

RECEIVED  
SEP 20 2013

OCD Artesia

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014TCB  
9/25/2013UNORTHODOX  
LOCATIONUNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. SHL:L8962; BHL:NM14468 & NM17574
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator MURCHISON OIL & GAS, INC.		7. If Unit or CA Agreement, Name and No.
3a. Address 1100 MIRA VISTA BLVD. PLANO, TX 75093		8. Lease Name and Well No. OGDEN FED COM 11H
3b. Phone No. (include area code) 972-931-0700		9. API Well No. 30-015-41700
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 200' FSL & 350' FEL, SEC 2 At proposed prod. zone 330' FSL & 350' FEL, SEC 11		10. Field and Pool or Exploratory Sulphate Delaware; SW
14. Distance in miles and direction from nearest town or post office* Approximately 18 miles SE of Carlsbad, NM		11. Sec., T. R. M. or Blk. and Survey or Area SEC 2 & 11, T25S, R26E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL: 330' FEL SEC 11 (NM17574 LEASE LINE)	16. No. of acres in lease L-896-2: 520 ac; NM 14468 160 ac; NM 17574: 160 ac	17. Spacing Unit dedicated to this well 160 ACRES
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SEE 1-MILE RADIUS MAP	19. Proposed Depth 2,001' TVD 6,865' MD	20. BLM/BIA Bond No. on file NM 2163
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,334' GL	22. Approximate date work will start* 10/01/2013	23. Estimated duration 30 DAYS

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature 	Name (Printed/Typed) JACK RANKIN	Date 08/13/2013
Title VICE PRESIDENT OPERATIONS		
Approved by (Signature) /s/ STEPHEN J. CAFFEY	Name (Printed/Typed)	Date SEP 18 2013
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval 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.  
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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.

(Continued on page 2)

\*(Instructions on page 2)

Carlsbad Controlled Water Basin

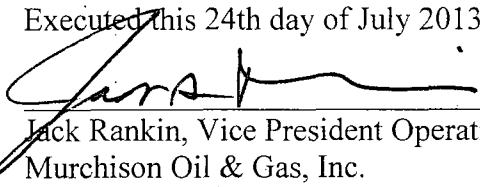
SEE ATTACHED FOR  
CONDITIONS OF APPROVALRECEIVED  
SEP 20 2013  
NMOCD ARTESIAApproval Subject to General Requirements  
& Special Stipulations Attached

**Murchison Oil & Gas, Inc.**  
**Ogden Fed Com #11H**  
**SL: 200' FSL & 350' FEL, Lot P, Sec. 2, T25S, R26E**  
**BHL: 330' FSL & 350' FEL, Lot P, Sec. 11, T25S, R26E**  
**Eddy County, New Mexico**

**OPERATOR CERTIFICATION**

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or Murchison Oil & Gas, Inc., am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 24th day of July 2013.



Jack Rankin, Vice President Operations  
Murchison Oil & Gas, Inc.  
1100 Mira Vista Blvd.  
Plano, TX 75093  
972-931-0700 Office  
713-582-3859 Cell  
jrankin@jdmii.com

Field Representatives:

Jesus Garcia 325-716-9611  
Eric Hernandez 432-631-1259  
companyman3@jdmii.com



VIA UPS

August 19, 2013

United States Department of the Interior  
Bureau of Land Management, Carlsbad Field Office  
620 E. Greene St.  
Carlsbad, NM 88220-6292  
Attn: Kurt Simmons

**RE: 3162.4 (P0220)**  
**NM17574**  
**ATS-13-1028**  
**Ogden Fed Com 11H**

Dear Mr. Simmons:

The well name has been changed to Ogden Fed Com 11H on the enclosed documents and the Drilling Plan has been revised to address the deficiencies outlined in your letter dated 8/7/13.

Discovery Exploration assigned Murchison Oil & Gas, Inc. operating rights in the SE/4 Sec. 11, T25S R26E (Lease No. NM17574) effective 8/5/13. A copy of the unrecorded Term Assignment is attached.

If you have any questions or need additional information, please contact me at [ccottrell@jdmii.com](mailto:ccottrell@jdmii.com), 214-884-2465 or Steve Morris at [smorris@jdmii.com](mailto:smorris@jdmii.com), 972-835-3315.

Best regards,

Cindy Cottrell  
Regulatory Coordinator

Enclosures

### TERM ASSIGNMENT

FOR ADEQUATE CONSIDERATION, the receipt and sufficiency of which is hereby acknowledged, Discovery Exploration, a Texas partnership, 410 N. Main, Midland, TX 79701 ("Assignor"), does hereby assign and convey unto **MURCHISON OIL AND GAS, INC.**, 1100 MIRA Vista Boulevard, Plano, Texas 75093 ("Assignee"), all of Assignor's right, title and interest in the operating rights, working interests, beneficial interests and/or contractual rights in and to the oil and gas lease described in Exhibit "A" attached hereto and made a part hereof (the "Lease") INsofar AND ONLY INsofar as the Lease covers the lands and depths from the surface to the base of the Ramsey sand formation being at a depth of 2,124 feet in the HNG Oil Company Grynberg-Fed Com 11 No. 1 well, API #30-015-22085, in Eddy County, New Mexico (the "Assigned Premises").

TO HAVE AND TO HOLD the Lease and the Assigned Premises, subject to the following reservations, terms and conditions:

### TERM OF ASSIGNMENT

This Assignment shall be for a term of twelve (12) months from August 5, 2013 (the "Primary Term"), and for so long thereafter as oil and/or gas are produced in paying quantities from the Assigned Premises or from lands validly pooled or communitized therewith or for so long as this Assignment is otherwise maintained in effect pursuant to the provisions hereof.

### OVERRIDING ROYALTY INTEREST RESERVATION

Assignor reserves unto itself, its successors and assigns, as an overriding royalty, the difference, if any, between 25% of all oil and gas produced and saved from the Lease and the Assigned Premises and the total of all royalties, overriding royalties, production payments and similar burdens created and existing as of the effective date of this Assignment, the intent being to convey unto Assignee a 75% net revenue interest in and to the Lease and the Assigned Premises. Any overriding royalty reserved and owned by Assignor hereunder shall be free and clear of all costs and expenses, except that said overriding royalty shall bear its ratable portion of applicable taxes. If the Lease covers less than all of the oil and gas in and under the Assigned Premises, or if Assignor owns or is assigning to Assignee less than the full interest of the original lessee in the Lease, the overriding royalty reserved herein shall be proportionately reduced to the interest assigned hereunder.

### EXTENSION BY DRILLING OR REWORKING

(a) If, at the expiration of the Primary Term, oil and/or gas in paying quantities are not being produced from the Assigned Premises or lands validly pooled or communitized therewith, but Assignee is then engaged in drilling or reworking operations thereon, this Assignment shall remain in force so long as drilling or reworking operations are prosecuted (whether on the same well or different wells) with no cessation of more than sixty (60) consecutive days, and, if they result in production in paying quantities, for so long thereafter as oil and/or gas are produced in paying quantities from the Assigned Premises or lands validly pooled or communitized therewith.

(b) If, after the expiration of the Primary Term, the production of oil and/or gas from the Assigned Premises or lands validly pooled or communitized therewith should cease from any cause, this Assignment nevertheless shall continue in force and effect as long as additional drilling operations or reworking operations are conducted on the Assigned Premises or on lands validly pooled or communitized therewith, which additional operations shall be deemed to be had when not more than sixty (60) consecutive days elapse between the cessation of production or abandonment of operations on one well and the actual commencement of drilling or reworking operations on another well, and, if production in paying quantities is obtained, this Assignment shall continue as long thereafter as oil and/or gas is produced in paying quantities from the Assigned Premises or lands validly pooled or communitized therewith, and as long thereafter as additional operations, either drilling or reworking, are had thereon.

#### CONTINUOUS DEVELOPMENT OPTION

At the expiration of the Primary Term or at the conclusion of the continuous development program as hereinafter defined, whichever occurs later, this Assignment shall terminate as to (1) all of the Assigned Premises covered hereby except as to those lands which are included within the geographical boundaries of a pooled or communitized unit and/or proration unit established in conformity with field rules or spacing laws of the applicable governmental body on which there is located a well producing or capable of producing oil and/or gas in paying quantities; and (2) all depths below 100' below the base of the deepest depth drilled in each pooled or communitized unit and/or proration unit. Assignee, at its option, may earn an interest in the Assigned Premises and the lands outside the boundaries of a pooled or communitized unit and/or proration unit by commencing a continuous development program as defined herein. If, prior to the end of the Primary Term, Assignee has drilled and completed a well on the Assigned Premises or lands pooled or communitized therewith either as a dry hole or as a well capable of producing oil and/or gas in paying quantities or has commenced operations for drilling or reworking on the Assigned Premises or lands validly pooled or communitized therewith prior to the end of the Primary Term, then the commencement date of the continuous development program shall be one hundred eighty (180) days after the expiration date of the Primary Term or one hundred eighty (180) days after the completion of any well drilled across the expiration of the Primary Term of this Assignment, and completed as a dry hole or a productive well, whichever is the later. Once the continuous development program has been commenced, this Assignment shall remain in full force and effect as to the Assigned Premises as long as Assignee, at its option, drills, or causes to be drilled, wells on the Assigned Premises or lands pooled or communitized therewith without a lapse of more than one hundred eighty (180) days between the completion or abandonment of one well (such date of completion or abandonment to be fixed by the official New Mexico Oil Conservation Commission potential date or plugging date) and the commencement of operations for the drilling of the next well. Upon the expiration of the Primary Term of this Assignment or conclusion of the continuous development program provided for herein, whichever is the last to occur, Assignee will execute a good and sufficient reassignment of the unearned lands in the Assigned Premises as required herein to Assignor free of any burdens thereon other than burdens existing as of the date of this Assignment. Assignee is under no obligation to conduct any drilling operations under the continuous development program or to drill any well or wells on the Assigned Premises.

#### POOLING/COMMUNITIZATION

Assignee is hereby granted the right to pool or communitize the Lease and Assigned Premises, or any part or horizon therein, with other lands if such pooling or communitization is necessary in order to comply with the pooling and spacing rules and orders of the New Mexico Oil Conservation Commission or any other governmental authority having jurisdiction over the same. Notwithstanding anything contained in this Assignment to the contrary, operations commenced or conducted by Assignee on lands other than those covered by the Lease which are effectively pooled or communitized with the Lease and the Assigned Premises or any part or horizon therein as allowed or prescribed by governmental authority shall be considered to be located on the Assigned Premises for the purposes of this Assignment. The overriding royalty interest reserved herein by Assignor shall be proportionately reduced by the number of acres covered by the Lease included within a pooled or communitized unit divided by the total number of acres pooled or communitized therewith.

#### LEASES AND CONTRACTS

This Assignment is made and accepted subject to, and Assignee hereby assumes, any and all royalties, overriding royalties, payments out of production, and other burdens or encumbrances to which the Lease may be subject, INSO FAR as such royalties, overriding royalties, payments out of production, and other burdens and encumbrances cover and affect the Assigned Premises.

Assignor makes no representation that compliance with the terms of this Assignment shall necessarily infer compliance with the terms and conditions of the Lease, and Assignee assumes and agrees to comply with all express and implied covenants and obligations of the Lease and any assignments thereof, deeds and other instruments pertaining thereto, to the extent they are applicable to the Assigned Premises, and shall relieve Assignor of and hold Assignor harmless from liability related thereto, specifically including, but not limited to, the loss or termination of any rights covered by this Assignment as a result of the expiration or termination of the Lease, or any portion thereof, covered hereby.

NOTWITHSTANDING ANYTHING CONTAINED IN THIS ASSIGNMENT TO THE CONTRARY, ASSIGNOR SHALL BE UNDER NO OBLIGATION WHATSOEVER TO MAINTAIN OR PERPETUATE THE LEASE.

#### RESERVATION BY ASSIGNOR

Assignor excepts from this Assignment and reserves to itself all right, title, interest and estate not expressly assigned hereby, the rights of ingress and egress, and such other rights and easements under and by virtue of the Lease, including the concurrent use of water, as may be necessary or desirable to explore, develop and operate the interest of Assignor in the Lease.

#### INDEMNITY

By acceptance of this Assignment, Assignee hereby agrees to indemnify, defend and hold Assignor, its directors, officers, agents, employees, and invitees harmless from and against any and all claims, actions, causes of action, liabilities, damages, losses, costs or expenses (including, without limitation, court costs, attorneys' fees and damages to persons [including death] and/or property) of any kind or character arising out of or otherwise relating to Assignee's ownership and/or operation of the Assigned Premises, from and after the effective date of this Assignment.

With respect to any operations conducted by Assignee on the Assigned Premises, it is agreed Assignee shall, at its sole risk and cost and under its exclusive control, timely and properly plug any and all wells, remove wastes, remediate and close all pits, and restore the surface of the land to the condition (and within any time period) required by the express or implied covenants of the Lease and any other agreements, if any, pertaining to the Assigned Premises. All operations of Assignee, with respect to the Assigned Premises (including, without limitation, plugging and abandonment operations) shall be conducted in strict compliance with the Lease and the statutes, rules, regulations, requirements and orders of any governmental agency having jurisdiction thereof.

#### COMPLIANCE WITH LAWS, REGULATIONS AND DOCUMENTS

By its acceptance hereof, Assignee, for itself and its successors and assigns, assumes and agrees to observe, fulfill and comply with the terms, provisions, obligations, royalties, overriding royalties, reservations, reversions, depth limitations and covenants, express and implied, set forth in the Leases, this Assignment and in all valid and subsisting (a) assignments, deeds, conveyances, and other instruments in, or disclosed by instruments in, the chain of title to Assignor, (b) other instruments in or disclosed by the public record, (c) pooling or unitization agreements and declarations, (d) the Operating Agreement, (e) any and all contracts and agreements associated with or applicable to the Assigned Premises or the Lease, (f) matters known to Assignee, (g) matters visible and apparent on the ground, (h) applicable federal, state and municipal statutes, ordinances, rules and regulations including, without limitation, all of the rules and regulations of the NMOCD, insofar as any of the foregoing cover and pertain to the Assigned Premises, and Assignee agrees to indemnify and hold Assignor, its successors and assigns, harmless from all claims, damages, penalties, costs and expenses incurred as a result of Assignee's failure to observe, fulfill and comply therewith or claims that Assignor and/or Assignee failed to observe, fulfill or comply therewith in executing this Assignment and for costs and expenses incurred by Assignor in connection therewith (including, without limitation, reasonable attorneys' fees, experts' fees, costs of court and other costs of collection or litigation). This indemnity shall survive the termination or expiration of this Assignment; further, the subsequent assignment of all or any portion of the Assigned Premises by Assignee, if permitted hereunder, shall not relieve Assignee, its heirs, successors or assigns, from liability under this provision. For the same consideration, Assignor does hereby consent to and approve any and all horizontal wells that may be drilled by Assignee on the Assigned Premises.

#### ABANDONMENT

By its acceptance hereof, Assignee, for itself and its successors and assigns, agrees that at such time as any well drilled by Assignee on the Assigned Premises is abandoned, such well will be properly plugged and abandoned, at Assignee's sole cost and expense, in accordance with applicable statutes, rules and regulations of any governmental authority exercising jurisdiction over the Lease pertaining to the plugging and abandonment of wells at the time of such plugging and

abandonment.

WELL INFORMATION

Assignee will furnish Assignor, if obtained, the information as shown on the attached Exhibit "B".

NO WARRANTY

This Assignment is made and accepted by Assignee without warranty of title, either express or implied. Assignor makes no express or implied warranties or representations as to the quality, merchantability or fitness of the rights hereby transferred to Assignee by Assignor for a particular purpose, for Assignee's intended use or for any use whatsoever.

DATED AND EFFECTIVE THIS 5th DAY OF August, 2013 (the "Effective Date").

ASSIGNOR:

DISCOVERY EXPLORATION, a Texas Partnership

By: Ernest Angelo Jr.  
Name: Ernest Angelo Jr.  
Title: Partner

ASSIGNEE:

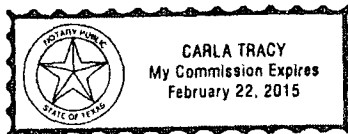
MURCHISON OIL AND GAS, INC.

By: Michael S. Daugherty  
Michael S. Daugherty, Chief Operating Officer

ACKNOWLEDGMENTS

STATE OF TEXAS  
COUNTY OF COLLIN

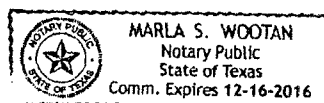
This instrument was acknowledged before me on the 12th day of August, 2013, by Michael S. Daugherty as Chief Operating Officer of Murchison Oil and Gas, Inc., as Oklahoma corporation on behalf of said corporation.



Carla Tracy  
Notary Public, State of Texas

STATE OF TEXAS  
COUNTY OF MIDLAND

This instrument was acknowledged before me on the 5th day of August, 2013, by Ernest Angelo, Jr., Partner of Discovery Exploration, a Texas partnership, on behalf of said partnership.



Marla S. Wootan  
Notary Public, State of Texas

**EXHIBIT "A"**

Attached to and made a part of that certain Term Assignment  
dated and effective 5th day of August 2003, executed by Discovery Exploration in  
favor of **Murchison Oil and Gas, Inc.**

**Oil and Gas Lease and Lands:**

Lease No.:	NM 17574
Date:	2/1/1973
Recorded:	NOT RECORDED IN EDDY COUNTY RECORDS
Lessor:	USA
Lessee:	K.J. Feil
Lands Covered:	Township 25 South, Range 26 East, NMPM, Eddy County, New Mexico. SE/4 Section 11.

