
| Geology: N. Gabelman   | 2/4/2014                |   | Engineering: smg3.26 |  |  |                          |                    |  |  |  |

**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11T**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

**SURFACE CASING AND CEMENT DESIGN**

| Size   | Interval   | Weight | Grade | Coupling | I.D.   | Drift  | Make-up Torque (ft-lbs) |         |      |
|--------|------------|--------|-------|----------|--------|--------|-------------------------|---------|------|
|        |            |        |       |          |        |        | Minimum                 | Optimum | Max  |
| 9-5/8" | 0' - 2150' | 36     | J-55  | LTC      | 8.921" | 8.765" | 3400                    | 4530    | 5660 |

| Interval   | Description                 | Collapse    | Burst       | Tension        |
|------------|-----------------------------|-------------|-------------|----------------|
|            |                             | (psi) / a   | (psi) / b   | (1000 lbs) / c |
| 0' - 2150' | 9-5/8", 36#, J-55, LTC, 8rd | 2020 / 2.00 | 3520 / 3.49 | 453 / 2.71     |

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9 ppg fluid on backside (2150' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (2150' setting depth).
- c) Based on string weight in 9 ppg fluid at 2150' TVD plus 100k# overpull. (Buoyed weight equals 67k lbs.)

Cement volumes are based on 9-5/8" casing set in 13-1/2 " hole with 60% excess to circulate cement back to surface.  
Mix and pump the following slurry.

**Pre-flush (Spacer):**      **20 bbls** fresh water

**Lead Slurry:**      **459 sks** (243 bbls), 11.5 lb/gal, 2.97 cu. Ft./sk Varicem Cement with 0.125 il/sk Lost Circulation Additive

**Tail Slurry:**      **173 sks** (62 bbls), 13.0 lb/gal, 2.01 cu.ft./sk Varicem with .125 lb/sk Lost Circulation Agent

**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11T**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

**INTERMEDIATE CASING AND CEMENT DESIGN**

| <b>Size</b> | <b>Interval</b> | <b>Weight</b> | <b>Grade</b> | <b>Coupling</b> | <b>I.D.</b> | <b>Drift**</b> | <b>Make-up Torque (ft-lbs)</b> |                |            |
|-------------|-----------------|---------------|--------------|-----------------|-------------|----------------|--------------------------------|----------------|------------|
|             |                 |               |              |                 |             |                | <b>Minimum</b>                 | <b>Optimum</b> | <b>Max</b> |
| 7"          | 0' - 11098'     | 32            | HCP-110      | LTC             | 6.094"      | 6.000"**       | 6730                           | 8970           | 9870       |

\*\*Special Drift 7" 32# to 6.0"

| <b>Interval</b> | <b>Length</b> | <b>Description</b>         | <b>Collapse</b> | <b>Burst</b> | <b>Tension</b> |
|-----------------|---------------|----------------------------|-----------------|--------------|----------------|
|                 |               |                            | (psi) a         | (psi) b      | (1000 lbs) c   |
| 0' - 11098'     | 11098'        | 7", 32#, P-110, LTC, 8rd   | 11820 / 2.10*   | 12460 / 1.28 | 897 / 2.23     |
| 6691' - 9429'   | 2738'         | 7", 32#, HCP-110, LTC, 8rd | 11820 / 1.04**  | 12460 / 1.29 |                |

**API Rating & Safety Factor**

- a) \*Assume full casing evacuation with 10 ppg fluid on backside. \*\*Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10818' TVD.
- c) Based on string weight in 10 ppg fluid, (301k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

Mix and pump the following slurry

**Pre-flush (Spacer):**      **100 bbls** Saltwater

**20bbls** CW8

**20bbls** Fresh Water

**Lead Slurry:**      **183 sks** (84 bbls), 11.8 ppg, 2.55 cu. ft./sk Econocem Cement with .3% Fe-2 and .25 lb/sk Lost Circulation Additive

**Tail Slurry:**      **581 sks** (170 bbls), 14.0 ppg, 1.55 cu. ft./sk Extendcem System with .2% HR-5 Retarder and .25 lb/sk Lost Circulation Additive

**Oasis Petroleum**  
**Well Summary**  
**Chalmers 5300 21-19 11T**  
**Section 19 T153N R100W**  
**McKenzie County, ND**

**PRODUCTION LINER**

| Size   | Interval              | Weight | Grade | Coupling | I.D.   | Drift  | Make-up Torque (ft-lbs) |         |      |
|--------|-----------------------|--------|-------|----------|--------|--------|-------------------------|---------|------|
|        |                       |        |       |          |        |        | Minimum                 | Optimum | Max  |
| 4-1/2" | 10291' - <b>20810</b> | 13.5   | P-110 | BTC      | 3.920" | 3.795" | 2270                    | 3020    | 3780 |

| Interval              | Length       | Description                 | Collapse<br>(psi) a | Burst<br>(psi) b | Tension<br>(1000 lbs) c |
|-----------------------|--------------|-----------------------------|---------------------|------------------|-------------------------|
| 10291' - <b>20810</b> | <b>10519</b> | 4-1/2", 13.5 lb, P-110, BTC | 10670 / 1.98        | 12410 / 1.28     | 443 / 1.99              |

**API Rating & Safety Factor**

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10895' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10895' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 122k lbs.) plus 100k lbs overpull.



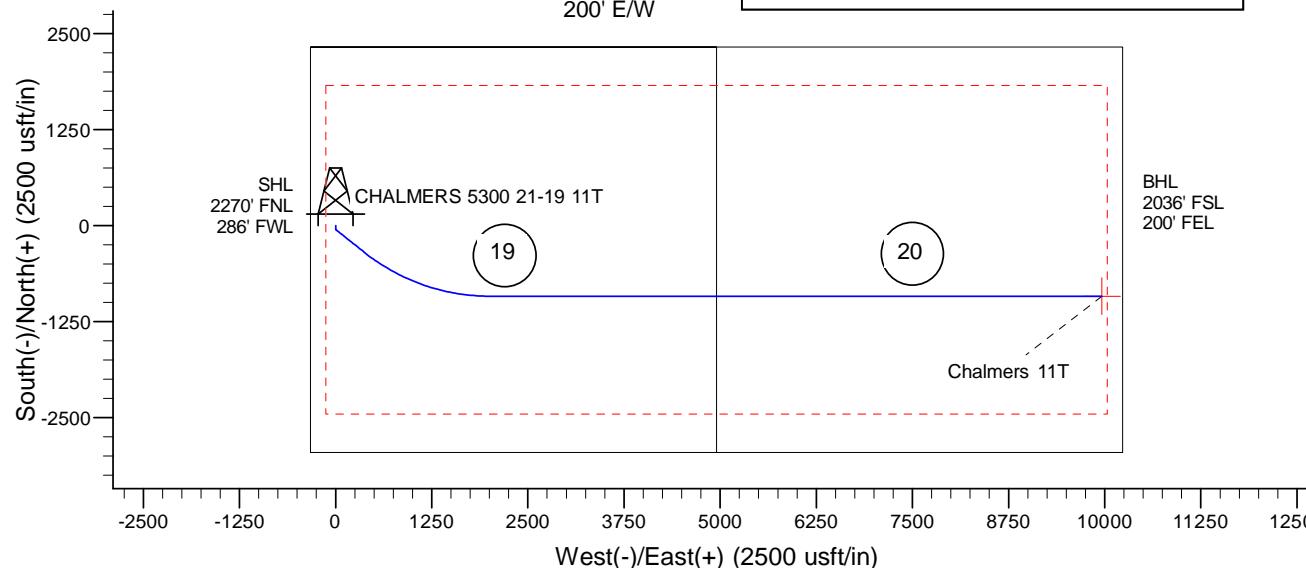
Azimuths to True North  
Magnetic North: 8.17°

Magnetic Field  
Strength: 56490.4snT  
Dip Angle: 72.96°  
Date: 2/17/2014  
Model: IGRF200510

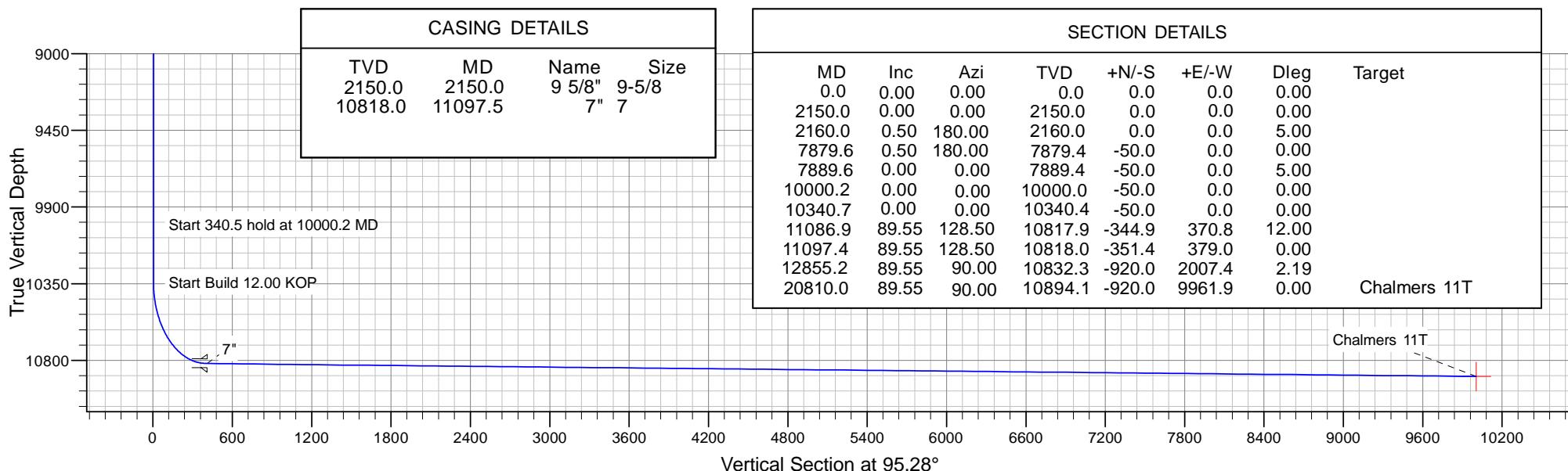
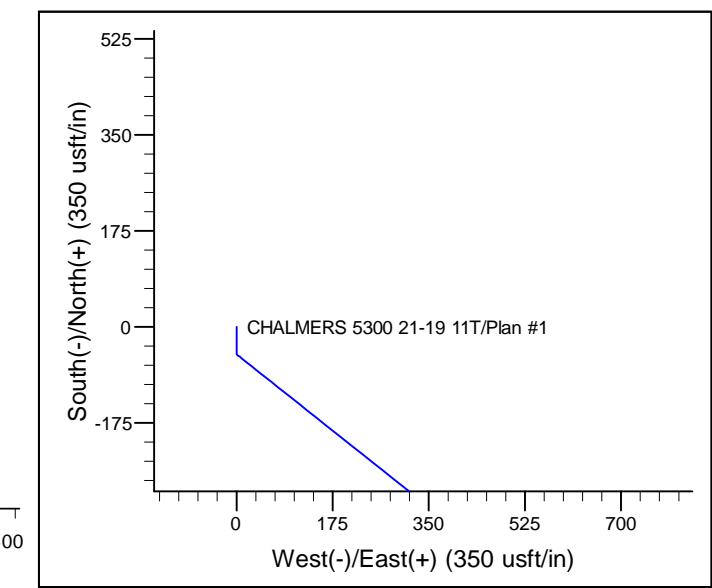


