

New Mexico Oil Conservation Division, District 1  
1625 N. French Drive  
Hobbs, NM 88240FORM APPROVED  
OMB No. 1004-0137  
Expires: July 31, 2010UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**RECEIVED**  
**DO NOT use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.**5. Lease Serial No.  
NMLC-062178  
6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2.

7. If Unit of CA/Agreement, Name and/or No.  
MILNESAND UNIT8. Well Name and No.  
#5219. API Well No.  
30-041-2046610. Field and Pool or Exploratory Area  
Milnesand - San Andres11. Country or Parish, State  
Roosevelt Co, NM

## 12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

| TYPE OF SUBMISSION                                   | TYPE OF ACTION                                |                                           |                                                    |                                                             |
|------------------------------------------------------|-----------------------------------------------|-------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|
| <input checked="" type="checkbox"/> Notice of Intent | <input type="checkbox"/> Acidize              | <input type="checkbox"/> Deepen           | <input type="checkbox"/> Production (Start/Resume) | <input type="checkbox"/> Water Shut-Off                     |
| <input type="checkbox"/> Subsequent Report           | <input type="checkbox"/> Alter Casing         | <input type="checkbox"/> Fracture Treat   | <input type="checkbox"/> Reclamation               | <input type="checkbox"/> Well Integrity                     |
| <input type="checkbox"/> Final Abandonment Notice    | <input type="checkbox"/> Casing Repair        | <input type="checkbox"/> New Construction | <input type="checkbox"/> Recomplete                | <input checked="" type="checkbox"/> Other <b>RECOMPLETE</b> |
|                                                      | <input type="checkbox"/> Change Plans         | <input type="checkbox"/> Plug and Abandon | <input type="checkbox"/> Temporarily Abandon       | <b>HORIZONTALLY</b>                                         |
|                                                      | <input type="checkbox"/> Convert to Injection | <input type="checkbox"/> Plug Back        | <input type="checkbox"/> Water Disposal            |                                                             |

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

The MSU #521 is currently producing from the San Andres perforations located @ 4635'-4669, 4688'-4712', 4728'-4732' & 4738'-4742'. Current PBTD is 4765' EOR proposes to perform the following operation in order to recomplete this well horizontally in the San Andres formation.

1. NU 3k BOPE and POH with rods and tubing.
2. RUWL and RIH with 5 1/2" CIBP. Correlate depth and set CIBP at KOP of 4350'. POH and RDWL.
3. PU 4 3/4" bit and 5 1/2" scraper on tubing. RIH and tag CIBP and test weight, POH and LD bit and scraper.
4. Run 5 1/2" whipstock on tubing to CIBP. Orient whipstock with gyro and set bottom trip anchor on CIBP, POH.
5. PU milling BHA, tag whipstock and mill window in 5 1/2" casing and 8' of new hole. POH with mill assembly.
6. PU drilling BHA and commence drilling with a 20°/100' build rate as per the attached directional drilling plan and survey.
7. At TD, run 3 1/2" 9.3# L80 FJ liner and set from TD to vertical section of 5 1/2" casing. Liner will have packers (PEAK or equivalent) with frac ports and will not be cemented. Number of ports and packers will be dictated by length and number of shows and porous interval drilled.
8. Fracture treat through ports separated by packers.

This lateral will be drilled with a closed loop mud system. After milling out the casing window with clear fresh water, the directional interval will be drilled with a polymer based fresh water system using the following parameters:

| Hole Size(Inches) | Depth MD/TVD(ft) | Mud Density(ppg) | Viscosity(sec/1000cc) | Plastic Viscosity(cP) | Yield Point(lb/100ft <sup>2</sup> ) | API Fluid Loss(ml) | pH       | LGS% |
|-------------------|------------------|------------------|-----------------------|-----------------------|-------------------------------------|--------------------|----------|------|
| 4.75              | KOP-TD           | 8.4-8.7          | 34-36                 | 4-10                  | 4-12                                | 10-12              | 9.5-10.0 | <6   |

Bond No. RLB0011896

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Jana True

Title

Prod. Asst.

Signature

Jana True

Date

6/27/11

## THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

/S/ DAVID R. GLASS

PETROLEUM ENGINEER

Title

Date

AUG 01 2011

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

APPROVED FOR 12 MONTH PERIOD  
ENDING AUG 01 2012

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

AUG 11 2011



**Weatherford®**

HOBBS OCD

AUG 09 2011

**Drilling Services**

RECEIVED

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## **Proposal**

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### **EOR OPERATING**

MILNESAND UNIT 521

ROOSEVELT CO, NM

WELL FILE: **PLAN 1**

MAY 25, 2011

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**Weatherford International, Ltd.**

P.O. Box 61028

Midland, TX 79711 USA

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[www.weatherford.com](http://www.weatherford.com)

# EOR Operating

Milnesand Unit 521  
Roosevelt Co, NM

| SECTION DETAILS |         |       |        |         |      |          |       |        |         |        |
|-----------------|---------|-------|--------|---------|------|----------|-------|--------|---------|--------|
| Sec             | MD      | Inc   | Azi    | TVD     | +N-S | +E-W     | DLeg  | TFace  | VSec    | Target |
| 1               | 0.00    | 0.00  | 0.00   | 0.00    | 0.00 | 0.00     | 0.00  | 0.00   | 0.00    |        |
| 2               | 4349.81 | 0.00  | 0.00   | 4349.81 | 0.00 | 0.00     | 0.00  | 0.00   | 0.00    |        |
| 3               | 4364.81 | 3.00  | 270.00 | 4364.80 | 0.00 | -0.39    | 20.00 | 270.00 | 0.39    |        |
| 4               | 4369.81 | 3.00  | 270.00 | 4369.79 | 0.00 | -0.65    | 0.00  | 0.00   | 0.65    |        |
| 5               | 4792.12 | 87.46 | 270.00 | 4641.00 | 0.00 | -274.05  | 20.00 | 0.00   | 274.05  |        |
| 6               | 7050.28 | 87.46 | 270.00 | 4741.00 | 0.00 | -2530.00 | 0.00  | 0.00   | 2530.00 | Pbhl   |