End of Exhibit "A"



District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM. 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number <b>30-015-41700</b>	<sup>2</sup> Pool Code <b>9645</b>	<sup>3</sup> Pool Name <b>Sulphate Delaware S.W.</b> <del>BLACK RIVER, DELAWARE, SOUTH</del>
<sup>4</sup> Property Code <b>8132 40153</b>	<sup>5</sup> Property Name <b>OGDEN FED COM</b>	<sup>6</sup> Well Number <b>11H</b>
<sup>7</sup> OGRID No. <b>15363</b>	<sup>8</sup> Operator Name <b>MURCHISON OIL &amp; GAS, INC.</b>	<sup>9</sup> Elevation <b>3334.3</b>

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>P</b>	<b>2</b>	<b>25 S</b>	<b>26 E</b>		<b>200</b>	<b>SOUTH</b>	<b>350</b>	<b>EAST</b>	<b>EDDY</b>

<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>P</b>	<b>11</b>	<b>25 S</b>	<b>26 E</b>		<b>330</b>	<b>SOUTH</b>	<b>350</b>	<b>EAST</b>	<b>EDDY</b>

<sup>12</sup> Dedicated Acres <b>160</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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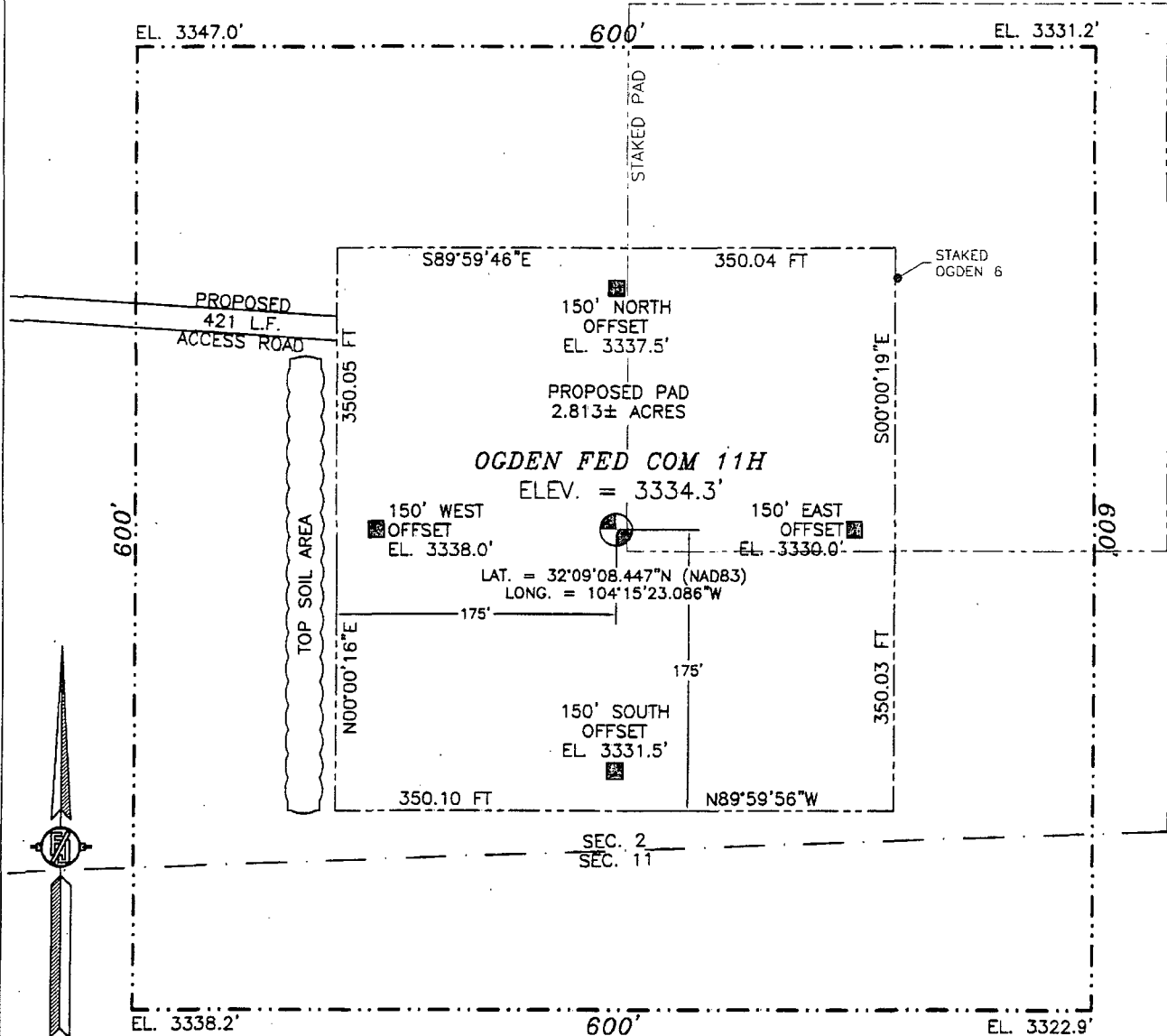
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>NW CORNER SEC. 2 LAT. = 32°09'59.196"N LONG. = 104°16'20.060"W</p> <p>W/4 CORNER SEC. 2 LAT. = 32°09'32.510"N LONG. = 104°16'20.688"W</p> <p>SECTION CORNER LAT. = 32°09'05.605"N LONG. = 104°16'21.355"W</p> <p>W/4 CORNER SEC. 11 LAT. = 32°08'39.491"N LONG. = 104°16'20.788"W</p> <p>SW CORNER SEC. 11 LAT. = 32°08'13.400"N LONG. = 104°16'19.954"W</p>	<p>N/4 CORNER SEC. 2 LAT. = 32°09'59.189"N LONG. = 104°15'49.220"W</p> <p>SEC. 2</p> <p>OGDEN FED COM 11H ELEV. = 3334.3' LAT. = 32°09'08.447"N (NAD83) LONG. = 104°15'23.086"W</p> <p>SURFACE LOCATION 200'</p> <p>QUARTER CORNER LAT. = 32°09'05.655"N LONG. = 104°15'50.219"W</p> <p>NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN DEGREES MINUTES DECIMAL SECONDS FORMAT. BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST (NAD83) COORDINATES MODIFIED TO SURFACE.</p> <p>SEC. 11</p> <p>BOTTOM OF HOLE LAT. = 32°08'17.334"N LONG. = 104°15'22.249"W</p> <p>BOTTOM OF HOLE 350'</p> <p>S/4 CORNER SEC. 11 LAT. = 32°08'13.766"N LONG. = 104°15'49.051"W</p>	<p>NE CORNER SEC. 2 LAT. = 32°09'59.080"N LONG. = 104°15'18.402"W</p> <p>E/4 CORNER SEC. 2 LAT. = 32°09'32.793"W LONG. = 104°15'18.713"W</p> <p>E/4 CORNER SEC. 11 LAT. = 32°08'40.352"N LONG. = 104°15'18.583"W</p> <p>SE CORNER SEC. 11 LAT. = 32°08'14.131"N LONG. = 104°15'16.129"W</p>	<p><b><sup>17</sup> OPERATOR CERTIFICATION</b> I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order hereafter entered by the division.</p> <p><i>Michael S. Daugherty</i> 8/19/13 Signature Date</p> <p><b>Michael S. Daugherty</b> Printed Name</p> <p><b>mdaugherty@jdmii.com</b> E-mail Address</p> <p><b><sup>18</sup> SURVEYOR CERTIFICATION</b> I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>AUGUST 13, 2013 Date of Survey</p> <p><i>[Signature]</i> Signature and Seal of Professional Surveyor</p> <p>Certificate Number <b>EDMONE JARAMILLO, PLS 12797</b></p> <p><b>SURVEY NO. 1985B</b></p>
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# EXHIBIT B

## SECTION 2, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN DEGREES, MINUTES AND DECIMAL SECONDS FORMAT. BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST (NAD83) COORDINATES MODIFIED TO SURFACE.



0 10 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR. 720 (BLACK RIVER VILLAGE RD.) AND CR. 748 (OLD CAVERN HWY.) AND CR. 742 (JOHN D. FOREHAND RD.) GO SOUTH ON CR. 742 3.9 MILES TO CALICHE LEASE ROAD TO RIGHT (WEST) GO WEST ON SAID CALICHE ROAD 2.5 MILES TO CALICHE ROAD TO LEFT (SOUTH) GO SOUTH ON CALICHE ROAD 1.0 MILES AT RIGHT TURN FOLLOW PROPOSED ROAD SOUTH TO SITE.

MURCHISON OIL & GAS, INC.  
OGDEN FED COM 11H

LOCATED 200 FT. FROM THE SOUTH LINE  
AND 350 FT. FROM THE EAST LINE OF  
SECTION 2, TOWNSHIP 25 SOUTH,  
RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

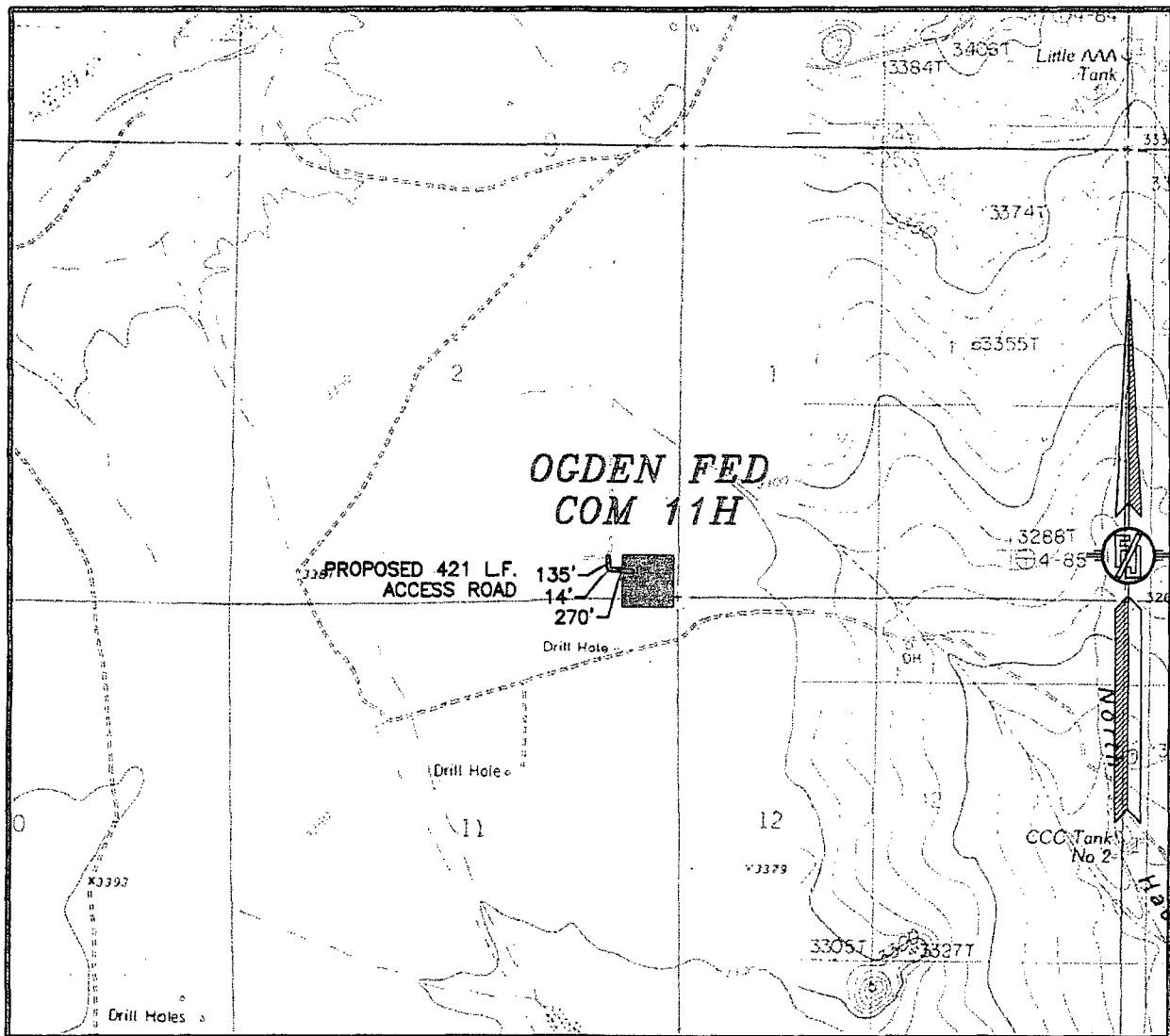
AUGUST 13, 2013

SURVEY NO. 1985B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

# EXHIBIT C-1

## SECTION 2, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO LOCATION VERIFICATION MAP



USGS QUAD MAP:  
BLACK RIVER VILLAGE

NOT TO SCALE

MURCHISON OIL & GAS, INC.  
OGDEN FED COM 11H  
LOCATED 200 FT. FROM THE SOUTH LINE  
AND 350 FT. FROM THE EAST LINE OF  
SECTION 2, TOWNSHIP 25 SOUTH,  
RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

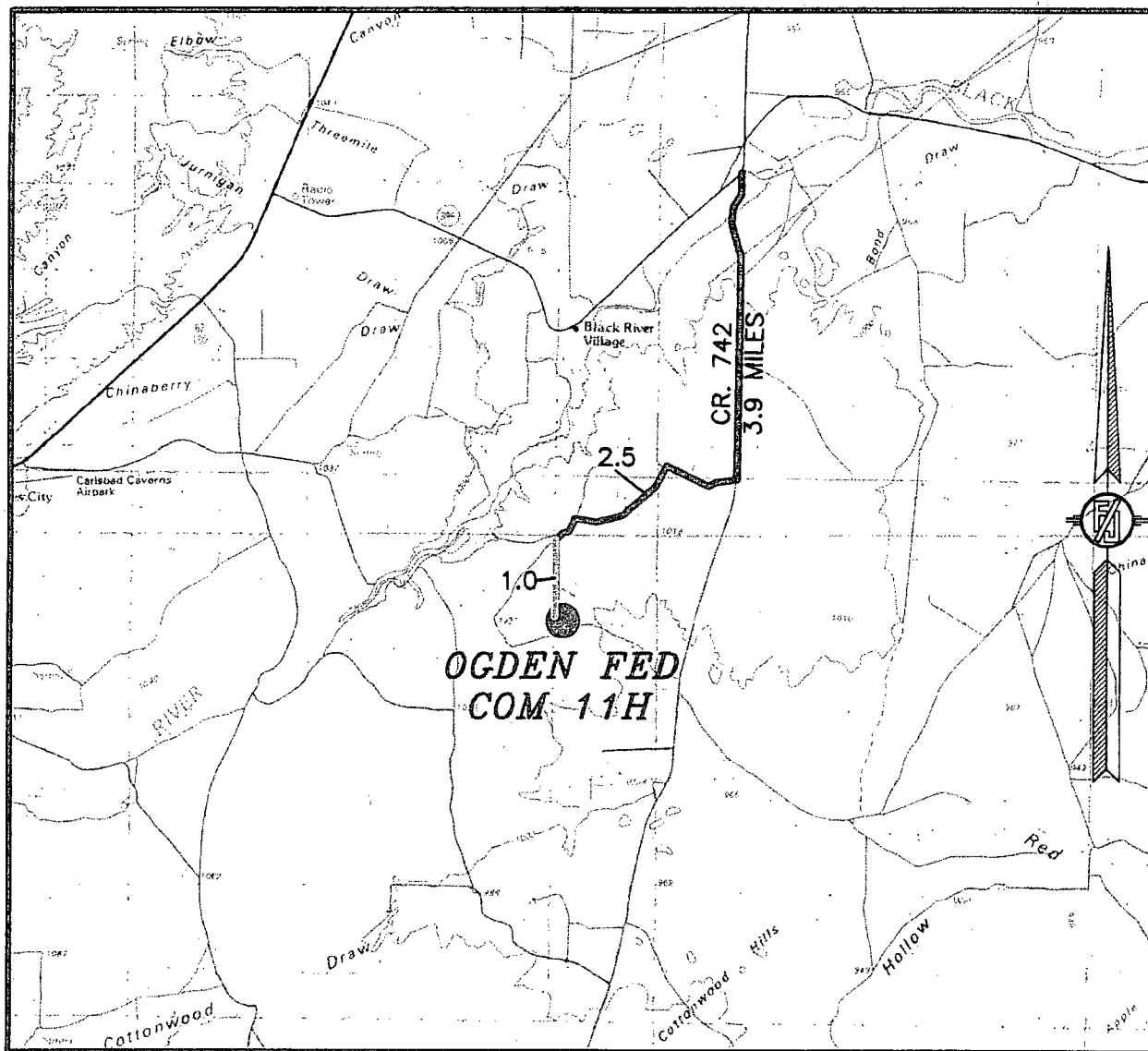
AUGUST 13, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SURVEY NO. 1985B

## EXHIBIT C-2

### SECTION 2, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

#### DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR. 720 (BLACK RIVER VILLAGE RD.) AND CR. 748 (OLD CAVERN HWY.) AND CR. 742 (JOHN D. FOREHAND RD.) GO SOUTH ON CR. 742 3.9 MILES TO CALICHE LEASE ROAD TO RIGHT (WEST) GO WEST ON SAID CALICHE ROAD 2.5 MILES TO CALICHE ROAD TO LEFT (SOUTH) GO SOUTH ON CALICHE ROAD 1.0 MILES AT RIGHT TURN FOLLOW PROPOSED ROAD SOUTH TO SITE.

MURCHISON OIL & GAS, INC.