Project: Indian Hills  
Site: 153N-100W-19/20  
Well: CHALMERS 5300 21-19 11T  
Wellbore: CHALMERS 5300 21-19 11T  
Design: Plan #1

Setbacks  
500' N/S  
200' E/W



|  |
|--|
| SITE DETAILS: 153N-100W-19/20  |
| Well Centre Latitude: 48° 3' 40.320 N<br>Longitude: 103° 36' 10.110 W  |
| Positional Uncertainty: 0.0<br>Convergence: -2.31<br>Local North: True |



# **Oasis**

**Indian Hills  
153N-100W-19/20  
CHALMERS 5300 21-19 11T**

**CHALMERS 5300 21-19 11T**

**Plan: Plan #1**

# **Standard Planning Report**

**16 June, 2014**

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

|                    |                            |  |
|--------------------|----------------------------|--|
| <b>Project</b>     | Indian Hills               |  |
| <b>Map System:</b> | US State Plane 1983        |  |
| <b>Geo Datum:</b>  | North American Datum 1983  |  |
| <b>Map Zone:</b>   | North Dakota Northern Zone |  |

|                                       |                                   |
|---------------------------------------|-----------------------------------|
| <b>Site</b>                           | 153N-100W-19/20                   |
| <b>Site Position:</b>                 | <b>Northing:</b> 402,776.24 usft  |
| <b>From:</b> Lat/Long                 | <b>Easting:</b> 1,209,958.00 usft |
| <b>Position Uncertainty:</b> 0.0 usft | <b>Slot Radius:</b> 13-3/16 "     |

Latitude: 48° 3' 44.270 N

Longitude: 103° 36' 10.700 W

Grid Convergence: -2.31 °

|                             |  |
|-----------------------------|--|
| <b>Well</b>                 | CHALMERS 5300 21-19 11T  |
| <b>Well Position</b>        | <b>+N/-S</b> -400.2 usft <b>Northing:</b> 402,374.70 usft <b>Latitude:</b> 48° 3' 40.320 N   |
|                             | <b>+E/-W</b> 40.1 usft <b>Easting:</b> 1,209,981.92 usft <b>Longitude:</b> 103° 36' 10.110 W |
| <b>Position Uncertainty</b> | 0.0 usft <b>Wellhead Elevation:</b> <b>Ground Level:</b> 2,046.0 usft                        |

103° 36' 10.700 W

2,046.0 usft

| Magnetics | Model Name | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|-----------|------------|-------------|--------------------|------------------|------------------------|
|           | IGRF200510 | 2/17/2014   | 8.17               | 72.96            | 56,490                 |

|                          |         |
|--------------------------|---------|
| <b>Design</b>            | Plan #1 |
| <b>Audit Notes:</b>      |         |
| <b>Version:</b>          |         |
| <b>Vertical Section:</b> |         |

**Phase:** PROTOTYPE    **Tie On Depth:** 0.0

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|--------------|
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |              |
| 2,150.0               | 0.00            | 0.00        | 2,150.0               | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |              |
| 2,160.0               | 0.50            | 180.00      | 2,160.0               | 0.0          | 0.0          | 5.00                    | 5.00                   | 0.00                  | 180.00  |              |
| 7,879.6               | 0.50            | 180.00      | 7,879.4               | -50.0        | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |              |
| 7,889.6               | 0.00            | 0.00        | 7,889.4               | -50.0        | 0.0          | 5.00                    | -5.00                  | 0.00                  | 180.00  |              |
| 10,000.2              | 0.00            | 0.00        | 10,000.0              | -50.0        | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |              |
| 10,340.7              | 0.00            | 0.00        | 10,340.4              | -50.0        | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |              |
| 11,086.9              | 89.55           | 128.50      | 10,817.9              | -344.9       | 370.8        | 12.00                   | 12.00                  | 0.00                  | 128.50  |              |
| 11,097.4              | 89.55           | 128.50      | 10,818.0              | -351.4       | 379.0        | 0.00                    | 0.00                   | 0.00                  | 0.00    |              |
| 12,855.2              | 89.55           | 90.00       | 10,832.3              | -920.0       | 2,007.4      | 2.19                    | 0.00                   | -2.19                 | 269.85  |              |
| 20,810.0              | 89.55           | 90.00       | 10,894.1              | -920.0       | 9,961.9      | 0.00                    | 0.00                   | 0.00                  | 0.00    | Chalmers 11T |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

### Planned Survey

| Measured Depth (usft)                 | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/S (usft) | +E/W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---------------------------------------|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-------------------------|------------------------|-----------------------|
| 0.0                                   | 0.00            | 0.00        | 0.0                   | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 100.0                                 | 0.00            | 0.00        | 100.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 200.0                                 | 0.00            | 0.00        | 200.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 300.0                                 | 0.00            | 0.00        | 300.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 400.0                                 | 0.00            | 0.00        | 400.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 500.0                                 | 0.00            | 0.00        | 500.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 600.0                                 | 0.00            | 0.00        | 600.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 700.0                                 | 0.00            | 0.00        | 700.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 800.0                                 | 0.00            | 0.00        | 800.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 900.0                                 | 0.00            | 0.00        | 900.0                 | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,000.0                               | 0.00            | 0.00        | 1,000.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,100.0                               | 0.00            | 0.00        | 1,100.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,200.0                               | 0.00            | 0.00        | 1,200.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,300.0                               | 0.00            | 0.00        | 1,300.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,400.0                               | 0.00            | 0.00        | 1,400.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,500.0                               | 0.00            | 0.00        | 1,500.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,600.0                               | 0.00            | 0.00        | 1,600.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,700.0                               | 0.00            | 0.00        | 1,700.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,800.0                               | 0.00            | 0.00        | 1,800.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 1,900.0                               | 0.00            | 0.00        | 1,900.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,000.0                               | 0.00            | 0.00        | 2,000.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,021.0                               | 0.00            | 0.00        | 2,021.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Pierre</b>                         |                 |             |                       |             |             |                         |                         |                        |                       |
| 2,100.0                               | 0.00            | 0.00        | 2,100.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,150.0                               | 0.00            | 0.00        | 2,150.0               | 0.0         | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Start Build 5.00 - 9 5/8"</b>      |                 |             |                       |             |             |                         |                         |                        |                       |
| 2,160.0                               | 0.50            | 180.00      | 2,160.0               | 0.0         | 0.0         | 0.0                     | 5.00                    | 5.00                   | 0.00                  |
| <b>Start 5719.7 hold at 2160.0 MD</b> |                 |             |                       |             |             |                         |                         |                        |                       |
| 2,200.0                               | 0.50            | 180.00      | 2,200.0               | -0.4        | 0.0         | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 2,300.0                               | 0.50            | 180.00      | 2,300.0               | -1.3        | 0.0         | 0.1                     | 0.00                    | 0.00                   | 0.00                  |
| 2,400.0                               | 0.50            | 180.00      | 2,400.0               | -2.1        | 0.0         | 0.2                     | 0.00                    | 0.00                   | 0.00                  |
| 2,500.0                               | 0.50            | 180.00      | 2,500.0               | -3.0        | 0.0         | 0.3                     | 0.00                    | 0.00                   | 0.00                  |
| 2,600.0                               | 0.50            | 180.00      | 2,600.0               | -3.9        | 0.0         | 0.4                     | 0.00                    | 0.00                   | 0.00                  |
| 2,700.0                               | 0.50            | 180.00      | 2,700.0               | -4.8        | 0.0         | 0.4                     | 0.00                    | 0.00                   | 0.00                  |
| 2,800.0                               | 0.50            | 180.00      | 2,800.0               | -5.6        | 0.0         | 0.5                     | 0.00                    | 0.00                   | 0.00                  |
| 2,900.0                               | 0.50            | 180.00      | 2,900.0               | -6.5        | 0.0         | 0.6                     | 0.00                    | 0.00                   | 0.00                  |
| 3,000.0                               | 0.50            | 180.00      | 3,000.0               | -7.4        | 0.0         | 0.7                     | 0.00                    | 0.00                   | 0.00                  |
| 3,100.0                               | 0.50            | 180.00      | 3,100.0               | -8.2        | 0.0         | 0.8                     | 0.00                    | 0.00                   | 0.00                  |
| 3,200.0                               | 0.50            | 180.00      | 3,200.0               | -9.1        | 0.0         | 0.8                     | 0.00                    | 0.00                   | 0.00                  |
| 3,300.0                               | 0.50            | 180.00      | 3,300.0               | -10.0       | 0.0         | 0.9                     | 0.00                    | 0.00                   | 0.00                  |
| 3,400.0                               | 0.50            | 180.00      | 3,400.0               | -10.9       | 0.0         | 1.0                     | 0.00                    | 0.00                   | 0.00                  |
| 3,500.0                               | 0.50            | 180.00      | 3,499.9               | -11.7       | 0.0         | 1.1                     | 0.00                    | 0.00                   | 0.00                  |
| 3,600.0                               | 0.50            | 180.00      | 3,599.9               | -12.6       | 0.0         | 1.2                     | 0.00                    | 0.00                   | 0.00                  |
| 3,700.0                               | 0.50            | 180.00      | 3,699.9               | -13.5       | 0.0         | 1.2                     | 0.00                    | 0.00                   | 0.00                  |
| 3,800.0                               | 0.50            | 180.00      | 3,799.9               | -14.4       | 0.0         | 1.3                     | 0.00                    | 0.00                   | 0.00                  |
| 3,900.0                               | 0.50            | 180.00      | 3,899.9               | -15.2       | 0.0         | 1.4                     | 0.00                    | 0.00                   | 0.00                  |
| 4,000.0                               | 0.50            | 180.00      | 3,999.9               | -16.1       | 0.0         | 1.5                     | 0.00                    | 0.00                   | 0.00                  |
| 4,100.0                               | 0.50            | 180.00      | 4,099.9               | -17.0       | 0.0         | 1.6                     | 0.00                    | 0.00                   | 0.00                  |
| 4,200.0                               | 0.50            | 180.00      | 4,199.9               | -17.8       | 0.0         | 1.6                     | 0.00                    | 0.00                   | 0.00                  |
| 4,300.0                               | 0.50            | 180.00      | 4,299.9               | -18.7       | 0.0         | 1.7                     | 0.00                    | 0.00                   | 0.00                  |
| 4,400.0                               | 0.50            | 180.00      | 4,399.9               | -19.6       | 0.0         | 1.8                     | 0.00                    | 0.00                   | 0.00                  |
| 4,500.0                               | 0.50            | 180.00      | 4,499.9               | -20.5       | 0.0         | 1.9                     | 0.00                    | 0.00                   | 0.00                  |
| 4,600.0                               | 0.50            | 180.00      | 4,599.9               | -21.3       | 0.0         | 2.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,624.1                               | 0.50            | 180.00      | 4,624.0               | -21.5       | 0.0         | 2.0                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Greenhorn</b>                      |                 |             |                       |             |             |                         |                         |                        |                       |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