| WELL DETAILS |      |      |           |           |               |                |
|--------------|------|------|-----------|-----------|---------------|----------------|
| Name         | +N-S | +E-W | Northing  | Easting   | Latitude      | Longitude      |
| MSU 521      | 0.00 | 0.00 | 949496.59 | 781529.11 | 33°36'24.012N | 103°24'31.284W |

| TARGET DETAILS |         |      |          |           |           |       |
|----------------|---------|------|----------|-----------|-----------|-------|
| Name           | TVD     | +N-S | +E-W     | Northing  | Easting   | Shape |
| Pbhl           | 4741.00 | 0.00 | -2530.00 | 949473.99 | 778999.21 | Point |

## FIELD DETAILS

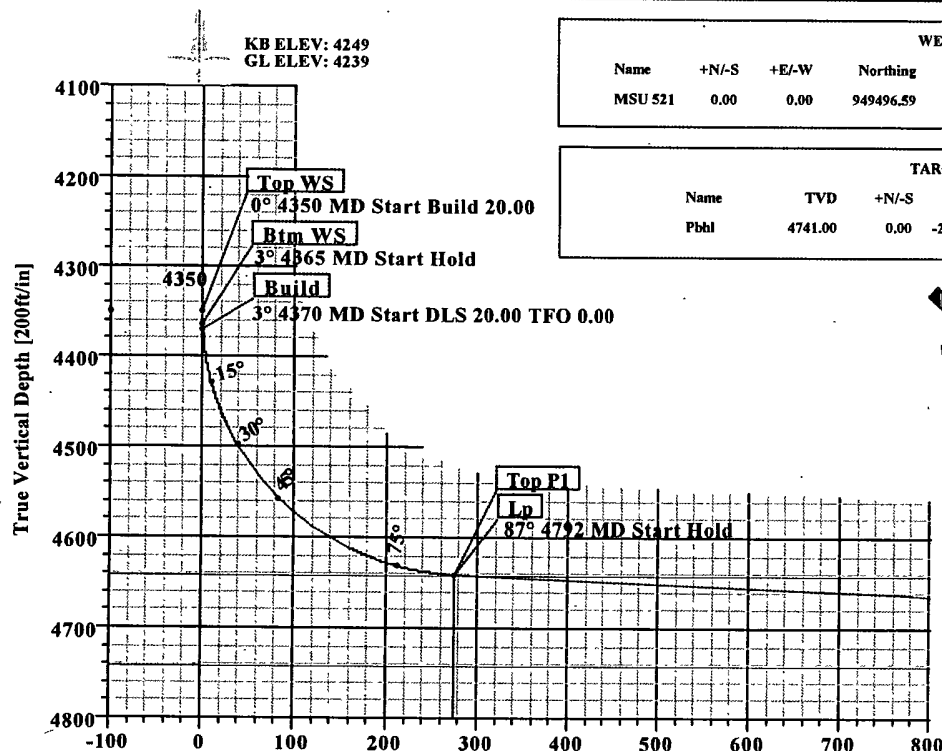
Roosevelt Co, NM (Nad 27)  
Geodetic System: US State Plane Coordinate System 1927  
Ellipsoid: NAD27 (Clarke 1866)  
Zone: New Mexico, Eastern Zone  
Magnetic Model: IGRF2010  
System Datum: Mean Sea Level  
Local North: True North

## SITE DETAILS

Milnesand Unit 521  
Site Centre Latitude: 33°36'24.012N  
Longitude: 103°24'31.284W  
Ground Level: 4239.00  
Positional Uncertainty: 0.00  
Convergence: 0.51

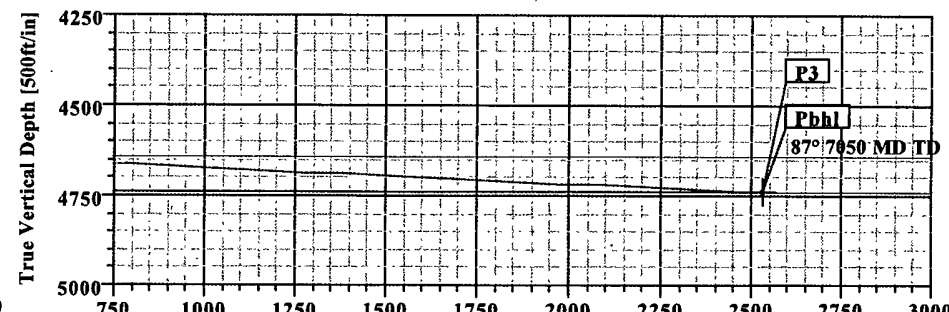
## FORMATION TOP DETAILS

| No. | TVDPath | MDPath  | Formation |
|-----|---------|---------|-----------|
| 1   | 4641.00 | 4792.12 | Top P1    |
| 2   | 4741.00 | 7050.28 | P3        |