**OGDEN FED COM 11H**

LOCATED 200 FT. FROM THE SOUTH LINE  
AND 350 FT. FROM THE EAST LINE OF  
SECTION 2, TOWNSHIP 25 SOUTH,  
RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

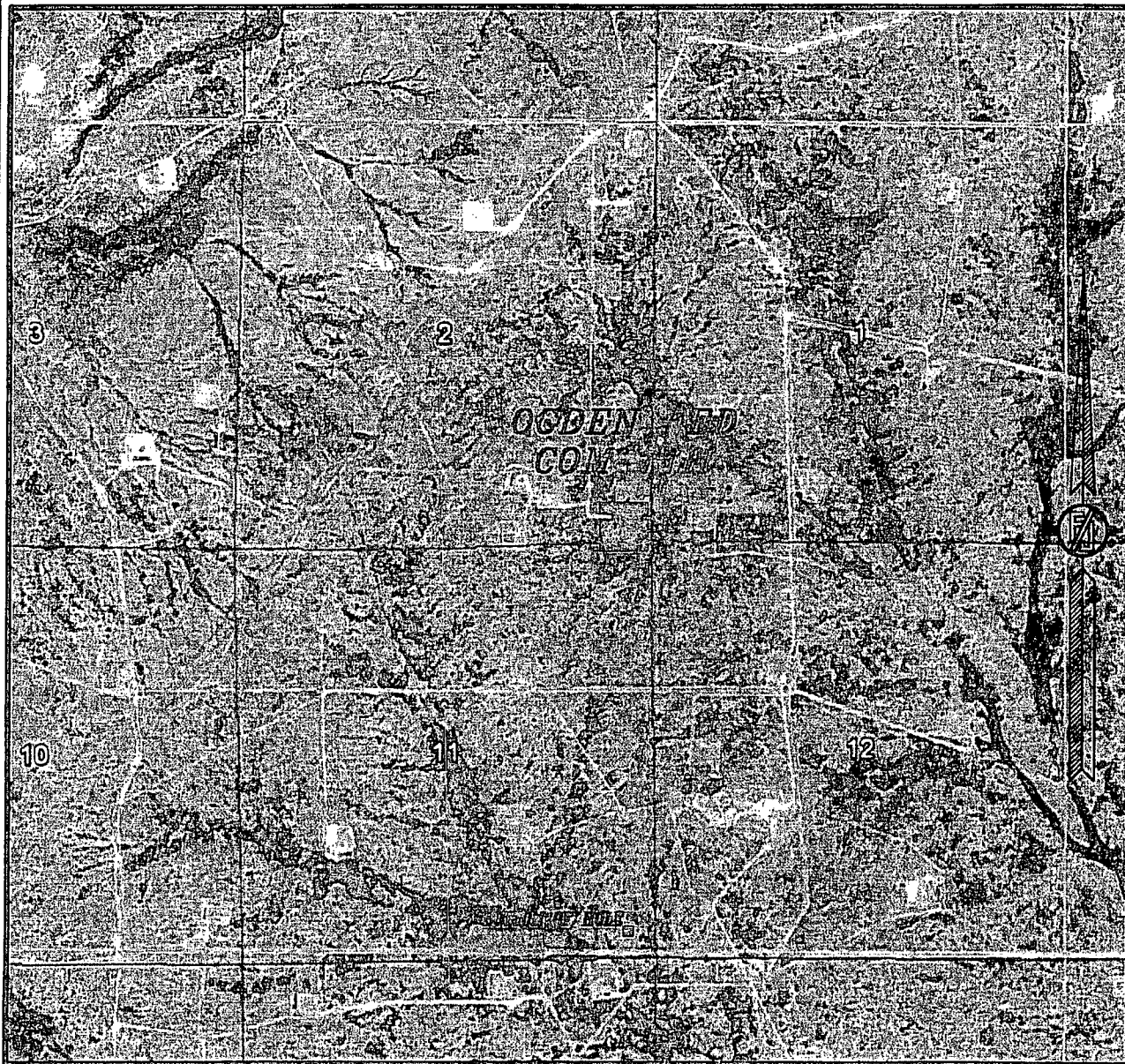
AUGUST 13, 2013

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341

SURVEY NO. 1985B  
CARLSBAD, NEW MEXICO

EXHIBIT C-3

SECTION 2, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO  
AERIAL PHOTO



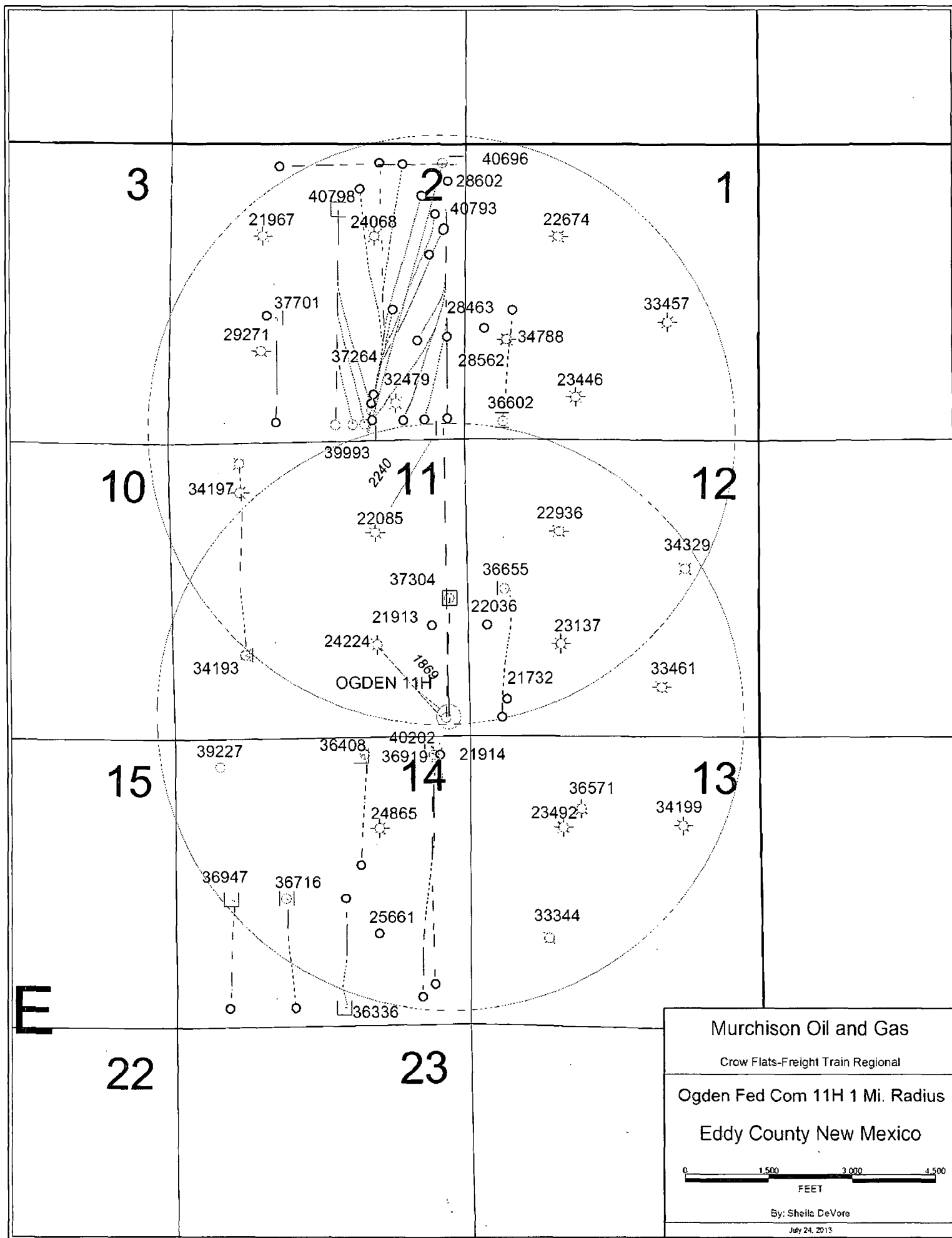
NOT TO SCALE  
AERIAL PHOTO:  
GOOGLE EARTH  
APRIL 2013

MURCHISON OIL & GAS, INC.  
OGDEN FED COM 11H  
LOCATED 200 FT. FROM THE SOUTH LINE  
AND 350 FT. FROM THE EAST LINE OF  
SECTION 2, TOWNSHIP 25 SOUTH,  
RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 13, 2013

SURVEY NO. 1985B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO



**Murchison Oil & Gas, Inc.  
Drilling Prognosis  
Ogden Fed Com 11H**

**Revision date: August 19, 2013**

Surface Location: 419,167.45usft N, 565,142.45usft E  
Section 2 200' FSL, 350' FEL

Bottom Hole Target: 414,009.6usft N, 565218.07usft E  
Section 11 330' FSL, 330' FEL  
  
Section 11, T-25-S, R-26-E  
Eddy County, New Mexico

Planned Total Depth: 2001' TVD /6865' MD

RKB: 3346.3' GL: 3334.3'

Preparer: Steve Morris

**Estimated Formation Tops (per geoprognosis with TVD's adjusted to actual KB):**

<u>Formation</u>	<u>TVD (ft)</u>	<u>Subsea (ft)</u>	<u>Thickness</u>	<u>Type</u>
Quaternary Alluvium	0	-3334	300	
Salado (Salt)	306'	-3040	1630	
Base Delaware Anhydrite	1936	-1410	25	
Lamar Lime	1961	-1385	30	
Ramsey Sand	1991	-1355	30	Hydrocarbon

As per the attached POD's, no fresh water has been recorded. If any fresh water is to be encountered it will be above the Salado formation (306'TVD).

**Pressure Control**

A 11" 3M BOP and 3M choke manifold will be used. See attached schematics.  
BOP test shall be conducted:

- A. when initially installed
- B. whenever any seal subject to test pressure is broken
- C. following related repairs
- D. at 30 day intervals

BOP, choke, kill lines, Kelly cock, inside BOP, etc. will be hydro tested to 250psi(low) and 3,000psi(high). The annular will be tested to 250psi (low) and 1500psi (high).

BOP will be function tested on each trip.

### Casing Program (minimum):

**\*All casing is new API casing.\***

HOLE	CASING	WEIGHT	GRADE	CONN	MD/RKB	STAGE
	14"	Structural	LP	N/A	0' – 120'	Conductor
12¼"	9⅝"	36.0 ppf	J-55	ST&C	0' – 300'	Surface
8¾"	7"	26.0 ppf	N-80	BT&C	0' – 2123' <sup>1913'</sup>	Production
6½"	4½"	11.6 ppf	N-80	BT&C	2023' – 6865' <sup>1713'</sup> (200 tie-back minimum)	Liner
SIZE	COLLAPSE	SF	BURST	SF	TENSION(Klbs)	SF
9⅝"	2020	16.65	3520	7.04	453	41.9
7"	5410	6.09	7240	2.41	641	12.32
4½"	6350	7.15	7780	2.59	291	12.22

### Cement Program:

#### 9⅝" Surface Casing

Cement with 225sx Lead - 12.8ppg Class C 35/65 + 6% Bentonite + 0.25# Cello Flake + 0.25% R-38 + 5%salt BWOW - Yield 1.9cu.ft/sx

200sx Tail(100') – 14.8ppg Class C + 2% CACL2 + 0.25# Cello Flake + 0.25% R-38 -Yield 1.35cu.ft/sx

Cement with 100% excess – A DV tool may be required if heavy losses are encountered while drilling.

TOC – Surface (0')

#### 7" Production Casing

Cement with 350sx Lead– 12.8ppg Class C 35/65 + 6% Bentonite + 0.25# Cello Flake + 0.25% R-38 + 5%salt BWOW - Yield 1.9cu.ft/sx

325sx Tail(300') – 14.8ppg Class C + 2% CACL2 + 0.25# Cello Flake + 0.25% R-38 -Yield 1.35cu.ft/sx

TOC – Surface (0')



Cement with 100% excess – Circulate cement to surface. If cement doesn't circulate a top squeeze job will be performed.

#### **4½" Liner**

Cement with 375sx 13ppg Class C Star Bond + 0.55% C-16 + 0.5% C15 + 0.3% C-20 + 0.1% ASA-10 + 1.5# Star Seal + 0.25% R-38 - Yield 1.63cu.ft/sx

Cement with 35% excess – Once cement job has been completed, the liner hanger will be set and the drill pipe unscrewed from the liner hanger. Circulate mud through the drill pipe to clear the annulus of any excess cement. Volume of excess cement circulated back to surface will be recorded.

Cement 100' into 7" casing. Cement is planned to be brought 500' into the 7" casing. The liner hanger will then be set and the DP removed from the liner hanger. Excess cement above the liner hanger will be circulated out to surface. If no cement is circulated to surface a temperature log will be run 6 hours after cementing or CBL will be run 36 hours after cementing. This will be determined in conjunction with the BLM.

**Class C** Is an API cement intended for surface to a depth of 6000 ft. Class C is sulfate resistant and yields early compressive strengths. Typically mixed from 14.8 ppg.

**Poz (Fly Ash)** Fly ash, an artificial pozzolan that consists of mostly silicon dioxide. Fly ash is used in cement slurries for oil field cementing applications to create economical lightweight slurries.

**ASA-10** Is a polymeric additive designed to help control free water and to suspend solids in cement slurries, particularly at higher temperatures where metasilicate products are difficult to retard. ASA-10 also gives some fluid loss control in most applications.

**C-15** A mildly retarding fluid loss additive for use at all temperatures below about 200°F. It thins, rather than thickens, typical slurries. Typical loadings are 0.1% to 1% BWOC.

**C-16A** Is a non-retarding fluid loss additive with particular application in pozzolan slurries. It is highly effective at exceptionally low loadings (0.5% or below) in many slurry designs.

**C-20** A lignosulfonate retarder for all classes of oil well cement. It is designed for use in the 125°-220°F temperature range. Typical loading is 0.1% to 1.5% BWOC.

**Defoamer** A Clear liquid used to minimize foaming tendencies and air entrapment in cement slurries during mixing process.

**R38** Is a powdered defoamer for all types of oil well cement. Typical loadings are 0.25% to 0.5% BWOC.

**SF-1** Is an additive that contributes to high compressive strengths in low density slurries and controls excessive free water. Reduces permeability, increases sulphate resistance, helps to control the alkali-aggregate reaction and increases concrete a

**Star-Seal** Is a loss circulation additive for severe loss circulation problems. It increases cement height and the ability to circulate cement through sloughed out formations. Typical loadings are 2#/sk to 5#/sk.

*See COA* **Mud Program:**

Depth (MD)	Hole Size	MW	PV	YP	WL	pH	Sol%
Spud with fresh water gel (36-40 visc) in suction pit.							
0'-300'	12¼"	8.3-9.0	10-12	12-15	N/C	10-10.5	<3
Brine <i>19131</i>							
300'- <del>2123'</del>	8¾"	10	1-2	1-2	N/C	10-10.5	<1
Cut Brine							
2123'-TD	6⅞"	8.6-9.1	1	1	N/C	10-10.5	<1

Sufficient LCM will be on location in the event of loss circulation. LCM will be added to the active system during drilling of surface hole to stop seepage. Usage and total on location will be recorded on the daily drilling report.

Sufficient barite will be on location in the event of a kick or blow out. Usage and total on location will be recorded on the daily drilling report.

H2S scavenger will be added to the active mud system from spud to TD of the well. Sufficient H2S scavenger will be on location to maintain proper active mud system %.

**Logging, Drill stem testing and Coring:**

2 man mud logging will start after surface casing has been set.

8.75" hole will have LWD (Gamma Ray). Logging will commence from Surface Casing to section TD.

6.125" hole will have LWD (Gamma Ray). Logging will be for the whole 6.125" section.

No cores or DST's are planned for the well.

**Bottom Hole:**

Temperature is expected to be 95°F. The bottom hole pressure is expected to be 1000psi maximum.

**Abnormal Conditions:**

No abnormal conditions are expected. Temperature is expected to be normal. All zones are expected to be normal pressure. Possible lost circulation on surface hole. LCM pills will be used to combat lost circulation.

**H2S:**

H2S is expected. Attached is the H2S response plan.

**Directional:**

Directional survey plan and plot attached.

**DRILLING RECORDER:**

Rig up EDR & PVT prior to spud to record drilling times and other drilling parameters from surface to TD.

**MUD MONITORING SYSTEM**

A pason PVT system will be rigged up prior to spudding the well. A volume monitoring system that measures, calculates, and displays readings from the mud system on the rig to alert the rig crew of impending gas kicks and lost circulation issues.

**Components**

**PVT Pit Bull monitor:**

Acts as the heart of the system, containing all the controls, switches, and alarms. Typically, it is mounted near the driller's console.

**Junction box:**

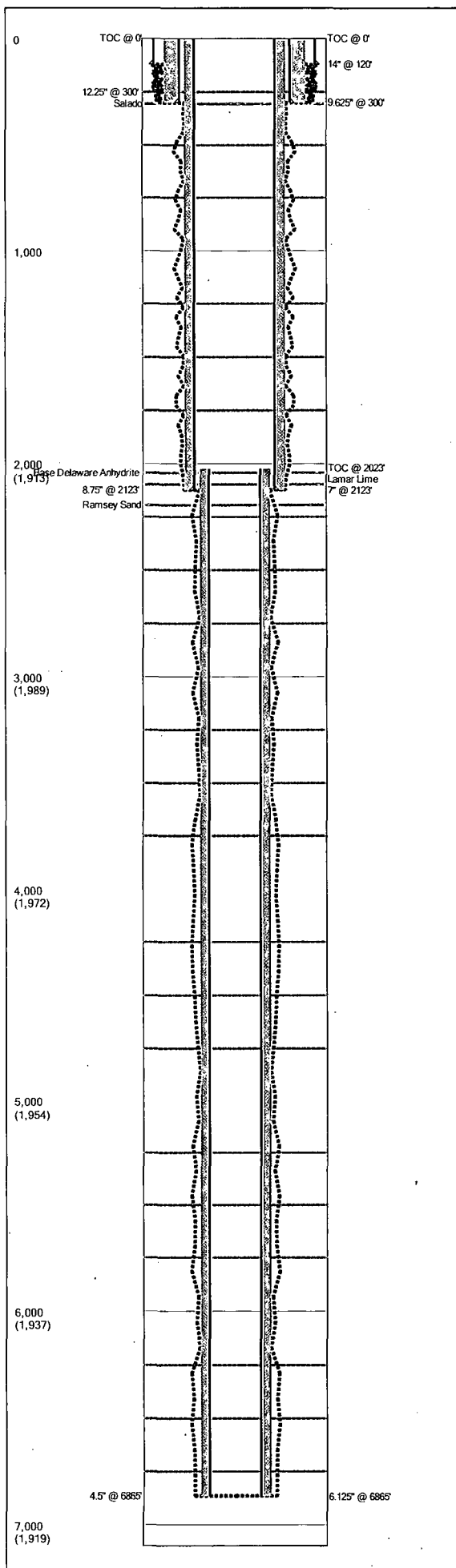
Provides a safe, convenient place for making the wiring connections.

**Mud probes:**

Measure the volume of drilling fluid in each individual tank.

**Flow sensor:**

Measures the relative amount of mud flowing in the return line.