| Planned Survey          |                 |             |                       |              |              |                         |                         |                        |                       |
|-------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)   | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 4,700.0                 | 0.50            | 180.00      | 4,699.9               | -22.2        | 0.0          | 2.0                     | 0.00                    | 0.00                   | 0.00                  |
| 4,800.0                 | 0.50            | 180.00      | 4,799.9               | -23.1        | 0.0          | 2.1                     | 0.00                    | 0.00                   | 0.00                  |
| 4,900.0                 | 0.50            | 180.00      | 4,899.9               | -24.0        | 0.0          | 2.2                     | 0.00                    | 0.00                   | 0.00                  |
| 5,000.0                 | 0.50            | 180.00      | 4,999.9               | -24.8        | 0.0          | 2.3                     | 0.00                    | 0.00                   | 0.00                  |
| 5,029.1                 | 0.50            | 180.00      | 5,029.0               | -25.1        | 0.0          | 2.3                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Mowry</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 5,100.0                 | 0.50            | 180.00      | 5,099.9               | -25.7        | 0.0          | 2.4                     | 0.00                    | 0.00                   | 0.00                  |
| 5,200.0                 | 0.50            | 180.00      | 5,199.9               | -26.6        | 0.0          | 2.4                     | 0.00                    | 0.00                   | 0.00                  |
| 5,300.0                 | 0.50            | 180.00      | 5,299.9               | -27.4        | 0.0          | 2.5                     | 0.00                    | 0.00                   | 0.00                  |
| 5,400.0                 | 0.50            | 180.00      | 5,399.9               | -28.3        | 0.0          | 2.6                     | 0.00                    | 0.00                   | 0.00                  |
| 5,417.1                 | 0.50            | 180.00      | 5,417.0               | -28.5        | 0.0          | 2.6                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Dakota</b>           |                 |             |                       |              |              |                         |                         |                        |                       |
| 5,500.0                 | 0.50            | 180.00      | 5,499.9               | -29.2        | 0.0          | 2.7                     | 0.00                    | 0.00                   | 0.00                  |
| 5,600.0                 | 0.50            | 180.00      | 5,599.9               | -30.1        | 0.0          | 2.8                     | 0.00                    | 0.00                   | 0.00                  |
| 5,700.0                 | 0.50            | 180.00      | 5,699.9               | -30.9        | 0.0          | 2.8                     | 0.00                    | 0.00                   | 0.00                  |
| 5,800.0                 | 0.50            | 180.00      | 5,799.9               | -31.8        | 0.0          | 2.9                     | 0.00                    | 0.00                   | 0.00                  |
| 5,900.0                 | 0.50            | 180.00      | 5,899.9               | -32.7        | 0.0          | 3.0                     | 0.00                    | 0.00                   | 0.00                  |
| 6,000.0                 | 0.50            | 180.00      | 5,999.9               | -33.6        | 0.0          | 3.1                     | 0.00                    | 0.00                   | 0.00                  |
| 6,100.0                 | 0.50            | 180.00      | 6,099.8               | -34.4        | 0.0          | 3.2                     | 0.00                    | 0.00                   | 0.00                  |
| 6,200.0                 | 0.50            | 180.00      | 6,199.8               | -35.3        | 0.0          | 3.2                     | 0.00                    | 0.00                   | 0.00                  |
| 6,300.0                 | 0.50            | 180.00      | 6,299.8               | -36.2        | 0.0          | 3.3                     | 0.00                    | 0.00                   | 0.00                  |
| 6,400.0                 | 0.50            | 180.00      | 6,399.8               | -37.0        | 0.0          | 3.4                     | 0.00                    | 0.00                   | 0.00                  |
| 6,463.2                 | 0.50            | 180.00      | 6,463.0               | -37.6        | 0.0          | 3.5                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Rierdon</b>          |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,500.0                 | 0.50            | 180.00      | 6,499.8               | -37.9        | 0.0          | 3.5                     | 0.00                    | 0.00                   | 0.00                  |
| 6,600.0                 | 0.50            | 180.00      | 6,599.8               | -38.8        | 0.0          | 3.6                     | 0.00                    | 0.00                   | 0.00                  |
| 6,700.0                 | 0.50            | 180.00      | 6,699.8               | -39.7        | 0.0          | 3.6                     | 0.00                    | 0.00                   | 0.00                  |
| 6,800.0                 | 0.50            | 180.00      | 6,799.8               | -40.5        | 0.0          | 3.7                     | 0.00                    | 0.00                   | 0.00                  |
| 6,891.2                 | 0.50            | 180.00      | 6,891.0               | -41.3        | 0.0          | 3.8                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Dunham Salt</b>      |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,900.0                 | 0.50            | 180.00      | 6,899.8               | -41.4        | 0.0          | 3.8                     | 0.00                    | 0.00                   | 0.00                  |
| 6,960.2                 | 0.50            | 180.00      | 6,960.0               | -41.9        | 0.0          | 3.9                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Dunham Salt Base</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,000.0                 | 0.50            | 180.00      | 6,999.8               | -42.3        | 0.0          | 3.9                     | 0.00                    | 0.00                   | 0.00                  |
| 7,100.0                 | 0.50            | 180.00      | 7,099.8               | -43.2        | 0.0          | 4.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,200.0                 | 0.50            | 180.00      | 7,199.8               | -44.0        | 0.0          | 4.0                     | 0.00                    | 0.00                   | 0.00                  |
| 7,257.2                 | 0.50            | 180.00      | 7,257.0               | -44.5        | 0.0          | 4.1                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Pine Salt</b>        |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,290.2                 | 0.50            | 180.00      | 7,290.0               | -44.8        | 0.0          | 4.1                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Pine Salt Base</b>   |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,300.0                 | 0.50            | 180.00      | 7,299.8               | -44.9        | 0.0          | 4.1                     | 0.00                    | 0.00                   | 0.00                  |
| 7,351.2                 | 0.50            | 180.00      | 7,351.0               | -45.3        | 0.0          | 4.2                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Opeche Salt</b>      |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,400.0                 | 0.50            | 180.00      | 7,399.8               | -45.8        | 0.0          | 4.2                     | 0.00                    | 0.00                   | 0.00                  |
| 7,426.2                 | 0.50            | 180.00      | 7,426.0               | -46.0        | 0.0          | 4.2                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Opeche Salt Base</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,500.0                 | 0.50            | 180.00      | 7,499.8               | -46.6        | 0.0          | 4.3                     | 0.00                    | 0.00                   | 0.00                  |
| 7,600.0                 | 0.50            | 180.00      | 7,599.8               | -47.5        | 0.0          | 4.4                     | 0.00                    | 0.00                   | 0.00                  |
| 7,662.2                 | 0.50            | 180.00      | 7,662.0               | -48.1        | 0.0          | 4.4                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Amsden</b>           |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,700.0                 | 0.50            | 180.00      | 7,699.8               | -48.4        | 0.0          | 4.4                     | 0.00                    | 0.00                   | 0.00                  |
| 7,800.0                 | 0.50            | 180.00      | 7,799.8               | -49.3        | 0.0          | 4.5                     | 0.00                    | 0.00                   | 0.00                  |
| 7,828.2                 | 0.50            | 180.00      | 7,828.0               | -49.5        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |
| <b>Tyler</b>            |                 |             |                       |              |              |                         |                         |                        |                       |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

| Planned Survey                        |                 |             |                       |              |              |                         |                         |                        |                       |  |
|---------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft)                 | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |  |
| 7,879.6                               | 0.50            | 180.00      | 7,879.4               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Start Drop -5.00</b>               |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 7,889.6                               | 0.00            | 0.00        | 7,889.4               | -50.0        | 0.0          | 4.6                     | 5.00                    | -5.00                  | -1,800.00             |  |
| <b>Start 2110.6 hold at 7889.7 MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 7,900.0                               | 0.00            | 0.00        | 7,899.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,000.0                               | 0.00            | 0.00        | 7,999.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,032.2                               | 0.00            | 0.00        | 8,032.0               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Otter/Base Minnelusa</b>           |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 8,100.0                               | 0.00            | 0.00        | 8,099.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,200.0                               | 0.00            | 0.00        | 8,199.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,300.0                               | 0.00            | 0.00        | 8,299.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,384.2                               | 0.00            | 0.00        | 8,384.0               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Kibbey Lime</b>                    |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 8,400.0                               | 0.00            | 0.00        | 8,399.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,500.0                               | 0.00            | 0.00        | 8,499.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,534.2                               | 0.00            | 0.00        | 8,534.0               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Charles Salt</b>                   |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 8,600.0                               | 0.00            | 0.00        | 8,599.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,700.0                               | 0.00            | 0.00        | 8,699.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,800.0                               | 0.00            | 0.00        | 8,799.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 8,900.0                               | 0.00            | 0.00        | 8,899.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,000.0                               | 0.00            | 0.00        | 8,999.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,100.0                               | 0.00            | 0.00        | 9,099.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,200.0                               | 0.00            | 0.00        | 9,199.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,209.2                               | 0.00            | 0.00        | 9,209.0               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Base Last Salt</b>                 |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 9,300.0                               | 0.00            | 0.00        | 9,299.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,400.0                               | 0.00            | 0.00        | 9,399.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,429.2                               | 0.00            | 0.00        | 9,429.0               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Mission Canyon</b>                 |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 9,500.0                               | 0.00            | 0.00        | 9,499.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,600.0                               | 0.00            | 0.00        | 9,599.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,700.0                               | 0.00            | 0.00        | 9,699.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,800.0                               | 0.00            | 0.00        | 9,799.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,900.0                               | 0.00            | 0.00        | 9,899.8               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 9,993.2                               | 0.00            | 0.00        | 9,993.0               | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Lodgepole</b>                      |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 10,000.2                              | 0.00            | 0.00        | 10,000.0              | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Start 340.5 hold at 10000.2 MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 10,100.0                              | 0.00            | 0.00        | 10,099.8              | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 10,200.0                              | 0.00            | 0.00        | 10,199.8              | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 10,300.0                              | 0.00            | 0.00        | 10,299.8              | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| 10,340.7                              | 0.00            | 0.00        | 10,340.4              | -50.0        | 0.0          | 4.6                     | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Start Build 12.00 KOP</b>          |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 10,350.0                              | 1.12            | 128.50      | 10,349.8              | -50.1        | 0.1          | 4.7                     | 12.00                   | 12.00                  | 0.00                  |  |
| 10,375.0                              | 4.12            | 128.50      | 10,374.8              | -50.8        | 1.0          | 5.6                     | 12.00                   | 12.00                  | 0.00                  |  |
| 10,400.0                              | 7.12            | 128.50      | 10,399.6              | -52.3        | 2.9          | 7.7                     | 12.00                   | 12.00                  | 0.00                  |  |
| 10,425.0                              | 10.12           | 128.50      | 10,424.3              | -54.6        | 5.8          | 10.8                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,450.0                              | 13.12           | 128.50      | 10,448.8              | -57.8        | 9.8          | 15.0                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,475.0                              | 16.12           | 128.50      | 10,473.0              | -61.7        | 14.7         | 20.3                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,500.0                              | 19.12           | 128.50      | 10,496.8              | -66.4        | 20.6         | 26.6                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,525.0                              | 22.12           | 128.50      | 10,520.2              | -71.9        | 27.5         | 34.0                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,550.0                              | 25.12           | 128.50      | 10,543.1              | -78.1        | 35.3         | 42.4                    | 12.00                   | 12.00                  | 0.00                  |  |
| 10,575.0                              | 28.12           | 128.50      | 10,565.5              | -85.1        | 44.1         | 51.7                    | 12.00                   | 12.00                  | 0.00                  |  |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