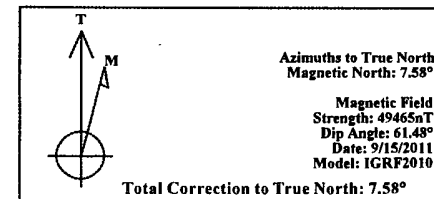
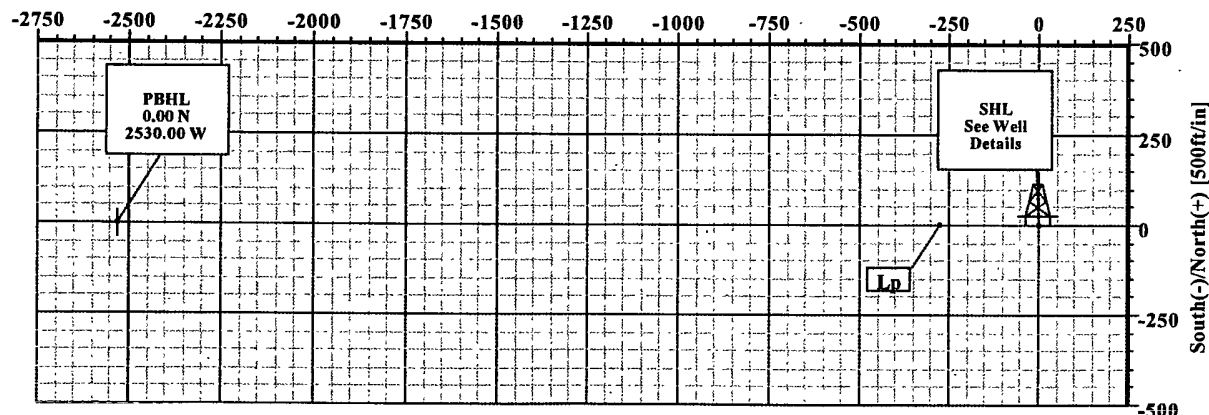


Vertical Section at 270.00° [200ft/in]

West(-)/East(+) [500ft/in]



Vertical Section at 270.00° [500ft/in]



Plan: Plan #1 (MSU 521/1)

Created By: Russell W. Joyner

Date: 5/25/2011



# Weatherford International Ltd.

## WFT Plan Report Lat, Long



Weatherford

|                                         |  |                                   |  |                                     |  |                   |  |
|-----------------------------------------|--|-----------------------------------|--|-------------------------------------|--|-------------------|--|
| <b>Company:</b> EOR Operating           |  | <b>Date:</b> 5/25/2011            |  | <b>Time:</b> 14:32:11               |  | <b>Page:</b> 1    |  |
| <b>Field:</b> Roosevelt Co. NM (Nad 27) |  | <b>Co-ordinate(NE) Reference:</b> |  | <b>Well:</b> MSU 521 True North     |  |                   |  |
| <b>Site:</b> Milnesand Unit 521         |  | <b>Vertical (TVD) Reference:</b>  |  | <b>SITE:</b> 4249.0                 |  |                   |  |
| <b>Well:</b> MSU 521                    |  | <b>Section (VS) Reference:</b>    |  | <b>Well (0.00N,0.00E,270.00Azi)</b> |  |                   |  |
| <b>Wellpath:</b> 1                      |  | <b>Survey Calculation Method:</b> |  | <b>Minimum Curvature</b>            |  | <b>Db:</b> Sybase |  |

|                       |                                 |
|-----------------------|---------------------------------|
| <b>Plan:</b> Plan #1  | <b>Date Composed:</b> 5/25/2011 |
| <b>Principal:</b> Yes | <b>Version:</b> 1               |
|                       | <b>Tied-to:</b> From Surface    |

|                                                          |                                           |
|----------------------------------------------------------|-------------------------------------------|
| <b>Field:</b> Roosevelt Co. NM (Nad 27)                  |                                           |
| <b>Map System:</b> US State Plane Coordinate System 1927 | <b>Map Zone:</b> New Mexico, Eastern Zone |
| <b>Geo Datum:</b> NAD27 (Clarke 1866)                    | <b>Coordinate System:</b> Well Centre     |
| <b>Sys Datum:</b> Mean Sea Level                         | <b>Geomagnetic Model:</b> IGRF2010        |

|                                      |                                   |
|--------------------------------------|-----------------------------------|
| <b>Site:</b> Milnesand Unit 521      |                                   |
| <b>Site Position:</b>                | <b>Northings:</b> 949496.59 ft    |
| <b>From:</b> Geographic              | <b>Eastings:</b> 781529.11 ft     |
| <b>Position Uncertainty:</b> 0.00 ft | <b>Latitude:</b> 33 36 24.012 N   |
| <b>Ground Level:</b> 4239.00 ft      | <b>Longitude:</b> 103 24 31.284 W |
|                                      | <b>North Reference:</b> True      |
|                                      | <b>Grid Convergence:</b> 0.51 deg |

|                                      |                                |                                   |  |
|--------------------------------------|--------------------------------|-----------------------------------|--|
| <b>Well:</b> MSU 521                 |                                | <b>Slot Name:</b>                 |  |
| <b>Well Position:</b> +N/-S 0.00 ft  | <b>Northings:</b> 949496.59 ft | <b>Latitude:</b> 33 36 24.012 N   |  |
| <b>+E/-W</b> 0.00 ft                 | <b>Eastings:</b> 781529.11 ft  | <b>Longitude:</b> 103 24 31.284 W |  |
| <b>Position Uncertainty:</b> 0.00 ft |                                |                                   |  |

|                                           |                           |                                           |        |
|-------------------------------------------|---------------------------|-------------------------------------------|--------|
| <b>Wellpath:</b> 1                        |                           | <b>Drilled From:</b> Surface              |        |
| <b>Current Datum:</b> SITE                | <b>Height:</b> 4249.00 ft | <b>Tie-on Depth:</b> 0.00 ft              |        |
| <b>Magnetic Data:</b> 9/15/2011           |                           | <b>Above System Datum:</b> Mean Sea Level |        |
| <b>Field Strength:</b> 49465 nT           |                           | <b>Declination:</b> 7.58 deg              |        |
| <b>Vertical Section:</b> Depth From (TVD) | <b>+N/-S</b> ft           | <b>Mag Dip Angle:</b> 61.48 deg           |        |
|                                           | <b>+E/-W</b> ft           | <b>Direction</b> deg                      |        |
| 0.00                                      | 0.00                      | 0.00                                      | 270.00 |