Last Updated: 8/12/2013 03:57 PM

Field Name	Lease Name	Well No.
Ogden	Ogden Fed Com	11H
County, State	API No.	
Eddy, New Mexico	00000000000001	
Version	Version Tag	
1	Planning	
G.L. (ft)	K.B. (ft)	Sec.
3,334.3	3,346.3	11
Township/Block		Range/Survey
25S		26E
Operator	Well Status	Latitude
Murchison Oil & Gas INC.	Planning	32.152346
Footage Call		Longitude
200' FSL & 350' FEL From Section		104.256413
PropNum	Spud Date	Comp. Date
Additional Information		
Prepared By	Updated By	Last Updated
Steve Morris	Steve Morris	8/12/2013 3:57 PM

#### Hole Summary

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	12.250	120	300	
	8.750	300	2,123	
	6.125	2,123	6,865	

#### Tubular Summary

Date	Description	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)
	Conductor Casing	14.000	54.50	J-55	0	120
	Surface Casing	9.625	36.00	J-55	0	300
	Intermediate Casing	7.000	26.00	N-80	0	2,123
	Liner	4.500	11.60	N-80	2,023	6,865

#### Casing Cement Summary

Date	No. Sx	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	425	9.625	0	300	
	675	7.000	0	2,123	
	375	4.500	2,023	6,865	

#### Formation Tops Summary

Formation	Top (MD ft)	Comments
Salado	306	
Base Delaware Anhydrite	1,936	
Lamar Lime	1,961	
Ramsey Sand	1,991	

Last Updated: 8/12/2013 03:57 PM

Field Name		Lease Name		Well No.	County, State		API No.	
Ogden		Ogden Fed Com		11H	Eddy, New Mexico		00000000000001	
Version	Version Tag				Spud Date	Comp. Date	G.L. (ft)	K.B. (ft)
	1 Planning						3,334.3	3,346.3
Sec.	Township/Block		Range/Survey		Footage Call			
11	25S		26E		200' FSL & 350' FEL From Section			
Operator			Well Status		Latitude		Longitude	PropNum
Murchison Oil & Gas INC.			Planning		32.152346		104.256413	
Last Updated		Prepared By			Updated By			
08/12/2013 3:57 PM		Steve Morris			Steve Morris			
Additional Information								

Hole Summary

Date	O.D. (in)	Top (MD ft)	Bottom (MD ft)	Comments
	12.250	120	300	
	8.750	300	2,123	
	6.125	2,123	6,865	

Tubular Summary

Date	Description	No. Jts	O.D. (in)	Wt (lb/ft)	Grade	Top (MD ft)	Bottom (MD ft)	Comments
	Conductor Casing		14.000	54.50	J-55	0	120	
	Surface Casing		9.625	36.00	J-55	0	300	
	Intermediate Casing		7.000	26.00	N-80	0	2,123	
	Liner		4.500	11.60	N-80	2,023	6,865	

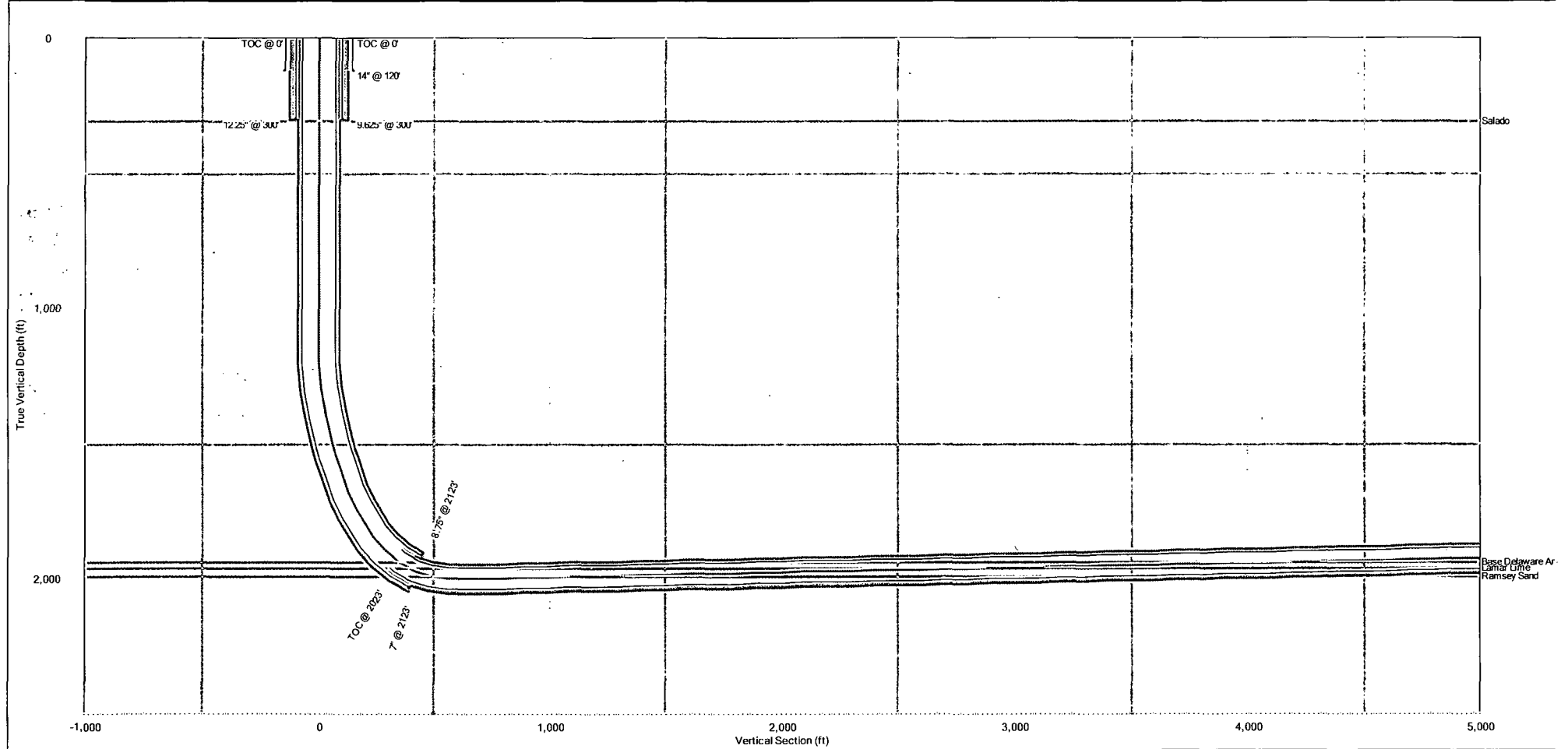
Casing Cement Summary

Date	No. Sx	Csg. O.D. (in)	Top (MD ft)	Bottom (MD ft)	Description	Comments
	425	9.625	0	300	Cement with 225sx Lead - 12.8ppg Class C 35/65 + 6% Bentonite + 0.25# Cello Flake + 0.25% R-38 + 5% salt BWOW - Yield 1.9cu.ft/sx200sx Tail(100') - 14.8ppg Class C + 2% CACL2 + 0.25# Cello Flake + 0.25% R-38 -Yield 1.35cu.ft/sxCement with 100% excess	
	675	7.000	0	2,123	Cement with 350sx Lead- 12.8ppg Class C 35/65 + 6% Bentonite + 0.25# Cello Flake + 0.25% R-38 + 5% salt BWOW - Yield 1.9cu.ft/sx325sx Tail(300') - 14.8ppg Class C + 2% CACL2 + 0.25# Cello Flake + 0.25% R-38 -Yield 1.35cu.ft/sxCement with 100% excess	
	375	4.500	2,023	6,865	Cement with 375sx 13ppg Class C Star Bond + 0.55% C-16 + 0.5% C15 + 0.3% C-20 + 0.1% ASA-10 + 1.5# Star Seal + 0.25% R-38	

Formation Top Summary

Formation Name	Top (MD ft)	Comments
Salado	306	
Base Delaware Anhydrite	1,936	
Lamar Lime	1,961	
Ramsey Sand	1,991	

Field Name		Lease Name	Well No.	County, State	API No.	Version	Version Tag	Spud Date	Comp. Date	G.L. (ft)	K.B. (ft)
Ogden		Ogden Fed Com	11H	Eddy, New Mexico	00000000000001	1	Planning			3,334.3	3,346.3
Sec.	Township/Block	Range/Survey	Footage Call		Latitude	Longitude	Well Status	PropNum	Operator		
11	25S	26E	200' FSL & 350' FEL From Section		32.152346	104.256413	Planning		Murchison Oil & Gas INC.		
Last Updated		Prepared By	Updated By		Additional Information						
8/12/13 3:57:01 PM		Steve Morris	Steve Morris								





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*New Mexico Office of the State Engineer*  
**Active & Inactive Points of Diversion**  
(with Ownership Information)

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No PODs found.

PLSS Search:

Section(s): 1

Township: 25S

Range: 26E



# *New Mexico Office of the State Engineer*

## **Active & Inactive Points of Diversion**

(with Ownership Information)

No PODs found.

**PLSS Search:**

Section(s): 2

Township: 25S

Range: 26E





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*New Mexico Office of the State Engineer*  
**Active & Inactive Points of Diversion**  
(with Ownership Information)

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No PODs found.

**PLSS Search:**

Section(s): 11

Township: 25S

Range: 26E



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*New Mexico Office of the State Engineer*  
**Active & Inactive Points of Diversion**  
(with Ownership Information)

---

No PODs found.

PLSS Search:

Section(s): 12

Township: 25S

Range: 26E

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6/25/13 12:45 PM

Page 1 of 1

ACTIVE & INACTIVE POINTS OF DIVERSION



# New Mexico Office of the State Engineer

## Active & Inactive Points of Diversion

(with Ownership Information)

										(R=POD has been replaced and no longer serves this file, (quarters are 1=NW 2=NE 3=SW 4=SE) C=the file is closed) (quarters are smallest to largest) (NAD83 UTM in meters)									
										(acre ft per annum)									
</																			

(R=POD has been replaced

and no longer serves this file, (quarters are 1=NW 2=NE 3=SW 4=SE)

C=the file is closed)

(quarters are smallest to largest) (NAD83 UTM in meters)

Record Count: 1

### PLSS Search:

Section(s): 14

Township: 25S

Range: 26E

Sorted by: File Number

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Page 1 of 1

ACTIVE & INACTIVE POINTS OF DIVERSION

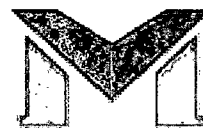
## **Murchison Oil and Gas**

Ogden South

Plan: 130813 Ogden Fed Com 11H

## **MOJO Standard Survey**

13 August, 2013



<b>Company:</b>	Murchison Oil and Gas	<b>Local Co-ordinate Reference:</b>	Well Ogden 11H
<b>Project:</b>	Ogden South	<b>TVD Reference:</b>	WELL @ 3346.3usft (Original Well Elev)
<b>Site:</b>	Ogden 11H	<b>MD Reference:</b>	WELL @ 3346.3usft (Original Well Elev)
<b>Well:</b>	Ogden 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Ogden 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	130813 Ogden Fed Com 11H	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project:</b>	Ogden South		
<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>	New Mexico Eastern Zone		Using geodetic scale factor

<b>Site:</b>	Ogden 11H				
<b>Site Position:</b>		<b>Northing:</b>	419,167.45 usft	<b>Latitude:</b>	32° 9' 8.447 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	565,142.45 usft	<b>Longitude:</b>	104° 15' 23.086 W
<b>Position Uncertainty:</b>	1.0 usft	<b>Slot Radius:</b>	16 "	<b>Grid Convergence:</b>	0.04 °

<b>Well:</b>	Ogden 11H					
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b>	419,167.45 usft	<b>Latitude:</b>	32° 9' 8.447 N
	+E/-W	0.0 usft	<b>Easting:</b>	565,142.45 usft	<b>Longitude:</b>	104° 15' 23.086 W
<b>Position Uncertainty</b>		1.0 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,334.3 usft

<b>Wellbore:</b>	Ogden 11H				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2010	25/06/2013	(°)	(°)	(nT)
			7.64	59.95	48,295

<b>Design:</b>	130813 Ogden Fed Com 11H			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	179.16

<b>Survey Tool Program:</b>	Date	13/08/2013		
<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
(usft)	(usft)			
0.0	6,865.0	130813 Ogden Fed Com 11H (Ogden 11H)	MWD	MWD - Standard

<b>Company:</b> Murchison Oil and Gas		<b>Local Co-ordinate Reference:</b> Well Ogden 11H			
<b>Project:</b> Ogden South		<b>TVD Reference:</b> WELL @ 3346.3usft (Original Well Elev)			
<b>Site:</b> Ogden 11H		<b>MD Reference:</b> WELL @ 3346.3usft (Original Well Elev)			
<b>Well:</b> Ogden 11H		<b>North Reference:</b> Grid			
<b>Wellbore:</b> Ogden 11H		<b>Survey Calculation Method:</b> Minimum Curvature			
<b>Design:</b> 130813 Ogden Fed Com 11H		<b>Database:</b> EDM 5000.1 Single User Db			

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
0.0	0.00	0.00	0.0	-3,346.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
100.0	0.00	0.00	100.0	-3,246.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
200.0	0.00	0.00	200.0	-3,146.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
300.0	0.00	0.00	300.0	-3,046.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
400.0	0.00	0.00	400.0	-2,946.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
500.0	0.00	0.00	500.0	-2,846.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
600.0	0.00	0.00	600.0	-2,746.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
700.0	0.00	0.00	700.0	-2,646.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
800.0	0.00	0.00	800.0	-2,546.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
900.0	0.00	0.00	900.0	-2,446.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
1,000.0	0.00	0.00	1,000.0	-2,346.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
1,050.0	0.00	0.00	1,050.0	-2,296.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
1,100.0	0.00	179.16	1,100.0	-2,246.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
1,150.0	0.00	179.16	1,150.0	-2,196.3	0.0	0.0	0.0	0.00	419,167.45	565,142.45	
1,200.0	3.00	179.16	1,200.0	-2,146.3	-1.3	0.0	1.3	6.00	419,166.15	565,142.47	
1,250.0	6.00	179.16	1,249.8	-2,096.5	-5.2	0.1	5.2	6.00	419,162.22	565,142.52	
1,300.0	9.00	179.16	1,299.4	-2,046.9	-11.8	0.2	11.8	6.00	419,155.70	565,142.62	
1,350.0	12.00	179.16	1,348.5	-1,997.8	-20.9	0.3	20.9	6.00	419,146.59	565,142.75	
1,400.0	13.50	179.16	1,397.3	-1,949.0	-31.9	0.5	31.9	3.00	419,135.56	565,142.91	
1,500.0	16.50	179.16	1,493.9	-1,852.4	-57.8	0.8	57.8	3.00	419,109.68	565,143.29	
1,550.0	18.00	179.16	1,541.6	-1,804.7	-72.6	1.1	72.6	3.00	419,094.86	565,143.51	
1,600.0	20.73	179.16	1,588.8	-1,757.5	-89.2	1.3	89.2	5.45	419,078.29	565,143.75	
1,700.0	26.18	179.16	1,680.5	-1,665.8	-129.0	1.9	129.0	5.45	419,038.51	565,144.34	
1,770.0	30.00	179.16	1,742.3	-1,604.0	-161.9	2.4	161.9	5.45	419,005.56	565,144.82	
1,800.0	32.70	179.16	1,767.9	-1,578.4	-177.5	2.6	177.5	9.00	418,989.96	565,145.05	
1,850.0	37.20	179.16	1,808.8	-1,537.5	-206.1	3.0	206.2	9.00	418,961.33	565,145.47	
1,870.0	39.00	179.16	1,824.6	-1,521.7	-218.5	3.2	218.5	9.00	418,948.99	565,145.65	

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well Ogden 11H
Project:	Ogden South	TVD Reference:	WELL @ 3346.3usft (Original Well Elev)
Site:	Ogden 11H	MD Reference:	WELL @ 3346.3usft (Original Well Elev)
Well:	Ogden 11H	North Reference:	Grid
Wellbore:	Ogden 11H	Survey Calculation Method:	Minimum Curvature
Design:	130813 Ogden Fed Com 11H	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
1,875.0	39.60	179.16	1,828.4	-1,517.9	-221.7	3.2	221.7	12.00	418,945.82	565,145.70	
1,900.0	42.60	179.16	1,847.3	-1,499.0	-238.1	3.5	238.1	12.00	418,929.39	565,145.94	
1,925.0	45.60	179.16	1,865.2	-1,481.1	-255.5	3.7	255.5	12.00	418,912.00	565,146.19	
1,950.0	48.60	179.16	1,882.3	-1,464.0	-273.8	4.0	273.8	12.00	418,893.69	565,146.46	
1,970.0	51.00	179.16	1,895.2	-1,451.1	-289.1	4.2	289.1	12.00	418,878.42	565,146.68	
1,975.0	51.60	179.16	1,898.3	-1,448.0	-293.0	4.3	293.0	12.00	418,874.52	565,146.74	
2,000.0	54.60	179.16	1,913.3	-1,433.0	-312.9	4.6	313.0	12.00	418,854.53	565,147.03	
2,025.0	57.60	179.16	1,927.2	-1,419.1	-333.7	4.9	333.7	12.00	418,833.79	565,147.34	
2,050.0	60.60	179.16	1,940.1	-1,406.2	-355.1	5.2	355.2	12.00	418,812.34	565,147.65	
2,075.0	63.60	179.16	1,951.8	-1,394.5	-377.2	5.5	377.3	12.00	418,790.26	565,147.98	
2,100.0	66.60	179.16	1,962.3	-1,384.0	-399.9	5.9	399.9	12.00	418,767.59	565,148.31	
2,125.0	69.60	179.16	1,971.6	-1,374.7	-423.1	6.2	423.1	12.00	418,744.40	565,148.65	
2,150.0	72.60	179.16	1,979.7	-1,366.6	-446.7	6.6	446.8	12.00	418,720.75	565,149.00	
2,175.0	75.60	179.16	1,986.6	-1,359.7	-470.8	6.9	470.8	12.00	418,696.72	565,149.35	
2,200.0	78.60	179.16	1,992.1	-1,354.2	-495.1	7.3	495.2	12.00	418,672.36	565,149.71	
2,225.0	81.60	179.16	1,996.4	-1,349.9	-519.8	7.6	519.8	12.00	418,647.74	565,150.07	
2,250.0	84.60	179.16	1,999.4	-1,346.9	-544.6	8.0	544.6	12.00	418,622.93	565,150.43	
2,270.0	87.00	179.16	2,000.9	-1,345.4	-564.5	8.3	564.6	12.00	418,602.99	565,150.72	
2,275.0	87.67	179.16	2,001.1	-1,345.2	-569.5	8.4	569.6	13.33	418,597.99	565,150.80	
2,300.0	91.00	179.16	2,001.4	-1,344.9	-594.5	8.7	594.6	13.33	418,573.00	565,151.16	
2,400.0	91.00	179.16	1,999.7	-1,346.6	-694.5	10.2	694.6	0.00	418,473.04	565,152.63	
2,500.0	91.00	179.16	1,997.9	-1,348.4	-794.5	11.6	794.5	0.00	418,373.07	565,154.09	
2,600.0	91.00	179.16	1,996.2	-1,350.1	-894.4	13.1	894.5	0.00	418,273.11	565,155.56	
2,700.0	91.00	179.16	1,994.5	-1,351.8	-994.4	14.6	994.5	0.00	418,173.14	565,157.03	
2,800.0	91.00	179.16	1,992.7	-1,353.6	-1,094.4	16.0	1,094.5	0.00	418,073.18	565,158.49	
2,900.0	91.00	179.16	1,991.0	-1,355.3	-1,194.3	17.5	1,194.5	0.00	417,973.21	565,159.96	
3,000.0	91.00	179.16	1,989.2	-1,357.1	-1,294.3	19.0	1,294.5	0.00	417,873.25	565,161.42	