| Planned Survey                           |                 |             |                       |             |             |                         |                         |                        |                       |
|--|-----------------|-------------|-----------------------|-------------|-------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)                    | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/S (usft) | +E/W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 10,600.0                                 | 31.12           | 128.50      | 10,587.2              | -92.8       | 53.8        | 62.1                    | 12.00                   | 12.00                  | 0.00                  |
| 10,625.0                                 | 34.12           | 128.50      | 10,608.3              | -101.2      | 64.3        | 73.4                    | 12.00                   | 12.00                  | 0.00                  |
| 10,650.0                                 | 37.12           | 128.50      | 10,628.6              | -110.2      | 75.7        | 85.5                    | 12.00                   | 12.00                  | 0.00                  |
| 10,675.0                                 | 40.12           | 128.50      | 10,648.1              | -119.9      | 87.9        | 98.6                    | 12.00                   | 12.00                  | 0.00                  |
| 10,700.0                                 | 43.12           | 128.50      | 10,666.8              | -130.3      | 100.9       | 112.5                   | 12.00                   | 12.00                  | 0.00                  |
| 10,725.0                                 | 46.12           | 128.50      | 10,684.6              | -141.2      | 114.7       | 127.2                   | 12.00                   | 12.00                  | 0.00                  |
| 10,750.0                                 | 49.12           | 128.50      | 10,701.5              | -152.7      | 129.1       | 142.6                   | 12.00                   | 12.00                  | 0.00                  |
| 10,757.0                                 | 49.96           | 128.50      | 10,706.0              | -156.0      | 133.3       | 147.1                   | 12.00                   | 12.00                  | 0.00                  |
| <b>False Bakken</b>                      |                 |             |                       |             |             |                         |                         |                        |                       |
| 10,772.8                                 | 51.86           | 128.50      | 10,716.0              | -163.7      | 142.9       | 157.4                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Upper Bakken Shale</b>                |                 |             |                       |             |             |                         |                         |                        |                       |
| 10,775.0                                 | 52.12           | 128.50      | 10,717.3              | -164.7      | 144.2       | 158.8                   | 12.00                   | 12.00                  | 0.00                  |
| 10,799.7                                 | 55.09           | 128.50      | 10,732.0              | -177.1      | 159.8       | 175.4                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Middle Bakken</b>                     |                 |             |                       |             |             |                         |                         |                        |                       |
| 10,800.0                                 | 55.12           | 128.50      | 10,732.1              | -177.2      | 160.0       | 175.6                   | 12.00                   | 12.00                  | 0.00                  |
| 10,825.0                                 | 58.12           | 128.50      | 10,745.9              | -190.2      | 176.3       | 193.1                   | 12.00                   | 12.00                  | 0.00                  |
| 10,850.0                                 | 61.12           | 128.50      | 10,758.5              | -203.7      | 193.2       | 211.1                   | 12.00                   | 12.00                  | 0.00                  |
| 10,865.9                                 | 63.03           | 128.50      | 10,766.0              | -212.4      | 204.2       | 222.9                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Lower Bakken Shale</b>                |                 |             |                       |             |             |                         |                         |                        |                       |
| 10,875.0                                 | 64.12           | 128.50      | 10,770.0              | -217.5      | 210.6       | 229.7                   | 12.00                   | 12.00                  | 0.00                  |
| 10,899.1                                 | 67.01           | 128.50      | 10,780.0              | -231.1      | 227.7       | 248.0                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Pronghorn</b>                         |                 |             |                       |             |             |                         |                         |                        |                       |
| 10,900.0                                 | 67.12           | 128.50      | 10,780.3              | -231.6      | 228.4       | 248.7                   | 12.00                   | 12.00                  | 0.00                  |
| 10,925.0                                 | 70.12           | 128.50      | 10,789.5              | -246.1      | 246.6       | 268.2                   | 12.00                   | 12.00                  | 0.00                  |
| 10,950.0                                 | 73.12           | 128.50      | 10,797.3              | -260.9      | 265.2       | 288.1                   | 12.00                   | 12.00                  | 0.00                  |
| 10,955.8                                 | 73.81           | 128.50      | 10,799.0              | -264.3      | 269.5       | 292.7                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Threeforks</b>                        |                 |             |                       |             |             |                         |                         |                        |                       |
| 10,975.0                                 | 76.12           | 128.50      | 10,804.0              | -275.9      | 284.0       | 308.2                   | 12.00                   | 12.00                  | 0.00                  |
| 11,000.0                                 | 79.12           | 128.50      | 10,809.3              | -291.1      | 303.2       | 328.6                   | 12.00                   | 12.00                  | 0.00                  |
| 11,009.2                                 | 80.22           | 128.50      | 10,811.0              | -296.7      | 310.2       | 336.2                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Threeforks(Top of Target)</b>         |                 |             |                       |             |             |                         |                         |                        |                       |
| 11,025.0                                 | 82.12           | 128.50      | 10,813.4              | -306.5      | 322.5       | 349.3                   | 12.00                   | 12.00                  | 0.00                  |
| 11,050.0                                 | 85.12           | 128.50      | 10,816.2              | -321.9      | 341.9       | 370.1                   | 12.00                   | 12.00                  | 0.00                  |
| 11,075.0                                 | 88.12           | 128.50      | 10,817.7              | -337.5      | 361.4       | 390.9                   | 12.00                   | 12.00                  | 0.00                  |
| 11,086.9                                 | 89.55           | 128.50      | 10,817.9              | -344.9      | 370.8       | 400.9                   | 12.00                   | 12.00                  | 0.00                  |
| <b>Start 10.5 hold at 11086.9 MD EOC</b> |                 |             |                       |             |             |                         |                         |                        |                       |
| 11,097.5                                 | 89.55           | 128.50      | 10,818.0              | -351.4      | 379.0       | 409.7                   | 0.00                    | 0.00                   | 0.00                  |
| <b>Start DLS 2.00 TFO 269.85 - 7"</b>    |                 |             |                       |             |             |                         |                         |                        |                       |
| 11,100.0                                 | 89.55           | 128.44      | 10,818.0              | -353.0      | 381.0       | 411.8                   | 2.22                    | -0.01                  | -2.22                 |
| 11,200.0                                 | 89.54           | 126.25      | 10,818.8              | -413.7      | 460.5       | 496.6                   | 2.19                    | -0.01                  | -2.19                 |
| 11,300.0                                 | 89.54           | 124.06      | 10,819.6              | -471.2      | 542.2       | 583.3                   | 2.19                    | 0.00                   | -2.19                 |
| 11,400.0                                 | 89.54           | 121.87      | 10,820.4              | -525.6      | 626.1       | 671.8                   | 2.19                    | 0.00                   | -2.19                 |
| 11,500.0                                 | 89.53           | 119.68      | 10,821.2              | -576.8      | 712.0       | 762.1                   | 2.19                    | 0.00                   | -2.19                 |
| 11,600.0                                 | 89.53           | 117.49      | 10,822.0              | -624.6      | 799.9       | 853.9                   | 2.19                    | 0.00                   | -2.19                 |
| 11,700.0                                 | 89.53           | 115.30      | 10,822.8              | -669.1      | 889.4       | 947.2                   | 2.19                    | 0.00                   | -2.19                 |
| 11,800.0                                 | 89.53           | 113.11      | 10,823.7              | -710.1      | 980.6       | 1,041.8                 | 2.19                    | 0.00                   | -2.19                 |
| 11,900.0                                 | 89.53           | 110.92      | 10,824.5              | -747.6      | 1,073.3     | 1,137.5                 | 2.19                    | 0.00                   | -2.19                 |
| 12,000.0                                 | 89.53           | 108.73      | 10,825.3              | -781.5      | 1,167.4     | 1,234.3                 | 2.19                    | 0.00                   | -2.19                 |
| 12,100.0                                 | 89.53           | 106.54      | 10,826.2              | -811.8      | 1,262.7     | 1,332.0                 | 2.19                    | 0.00                   | -2.19                 |
| 12,200.0                                 | 89.53           | 104.35      | 10,827.0              | -838.4      | 1,359.1     | 1,430.4                 | 2.19                    | 0.00                   | -2.19                 |
| 12,300.0                                 | 89.53           | 102.16      | 10,827.8              | -861.3      | 1,456.4     | 1,529.4                 | 2.19                    | 0.00                   | -2.19                 |
| 12,400.0                                 | 89.53           | 99.97       | 10,828.6              | -880.5      | 1,554.5     | 1,628.9                 | 2.19                    | 0.00                   | -2.19                 |
| 12,500.0                                 | 89.54           | 97.78       | 10,829.4              | -895.9      | 1,653.3     | 1,728.7                 | 2.19                    | 0.00                   | -2.19                 |
| 12,600.0                                 | 89.54           | 95.59       | 10,830.2              | -907.6      | 1,752.6     | 1,828.7                 | 2.19                    | 0.00                   | -2.19                 |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