| Plan Section Information |       |        |         |       |          |           |           |           |        |        |
|--------------------------|-------|--------|---------|-------|----------|-----------|-----------|-----------|--------|--------|
| MD                       | Incl  | Azim   | TVD     | +N/-S | +E/-W    | DLS       | Build     | Turn      | TFO    | Target |
| ft                       | deg   | deg    | ft      | ft    | ft       | deg/100ft | deg/100ft | deg/100ft | deg    |        |
| 0.00                     | 0.00  | 0.00   | 0.00    | 0.00  | 0.00     | 0.00      | 0.00      | 0.00      | 0.00   |        |
| 4349.81                  | 0.00  | 0.00   | 4349.81 | 0.00  | 0.00     | 0.00      | 0.00      | 0.00      | 0.00   |        |
| 4364.81                  | 3.00  | 270.00 | 4364.80 | 0.00  | -0.39    | 20.00     | 20.00     | 0.00      | 270.00 |        |
| 4369.81                  | 3.00  | 270.00 | 4369.79 | 0.00  | -0.65    | 0.00      | 0.00      | 0.00      | 0.00   |        |
| 4792.12                  | 87.46 | 270.00 | 4641.00 | 0.00  | -274.05  | 20.00     | 20.00     | 0.00      | 0.00   |        |
| 7050.28                  | 87.46 | 270.00 | 4741.00 | 0.00  | -2530.00 | 0.00      | 0.00      | 0.00      | 0.00   | Pbhl   |

| Survey  |       |        |         |      |         |        |           |     |     |        |      |     |        |         |
|---------|-------|--------|---------|------|---------|--------|-----------|-----|-----|--------|------|-----|--------|---------|
| MD      | Incl  | Azim   | TVD     | N/S  | E/W     | VS     | DLS       | Lat | Min | Sec    | Long | Min | Sec    | Comment |
| ft      | deg   | deg    | ft      | ft   | ft      | ft     | deg/100ft |     |     |        |      |     |        |         |
| 4300.00 | 0.00  | 0.00   | 4300.00 | 0.00 | 0.00    | 0.00   | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 31.284 |         |
| 4349.81 | 0.00  | 0.00   | 4349.81 | 0.00 | 0.00    | 0.00   | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 31.284 | Top WS  |
| 4364.81 | 3.00  | 270.00 | 4364.80 | 0.00 | -0.39   | 0.39   | 20.00     | 33  | 36  | 24.012 | 103  | 24  | 31.289 | Btm WS  |
| 4369.81 | 3.00  | 270.00 | 4369.79 | 0.00 | -0.65   | 0.65   | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 31.292 | Build   |
| 4400.00 | 9.04  | 270.00 | 4399.81 | 0.00 | -3.82   | 3.82   | 20.00     | 33  | 36  | 24.012 | 103  | 24  | 31.329 |         |
| 4500.00 | 29.04 | 270.00 | 4493.86 | 0.00 | -36.27  | 36.27  | 20.00     | 33  | 36  | 24.012 | 103  | 24  | 31.713 |         |
| 4600.00 | 49.04 | 270.00 | 4571.14 | 0.00 | -98.94  | 98.94  | 20.00     | 33  | 36  | 24.012 | 103  | 24  | 32.454 |         |
| 4700.00 | 69.04 | 270.00 | 4622.32 | 0.00 | -184.25 | 184.25 | 20.00     | 33  | 36  | 24.012 | 103  | 24  | 33.462 |         |
| 4792.12 | 87.46 | 270.00 | 4641.00 | 0.00 | -274.05 | 274.05 | 20.00     | 33  | 36  | 24.012 | 103  | 24  | 34.524 | Top P1  |
| 4800.00 | 87.46 | 270.00 | 4641.35 | 0.00 | -281.93 | 281.93 | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 34.617 |         |
| 4900.00 | 87.46 | 270.00 | 4645.78 | 0.00 | -381.83 | 381.83 | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 35.798 |         |
| 5000.00 | 87.46 | 270.00 | 4650.21 | 0.00 | -481.73 | 481.73 | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 36.979 |         |
| 5100.00 | 87.46 | 270.00 | 4654.63 | 0.00 | -581.63 | 581.63 | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 38.161 |         |
| 5200.00 | 87.46 | 270.00 | 4659.06 | 0.00 | -681.54 | 681.54 | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 39.342 |         |
| 5300.00 | 87.46 | 270.00 | 4663.49 | 0.00 | -781.44 | 781.44 | 0.00      | 33  | 36  | 24.012 | 103  | 24  | 40.523 |         |

# Weatherford International Ltd.

## WFT Plan Report Lat, Long



**Weatherford**

|                                  |                            |                              |            |
|----------------------------------|----------------------------|------------------------------|------------|
| Company: EOR Operating           | Date: 5/25/2011            | Time: 14:32:11               | Page: 2    |
| Field: Roosevelt Co. NM (Nad 27) | Co-ordinate(NE) Reference: | Well: MSU 521 True North     |            |
| Site: Milnesand Unit 521         | Vertical (TVD) Reference:  | SITE 4249.0                  |            |
| Well: MSU 521                    | Section (VS) Reference:    | Well (0.00N;0.00E;270.00Azi) |            |
| Wellpath: 1                      | Survey Calculation Method: | Minimum Curvature            | Db: Sybase |

### Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | N/S<br>ft | E/W<br>ft | VS<br>ft | DLS<br>deg/100ft | Lat<br>Min | Sec | Long<br>Min | Sec | Comment       |
|----------|-------------|-------------|-----------|-----------|-----------|----------|------------------|------------|-----|-------------|-----|---------------|
| 5400.00  | 87.46       | 270.00      | 4667.92   | 0.00      | -881.34   | 881.34   | 0.00             | 33         | 36  | 24.012      | 103 | 24 41.704     |
| 5500.00  | 87.46       | 270.00      | 4672.35   | 0.00      | -981.24   | 981.24   | 0.00             | 33         | 36  | 24.012      | 103 | 24 42.885     |
| 5600.00  | 87.46       | 270.00      | 4676.78   | 0.00      | -1081.14  | 1081.14  | 0.00             | 33         | 36  | 24.012      | 103 | 24 44.066     |
| 5700.00  | 87.46       | 270.00      | 4681.20   | 0.00      | -1181.05  | 1181.05  | 0.00             | 33         | 36  | 24.012      | 103 | 24 45.247     |
| 5800.00  | 87.46       | 270.00      | 4685.63   | 0.00      | -1280.95  | 1280.95  | 0.00             | 33         | 36  | 24.012      | 103 | 24 46.428     |
| 5900.00  | 87.46       | 270.00      | 4690.06   | 0.00      | -1380.85  | 1380.85  | 0.00             | 33         | 36  | 24.012      | 103 | 24 47.610     |
| 6000.00  | 87.46       | 270.00      | 4694.49   | 0.00      | -1480.75  | 1480.75  | 0.00             | 33         | 36  | 24.012      | 103 | 24 48.791     |
| 6100.00  | 87.46       | 270.00      | 4698.92   | 0.00      | -1580.65  | 1580.65  | 0.00             | 33         | 36  | 24.012      | 103 | 24 49.972     |
| 6200.00  | 87.46       | 270.00      | 4703.35   | 0.00      | -1680.56  | 1680.56  | 0.00             | 33         | 36  | 24.012      | 103 | 24 51.153     |
| 6300.00  | 87.46       | 270.00      | 4707.77   | 0.00      | -1780.46  | 1780.46  | 0.00             | 33         | 36  | 24.011      | 103 | 24 52.334     |
| 6400.00  | 87.46       | 270.00      | 4712.20   | 0.00      | -1880.36  | 1880.36  | 0.00             | 33         | 36  | 24.011      | 103 | 24 53.515     |
| 6500.00  | 87.46       | 270.00      | 4716.63   | 0.00      | -1980.26  | 1980.26  | 0.00             | 33         | 36  | 24.011      | 103 | 24 54.696     |
| 6600.00  | 87.46       | 270.00      | 4721.06   | 0.00      | -2080.16  | 2080.16  | 0.00             | 33         | 36  | 24.011      | 103 | 24 55.877     |
| 6700.00  | 87.46       | 270.00      | 4725.49   | 0.00      | -2180.06  | 2180.06  | 0.00             | 33         | 36  | 24.011      | 103 | 24 57.059     |
| 6800.00  | 87.46       | 270.00      | 4729.92   | 0.00      | -2279.97  | 2279.97  | 0.00             | 33         | 36  | 24.011      | 103 | 24 58.240     |
| 6900.00  | 87.46       | 270.00      | 4734.35   | 0.00      | -2379.87  | 2379.87  | 0.00             | 33         | 36  | 24.011      | 103 | 24 59.421     |
| 7000.00  | 87.46       | 270.00      | 4738.77   | 0.00      | -2479.77  | 2479.77  | 0.00             | 33         | 36  | 24.011      | 103 | 25 0.602      |
| 7050.28  | 87.46       | 270.00      | 4741.00   | 0.00      | -2530.00  | 2530.00  | 0.00             | 33         | 36  | 24.011      | 103 | 25 1.196 Pbhl |

### Targets

| Name | Description<br>Dip | Dir | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | Map<br>Northing<br>ft | Map<br>Easting<br>ft | Latitude<br>Deg Min Sec | Longitude<br>Deg Min Sec |
|------|--------------------|-----|-----------|-------------|-------------|-----------------------|----------------------|-------------------------|--------------------------|
| Pbhl |                    |     | 4741.00   | 0.00        | -2530.00    | 949473.99             | 778999.21            | 33 36 24.011 N          | 103 25 1.196 W           |

### Casing Points

| MD<br>ft | TVD<br>ft | Diameter | Hole Size | Name |
|----------|-----------|----------|-----------|------|
|          |           |          |           |      |
|          |           |          |           |      |

### Formations

| MD<br>ft | TVD<br>ft | Formations | Lithology | Dip Angle<br>deg | Dip Direction<br>deg |
|----------|-----------|------------|-----------|------------------|----------------------|
| 4792.12  | 4641.00   | Top P1     |           | 0.00             | 0.00                 |
| 7050.28  | 4741.00   | P3         |           | 0.00             | 0.00                 |

### Annotation

| MD<br>ft | TVD<br>ft |        |
|----------|-----------|--------|
| 4349.81  | 4349.81   | Top WS |
| 4364.81  | 4364.80   | Btm WS |
| 4369.81  | 4369.80   | Build  |
| 4792.12  | 4641.00   | Lp     |
| 7050.27  | 4741.00   | Pbhl   |

**Weatherford®****Weatherford Drilling Services**

GeoDec v5.03

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Report Date: May 24, 2011  
Job Number: \_\_\_\_\_  
Customer: EOR Operating  
Well Name: Milnesand Unit MSU 521  
API Number: \_\_\_\_\_  
Rig Name: \_\_\_\_\_  
Location: Roosevelt Co, NM  
Block: \_\_\_\_\_  
Engineer: RWJ

---

|                                             |                                             |
|---------------------------------------------|---------------------------------------------|
| Geodetic Latitude / Longitude               | Geodetic Latitude / Longitude               |
| System: Latitude / Longitude                | System: Latitude / Longitude                |
| Projection: Geodetic Latitude and Longitude | Projection: Geodetic Latitude and Longitude |
| Datum: NAD 1927 (NADCON CONUS)              | Datum: NAD 1927 (NADCON CONUS)              |
| Ellipsoid: Clarke 1866                      | Ellipsoid: Clarke 1866                      |
| Latitude 33.6066700 DEG                     | Latitude 33.6066700 DEG                     |
| Longitude -103.4086900 DEG                  | Longitude -103.4086900 DEG                  |