<b>Company:</b> Murchison Oil and Gas						<b>Local Co-ordinate Reference:</b>			<b>Well Ogden 11H</b>		
<b>Project:</b> Ogden South						<b>TVD Reference:</b>			<b>WELL @ 3346.3usft (Original Well Elev)</b>		
<b>Site:</b> Ogden 11H						<b>MD Reference:</b>			<b>WELL @ 3346.3usft (Original Well Elev)</b>		
<b>Well:</b> Ogden 11H						<b>North Reference:</b>			<b>Grid</b>		
<b>Wellbore:</b> Ogden 11H						<b>Survey Calculation Method:</b>			<b>Minimum Curvature</b>		
<b>Design:</b> 130813 Ogden Fed Com 11H						<b>Database:</b>			<b>EDM 5000.1 Single User Db</b>		
<b>Planned Survey</b>											
MD (usft)	Inc. (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
3,100.0	91.00	179.16	1,987.5	-1,358.8	-1,394.3	20.4	1,394.4	0.00	417,773.28	565,162.89	
3,200.0	91.00	179.16	1,985.7	-1,360.6	-1,494.3	21.9	1,494.4	0.00	417,673.32	565,164.35	
3,300.0	91.00	179.16	1,984.0	-1,362.3	-1,594.2	23.4	1,594.4	0.00	417,573.35	565,165.82	
3,400.0	91.00	179.16	1,982.2	-1,364.1	-1,694.2	24.8	1,694.4	0.00	417,473.39	565,167.28	
3,500.0	91.00	179.16	1,980.5	-1,365.8	-1,794.2	26.3	1,794.4	0.00	417,373.42	565,168.75	
3,600.0	91.00	179.16	1,978.7	-1,367.6	-1,894.2	27.8	1,894.4	0.00	417,273.46	565,170.22	
3,700.0	91.00	179.16	1,977.0	-1,369.3	-1,994.1	29.2	1,994.4	0.00	417,173.49	565,171.68	
3,800.0	91.00	179.16	1,975.3	-1,371.0	-2,094.1	30.7	2,094.3	0.00	417,073.53	565,173.15	
3,900.0	91.00	179.16	1,973.5	-1,372.8	-2,194.1	32.2	2,194.3	0.00	416,973.56	565,174.61	
4,000.0	91.00	179.16	1,971.8	-1,374.5	-2,294.1	33.6	2,294.3	0.00	416,873.60	565,176.08	
4,100.0	91.00	179.16	1,970.0	-1,376.3	-2,394.0	35.1	2,394.3	0.00	416,773.63	565,177.54	
4,200.0	91.00	179.16	1,968.3	-1,378.0	-2,494.0	36.6	2,494.3	0.00	416,673.67	565,179.01	
4,300.0	91.00	179.16	1,966.5	-1,379.8	-2,594.0	38.0	2,594.3	0.00	416,573.70	565,180.48	
4,400.0	91.00	179.16	1,964.8	-1,381.5	-2,694.0	39.5	2,694.2	0.00	416,473.74	565,181.94	
4,500.0	91.00	179.16	1,963.0	-1,383.3	-2,793.9	41.0	2,794.2	0.00	416,373.77	565,183.41	
4,600.0	91.00	179.16	1,961.3	-1,385.0	-2,893.9	42.4	2,894.2	0.00	416,273.81	565,184.87	
4,700.0	91.00	179.16	1,959.5	-1,386.8	-2,993.9	43.9	2,994.2	0.00	416,173.84	565,186.34	
4,800.0	91.00	179.16	1,957.8	-1,388.5	-3,093.9	45.4	3,094.2	0.00	416,073.88	565,187.80	
4,900.0	91.00	179.16	1,956.1	-1,390.2	-3,193.8	46.8	3,194.2	0.00	415,973.91	565,189.27	
5,000.0	91.00	179.16	1,954.3	-1,392.0	-3,293.8	48.3	3,294.2	0.00	415,873.95	565,190.74	
5,100.0	91.00	179.16	1,952.6	-1,393.7	-3,393.8	49.8	3,394.1	0.00	415,773.98	565,192.20	
5,200.0	91.00	179.16	1,950.8	-1,395.5	-3,493.8	51.2	3,494.1	0.00	415,674.02	565,193.67	
5,300.0	91.00	179.16	1,949.1	-1,397.2	-3,593.7	52.7	3,594.1	0.00	415,574.05	565,195.13	
5,400.0	91.00	179.16	1,947.3	-1,399.0	-3,693.7	54.2	3,694.1	0.00	415,474.09	565,196.60	
5,500.0	91.00	179.16	1,945.6	-1,400.7	-3,793.7	55.6	3,794.1	0.00	415,374.12	565,198.06	
5,600.0	91.00	179.16	1,943.8	-1,402.5	-3,893.6	57.1	3,894.1	0.00	415,274.16	565,199.53	
5,700.0	91.00	179.16	1,942.1	-1,404.2	-3,993.6	58.6	3,994.1	0.00	415,174.19	565,201.00	



<b>Company:</b>	Murchison Oil and Gas	<b>Local Co-ordinate Reference:</b>	Well Ogden 11H
<b>Project:</b>	Ogden South	<b>TVD Reference:</b>	WELL @ 3346.3usft (Original Well Elev)
<b>Site:</b>	Ogden 11H	<b>MD Reference:</b>	WELL @ 3346.3usft (Original Well Elev)
<b>Well:</b>	Ogden 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Ogden 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	130813 Ogden Fed Com 11H	<b>Database:</b>	EDM 5000.1 Single User Db

Planned Survey												
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)		
5,800.0	91.00	179.16	1,940.4	-1,405.9	-4,093.6	60.0	4,094.0	0.00	415,074.23	565,202.46		
5,900.0	91.00	179.16	1,938.6	-1,407.7	-4,193.6	61.5	4,194.0	0.00	414,974.26	565,203.93		
6,000.0	91.00	179.16	1,936.9	-1,409.4	-4,293.5	63.0	4,294.0	0.00	414,874.30	565,205.39		
6,100.0	91.00	179.16	1,935.1	-1,411.2	-4,393.5	64.4	4,394.0	0.00	414,774.33	565,206.86		
6,200.0	91.00	179.16	1,933.4	-1,412.9	-4,493.5	65.9	4,494.0	0.00	414,674.37	565,208.32		
6,300.0	91.00	179.16	1,931.6	-1,414.7	-4,593.5	67.3	4,594.0	0.00	414,574.40	565,209.79		
6,400.0	91.00	179.16	1,929.9	-1,416.4	-4,693.4	68.8	4,693.9	0.00	414,474.44	565,211.25		
6,500.0	91.00	179.16	1,928.1	-1,418.2	-4,793.4	70.3	4,793.9	0.00	414,374.47	565,212.72		
6,600.0	91.00	179.16	1,926.4	-1,419.9	-4,893.4	71.7	4,893.9	0.00	414,274.51	565,214.19		
6,700.0	91.00	179.16	1,924.6	-1,421.7	-4,993.4	73.2	4,993.9	0.00	414,174.54	565,215.65		
6,800.0	91.00	179.16	1,922.9	-1,423.4	-5,093.3	74.7	5,093.9	0.00	414,074.58	565,217.12		
6,865.0	91.00	179.16	1,921.8	-1,424.5	-5,158.3	75.6	5,158.9	0.00	414,009.60	565,218.07		

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
300.0	300.0	9 5/8" Surface Casing	9-5/8	12-1/4		
2,123.2	1,971.0	7" Production Casing	7	8-3/4		
6,865.0	1,921.8	4 1/2" Liner	4-1/2	6-1/8		

<b>Company:</b>	Murchison Oil and Gas	<b>Local Co-ordinate Reference:</b>	Well Ogden 11H
<b>Project:</b>	Ogden South	<b>TVD Reference:</b>	WELL @ 3346.3usft (Original Well Elev)
<b>Site:</b>	Ogden 11H	<b>MD Reference:</b>	WELL @ 3346.3usft (Original Well Elev)
<b>Well:</b>	Ogden 11H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Ogden 11H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	130813 Ogden Fed Com 11H	<b>Database:</b>	EDM 5000.1 Single User Db

Formations				
Measured Depth (usft)	Vertical Depth (usft)	Name	Dip (°)	
2,096.8	1,961.0	Lamar Lime	0.00	
2,194.4	1,991.0	Ramsey Sand	0.00	
306.0	306.0	Salado	0.00	
2,041.8	1,936.0	Base Delaware Anhydrite	0.00	

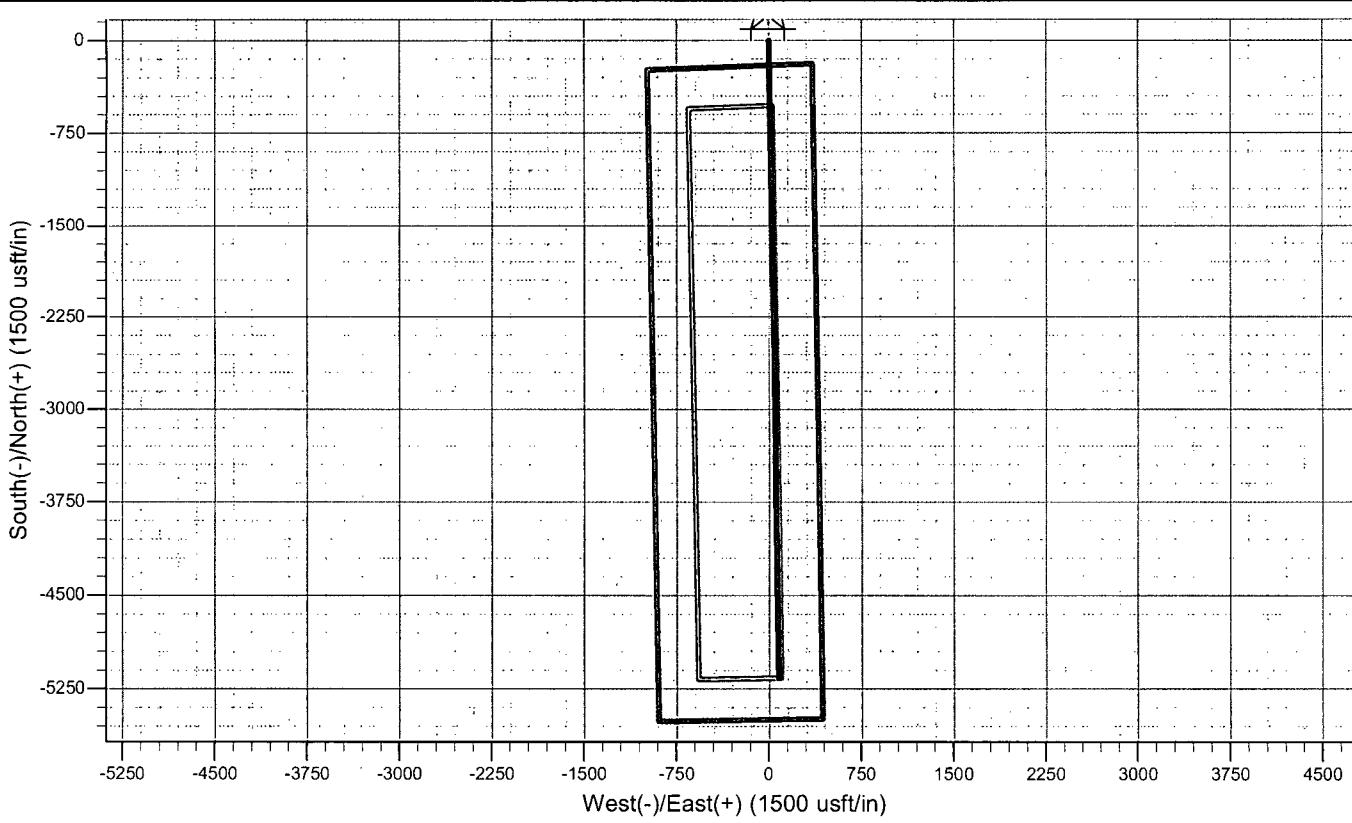
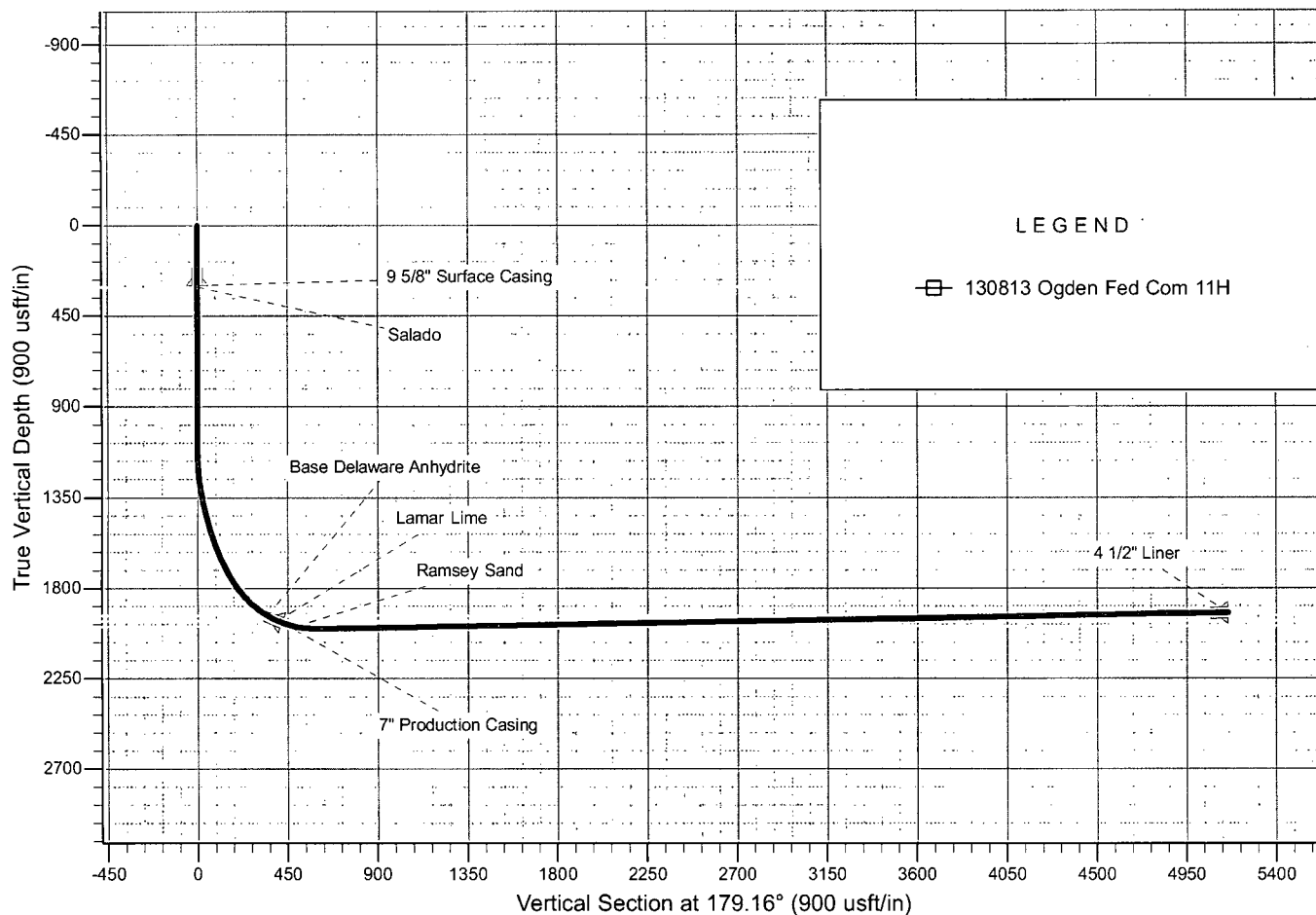
Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,150.0	1,150.0	0.0	0.0	Start Build 6.00
1,350.0	1,348.5	-20.9	0.3	Start Build 3.00
1,550.0	1,541.6	-72.6	1.1	Start Build 5.45
1,770.0	1,742.3	-161.9	2.4	Start Build 9.00
1,870.0	1,824.6	-218.5	3.2	Start Build 12.00
1,970.0	1,895.2	-289.1	4.2	Start Build 12.00
2,270.0	2,000.9	-564.5	8.3	Start Build 13.33
2,300.0	2,001.4	-594.5	8.7	Start 4565.0 hold at 2300.0 MD
6,865.0	1,921.8	-5,158.3	75.6	TD at 6865.0

Checked By: _____	Approved By: _____	Date: _____
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Project: Ogden South  
 Site: Ogden 11H  
 Well: Ogden 11H  
 Wellbore: Ogden 11H  
 Design: 130813 Ogden Fed Com 11H

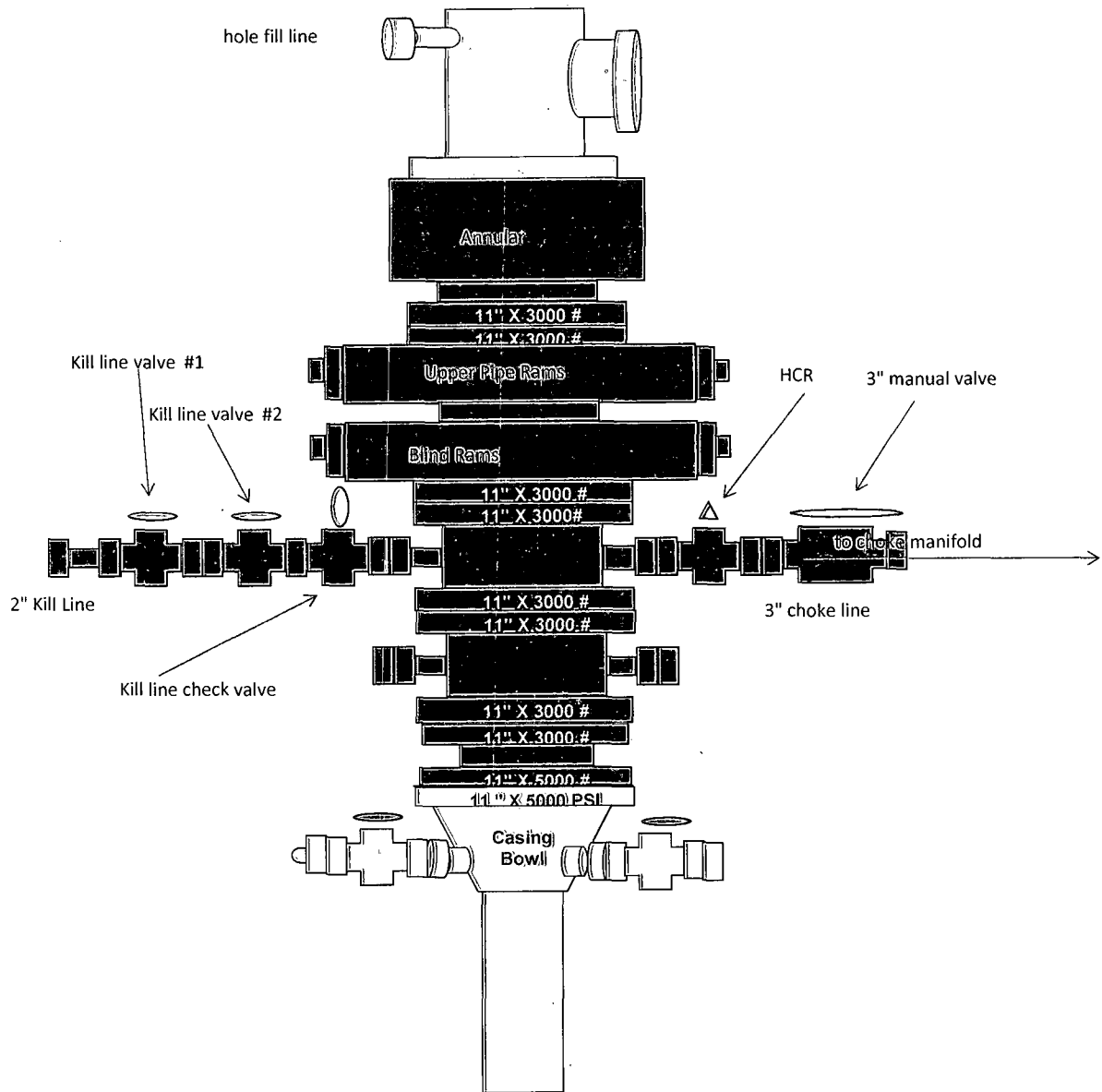


Azimuths to Grid North  
 True North: -0.04°  
 Magnetic North: 7.60°  
 Magnetic Field  
 Strength: 48295.3snT  
 Dip Angle: 59.95°  
 Date: 25/06/2013  
 Model: IGRF2010