| Planned Survey                         |                 |             |                       |              |              |                         |                         |                        |                       |  |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft)                  | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |  |
| 12,700.0                               | 89.55           | 93.40       | 10,831.0              | -915.4       | 1,852.3      | 1,928.6                 | 2.19                    | 0.00                   | -2.19                 |  |
| 12,800.0                               | 89.55           | 91.21       | 10,831.8              | -919.4       | 1,952.2      | 2,028.5                 | 2.19                    | 0.01                   | -2.19                 |  |
| 12,855.2                               | 89.55           | 90.00       | 10,832.3              | -920.0       | 2,007.4      | 2,083.5                 | 2.19                    | 0.01                   | -2.19                 |  |
| 12,900.0                               | 89.55           | 90.00       | 10,832.6              | -920.0       | 2,052.2      | 2,128.1                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,000.0                               | 89.55           | 90.00       | 10,833.4              | -920.0       | 2,152.2      | 2,227.7                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,022.1                               | 89.55           | 90.00       | 10,833.6              | -920.0       | 2,174.4      | 2,249.7                 | 0.00                    | 0.00                   | 0.00                  |  |
| <b>Start 7906.2 hold at 13022.2 MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 13,100.0                               | 89.55           | 90.00       | 10,834.2              | -920.0       | 2,252.2      | 2,327.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,200.0                               | 89.55           | 90.00       | 10,834.9              | -920.0       | 2,352.2      | 2,426.8                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,300.0                               | 89.55           | 90.00       | 10,835.7              | -920.0       | 2,452.2      | 2,526.4                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,400.0                               | 89.55           | 90.00       | 10,836.5              | -920.0       | 2,552.2      | 2,626.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,500.0                               | 89.55           | 90.00       | 10,837.3              | -920.0       | 2,652.2      | 2,725.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,600.0                               | 89.55           | 90.00       | 10,838.0              | -920.0       | 2,752.2      | 2,825.1                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,700.0                               | 89.55           | 90.00       | 10,838.8              | -920.0       | 2,852.2      | 2,924.7                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,800.0                               | 89.55           | 90.00       | 10,839.6              | -920.0       | 2,952.2      | 3,024.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 13,900.0                               | 89.55           | 90.00       | 10,840.4              | -920.0       | 3,052.2      | 3,123.8                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,000.0                               | 89.55           | 90.00       | 10,841.2              | -920.0       | 3,152.2      | 3,223.4                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,100.0                               | 89.55           | 90.00       | 10,841.9              | -920.0       | 3,252.2      | 3,323.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,200.0                               | 89.55           | 90.00       | 10,842.7              | -920.0       | 3,352.2      | 3,422.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,300.0                               | 89.55           | 90.00       | 10,843.5              | -920.0       | 3,452.2      | 3,522.1                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,400.0                               | 89.55           | 90.00       | 10,844.3              | -920.0       | 3,552.2      | 3,621.7                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,500.0                               | 89.55           | 90.00       | 10,845.0              | -920.0       | 3,652.2      | 3,721.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,600.0                               | 89.55           | 90.00       | 10,845.8              | -920.0       | 3,752.2      | 3,820.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,700.0                               | 89.55           | 90.00       | 10,846.6              | -920.0       | 3,852.2      | 3,920.4                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,800.0                               | 89.55           | 90.00       | 10,847.4              | -920.0       | 3,952.2      | 4,020.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| 14,900.0                               | 89.55           | 90.00       | 10,848.2              | -920.0       | 4,052.1      | 4,119.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,000.0                               | 89.55           | 90.00       | 10,848.9              | -920.0       | 4,152.1      | 4,219.2                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,100.0                               | 89.55           | 90.00       | 10,849.7              | -920.0       | 4,252.1      | 4,318.7                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,200.0                               | 89.55           | 90.00       | 10,850.5              | -920.0       | 4,352.1      | 4,418.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,300.0                               | 89.55           | 90.00       | 10,851.3              | -920.0       | 4,452.1      | 4,517.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,400.0                               | 89.55           | 90.00       | 10,852.0              | -920.0       | 4,552.1      | 4,617.4                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,500.0                               | 89.55           | 90.00       | 10,852.8              | -920.0       | 4,652.1      | 4,717.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,600.0                               | 89.55           | 90.00       | 10,853.6              | -920.0       | 4,752.1      | 4,816.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,700.0                               | 89.55           | 90.00       | 10,854.4              | -920.0       | 4,852.1      | 4,916.2                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,800.0                               | 89.55           | 90.00       | 10,855.2              | -920.0       | 4,952.1      | 5,015.7                 | 0.00                    | 0.00                   | 0.00                  |  |
| 15,900.0                               | 89.55           | 90.00       | 10,855.9              | -920.0       | 5,052.1      | 5,115.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,000.0                               | 89.55           | 90.00       | 10,856.7              | -920.0       | 5,152.1      | 5,214.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,100.0                               | 89.55           | 90.00       | 10,857.5              | -920.0       | 5,252.1      | 5,314.5                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,200.0                               | 89.55           | 90.00       | 10,858.3              | -920.0       | 5,352.1      | 5,414.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,300.0                               | 89.55           | 90.00       | 10,859.0              | -920.0       | 5,452.1      | 5,513.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,400.0                               | 89.55           | 90.00       | 10,859.8              | -920.0       | 5,552.1      | 5,613.2                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,500.0                               | 89.55           | 90.00       | 10,860.6              | -920.0       | 5,652.1      | 5,712.8                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,600.0                               | 89.55           | 90.00       | 10,861.4              | -920.0       | 5,752.1      | 5,812.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,700.0                               | 89.55           | 90.00       | 10,862.2              | -920.0       | 5,852.1      | 5,911.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,800.0                               | 89.55           | 90.00       | 10,862.9              | -920.0       | 5,952.1      | 6,011.5                 | 0.00                    | 0.00                   | 0.00                  |  |
| 16,900.0                               | 89.55           | 90.00       | 10,863.7              | -920.0       | 6,052.1      | 6,111.0                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,000.0                               | 89.55           | 90.00       | 10,864.5              | -920.0       | 6,152.1      | 6,210.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,100.0                               | 89.55           | 90.00       | 10,865.3              | -920.0       | 6,252.1      | 6,310.2                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,200.0                               | 89.55           | 90.00       | 10,866.0              | -920.0       | 6,352.1      | 6,409.8                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,300.0                               | 89.55           | 90.00       | 10,866.8              | -920.0       | 6,452.1      | 6,509.3                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,400.0                               | 89.55           | 90.00       | 10,867.6              | -920.0       | 6,552.1      | 6,608.9                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,500.0                               | 89.55           | 90.00       | 10,868.4              | -920.0       | 6,652.1      | 6,708.5                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,600.0                               | 89.55           | 90.00       | 10,869.2              | -920.0       | 6,752.1      | 6,808.1                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,700.0                               | 89.55           | 90.00       | 10,869.9              | -920.0       | 6,852.1      | 6,907.6                 | 0.00                    | 0.00                   | 0.00                  |  |
| 17,800.0                               | 89.55           | 90.00       | 10,870.7              | -920.0       | 6,952.1      | 7,007.2                 | 0.00                    | 0.00                   | 0.00                  |  |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

### Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 17,900.0              | 89.55           | 90.00       | 10,871.5              | -920.0       | 7,052.1      | 7,106.8                 | 0.00                    | 0.00                   | 0.00                  |
| 18,000.0              | 89.55           | 90.00       | 10,872.3              | -920.0       | 7,152.1      | 7,206.4                 | 0.00                    | 0.00                   | 0.00                  |
| 18,100.0              | 89.55           | 90.00       | 10,873.0              | -920.0       | 7,252.1      | 7,305.9                 | 0.00                    | 0.00                   | 0.00                  |
| 18,200.0              | 89.55           | 90.00       | 10,873.8              | -920.0       | 7,352.0      | 7,405.5                 | 0.00                    | 0.00                   | 0.00                  |
| 18,300.0              | 89.55           | 90.00       | 10,874.6              | -920.0       | 7,452.0      | 7,505.1                 | 0.00                    | 0.00                   | 0.00                  |
| 18,400.0              | 89.55           | 90.00       | 10,875.4              | -920.0       | 7,552.0      | 7,604.6                 | 0.00                    | 0.00                   | 0.00                  |
| 18,500.0              | 89.55           | 90.00       | 10,876.2              | -920.0       | 7,652.0      | 7,704.2                 | 0.00                    | 0.00                   | 0.00                  |
| 18,600.0              | 89.55           | 90.00       | 10,876.9              | -920.0       | 7,752.0      | 7,803.8                 | 0.00                    | 0.00                   | 0.00                  |
| 18,700.0              | 89.55           | 90.00       | 10,877.7              | -920.0       | 7,852.0      | 7,903.4                 | 0.00                    | 0.00                   | 0.00                  |
| 18,800.0              | 89.55           | 90.00       | 10,878.5              | -920.0       | 7,952.0      | 8,002.9                 | 0.00                    | 0.00                   | 0.00                  |
| 18,900.0              | 89.55           | 90.00       | 10,879.3              | -920.0       | 8,052.0      | 8,102.5                 | 0.00                    | 0.00                   | 0.00                  |
| 19,000.0              | 89.55           | 90.00       | 10,880.0              | -920.0       | 8,152.0      | 8,202.1                 | 0.00                    | 0.00                   | 0.00                  |
| 19,100.0              | 89.55           | 90.00       | 10,880.8              | -920.0       | 8,252.0      | 8,301.7                 | 0.00                    | 0.00                   | 0.00                  |
| 19,200.0              | 89.55           | 90.00       | 10,881.6              | -920.0       | 8,352.0      | 8,401.2                 | 0.00                    | 0.00                   | 0.00                  |
| 19,300.0              | 89.55           | 90.00       | 10,882.4              | -920.0       | 8,452.0      | 8,500.8                 | 0.00                    | 0.00                   | 0.00                  |
| 19,400.0              | 89.55           | 90.00       | 10,883.2              | -920.0       | 8,552.0      | 8,600.4                 | 0.00                    | 0.00                   | 0.00                  |
| 19,500.0              | 89.55           | 90.00       | 10,883.9              | -920.0       | 8,652.0      | 8,700.0                 | 0.00                    | 0.00                   | 0.00                  |
| 19,600.0              | 89.55           | 90.00       | 10,884.7              | -920.0       | 8,752.0      | 8,799.5                 | 0.00                    | 0.00                   | 0.00                  |
| 19,700.0              | 89.55           | 90.00       | 10,885.5              | -920.0       | 8,852.0      | 8,899.1                 | 0.00                    | 0.00                   | 0.00                  |
| 19,800.0              | 89.55           | 90.00       | 10,886.3              | -920.0       | 8,952.0      | 8,998.7                 | 0.00                    | 0.00                   | 0.00                  |
| 19,900.0              | 89.55           | 90.00       | 10,887.0              | -920.0       | 9,052.0      | 9,098.2                 | 0.00                    | 0.00                   | 0.00                  |
| 20,000.0              | 89.55           | 90.00       | 10,887.8              | -920.0       | 9,152.0      | 9,197.8                 | 0.00                    | 0.00                   | 0.00                  |
| 20,100.0              | 89.55           | 90.00       | 10,888.6              | -920.0       | 9,252.0      | 9,297.4                 | 0.00                    | 0.00                   | 0.00                  |
| 20,200.0              | 89.55           | 90.00       | 10,889.4              | -920.0       | 9,352.0      | 9,397.0                 | 0.00                    | 0.00                   | 0.00                  |
| 20,300.0              | 89.55           | 90.00       | 10,890.2              | -920.0       | 9,452.0      | 9,496.5                 | 0.00                    | 0.00                   | 0.00                  |
| 20,400.0              | 89.55           | 90.00       | 10,890.9              | -920.0       | 9,552.0      | 9,596.1                 | 0.00                    | 0.00                   | 0.00                  |
| 20,500.0              | 89.55           | 90.00       | 10,891.7              | -920.0       | 9,652.0      | 9,695.7                 | 0.00                    | 0.00                   | 0.00                  |
| 20,600.0              | 89.55           | 90.00       | 10,892.5              | -920.0       | 9,752.0      | 9,795.3                 | 0.00                    | 0.00                   | 0.00                  |
| 20,700.0              | 89.55           | 90.00       | 10,893.3              | -920.0       | 9,852.0      | 9,894.8                 | 0.00                    | 0.00                   | 0.00                  |
| 20,810.0              | 89.55           | 90.00       | 10,894.1              | -920.0       | 9,961.9      | 10,004.3                | 0.00                    | 0.00                   | 0.00                  |