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|                         |              |                        |
|-------------------------|--------------|------------------------|
| Geodetic Location WGS84 | Elevation =  | 0.0 Meters             |
| Latitude =              | 33.60667° N  | 33° 36 min 24.012 sec  |
| Longitude =             | 103.40869° W | 103° 24 min 31.284 sec |

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|                        |              |                              |
|------------------------|--------------|------------------------------|
| Magnetic Declination = | 7.58°        | [True North Offset]          |
| Local Gravity =        | .9989 g      | Checksum = 6722              |
| Local Field Strength = | 49461 nT     | Magnetic Vector X = 23412 nT |
| Magnetic Dip =         | 61.48°       | Magnetic Vector Y = 3116 nT  |
| Magnetic Model =       | IGRF-2010g11 | Magnetic Vector Z = 43458 nT |
| Spud Date =            | Sep 15, 2011 | Magnetic Vector H = 23619 nT |

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Signed: \_\_\_\_\_

Date: \_\_\_\_\_

MILNESAND UNIT 521 P1 SVY

Weatherford International Ltd.  
WFT Plan Report Lat, Long

Company: EOR Operating  
Time: 14:32:51 Page: 1  
Field: Roosevelt Co, NM (Nad 27)  
Reference: Well: MSU 521, True North  
Site: Milnesand Unit 521  
Reference: SITE 4249.0  
Well: MSU 521  
Reference: Well (0.00N,0.00E,270.00Azi)  
Wellpath: 1  
Method: Minimum Curvature Db: Sybase

Date: 5/25/2011  
Co-ordinate(NE)  
Vertical (TVD)  
Section (VS)  
Survey Calculation

Plan: Plan #1  
5/25/2011

Date Composed:

1  
Principal: Yes  
From Surface

Version:

Tied-to:

Field: Roosevelt Co, NM (Nad 27)

Map System: US State Plane Coordinate System 1927  
New Mexico, Eastern Zone  
Geo Datum: NAD27 (Clarke 1866)  
Well Centre  
Sys Datum: Mean Sea Level  
IGRF2010

Map Zone:  
Coordinate System:  
Geomagnetic Model:

Site: Milnesand Unit 521

Site Position:  
33 36 24.012 N  
From: Geographic  
103 24 31.284 W  
Position Uncertainty: 0.00 ft  
True  
Ground Level: 4239.00 ft  
0.51 deg

Northing: 949496.59 ft Latitude:  
Easting: 781529.11 ft Longitude:  
North Reference:  
Grid Convergence:

Well: MSU 521

Slot Name:

Well Position: +N/-S 0.00 ft  
33 36 24.012 N  
+E/-W 0.00 ft  
103 24 31.284 W  
Position Uncertainty: 0.00 ft

Northing: 949496.59 ft Latitude:  
Easting: 781529.11 ft Longitude:

Wellpath: 1  
Surface

Drilled From:

Tie-on Depth:

0.00 ft  
Current Datum: SITE  
Datum: Mean Sea Level  
Magnetic Data: 9/15/2011

Height 4249.00 ft Above System  
Declination:

## MILNESAND UNIT 521 P1 SVY

7.58 deg  
 Field Strength: 49465 nT  
 61.48 deg  
 Vertical Section: Depth From (TVD) +N/-S  
 Direction +E/-W  
 ft ft ft  
 deg 0.00 0.00 0.00

270.00

Plan Section Information

| MD        | Incl      | Azim      | TVD     | +N/-S | +E/-W    | DLS   | Build |
|-----------|-----------|-----------|---------|-------|----------|-------|-------|
| Turn      | TFO       | Target    |         |       |          |       |       |
| ft        | deg       | deg       | ft      | ft    | ft       |       |       |
| deg/100ft | deg/100ft | deg/100ft | deg     |       |          |       |       |
| 0.00      | 0.00      | 0.00      | 0.00    | 0.00  | 0.00     | 0.00  | 0.00  |
| 0.00      | 0.00      |           |         |       |          |       |       |
| 4349.81   | 0.00      | 0.00      | 4349.81 | 0.00  | 0.00     | 0.00  | 0.00  |
| 0.00      | 0.00      |           |         |       |          |       |       |
| 4364.81   | 3.00      | 270.00    | 4364.80 | 0.00  | -0.39    | 20.00 | 20.00 |
| 0.00      | 270.00    |           |         |       |          |       |       |
| 4369.81   | 3.00      | 270.00    | 4369.79 | 0.00  | -0.65    | 0.00  | 0.00  |
| 0.00      | 0.00      |           |         |       |          |       |       |
| 4792.12   | 87.46     | 270.00    | 4641.00 | 0.00  | -274.05  | 20.00 | 20.00 |
| 0.00      | 0.00      |           |         |       |          |       |       |
| 7050.28   | 87.46     | 270.00    | 4741.00 | 0.00  | -2530.00 | 0.00  | 0.00  |
| 0.00      | 0.00      | Pbh1      |         |       |          |       |       |