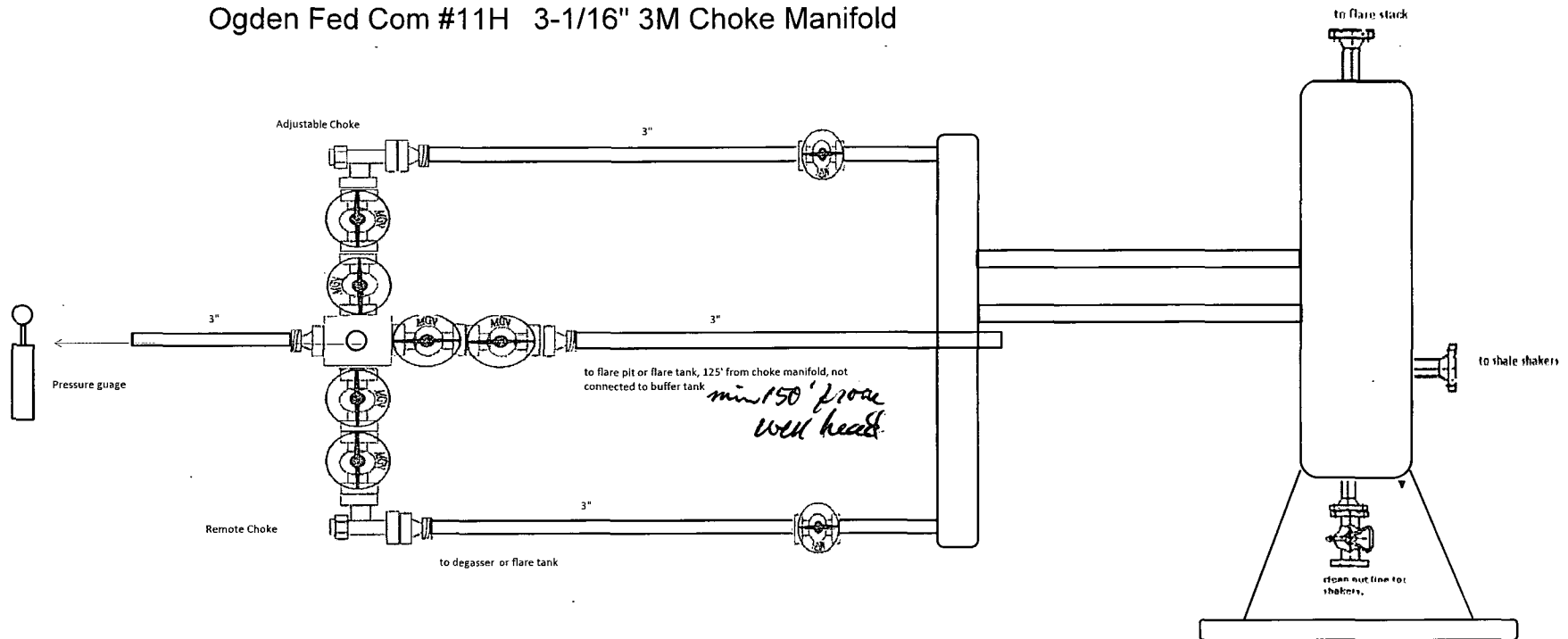
# EXHIBIT G-1

Ogden Fed Com #11H - 11" 3M BOP stack



## EXHIBIT G-2

### Ogden Fed Com #11H 3-1/16" 3M Choke Manifold

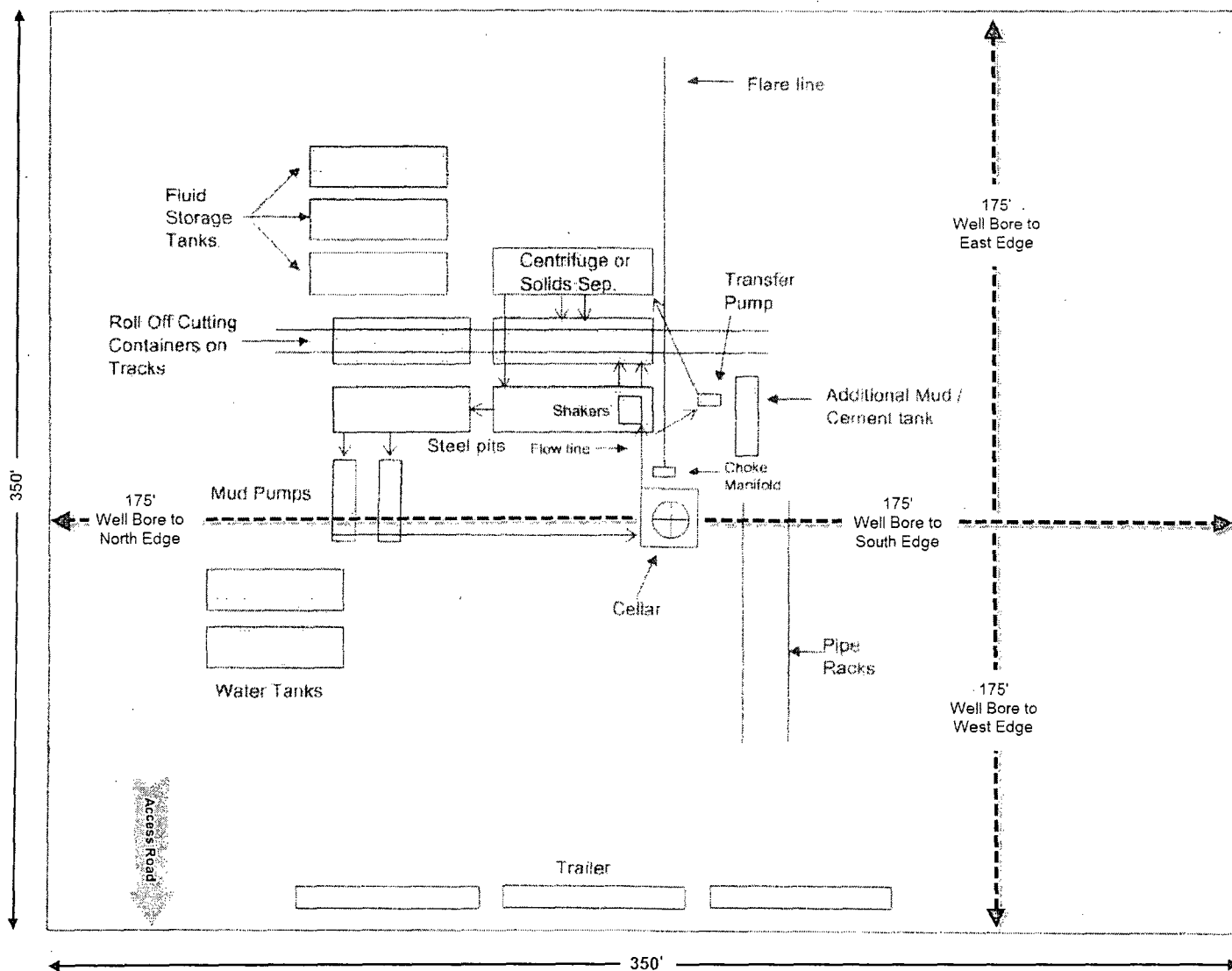


**Murchison Oil & Gas, Inc.**  
**Ogden Fed Com 11H**  
200' FSL & 350' FEL  
Sec. 2, T25S, R26E  
Eddy County, NM

**CLOSED-LOOP OPERATING AND MAINTENANCE PLAN**

- All drilling fluid circulated over shaker(s) with cuttings discharged into roll-off container.
- Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll-off container.
- Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.
- Roll-off containers are lined and de-watered with fluids re-circulated into system.
- Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.
- This equipment will be maintained 24 hours/day by solids control personnel and/or rig crews that stay on location.
- Cuttings will be hauled to one of the following depending upon which rig is available to drill this well:
  - R360 Permit Number R9166 / NM-01-0006
  - GMI Permit Number 711-019-001 / NM-01-0019

# Ogden Fed Com 11H Closed Loop Equipment Diagram



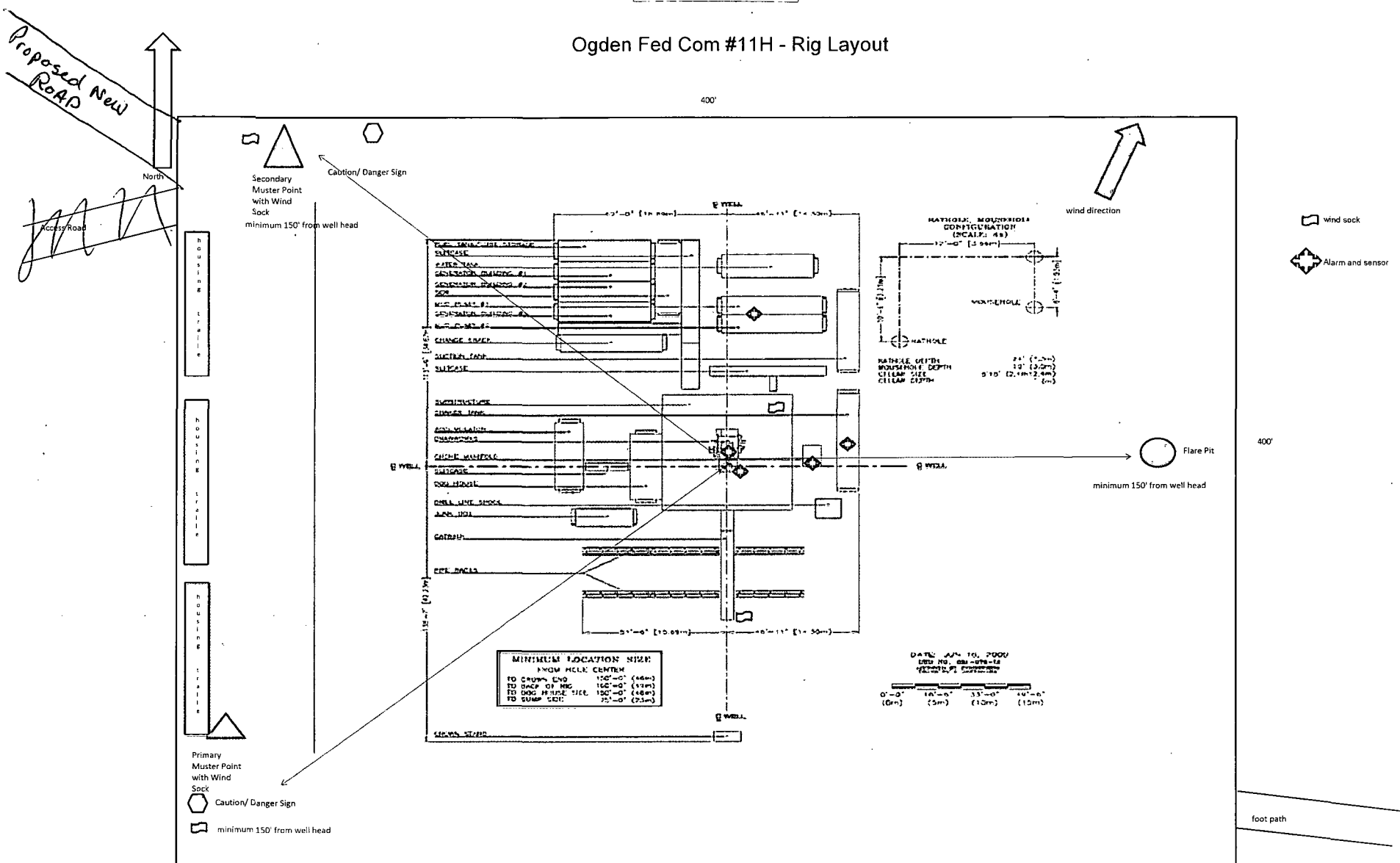
V-Door shall be oriented west.

A-2

WB 8-5-2013

EXHIBIT E

Ogden Fed Com #11H - Rig Layout



Y-door shall be oriented west

LB 8-5-2013



**MURCHISON OIL & GAS, INC. ("MOGI")**

**OGDEN FED COM 11H**

**H2S Drilling Operations Plan**

**August 2013**

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## H<sub>2</sub>S CONTINGENCY PLAN SECTION

### **Scope:**

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, or following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas (H<sub>2</sub>S).

### **Objective:**

Prevent any and all accidents, and prevent the uncontrolled release of H<sub>2</sub>S into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

### **Discussion of Plan:**

#### ***Suspected Problem Zones:***

***Implementation:*** This plan, with all details, is to be fully implemented 1000' before drilling into the first sour zone.

***Emergency Response Procedure:*** This section outlines the conditions and denotes steps to be taken in the event of an emergency.

***Emergency Equipment and Procedure:*** This section outlines the safety and emergency equipment that will be required for the drilling of this well.

***Training Provisions:*** This section outlines the training provisions that must be adhered to 1000' before drilling into the first sour zone.

***Emergency call lists:*** Included are the telephone numbers of all persons that would need to be contacted, should an H<sub>2</sub>S emergency occur.

***Briefing:*** This section deals with the briefing of all persons involved with the drilling of this well.

***Public Safety:*** Public Safety Personnel will be made aware of the drilling of this well.

***Check Lists:*** Status check lists and procedural check lists have been included to ensure adherence to the plan.

***General Information:*** A general information section has been included to supply support information.

## EMERGENCY PROCEDURES SECTION

- I. In the event of any evidence of H<sub>2</sub>S level above 10 ppm, take the following steps immediately:
  - A. Secure breathing apparatus.
  - B. Order non-essential personnel out of the danger zone.
  - C. Take steps to determine if the H<sub>2</sub>S level can be corrected or suppressed, and if so, proceed with normal operations.
- II. If uncontrollable conditions occur, proceed with the following:
  - A. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify necessary public safety personnel and the New Mexico Oil & Gas of the situation.
  - B. Remove all personnel to the Safe Briefing Area.
  - C. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.
  - D. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.
- III. Responsibility:
  - A. The Company Approved Supervisor shall be responsible for the total implementation of the plan.
  - B. The Company Approved Supervisor shall be in complete command during any emergency.
  - C. The Company Approved Supervisor shall designate a back up Supervisor in the event that he/she is not available.

## **EMERGENCY PROCEDURE IMPLEMENTATION**

### **I. Drilling or Tripping**

#### **A. All Personnel**

1. When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
2. Check status of other personnel (buddy system).
3. Secure breathing apparatus.
4. Wait for orders from supervisor.

#### **B. Drilling Foreman**

1. Report to the upwind Safe Briefing Area.
2. Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
3. Determine the concentration of H<sub>2</sub>S.
4. Assess the situation and take appropriate control measures.

#### **C. Tool Pusher**

1. Report to the upwind Safe Briefing Area.
2. Don breathing apparatus and return to the point of release with the Drilling Foreman or the Driller (buddy system).
3. Determine the concentration.
4. Assess the situation and take appropriate control measures.

#### **D. Driller**

1. Check the status of other personnel (in a rescue attempt, always use the buddy system).
2. Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
3. Assume the responsibility of the Drilling Foreman and the Tool Pusher until they arrive, in the event of their absence.

E. Derrick Man and Floor Hands

1. Remain in the upwind Safe Briefing Area until otherwise instructed by a supervisor.

F. Mud Engineer

1. Report to the upwind Safe Briefing Area.
2. When instructed, begin check of mud for pH level and H<sub>2</sub>S level.

G. Safety Personnel

1. Don Breathing Apparatus.
2. Check status of all personnel.
3. Wait for instructions from Drilling Foreman or Tool Pusher.

**II. Taking a Kick**

- A. All personnel report to the upwind Safe Briefing Area.
- B. Follow standard BOP procedures.

**III. Open Hole Logging**

- A. All unnecessary personnel should leave the rig floor.
- B. Drilling Foreman and Safety Personnel should monitor the conditions and make necessary safety equipment recommendations.

**IV. Running Casing or Plugging**

- A. Follow "Drilling or Tripping" procedures.
- B. Assure that all personnel have access to protective equipment.

## **SIMULATED BLOWOUT CONTROL DRILLS**

All drills will be initiated by activating alarm devices (air horn). One long blast, on the air horn, for ACTUAL and SIMULATED Blowout Control Drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill #1        On-bottom Drilling

Drill #2        Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire pit drill assignment. The times must be recorded on the IADC Driller's Log as "Blowout Control Drill".

Drill No.:

Reaction Time to Shut-In:

minutes,

seconds.

Total Time to Complete Assignment:

minutes,

seconds.

### **I. Drill Overviews**

#### **A. Drill No. 1 - On-bottom Drilling**

1. Sound the alarm immediately.
2. Stop the rotary and hoist the kelly joint above the rotary table.
3. Stop the circulatory pump.
4. Close the drill pipe rams.
5. Record casing and drill pipe shut-in pressures and pit volume increases.

#### **B. Drill No. 2 – Tripping Drill Pipe**

1. Sound the alarm immediately.
2. Position the upper tool joint just above the rotary table and set the slips.
3. Install a full opening valve or inside blowout preventor tool in order to close the drill pipe.
4. Close the drill pipe rams.
5. Record the shut-in annular pressure.