### Design Targets

| Target Name<br>- hit/miss target<br>- Shape   | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude        | Longitude         |
|---|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------------|-------------------|
| Chalmers 11T  | 0.00          | 0.00         | 10,894.7   | -919.3       | 9,962.0      | 401,054.81      | 1,219,898.79   | 48° 3' 31.221 N | 103° 33' 43.454 W |
| - plan misses target center by 0.9usft at 20810.0usft MD (10894.1 TVD, -920.0 N, 9961.9 E)<br>- Point |               |              |            |              |              |                 |                |                 |                   |

### Casing Points

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter ("") | Hole Diameter ("") |
|-----------------------|-----------------------|------|----------------------|--------------------|
| 2,150.0               | 2,150.0 9 5/8"        |      | 9-5/8                | 13-1/2             |
| 11,097.5              | 10,818.0 7"           |      | 7                    | 8-3/4              |

# Oasis Petroleum

## Planning Report

|                  |                             |                                     |  |
|------------------|-----------------------------|-------------------------------------|--|
| <b>Database:</b> | OpenWellsCompass - EDM Prod | <b>Local Co-ordinate Reference:</b> | Well CHALMERS 5300 21-19 11T           |
| <b>Company:</b>  | Oasis                       | <b>TVD Reference:</b>               | WELL @ 2071.0usft (Original Well Elev) |
| <b>Project:</b>  | Indian Hills                | <b>MD Reference:</b>                | WELL @ 2071.0usft (Original Well Elev) |
| <b>Site:</b>     | 153N-100W-19/20             | <b>North Reference:</b>             | True                                   |
| <b>Well:</b>     | CHALMERS 5300 21-19 11T     | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Wellbore:</b> | CHALMERS 5300 21-19 11T     |                                     |  |
| <b>Design:</b>   | Plan #1                     |                                     |  |

| Formations            |                       |                           |           |         |                   |  |
|-----------------------|-----------------------|---------------------------|-----------|---------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name                      | Lithology | Dip (°) | Dip Direction (°) |  |
| 2,021.0               | 2,021.0               | Pierre                    |           |         |                   |  |
| 4,624.1               | 4,624.0               | Greenhorn                 |           |         |                   |  |
| 5,029.1               | 5,029.0               | Mowry                     |           |         |                   |  |
| 5,417.1               | 5,417.0               | Dakota                    |           |         |                   |  |
| 6,463.2               | 6,463.0               | Rierdon                   |           |         |                   |  |
| 6,891.2               | 6,891.0               | Dunham Salt               |           |         |                   |  |
| 6,960.2               | 6,960.0               | Dunham Salt Base          |           |         |                   |  |
| 7,257.2               | 7,257.0               | Pine Salt                 |           |         |                   |  |
| 7,290.2               | 7,290.0               | Pine Salt Base            |           |         |                   |  |
| 7,351.2               | 7,351.0               | Opeche Salt               |           |         |                   |  |
| 7,426.2               | 7,426.0               | Opeche Salt Base          |           |         |                   |  |
| 7,662.2               | 7,662.0               | Amsden                    |           |         |                   |  |
| 7,828.2               | 7,828.0               | Tyler                     |           |         |                   |  |
| 8,032.2               | 8,032.0               | Otter/Base Minnelusa      |           |         |                   |  |
| 8,384.2               | 8,384.0               | Kibbey Lime               |           |         |                   |  |
| 8,534.2               | 8,534.0               | Charles Salt              |           |         |                   |  |
| 9,209.2               | 9,209.0               | Base Last Salt            |           |         |                   |  |
| 9,429.2               | 9,429.0               | Mission Canyon            |           |         |                   |  |
| 9,993.2               | 9,993.0               | Lodgepole                 |           |         |                   |  |
| 10,757.0              | 10,706.0              | False Bakken              |           |         |                   |  |
| 10,772.8              | 10,716.0              | Upper Bakken Shale        |           |         |                   |  |
| 10,799.7              | 10,732.0              | Middle Bakken             |           |         |                   |  |
| 10,865.9              | 10,766.0              | Lower Bakken Shale        |           |         |                   |  |
| 10,899.1              | 10,780.0              | Pronghorn                 |           |         |                   |  |
| 10,955.8              | 10,799.0              | Threeforks                |           |         |                   |  |
| 11,009.2              | 10,811.0              | Threeforks(Top of Target) |           |         |                   |  |

| Plan Annotations      |                       |                   |             |                                   |  |
|-----------------------|-----------------------|-------------------|-------------|-----------------------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |             |                                   |  |
|                       |                       | +N-S (usft)       | +E-W (usft) | Comment                           |  |
| 2,150.0               | 2,150.0               | 0.0               | 0.0         | Start Build 5.00                  |  |
| 2,160.0               | 2,160.0               | 0.0               | 0.0         | Start 5719.7 hold at 2160.0 MD    |  |
| 7,879.6               | 7,879.4               | -50.0             | 0.0         | Start Drop -5.00                  |  |
| 7,889.6               | 7,889.4               | -50.0             | 0.0         | Start 2110.6 hold at 7889.7 MD    |  |
| 10,000.2              | 10,000.0              | -50.0             | 0.0         | Start 340.5 hold at 10000.2 MD    |  |
| 10,340.7              | 10,340.4              | -50.0             | 0.0         | Start Build 12.00 KOP             |  |
| 11,086.9              | 10,817.9              | -344.9            | 370.8       | Start 10.5 hold at 11086.9 MD EOC |  |
| 11,097.4              | 10,818.0              | -351.4            | 379.0       | Start DLS 2.00 TFO 269.85         |  |
| 13,022.1              | 10,833.6              | -920.0            | 2,174.4     | Start 7906.2 hold at 13022.2 MD   |  |
| 20,822.9              |                       |                   |             | TD at 20822.9                     |  |

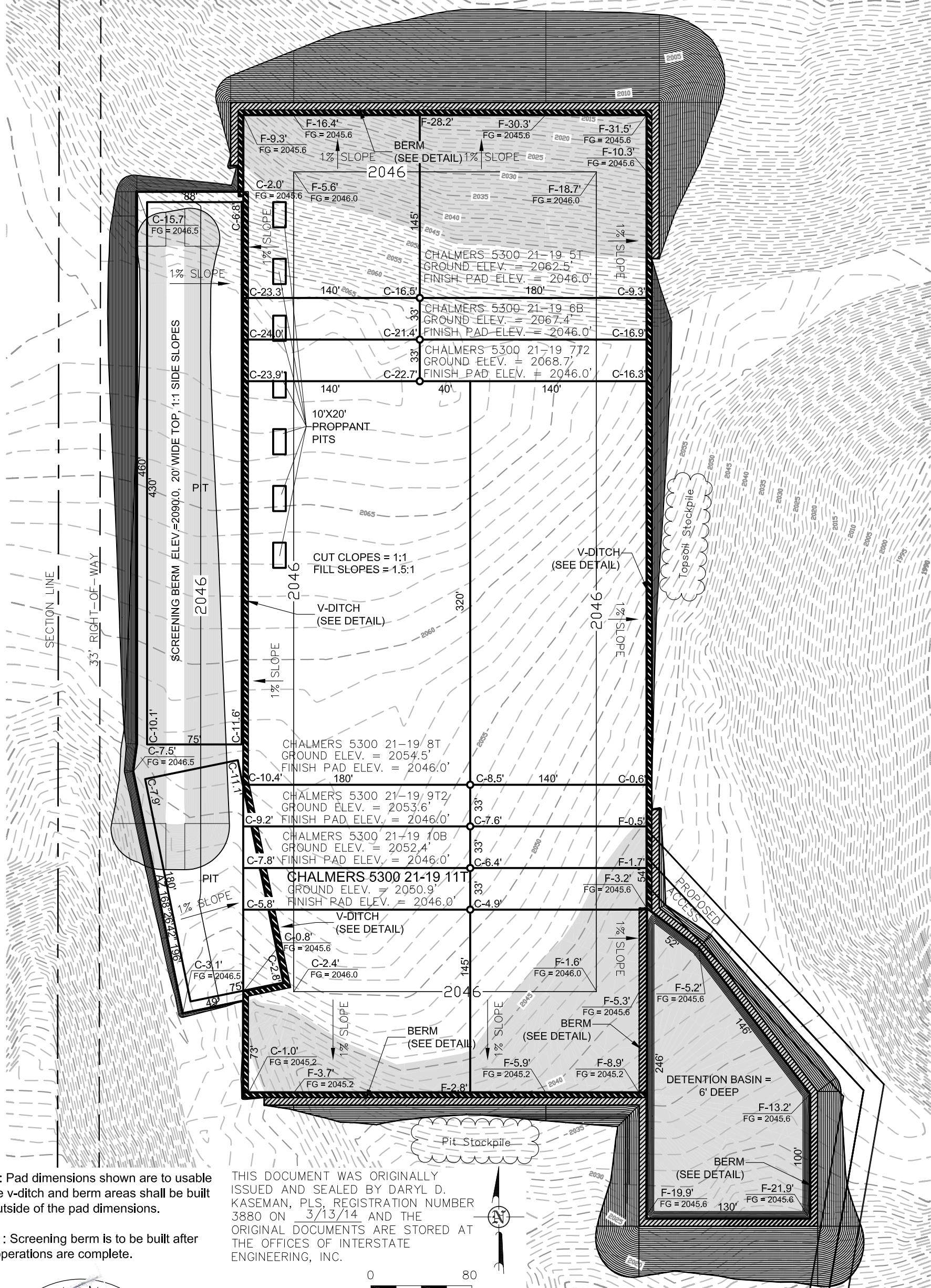


# PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



3/8



Professionals you need, people you trust

Interstate Engineering, Inc.  
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Sidney, Montana 59270  
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[www.interstateeng.com](http://www.interstateeng.com)  
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC  
PAD LAYOUT  
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06  
Checked By: D.D.K. Date: JAN, 2014

| Revision No. | Date    | By  | Description        |
|--------------|---------|-----|--------------------|
| REV 1        | 3/12/14 | JJS | MOVED WELLS ON PAD |
|              |         |     |                    |
|              |         |     |                    |
|              |         |     |                    |

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OASIS PETROLEUM NORTH AMERICA, LLC  
PAD LAYOUT  
SECTION 19, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA  
Drawn By: B.H.H. Project No.: S13-09-282.06  
Checked By: D.D.K. Date: JAN, 2014

Chalmers CADD REVISED CHALMERS 11T.dwg - 3/13/2014 2:22 PM josh schmierer

# WELL LOCATION SITE QUANTITIES

OASIS PETROLEUM NORTH AMERICA, LLC

1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

|                         |                   |
|-------------------------|-------------------|
| WELL SITE ELEVATION     | 2050.9            |
| WELL PAD ELEVATION      | 2046.0            |
| <br>                    |                   |
| EXCAVATION              | 119,687           |
| PLUS PIT                | <u>22,050</u>     |
|                         | 141,737           |
| <br>                    |                   |
| EMBANKMENT              | 53,703            |
| PLUS SHRINKAGE (30%)    | <u>16,111</u>     |
|                         | 69,814            |
| <br>                    |                   |
| STOCKPILE PIT           | 22,050            |
| <br>                    |                   |
| STOCKPILE TOP SOIL (6") | 7,335             |
| <br>                    |                   |
| BERMS                   | 1,373 LF = 445 CY |
| <br>                    |                   |
| DITCHES                 | 2,044 LF = 313 CY |
| <br>                    |                   |
| DETENTION AREA          | 4,751 CY          |
| <br>                    |                   |
| SCREENING BERM          | 27,464 CY         |
| <br>                    |                   |
| STOCKPILE MATERIAL      | 19,693            |
| <br>                    |                   |
| DISTURBED AREA FROM PAD | 9.09 ACRES        |

NOTE: ALL QUANTITIES ARE IN CUBIC YARDS (UNLESS NOTED)

CUT END SLOPES AT 1:1

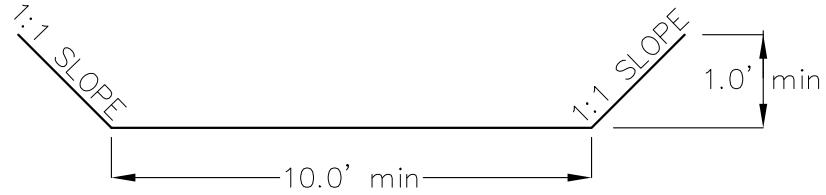
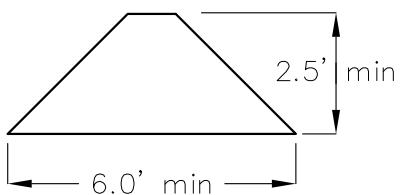
FILL END SLOPES AT 1.5:1

## WELL SITE LOCATION

2325' FNL

326' FWL

## BERM DETAIL



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**8/8**

SHEET NO.



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OASIS PETROLEUM NORTH AMERICA, LLC

QUANTITIES

SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06

Checked By: D.D.K. Date: JAN, 2014

| Revision No. | Date    | By  | Description        |
|--------------|---------|-----|--------------------|
| REV 1        | 3/12/14 | JJS | MOVED WELLS ON PAD |
|              |         |     |                    |
|              |         |     |                    |
|              |         |     |                    |

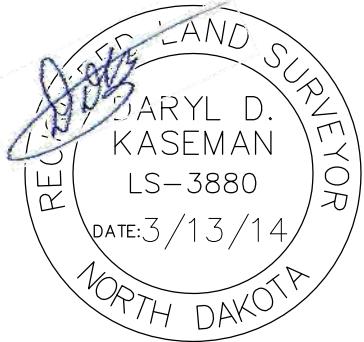
# CROSS SECTIONS

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

THIS DOCUMENT WAS ORIGINALLY ISSUED  
AND SEALED BY DARYL D. KASEMAN,  
PLS, REGISTRATION NUMBER 3880 ON  
3/13/14 AND THE ORIGINAL  
DOCUMENTS ARE STORED AT THE  
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INC.



SCALE  
HORIZ 1"=200'  
VERT 1"=50'

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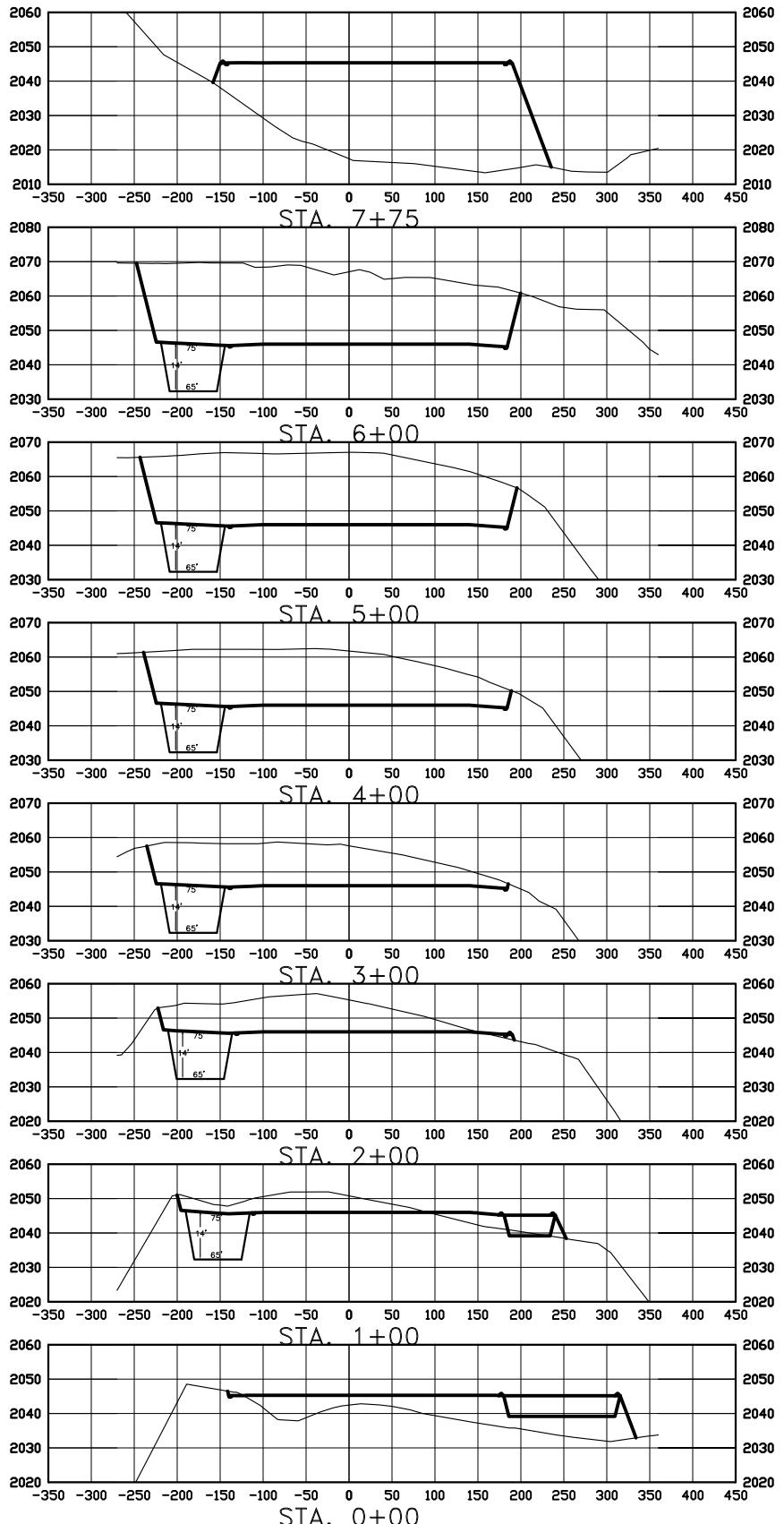
SHEET NO.

Interstate Engineering, Inc.  
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425 East Main Street  
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OASIS PETROLEUM NORTH AMERICA, LLC  
PAD CROSS SECTIONS  
SECTION 19, T153N, R100W  
MCKENZIE COUNTY, NORTH DAKOTA

| Drawn By:   | B.H.H. | Project No.: | S13-09-282.06 |
|-------------|--------|--------------|---------------|
| Checked By: | D.D.K. | Date:        | JAN, 2014     |

| Revision No. | Date    | By  | Description        |
|--------------|---------|-----|--------------------|
| REV 1        | 3/12/14 | JJS | MOVED WELLS ON PAD |
|              |         |     |                    |
|              |         |     |                    |
|              |         |     |                    |



STA. 0+00

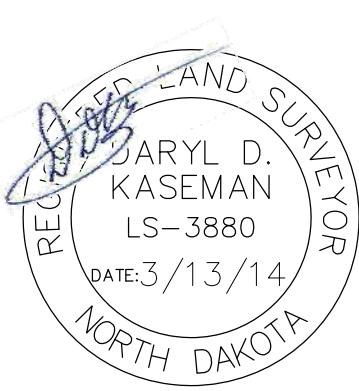
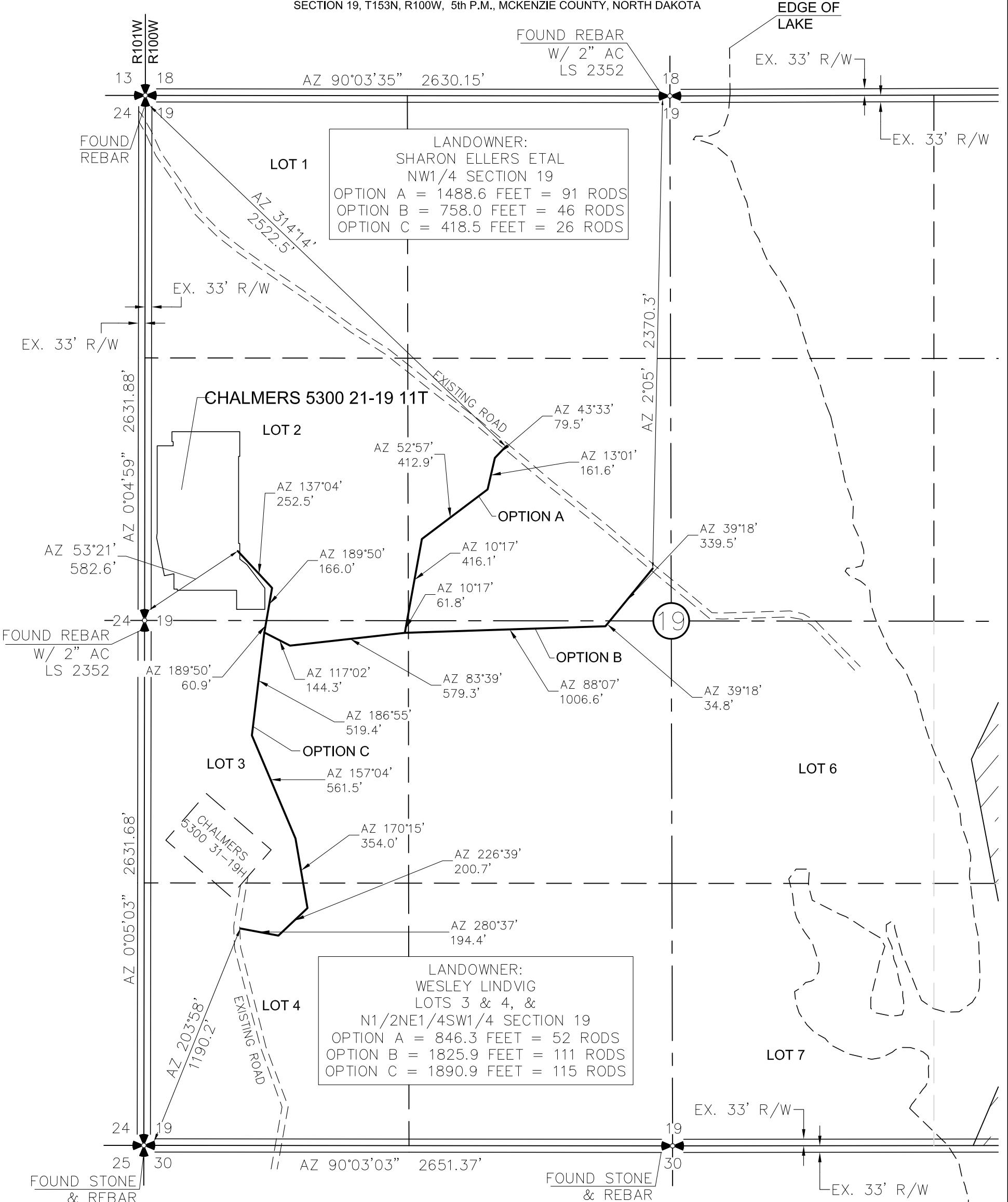
## ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
"QUALMERS 5200 21-10-11T"

"CHALMERS 5300 21-19 11T"

CHALMERS 5500 21-19 TH  
1 NORTH LINE AND 326 FEET

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY  
ISSUED AND SEALED BY DARYL D.  
KASEMAN, PLS, REGISTRATION NUMBER  
3880 ON 3/13/14 AND THE  
ORIGINAL DOCUMENTS ARE STORED AT  
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NOTE: All utilities shown are preliminary only, a complete location is recommended before construction.

0                      500  
  
 1" = 500'

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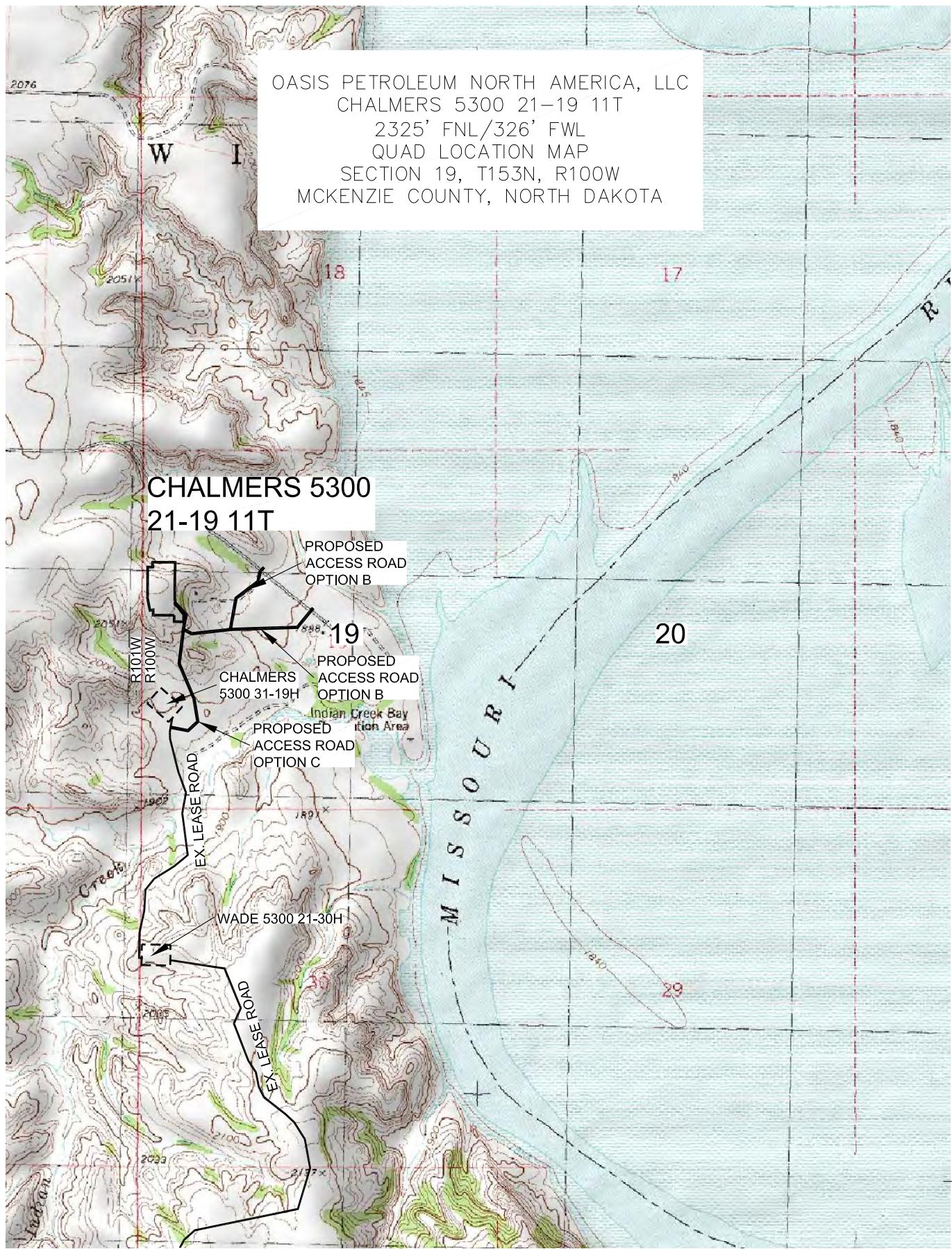
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OASIS PETROLEUM NORTH AMERICA, LLC  
ACCESS APPROACH

SECTION 19, T153N, R100W

MORENZIE COUNTY, NORTH DAKOTA

| Revision No. | Date    | By  | Description        |
|--------------|---------|-----|--------------------|
| REV 1        | 3/12/14 | JJS | MOVED WELLS ON PAD |
|              |         |     |                    |
|              |         |     |                    |
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OASIS PETROLEUM NORTH AMERICA, LLC  
QUAD LOCATION MAP  
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

|             |        |              |               |
|-------------|--------|--------------|---------------|
| Drawn By:   | B.H.H. | Project No.: | S13-09-282.06 |
| Checked By: | D.D.K. | Date:        | JAN, 2014     |

| Revision No. | Date    | By  | Description        |
|--------------|---------|-----|--------------------|
| REV 1        | 3/12/14 | JJS | MOVED WELLS ON PAD |
|              |         |     |                    |
|              |         |     |                    |
|              |         |     |                    |
|              |         |     |                    |

**COUNTY ROAD MAP**  
OASIS PETROLEUM NORTH AMERICA, LLC  
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002  
"CHALMERS 5300 21-19 11T"  
2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE  
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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SCALE: 1" = 2 MILE

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425 East Main Street  
Sidney, Montana 59270  
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Fax (406) 433-5618  
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P.O. Box 648  
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OASIS PETROLEUM NORTH AMERICA, LLC  
COUNTY ROAD MAP  
SECTION 19, T153N, R100W

Sidney, Montana 59270  
Ph (406) 433-5617

MCKENZIE COUNTY, NORTH DAKOTA

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|              |         |     |                    |
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|              |         |     |                    |



## **STATEMENT**

This statement is being sent in order to comply with NDAC 43-02-03-16 (Application for permit to drill and recomplete) which states (in part that) "confirmation that a legal street address has been requested for the well site, and well facility if separate from the well site, and the proposed road access to the nearest existing public road". On the date noted below a legal street address was requested from the appropriate county office.

April 3, 2014  
McKenzie County  
Aaron Chisolm – [address@co.mckenzie.nd.us](mailto:address@co.mckenzie.nd.us)

Chalmers 5300 21-19 5T Lot 2 Section 19 T153N R100W  
Chalmers 5300 21-19 6B Lot 2 Section 19 T153N R100W  
Chalmers 5300 21-19 7T2 Lot 2 Section 19 T153N R100W  
Chalmers 5300 21-19 8T Lot 2 Section 19 T153N R100W  
Chalmers 5300 21-19 9T2 Lot 2 Section 19 T153N R100W  
Chalmers 5300 21-19 10B Lot 2 Section 19 T153N R100W  
Chalmers 5300 21-19 11T Lot 2 Sections 19 T153N R100W

Chelsea Covington  
**Chelsea Covington**  
Regulatory Assistant  
Oasis Petroleum North America, LLC



June 10, 2014

Re: Un-Occupied Trailer House and Seasonal Cabin.

Brandi,

Just to follow up with past conversations about the dwellings east of our proposed Chalmer 5300 21-19 well site. The white trailer is unlivable, it has no water, power or sewer. The cabin is seasonal at best and has not been used for several years. If I can be of further assistance please advise.

Thank you,

A handwritten signature in blue ink, appearing to read "JD DeMorrett".

JD DeMorrett

Sr. Staff Landman for Oasis Petroleum North America, LLC

PO Box 1126 Williston ND- Office 701-577-1600 Fax 701-577-1692