Survey

| Min | MD<br>Sec<br>ft | Incl<br>Long<br>deg | Azim<br>Min<br>deg | Sec    | TVD<br>ft | N/S<br>Comment<br>ft | E/W<br>ft | VS<br>ft | DLS<br>deg/100ft | Lat |
|-----|-----------------|---------------------|--------------------|--------|-----------|----------------------|-----------|----------|------------------|-----|
|     | 4300.00         | 0.00                | 0.00               |        | 4300.00   | 0.00                 | 0.00      | 0.00     | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 31.284 |           |                      |           |          |                  |     |
|     | 4349.81         | 0.00                | 0.00               |        | 4349.81   | 0.00                 | 0.00      | 0.00     | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 31.284 | Top WS    |                      |           |          |                  |     |
|     | 4364.81         | 3.00                | 270.00             |        | 4364.80   | 0.00                 | -0.39     | 0.39     | 20.00            | 33  |
| 36  | 24.012          | 103                 | 24                 | 31.289 | Btm WS    |                      |           |          |                  |     |
|     | 4369.81         | 3.00                | 270.00             |        | 4369.79   | 0.00                 | -0.65     | 0.65     | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 31.292 | Build     |                      |           |          |                  |     |
|     | 4400.00         | 9.04                | 270.00             |        | 4399.81   | 0.00                 | -3.82     | 3.82     | 20.00            | 33  |
| 36  | 24.012          | 103                 | 24                 | 31.329 |           |                      |           |          |                  |     |
|     | 4500.00         | 29.04               | 270.00             |        | 4493.86   | 0.00                 | -36.27    | 36.27    | 20.00            | 33  |
| 36  | 24.012          | 103                 | 24                 | 31.713 |           |                      |           |          |                  |     |
|     | 4600.00         | 49.04               | 270.00             |        | 4571.14   | 0.00                 | -98.94    | 98.94    | 20.00            | 33  |
| 36  | 24.012          | 103                 | 24                 | 32.454 |           |                      |           |          |                  |     |
|     | 4700.00         | 69.04               | 270.00             |        | 4622.32   | 0.00                 | -184.25   | 184.25   | 20.00            | 33  |
| 36  | 24.012          | 103                 | 24                 | 33.462 |           |                      |           |          |                  |     |
|     | 4792.12         | 87.46               | 270.00             |        | 4641.00   | 0.00                 | -274.05   | 274.05   | 20.00            | 33  |
| 36  | 24.012          | 103                 | 24                 | 34.524 | Top P1    |                      |           |          |                  |     |
|     | 4800.00         | 87.46               | 270.00             |        | 4641.35   | 0.00                 | -281.93   | 281.93   | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 34.617 |           |                      |           |          |                  |     |
|     | 4900.00         | 87.46               | 270.00             |        | 4645.78   | 0.00                 | -381.83   | 381.83   | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 35.798 |           |                      |           |          |                  |     |
|     | 5000.00         | 87.46               | 270.00             |        | 4650.21   | 0.00                 | -481.73   | 481.73   | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 36.979 |           |                      |           |          |                  |     |
|     | 5100.00         | 87.46               | 270.00             |        | 4654.63   | 0.00                 | -581.63   | 581.63   | 0.00             | 33  |
| 36  | 24.012          | 103                 | 24                 | 38.161 |           |                      |           |          |                  |     |
|     | 5200.00         | 87.46               | 270.00             |        | 4659.06   | 0.00                 | -681.54   | 681.54   | 0.00             | 33  |

| MILNESAND UNIT 521 P1 SVY |         |       |        |         |      |          |         |      |    |
|---------------------------|---------|-------|--------|---------|------|----------|---------|------|----|
| 36                        | 24.012  | 103   | 24     | 39.342  |      |          |         |      |    |
|                           | 5300.00 | 87.46 | 270.00 | 4663.49 | 0.00 | -781.44  | 781.44  | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 40.523  |      |          |         |      |    |
|                           | 5400.00 | 87.46 | 270.00 | 4667.92 | 0.00 | -881.34  | 881.34  | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 41.704  |      |          |         |      |    |
|                           | 5500.00 | 87.46 | 270.00 | 4672.35 | 0.00 | -981.24  | 981.24  | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 42.885  |      |          |         |      |    |
|                           | 5600.00 | 87.46 | 270.00 | 4676.78 | 0.00 | -1081.14 | 1081.14 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 44.066  |      |          |         |      |    |
|                           | 5700.00 | 87.46 | 270.00 | 4681.20 | 0.00 | -1181.05 | 1181.05 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 45.247  |      |          |         |      |    |
|                           | 5800.00 | 87.46 | 270.00 | 4685.63 | 0.00 | -1280.95 | 1280.95 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 46.428  |      |          |         |      |    |
|                           | 5900.00 | 87.46 | 270.00 | 4690.06 | 0.00 | -1380.85 | 1380.85 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 47.610  |      |          |         |      |    |
|                           | 6000.00 | 87.46 | 270.00 | 4694.49 | 0.00 | -1480.75 | 1480.75 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 48.791  |      |          |         |      |    |
|                           | 6100.00 | 87.46 | 270.00 | 4698.92 | 0.00 | -1580.65 | 1580.65 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 49.972  |      |          |         |      |    |
|                           | 6200.00 | 87.46 | 270.00 | 4703.35 | 0.00 | -1680.56 | 1680.56 | 0.00 | 33 |
| 36                        | 24.012  | 103   | 24     | 51.153  |      |          |         |      |    |
|                           | 6300.00 | 87.46 | 270.00 | 4707.77 | 0.00 | -1780.46 | 1780.46 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 52.334  |      |          |         |      |    |
|                           | 6400.00 | 87.46 | 270.00 | 4712.20 | 0.00 | -1880.36 | 1880.36 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 53.515  |      |          |         |      |    |
|                           | 6500.00 | 87.46 | 270.00 | 4716.63 | 0.00 | -1980.26 | 1980.26 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 54.696  |      |          |         |      |    |
|                           | 6600.00 | 87.46 | 270.00 | 4721.06 | 0.00 | -2080.16 | 2080.16 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 55.877  |      |          |         |      |    |
|                           | 6700.00 | 87.46 | 270.00 | 4725.49 | 0.00 | -2180.06 | 2180.06 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 57.059  |      |          |         |      |    |
|                           | 6800.00 | 87.46 | 270.00 | 4729.92 | 0.00 | -2279.97 | 2279.97 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 58.240  |      |          |         |      |    |
|                           | 6900.00 | 87.46 | 270.00 | 4734.35 | 0.00 | -2379.87 | 2379.87 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 24     | 59.421  |      |          |         |      |    |
|                           | 7000.00 | 87.46 | 270.00 | 4738.77 | 0.00 | -2479.77 | 2479.77 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 25     | 0.602   |      |          |         |      |    |
|                           | 7050.28 | 87.46 | 270.00 | 4741.00 | 0.00 | -2530.00 | 2530.00 | 0.00 | 33 |
| 36                        | 24.011  | 103   | 25     | 1.196   | Pbh1 |          |         |      |    |

#### Targets

| Map       |       | Latitude    |         | Longitude |      | Map     |       |          |           |
|-----------|-------|-------------|---------|-----------|------|---------|-------|----------|-----------|
| Name      | ----- | Description | ---<--- | TVD       | ---  | +N/-S   | +E/-W | Northing |           |
| Easting   | Deg   | Min         | Sec     | Dip.      | Dir. | ft      | ft    | ft       |           |
| Pbh1      |       |             |         |           |      | 4741.00 | 0.00  | -2530.00 | 949473.99 |
| 778999.21 | 33    | 36          | 24.011  | N         | 103  | 25      | 1.196 | W        |           |

#### Casing Points

| MD | TVD | Diameter | Hole Size | Name |
|----|-----|----------|-----------|------|
|----|-----|----------|-----------|------|

#### Formations

MILNESAND UNIT 521 P1 SVY

| MD         | TVD             | Formations    | Lithology |
|------------|-----------------|---------------|-----------|
| ft         | Dip Angle<br>ft | Dip Direction |           |
|            | deg             | deg           |           |
| 4792.12    | 4641.00         | Top P1        |           |
|            | 0.00            |               | 0.00      |
| 7050.28    | 4741.00         | P3            |           |
|            | 0.00            |               | 0.00      |
| Annotation |                 |               |           |
| MD         | TVD             |               |           |
| ft         | ft              |               |           |
| 4349.81    | 4349.81         | Top WS        |           |
| 4364.81    | 4364.80         | Btm WS        |           |
| 4369.81    | 4369.80         | Build         |           |
| 4792.12    | 4641.00         | Lp            |           |
| 7050.27    | 4741.00         | Pbh1          |           |

**PECOS DISTRICT - RFO  
CONDITIONS OF APPROVAL**

**HOBBS OCD**  
**AUG 09 2011**

OPERATORS NAME: EOR Operating Co.  
LEASE NO.: NMLC-062178  
WELL NAME & NO: Milnesand Unit Well No. 521  
SURFACE HOLE FOOTAGE: 2630' FNL & 100' FEL  
BOTTOM HOLE FOOTAGE: 2630' FNL & 2630' FEL  
LOCATION: Section 24, T. 8 S., R. 34 E., NMPM  
COUNTY: Roosevelt County, New Mexico

**RECEIVED**

**A. DRILLING OPERATIONS REQUIREMENTS**

1. Call the Roswell Field Office, 2909 West Second St., Roswell, NM 88201. During office hours call (575) 627-0205 or after office hours call (575) 420-2832. Engineer on call during office hours call (575) 627-0275 or after office hours call (575) 626-5749.
2. The BLM is to be notified a minimum of 24 hours in advance for a representative to witness:
  - a. Setting And/Or Cementing Any Casing String That May Be Run
  - b. BOPE Tests
3. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
4. This lateral will be drilled with a closed loop mud system. After milling out the 5-1/2 inch production casing window with clear fresh water, the directional interval will be drilled with a 4-3/4 inch bit using a polymer based fresh water system.

**B. CASING**

1. There is no required fill of cement behind the 3-1/2 inch production liner since packers with frac ports will be used for lateral and will not require cementing.
2. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
3. Any casing set shall be new or reconditioned and tested casing and meet API standards for new casing. The use of reconditioned and tested casing shall be subject to approval by the authorized officer. Approval will be contingent upon the wall thickness of any casing being verified to be at least 87-1/2 per cent of the nominal wall thickness of new casing.

**C. PRESSURE CONTROL:**

1. Before milling out the 5-1/2 inch production casing window, the blowout preventer assembly shall consist of a minimum of One Annular Preventer or Two Ram-Type Preventers and a Kelly Cock/Stabbing Valve.
2. Before milling out the 5-1/2 inch production casing window, minimum working pressure of the blowout preventer and related equipment (BOPE) shall be 2000 psi.

3. The BOPE shall be installed before milling out the 5-1/2 inch production casing window and shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.

- a. The BLM Roswell Field office shall be notified a minimum of 24 hours in advance for a representative to witness the tests.
- b. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.
- c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test will be submitted to the BLM Roswell Field Office at 2909 West Second Street, Roswell, New Mexico 88201.
- d. Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures. Use of drilling mud for testing is not permitted since it can mask small leaks.
- e. Testing must be done in a safe workman like manner. Hard line connections shall be required.

#### **D. MUD PROGRAM REQUIREMENTS:**

The drilling operations of this well will be conducted in accordance with the Onshore Oil and Gas Order No. 2 as provided in 43 CFR 3164.1. This includes well control equipment and its testing, mud system and associated equipment, and the casing and cementing.

- a. Sufficient quantities of mud materials shall be maintained at the well site, at all times, for the purpose of assuring well control.
- b. A mud test shall be performed at least every 24 hours after mudding up to determine, as applicable density, viscosity, gel strength, filtration, and PH.
- c. Visual mud monitoring equipment shall be in place to detect volume changes indicating loss or gain of circulating fluid volume.

#### **E. SPECIAL STIPULATION:**

If frac ponds are necessary submit for approval a right-of-way application or sundry notice (Form 3160-5) to the BLM, Roswell Field Office 2909 West Second, Roswell, NM 88201. If frac pond is located on private/State surface and support the enhanced production of federal minerals BLM approval is necessary.

The frac pond will only be authorized to contain freshwater and testing of water quality is required. Additives are not allowed without consent of the authorized officer. If at any time the water in the frac pond becomes polluted with salts or other contaminants, use of the frac pond will cease and desist, and all liquids will be removed from the frac pond and disposed of properly. Mineral materials extracted during construction of the frac pond will be stored on-location and/or used for constructing the frac pond.