## II. Crew Assignments

### A. Drill No. 1 – On-bottom Drilling

#### 1. Driller

- a) Stop the rotary and hoist the kelly joint above the rotary table.
- b) Stop the circulatory pump.
- c) Check flow.
- d) If flowing, sound the alarm immediately.
- e) Record the shut-in drill pipe pressure.
- f) Determine the mud weight increase needed or other courses of action.

#### 2. Derrickman

- a) Open choke line valve at BOP.
- b) Signal Floor Man # 1 at accumulator that choke line is open.
- c) Close choke and upstream valve after pipe tams have been closed.
- d) Read the shut-in annular pressure and report readings to Driller.

#### 3. Floor Man #1

- a) Close the pipe rams after receiving the signal from the Derrickman.
- b) Report to Driller for further instructions.

#### 4. Floor Man #2

- a) Notify the Tool Pusher and Operator Representative of the H<sub>2</sub>S alarms.
- b) Check for open fires and, if safe to do so, extinguish them.
- c) Stop all welding operations.
- d) Turn-off all non-explosion proof lights and instruments.
- e) Report to Driller for further instructions.

#### 5. Tool Pusher

- a) Report to the rig floor.
- b) Have a meeting with all crews.



- c) Compile and summarize all information.
- d) Calculate the proper kill weight.
- e) Ensure that proper well procedures are put into action.

6. Operator Representative

- a) Notify the Drilling Superintendent.
- b) Determine if an emergency exists and if so, activate the contingency plan.

B. Drill No. 2 – Tripping Pipe

1. Driller

- a) Sound the alarm immediately when mud volume increase has been detected.
- b) Position the upper tool joint just above the rotary table and set slips.
- c) Install a full opening valve or inside blowout preventor tool to close the drill pipe.
- d) Check flow.
- e) Record all data reported by the crew.
- f) Determine the course of action.

2. Derrickman

- a) Come down out of derrick.
- b) Notify Tool Pusher and Operator Representative.
- c) Check for open fires and, if safe to do so, extinguish them.
- d) Stop all welding operations.
- e) Report to Driller for further instructions.

3. Floor Man #1

- a) Pick up full opening valve or inside blowout preventor tool and stab into tool joint above rotary table (with Floor Man # 2).
- b) Tighten valve with back-up tongs.
- c) Close pipe rams after signal from Floor Man # 2.

- d) Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.
- e) Report to Driller for further instructions.

#### 4. Floor Man #2

- a) Pick-up full opening valve or inside blowout preventor tool and stab into tool joint above rotary table (with Floor Man #1).
- b) Position back-up tongs on drill pipe.
- c) Open choke line valve at BOP.
- d) Signal Floor Man # 1 at accumulator that choke line is open.
- e) Close choke and upstream valve after pipe rams have been closed.
- f) Check for leaks on BOP stack and choke manifold.
- g) Read annular pressure.
- h) Report readings to the Driller.

#### 5. Tool Pusher

- a) Report to the rig floor.
- b) Have a meeting with all of the crews.
- c) Compile and summarize all information.
- d) See that proper well kill procedures are put into action.

#### 6. Operator Representative

- a) Notify Drilling Superintendent
- b) Determine if an emergency exists, and if so, activate the contingency plan.

## IGNITION PROCEDURES

### Responsibility:

The decision to ignite the well is the responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. In the event the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

### Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Foreman is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

NOTE: After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Do not assume the area is safe after the well is ignited.

## TRAINING PROGRAM

When working in an area where Hydrogen Sulfide ( $H_2S$ ) might be encountered, definite training requirements for all personnel must be carried out. The Company Supervisor will ensure that all personnel, at the well site, have had adequate training in the following:

1. Hazards and Characteristics of Hydrogen Sulfide.
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4.  $H_2S$  detection, emergency alarm and sensor location.
5. Emergency rescue.
6. Resuscitators.
7. First aid and artificial resuscitation.
8. The effects of Hydrogen Sulfide on metals. All tubulars used down hole will be sour service.
9. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains  $H_2S$ , and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

## EMERGENCY EQUIPMENT REQUIREMENTS

### Lease Entrance:

Should be located at the lease entrance with the following information:

CAUTION-POTENTIAL POISON GAS  
HYDROGEN SULFIDE

### Respiratory Equipment:

- Fresh air breathing equipment should be placed at the safe briefing areas and should include the following: Two SCBA's will be placed at each briefing area. A moveable Breathing air trailer with 2 SCBA's, 5 work/escape units, ample breathing air hose and manifolds will be on location. The breathing air hose will be installed on the rig floor and derrick along with breathing air manifolds so that it will not restrict work activity. All employees that may wear respiratory will complete a MEQ and be quantitative fit tested 1000' prior to the 1<sup>st</sup> zone that may contain H<sub>2</sub>S.

### Windsocks or Wind Streamers:

- A minimum of two 10" windsocks located at strategic locations so that they may be seen from any point on location. More will be used if necessary for wind consciousness.
- Wind streamers (if preferred) should be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

### Hydrogen Sulfide Detector and Alarms:

- 1- Four channel H<sub>2</sub>S monitor w/audible and visual alarms that are strategically located so they can be seen and heard by employees working on the well site. All sensors will be bump tested or calibrated if necessary on a weekly basis. The alarms will be set to visually alarm at 10 PPM and audible at 14 PPM.
- Four (4) sensors located as follows: #1 – Rig Floor, #2 & #3 – Bell Nipple, #4 – End of flow line where well bore fluid is discharged
- Portable colormetric tube detector w/tubes will be stored in the Toolpusher trailer

### Well Condition Sign and Flags:

The Well Condition Sign w/flags should be placed a minimum of 150' before you enter the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN – Normal Operating Conditions  
YELLOW – Potential Danger  
RED – Danger, H<sub>2</sub>S Gas Present

**Auxiliary Rescue Equipment:**

- Stretcher (drilling contractor)
- 2 – 100' OSHA approved Rescue lines (drilling contractor)
- First Aid Kit properly stocked (drilling contractor)

**Mud Inspection Equipment:**

Garret Gas Train or Hach Tester for inspection of Hydrogen Sulfide in the drilling mud system.

**Fire Extinguishers:**

Adequate fire extinguishers shall be located at strategic locations. (Provided by Drilling Contractor)

**Blowout Preventor:**

- The well shall have hydraulic BOP equipment for the anticipated BHP.
- The rig shall have a mud/gas separator.

**Confined Space Monitor:**

There should be a portable multi-gas monitor with at least 3 sensors (O<sub>2</sub>, LEL & H<sub>2</sub>S). This instrument should be used to test the atmosphere of any confined space before entering. It should also be used for atmospheric testing for LEL gas before beginning any type of Hot Work. Proper calibration documentation will need to be provided. **(Supplied by Drilling Contractor)**

**Communication Equipment:**

- Proper communication equipment such as cell phones or 2 – way radios should be available at the rig.
- Radio communication shall be available for communication between the company man's trailer, rig floor and the tool pusher's trailer.
- Communication equipment shall be available on the vehicles.

**Special Control Equipment:**

- Hydraulic BOP equipment with remote control on the ground.
- Rotating head at the surface casing point.
- BOP, Choke Manifold and Process Flow Diagrams (see APD)
- 5M Choke Manifold Equipment (see APD)

**Evacuation Plan:**

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

**Designated Areas:*****Parking and Visitor area:***

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- Designated smoking area.

***Safe Briefing Areas:***

- Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.
- Personal protective equipment should be stored at both briefing areas or if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

**NOTE:**

- Additional equipment will be available at the MOGI Carlsbad, New Mexico office.
- Additional personal H<sub>2</sub>S monitors are available for all employees on location.
- Automatic Flare Igniters are recommended for installation on the rig.

## CHECK LISTS

### Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance. \_\_\_\_\_
2. Two (2) wind socks (in required locations). \_\_\_\_\_
3. Wind Streamers (if required). \_\_\_\_\_
4. SCBA's on location for all rig personnel and mud loggers. \_\_\_\_\_
5. Air packs, inspected and ready for use. \_\_\_\_\_
6. Spare bottles for each air pack (if required). \_\_\_\_\_
7. Cascade system for refilling air bottles. \_\_\_\_\_
8. Cascade system and hose line hook up. \_\_\_\_\_
9. Choke manifold hooked-up and tested.  
(Before drilling out surface casing.) \_\_\_\_\_
10. Remote Hydraulic BOP control (hooked-up and  
tested before drilling out surface casing). \_\_\_\_\_
11. BOP tested (before drilling out surface casing). \_\_\_\_\_
12. Mud engineer on location with equipment to test  
mud for H<sub>2</sub>S. \_\_\_\_\_
13. Safe Briefing Areas set-up. \_\_\_\_\_
14. Well Condition sign and flags on location and ready. \_\_\_\_\_
15. Hydrogen Sulfide detection system hooked-up & tested. \_\_\_\_\_
16. Hydrogen Sulfide alarm system hooked-up & tested. \_\_\_\_\_
17. Stretcher on location at Safe Briefing Area. \_\_\_\_\_
18. 2-100' OSHA Approved Life Lines on location. \_\_\_\_\_
19. 1-20# Fire Extinguisher in safety trailer. \_\_\_\_\_
20. Confined Space Monitor on location and tested. \_\_\_\_\_



- 21. All rig crews and supervisor trained (as required). \_\_\_\_\_
- 22. Access restricted for unauthorized personnel. \_\_\_\_\_
- 23. Drills on H<sub>2</sub>S and well control procedures. \_\_\_\_\_
- 24. All outside service contractors advised of potential H<sub>2</sub>S on the well. \_\_\_\_\_
- 25. NO SMOKING sign posted. \_\_\_\_\_
- 26. H<sub>2</sub>S Detector Pump w/tubes on location. \_\_\_\_\_
- 27. 25mm Flare Gun on location w/flares. \_\_\_\_\_
- 28. Automatic Flare Ignitor installed on rig. \_\_\_\_\_

## Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check Breathing equipment to insure that they have not been tampered with.
3. Check pressure on the supply air bottles to make sure they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that they are fully charged and operational. This requires that the air cylinder be opened and the mask assembly be put on and tested to make sure that the regulators and masks are properly working. Negative and Positive pressure should be conducted on all masks.
2. BOP skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all breathing air mask assemblies to see that straps are loosened and turned back, ready to use.
5. Check pressure on cascade air cylinders to make sure they are fully charged and ready to use for refill purposes if necessary.
6. Check all cascade system regulators to make sure they work properly.
7. Perform breathing drills with on-site personnel.
8. Check the following supplies for availability:
  - Stretcher
  - Safety Belts and ropes.
  - Spare air bottles.
  - Spare oxygen bottles (if resuscitator required).
  - Gas Detector Pump and tubes.
  - Emergency telephone lists.
9. Test the Confined Space Monitor to verify the batteries are good and that the unit is in good working condition and has been properly calibrated according to manufacturer's recommendations.

## BRIEFING PROCEDURES

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

### Pre-Spud Meeting

Date: Prior to spudding the well.

Attendance: Drilling Supervisor  
Drilling Engineer  
Drilling Foreman  
Rig Tool Pushers  
Mud Engineer  
All Safety Personnel  
Key Service Company Personnel

Purpose: Review and discuss the well program, step-by-step, to insure complete understanding of assignments and responsibilities.

## EVACUATION PLAN

### General Plan

The direct lines of action prepared by MOGI, to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foremen, Tool Pusher or Driller) determine that Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the Area Map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.

5. After the discharge of gas has been controlled, "Company" safety personnel will determine when the area is safe for re-entry.

## Emergency Assistance Telephone List

### **PUBLIC SAFETY:**

**911 or**

Eddy County Sheriff or Police	(575) 746-9888
State Police	(888) 442-6677
State Emergency Response Center (SERC)	(505) 476-9635
Artesia Police/Fire/Ambulance Department	(575) 746-5000
Ambulance	911
Department of Public Safety	(392) 392-5588
Oil Conservation Division	(575) 748-1283

### **MURCHISON OIL & GAS, INC.**

Murchison Oil & Gas, Inc.	Office (972) 931-0700
Drilling Manager:	Office (972) 931-0700
Joel Stockford	Cell (972) 835-3349
Senior Engineer:	Office (972) 931-0700
Steve Morris	Cell (972) 835-3315
Vice President Operations	Office (972) 931-0700
Jack Rankin	Cell (713) 582-3859
Safety Coordinator	Office (575) 628-3932
Greg Boans	Cell (575) 706-0667

### **Drilling Contractor – TBD**

Tool Pusher:

Relief Tool Pusher:

Drilling Manager:

### **MOGI Carlsbad**

**(575) 628-3932**

Field Operations Manager:

Randy Dutton	Cell (575) 706-4209
Chace Walls	Cell (575) 520-1795

Operations Manager:

Greg Boans	Cell (575) 706-0667
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The geologic zones that will be encountered during drilling are known to contain hazardous quantities of H<sub>2</sub>S. The Aerial Photo (APD Exhibit C-3) illustrates that there are no residents within a 3000' radius of the surface location. If new residents move into the area, they will be notified via a hand delivered written notice describing the activities, potential hazards, conditions of evacuation, evacuation drill siren alarms and other precautionary measures.

Evacuee Description:

Residents: THERE ARE NO RESIDENTS WITHIN 3000' ROE.

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:

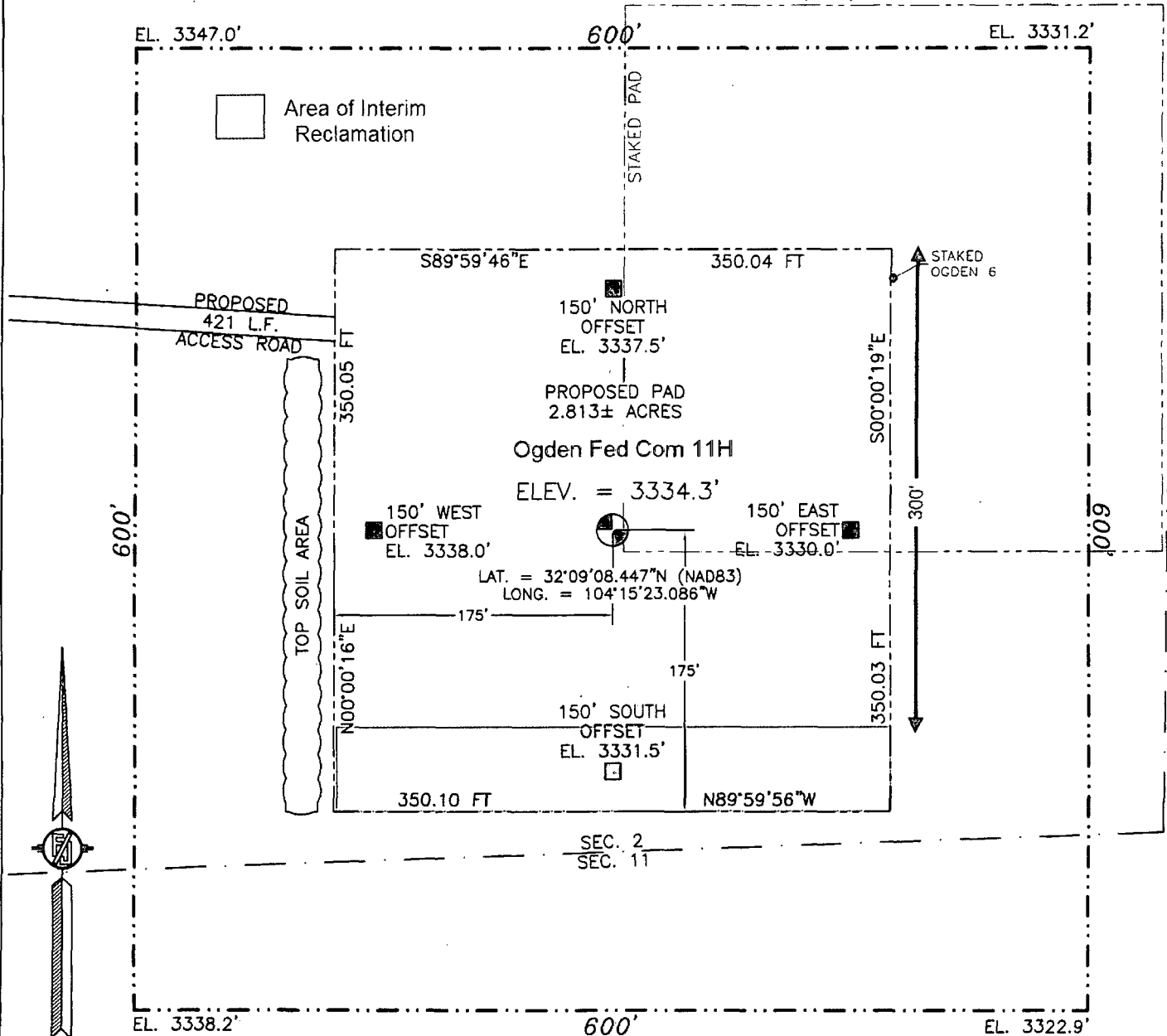
All evacuees will migrate laterally toward the wind direction.

MOGI will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local and emergency medical service as necessary.

EXHIBIT F-2 AREA OF INTERIM RECLAMATION

SECTION 2, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) IN DEGREES, MINUTES AND DECIMAL SECONDS FORMAT. BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST (NAD83) COORDINATES MODIFIED TO SURFACE.



0 10 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR. 720 (BLACK RIVER VILLAGE RD.) AND CR. 748 (OLD CAVERN HWY.) AND CR. 742 (JOHN D. FOREHAND RD.) GO SOUTH ON CR. 742 3.9 MILES TO CALICHE LEASE ROAD TO RIGHT (WEST) GO WEST ON SAID CALICHE ROAD 2.5 MILES TO CALICHE ROAD TO LEFT (SOUTH) GO SOUTH ON CALICHE ROAD 1.0 MILES AT RIGHT TURN FOLLOW PROPOSED ROAD SOUTH TO SITE.

MURCHISON OIL & GAS, INC.

OGDEN FED COM 11H

LOCATED 200 FT. FROM THE SOUTH LINE  
AND 350 FT. FROM THE EAST LINE OF  
SECTION 2, TOWNSHIP 25 SOUTH,  
RANGE 26 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

JULY 3, 2013

SURVEY NO. 1985A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341

CARLSBAD, NEW MEXICO

**MURCHISON OIL & GAS, INC.**  
**SURFACE USE AND OPERATIONS PLAN**

**Ogden Fed Com #11H**  
**SL: SEC 2, 200' FSL & 350' FEL, UNIT P**  
**BHL: SEC 11, 330' FSL & 350' FEL, UNIT P**  
**T25S, R26E**  
**Eddy County, New Mexico**

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above-described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved, and the procedures to be followed in rehabilitating the surface after completion of the operations so that a complete appraisal can be made of the environmental effect associated with the operations.

**1. EXISTING ROADS**

**EXISTING ROADS:**

- a. The well site and elevation plat for the proposed well are reflected on Form C-102: Well Location and Acreage Dedication Plat. The well was staked by Madron Surveying, Inc.
- b. Exhibits B and C-1 through C-3 are portions of a topo map, road map and an aerial map showing the proposed well site and roads in the vicinity.
- c. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

**DIRECTIONS:**

From the intersection of CR 720 (Black River Village Rd.) and CR 748 (Old Cavern Hwy.) and CR 742 (John D. Forehand Rd.) Go south on CR 742 3.9 miles to caliche lease road to right (west). Go west on said caliche road 2.5 miles to caliche road to left (south). Go south on caliche road 1 mile. At right turn follow proposed road south to site.

**ACCESS ROADS**

**Length and Width**

A 421' x 30' access road will be constructed (see Exhibit B). Murchison Oil & Gas, Inc. has agreements with the surface owners for right-of-way for the lease road to the proposed well.

**Surface Material**

Six inches of caliche and water, compacted and graded.

**Maximum Grade**

Less than three percent

**Turnouts**

None needed

**Drainage Design**

N/A

**Culverts**

None needed

**Gates and Cattle Guards**

None required

**2. LOCATION OF EXISTING WELLS**

The locations of existing wells within a 1 mile radius are shown on Exhibit D.



**3. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES**

If the well is productive:

- a. Pumping equipment and tank battery facilities including all flowlines and piping will be installed according to API specifications.
- b. If electricity is needed, power will be obtained from Central Valley Electric, and they will submit a separate plan and ROW for service to the well location.
- c. Original topsoil from the well site will be returned to the location, and the site will be recontoured as close as possible to the original state.

**4. LOCATION AND TYPE OF WATER SUPPLY**

The well will be drilled using a combination of water mud systems as outlined in the Drilling Program. The water will be obtained from commercial water stations in the area and hauled to the location by transport truck using the existing roads shown on Exhibit C-1 through C-3. If a commercial fresh water source is nearby, fast line may be laid along existing road ROWs and fresh water pumped to the well. No water well will be drilled on the location.

**5. SOURCE OF CONSTRUCTION MATERIALS**

Caliche required for the construction of the location pad and access road will be obtained from caliche on the location or from the nearest BLM-approved pit.

**6. METHODS OF HANDLING WASTE DISPOSAL**

- a. The well will be drilled using a closed loop system (see Form C-144 CLEZ).
- b. All drilling fluid will be circulated over shaker(s) with cuttings discharged into roll off container. Fluid and fines below shaker(s) will be circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container. Fluid will be continuously re-circulated through equipment with polymer added to aid separation of cutting fines.
- c. Roll-off containers will be lined and de-watered with fluids re-circulated into system.
- d. Cuttings will be hauled to one of the following, depending on which rig is available to drill well:  
R360 (permit number NM-01-0006)  
GMI (permit number NM-01-0019)
- e. Water produced from the well during completion will be held temporarily in steel tanks and then taken to a NMOCD approved commercial disposal facility.
- f. Garbage and trash produced during drilling or completion operations will be collected in trash cages or trash bins and hauled to an approved landfill.
- g. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days.

**7. ANCILLARY FACILITIES**

None required.

**8. WELL SITE LAYOUT**

- a. Exhibit E shows the proposed well site layout with dimensions of the pad layout.
- b. The ground surface at the drilling location is essentially flat.
- c. V Door direction is south.  
west

U 8-5-200

8-5-2013

- d. Topsoil, if available, will be stockpiled on the ~~south~~<sup>west</sup> side of the location until it is needed for interim reclamation.
- e. No permanent living facilities are planned, but a temporary foreman/tool pusher's trailer will be on location during the drilling operations.

## **9. PLANS FOR RESTORATION OF THE SURFACE**

- a. Interim reclamation will take place after the well is completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. Any stockpiled topsoil will be spread over reclaimed area and reseeded with a BLM-approved seed mixture. Exhibit F-2 shows the final pad size after reclamation: 350' x 300'.
- b. Final reclamation will take place if the well is not productive. Upon plugging and abandoning the well, all caliche will be removed from the well pad and access road, and surface will be contoured to match the original topography as much as possible. Caliche will be recycled for road repair or reused for another well pad on the same lease. If any topsoil remains, it will be spread out and reseeded with a BLM-approved seed mixture.

## **10. SURFACE OWNERSHIP**

- a. The surface is owned by the State of New Mexico and is administered by the New Mexico State Land Office. The surface has multiple uses, primarily grazing of livestock and oil and gas production.
- b. The surface tenant for this site is Ogden Farms & Cattle Co., Inc., 159 West Ogden Rd., Loving, NM 88256.

## **OTHER INFORMATION**

### **Topography**

The land surface at the well site is small, rolling hills.

### **Soil**

Loamy soil shallow to caliche and raw Gypsum.

### **Flora and Fauna**

The vegetation consists of creosote, mesquite, yucca, prickly pear, Mormon tea, cane cholla, pencil cholla, horse creeper and various grasses. Faunal species include pronghorn antelope, mule deer, coyote, badger, rabbits, and various snakes, small mammals, birds and reptiles.

### **Ponds and Streams**

There are no rivers, lakes, ponds, or streams in the area.

### **Residences and Other Structures**

There are no residences within one mile of the proposed well site.

### **Archaeological, Historical, and Cultural sites**

A Cultural Resources Examination was conducted on July 8, 2013 by Rebecca L. Hill, Boone Archaeological Services, LLC of New Mexico and sent to the BLM, Carlsbad Office and New Mexico State Land Office.

**OPERATOR'S REPRESENTATIVES**

Jack Rankin, Vice President Operations  
1100 Mira Vista Blvd.  
Plano, TX 75093-4698  
Office Phone: (972) 931-0700  
Cell Phone: (713) 582-3859

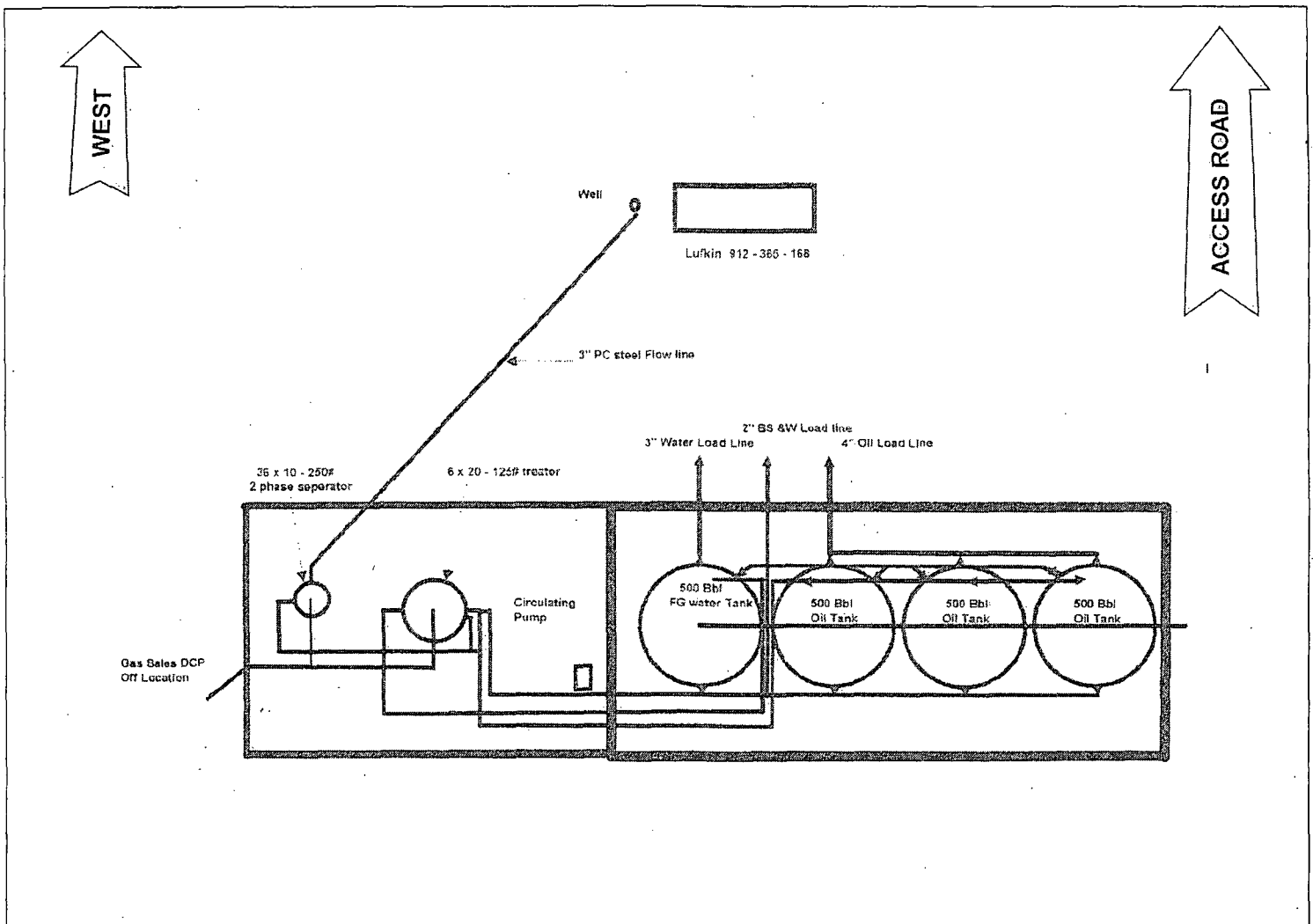
Greg Boans, Production Superintendent  
110 Shaw  
Carlsbad, NM 88220  
Office Phone: (575) 628-3932  
Cell Phone: (575) 706-0667

Steve Morris, Senior Drilling Engineer  
1100 Mira Vista Blvd.  
Plano, TX 75093-4698  
Office Phone: (972) 931-0700  
Cell Phone: (972) 835-3315

**EXHIBITS**

A	Form C-102 Well Location & Acreage Dedication Map
B	Well Site
C-1 thru C-3	Vicinity Map (Topographical), Location Verification Map, Aerial Map
D	1-Mile Radius Map
E	Well Site Layout
F-1	Production Facilities
F-2	Interim Reclamation Map
G-1	BOP Diagram
G-2	Choke Manifold Diagram

Exhibit F-1  
Production Facility Layout  
Ogden Fed Com 11H



Containment Area: Fiberglass container around tanks (Vol. = 40' x 100' x 2.89' = 2,064 bbls)

Tank Pad: Tanks set within fiberglass containment

Leak Detection: Leak detection float w/alarm inside fiberglass container; level control alarms on all tanks

2

# PECOS DISTRICT CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Murchison Oil &amp; Gas, Inc.</b>
<b>LEASE NO.:</b>	<b>NMNM-14468</b>
<b>WELL NAME &amp; NO.:</b>	<b>Ogden Fed Com 11H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>0200' FSL &amp; 0350' FEL</b>
<b>BOTTOM HOLE FOOTAGE</b>	<b>0330' FSL &amp; 0350' FEL Sec. 11, T. 25 S., R 26 E.</b>
<b>LOCATION:</b>	<b>Section 02, T. 25 S., R 26 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**

- Cave/Karst
- Communitization Agreement

- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads

- ☐ **Road Section Diagram**

- ☒ **Drilling**
  - Cement Requirements
  - H2S Requirements
  - High Cave/Karst
  - Logging Requirements
  - Waste Material and Fluids

- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines

- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## **V. SPECIAL REQUIREMENT(S)**

### **Cave and Karst**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

#### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

##### **Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

##### **No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

##### **Pad Berming:**

The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

##### **Tank Battery Liners and Berms:**

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

##### **Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

##### **Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

#### **Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

##### **Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

**Drilling:****Communitization Agreement**

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.



## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

### **D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## **F. EXCLOSURE FENCING (CELLARS & PITS)**

### **Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## **G. ON LEASE ACCESS ROADS**

### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

### **Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

### **Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **Ditching**

Ditching shall be required on both sides of the road.

### **Turnouts**

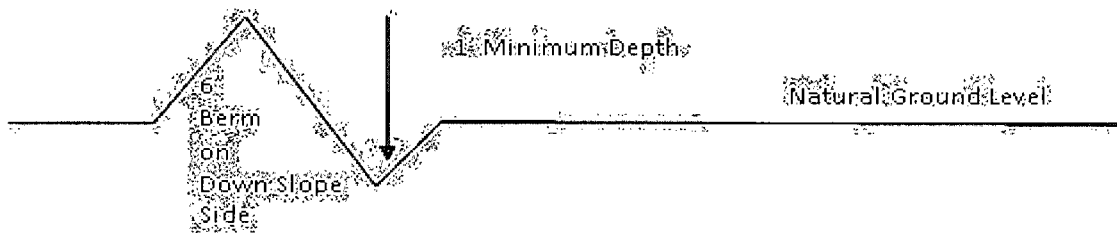
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

## Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

### Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

## Culvert Installations

Appropriately sized culverts shall be installed at deep waterway channel flow crossings through the road.

## Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings.

Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

**Fence Requirement**

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

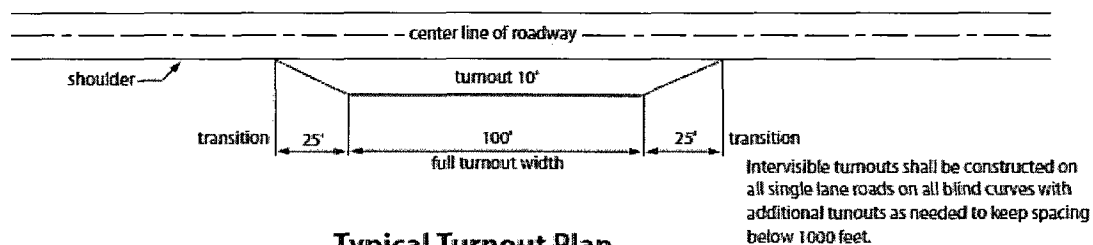
**Public Access**

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

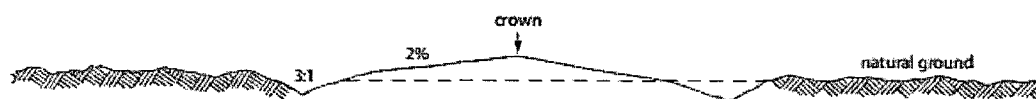
## Construction Steps

1. Salvage topsoil
2. Construct road

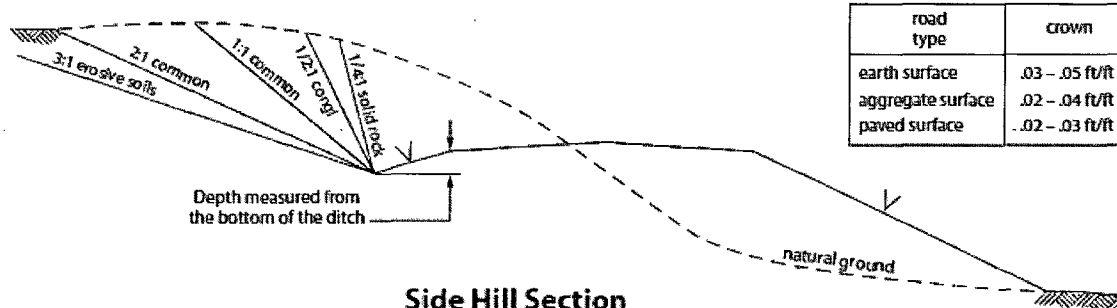
3. Redistribute topsoil
4. Revegetate slopes



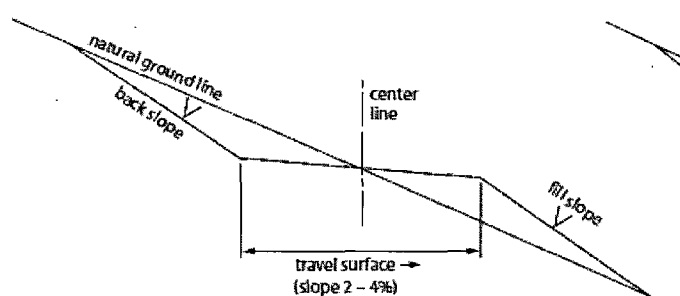
**Typical Turnout Plan**



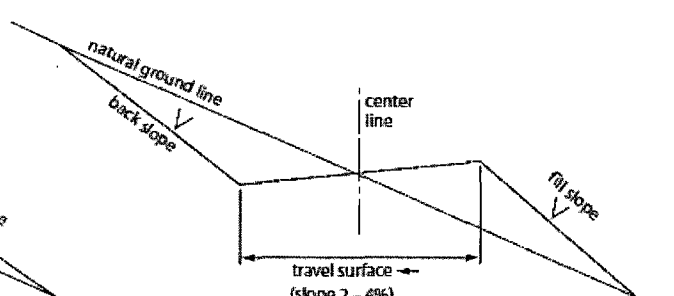
**Level Ground Section**



**Side Hill Section**



**Typical Outsloped Section**



**Typical Insloped Section**

Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

1. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**
2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The top and bottom of Salt are to be recorded on the Completion Report.**

## **B. CASING**

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. **DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.** Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. **IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS.** See individual casing strings for details regarding lead cement slurry requirements.

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Possibility of water flows in the Castile and Delaware.**

**Possibility of lost circulation in the Salado, Castile, and Delaware.**

**HIGH CAVE/KARST – CONTINGENCY CASING WILL BE REQUIRED IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE. THE SURFACE HOLE WILL HAVE TO BE REAMED AND A LARGER CASING INSTALLED. IF LOST CIRCULATION OCCURS WHILE DRILLING THE 8-3/4" HOLE, THE CEMENT PROGRAM FOR THE 7" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.**

1. The **9-5/8** inch surface casing shall be set at approximately **300** feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Centralizers required through the curve and a minimum of one every other joint.**

2. The minimum required fill of cement behind the **7** inch production casing, which shall be set at approximately **1913** feet, is:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

3. The minimum required fill of cement behind the **4-1/2** inch production liner, which shall be set from **1713 feet - TD**, is:

☒ Cement to tie back 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 24% - Additional cement may be required.**

4. 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.



### C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
  - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
  - d. The results of the test shall be reported to the appropriate BLM office.
  - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
  - f. 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. This test shall be performed prior to the test at full stack pressure.

**D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

**E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 091713**

## **VIII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### **Exclosure Netting (Open-top Tanks)**

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

**B. PIPELINES (no pipelines were applied for in APD)**

**C. ELECTRIC LINES (no electric lines were applied for in APD)**

### **IX. INTERIM RECLAMATION**

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

### **X. FINAL ABANDONMENT & RECLAMATION**

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

### Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass ( <i>Eragrostis intermedia</i> )	0.5
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sideoats grama ( <i>Bouteloua curtipendula</i> )	5.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed