

13-734

OCD Artesia

Form 3160-3  
(March 2012)

FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

TOG  
9/18/2013

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

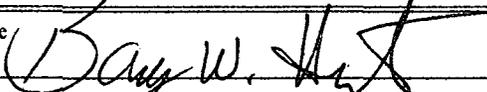
APPLICATION FOR PERMIT TO DRILL OR REENTER

|  |   |  |                 |
|--|---|--|-----------------|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER   |   | 7. If Unit or CA Agreement, Name and No.                                       |                 |
| 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 |   | 8. Lease Name and Well No. < 40136 ><br>WINCHESTER 3 FEDERAL COM 5H            |                 |
| 2. Name of Operator CHI OPERATING, INC.  |   | 9. API Well No.<br>30-015-41678  |                 |
| 3a. Address P. O. BOX 1799<br>MIDLAND, TEXAS 79702   | 3b. Phone No. (include area code)<br>432-685-5001 (JOHN QUALLS) | 10. Field and Pool, or Exploratory < 48035 ><br>OLD MILLMAN RANCH BONE SPRING  |                 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements.)*<br>At surface 330 FNL & 660 FWL<br>At proposed prod. zone 330 FSL & 990 FWL  |   | 11. Sec., T. R. M. or Blk. and Survey or Area<br>SECTION 3, T. 20 S., R. 28 E. |                 |
| 14. Distance in miles and direction from nearest town or post office*<br>10 MILES NORTHEAST OF CARLSBAD, NM  |   | 12. County or Parish<br>EDDY   | 13. State<br>NM |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'   | 16. No. of acres in lease<br>320 SHL<br>480 BHL                 | 17. Spacing Unit dedicated to this well<br><del>480</del> 159.53               |                 |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 430' ARCO 3H<br>BHL: 800'  | 19. Proposed Depth<br>TVD: 7330'<br>MD: 11,702'                 | 20. BLM/BIA Bond No. on file<br>NM-1616  |                 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>3295' GL  | 22. Approximate date work will start*<br>A.S.A.P.               | 23. Estimated duration<br>40 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)<br>BARRY W. HUNT     | Date<br>7/23/13                 |
| Title<br>PERMIT AGENT FOR CHI OPERATING, INC.   |   |                                 |
| Approved by (Signature)  | Name (Printed/Typed)<br>STEPHEN J. CAFFEY | SEP 12 2013                     |
| Title<br>FIELD MANAGER  |   | Office<br>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.

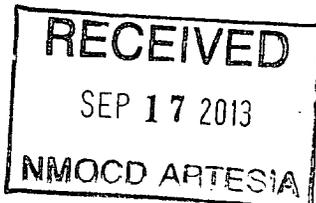
APPROVAL FOR TWO YEARS

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)

Cabitan Controlled Water Basin



Approval Subject to General Requirements  
& Special Stipulations Attached

Operator must be in compliance with  
NMOCD Rule 5.9 prior to producing  
well

TOG 9/18/2013

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

13. BOND COVERAGE:

Bond Coverage is Nationwide; Bond Number NM-1616.

OPERATORS REPRESENTATIVE:

The CHI Operating, Inc. representatives responsible for ensuring compliance of the surface use plan are listed below:

Surface:

Barry W. Hunt – Permit Agent  
1403 Spring Farm Place  
Carlsbad, NM 88220  
(575) 885-1417 (Home)  
(575) 361-4078 (Cell)

Drilling & Production:

John Qualls – CHI Operating, Inc.  
P.O. Box 1799  
Midland, Tx. 79702  
(432) 685-5001 (Office)  
(432) 557-8774 (Cell)

**ON-SITE PERFORMED ON 5/09/13 RESULTED IN PROPOSED LOCATION BEING MOVED 330 FT. WEST, DUE TO NAVAJO PIPELINE AND A DRAINAGE. IT WAS AGREED TO TURN THE LOCATION TO A V-DOOR EAST. IT WAS FURTHER AGREED TO PLACE THE BATTERY ON THE SOUTH SIDE OF THE PAD, TOP SOIL TO THE NORTH AND INTERIM RECLAMATION WOULD BE THE NORTH, WEST AND EAST PORTION OF THE PAD.**

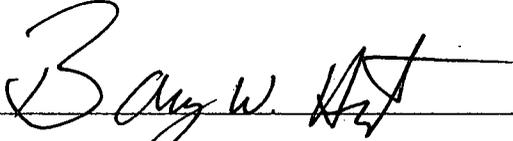
**PRESENT AT ON-SITE:**

**BARRY HUNT – PERMIT AGENT FOR CHI OPERATING, INC.  
AMANDA LYNCH – BLM  
BECKIE HILL - BOONE ARCHAEOLOGICAL SERVICES  
BASIN SURVEYS**

## CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road proposed herein; that I am familiar with the conditions that presently 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 CHI Operating, 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 23rd. day of July 2013.

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



Printed Name: Barry Hunt

Position: Agent for CHI Operating, Inc.

Address: 1403 Springs Farm Place, Carlsbad, NM 88220

Telephone: (575) 361-4078

E-mail: specialtpermitting@gmail.com

*Chi Operating, Inc.*

P. O. BOX 1799  
MIDLAND, TEXAS 79702

August 27, 2012

Re: Authorization to Permit for Drilling and Right Of Way

To Whom it may concern,

Chi Operating, Inc. hereby authorizes Mr. Barry Hunt to serve as an agent for the purpose of permitting and obtaining Federal authority.

*Gary Womack*

*Chi Energy, Inc.*

432-634-8958 (C)

432-685-5001 (O)

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone (876) 390-6101 Fax: (876) 393-0720

DISTRICT II  
811 S. First St., Artesia, NM 88210  
Phone (876) 748-1285 Fax: (875) 748-9720

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV  
1220 S. St. Francois Dr., Santa Fe, NM 87505  
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised August 1, 2011

Submit one copy to appropriate  
District Office

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

|                                   |  |   |
|-----------------------------------|--|---|
| API Number<br><b>30-015-41678</b> | Pool Code<br><b>48035</b>                        | Pool Name<br><b>Old Millman Ranch Bone Spring</b> |
| Property Code<br><b>40136</b>     | Property Name<br><b>WINCHESTER 3 FEDERAL COM</b> | Well Number<br><b>5H</b>                          |
| OGRID No.<br><b>04378</b>         | Operator Name<br><b>CHI OPERATING, INC.</b>      | Elevation<br><b>3295'</b>                         |

Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| LOT 4         | 3       | 20 S     | 28 E  |         | 330           | NORTH            | 660           | WEST           | EDDY   |

Bottom Hole Location If Different From Surface

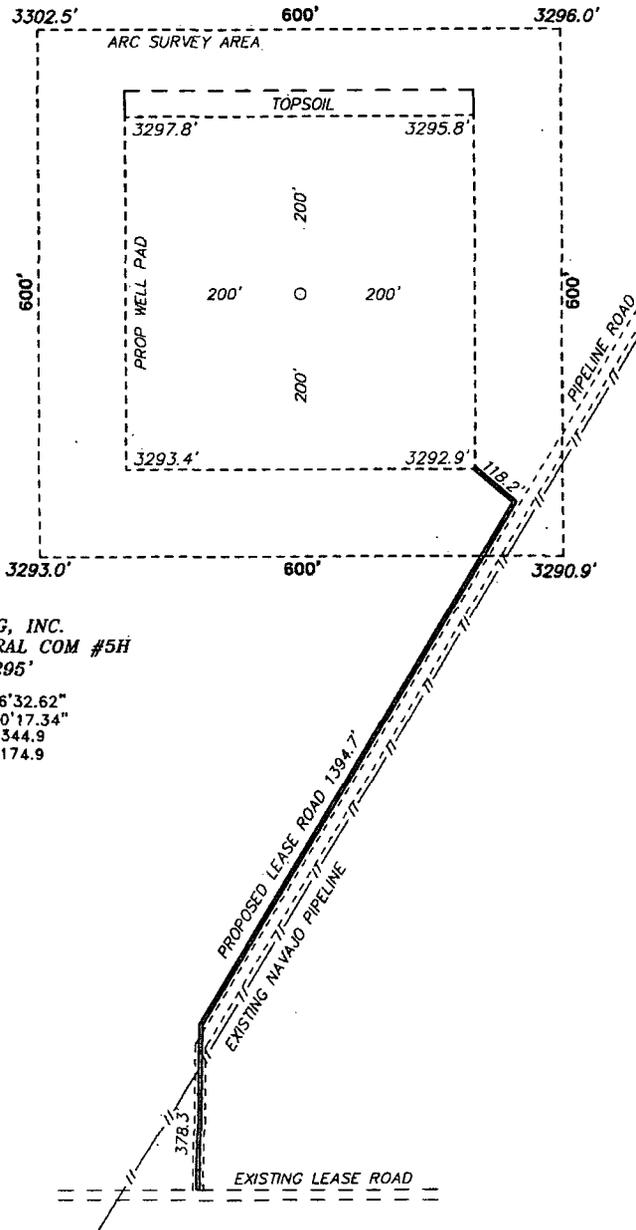
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| M             | 3       | 20 S     | 28 E  |         | 330           | SOUTH            | 990           | WEST           | EDDY   |

|                                  |                 |                    |           |
|----------------------------------|-----------------|--------------------|-----------|
| Dedicated Acres<br><b>159.53</b> | Joint or Infill | Consolidation Code | Order No. |
|----------------------------------|-----------------|--------------------|-----------|

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><b>SURFACE LOCATION</b><br/>Lot - N 32°36'32.62"<br/>Long - W 104°10'17.34"<br/>NMSPC= N 585344.9<br/>E 591174.9<br/>(NAD-83)</p> <p><b>PROPOSED BOTTOM HOLE LOCATION</b><br/>Lot - N 32°35'46.94"<br/>Long - W 104°10'13.58"<br/>NMSPC= N 580728.9<br/>E 591503.7<br/>(NAD-83)</p> | <p><b>OPERATOR CERTIFICATION</b><br/>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 heretofore entered by the division.</p> <p><i>John W. Qualls</i><br/>Signature Date<br/><b>John W. Qualls</b><br/>Printed Name<br/><b>john@chienergyinc.com</b><br/>Email Address</p> |
|  | <p><b>SURVEYOR CERTIFICATION</b><br/>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>Date Surveyed<br/>Signature &amp; Seal of Professional Surveyor<br/></p>  |
|  | <p>Certificate No. <b>28654</b> Jones 7977</p>   |
|  | <p><b>BASIN SURVEYS 28654</b></p>  |

SECTION 3, TOWNSHIP 20 SOUTH, RANGE 28 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



CHI OPERATING, INC.  
WINCHESTER 3 FEDERAL COM #5H  
ELEV. - 3295'

Lat - N 32°36'32.62"  
Long - W 104°10'17.34"  
NMSPC - N 585344.9  
E 591174.9  
(NAD-83)

WELL LOCATION IS ±13 MILES TO THE NORTH OF CARLSBAD, NM  
200 0 200 400 FEET  
SCALE: 1" = 200'

Directions to Location:

FROM THE JUNCTION OF BURTON FLATS AND  
BUCKSKIN, GO NORTH ON BUCKSKIN FOR 2.0 MILES  
TO LEASE ROAD, GO WEST ON LEASE ROAD FOR 2.3  
MILES TO PROPOSED LEASE ROAD.

**CHI OPERATING, INC.**

REF: WINCHESTER 3 FEDERAL COM #5H / WELL PAD TOPO

THE WINCHESTER 3 FEDERAL COM #5H LOCATED 330'  
FROM THE NORTH LINE AND 660' FROM THE WEST LINE OF  
SECTION 3, TOWNSHIP 20 SOUTH, RANGE 28 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO.

**BASIN SURVEYS** P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 28654

Drawn By: J. SMALL

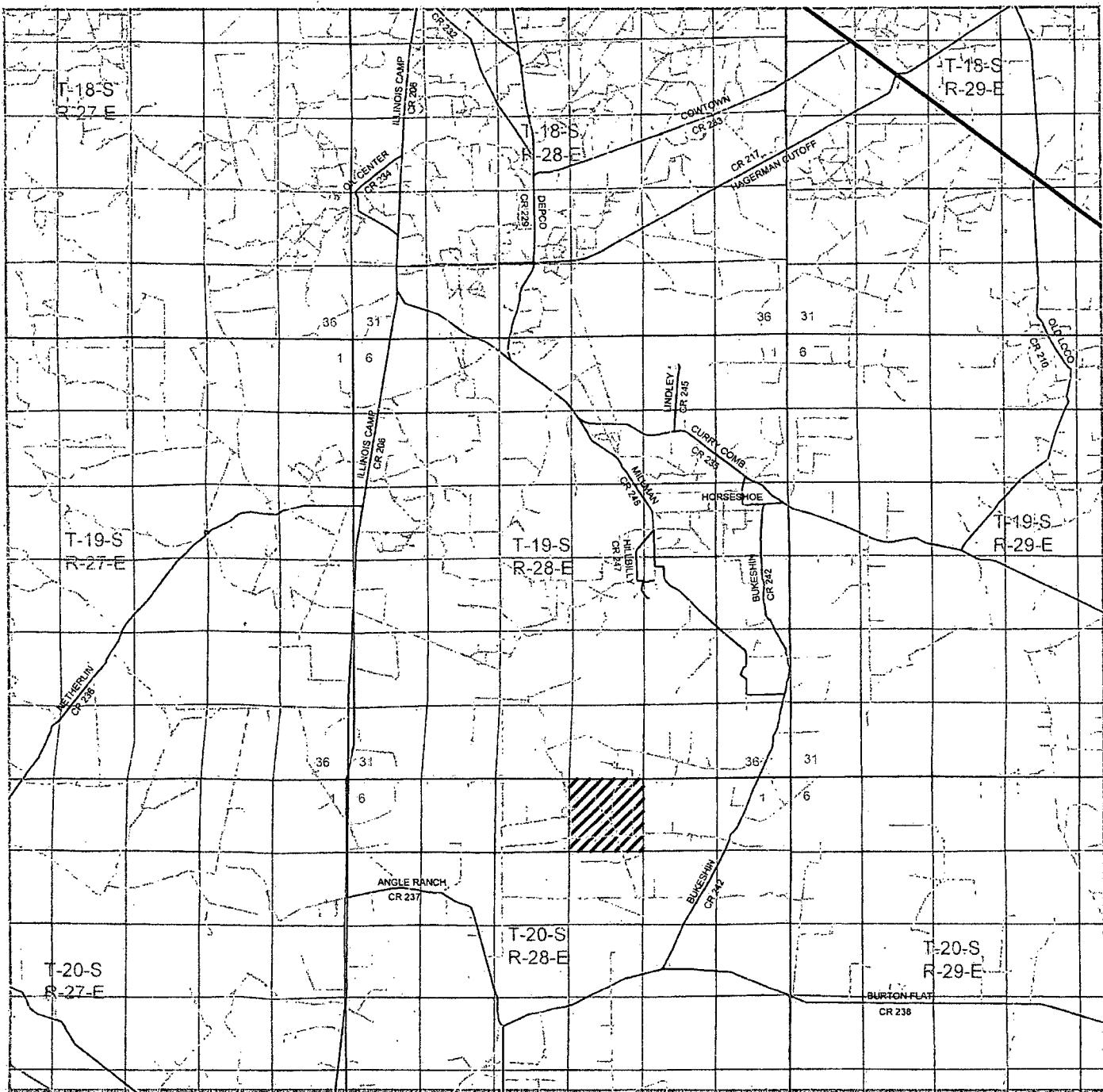
Date: 05-15-2013

Disk: JMS 28654

Survey Date: 05-09-2013

Sheet 1 of 1 Sheets





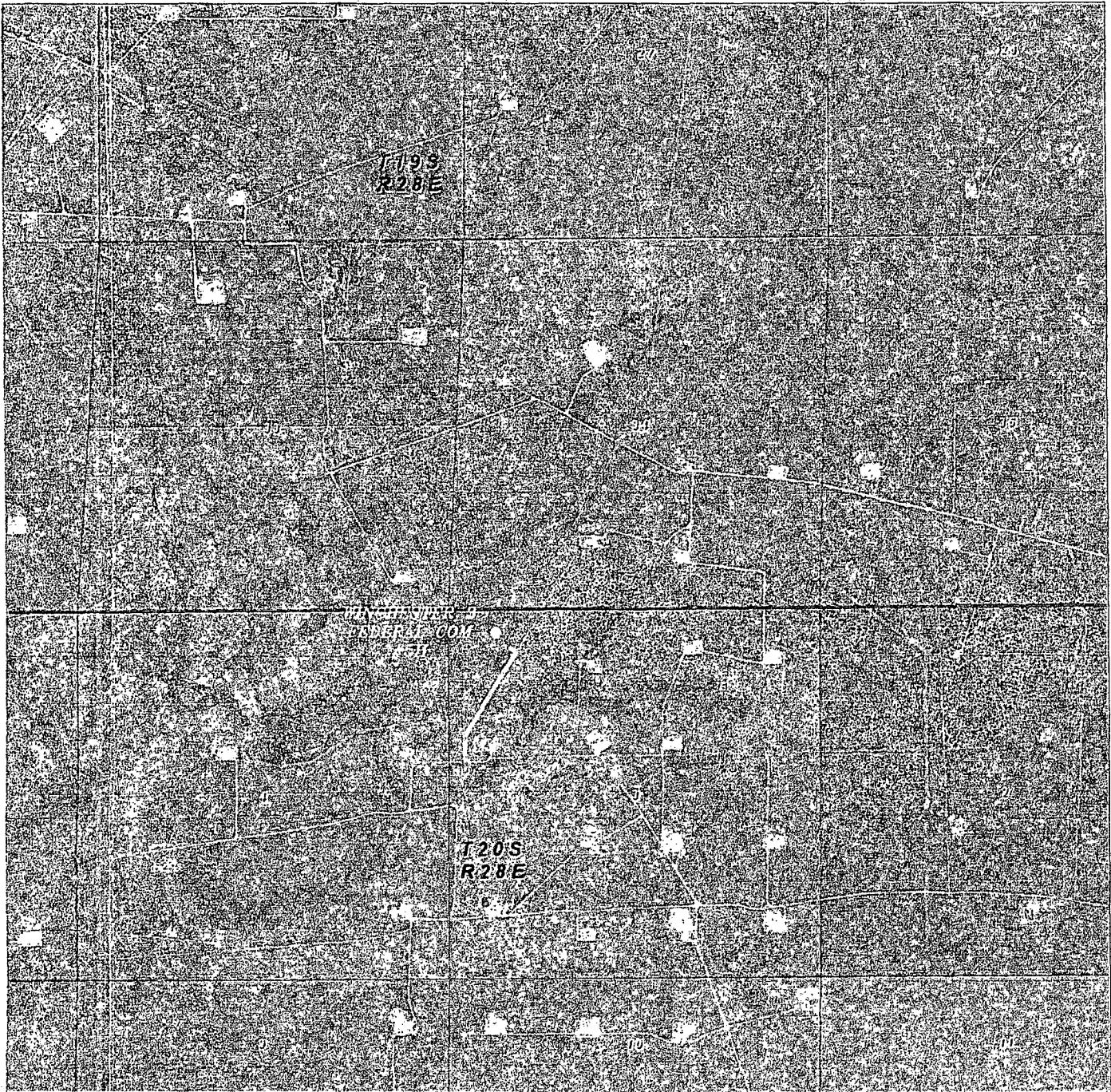
**WINCHESTER 3 FEDERAL COM #5H**  
 Located 330' FNL and 660' FWL  
 Section 3, Township 20 South, Range 28 East,  
 N.M.P.M., Eddy County, New Mexico.

**basin surveys**  
 focused on excellence in the oilfield

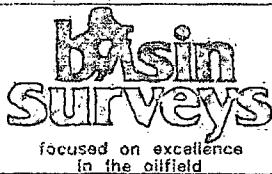
P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
 basinsurveys.com

|              |              |
|--------------|--------------|
| W.O. Number: | JMS 28654    |
| Survey Date: | 05-09-2013   |
| Scale:       | 1" = 2 Miles |
| Date:        | 05-15-2013   |

**CHI OPERATING, INC.**



**WINCHESTER 3 FEDERAL COM #5H**  
 Located 330' FNL and 660' FWL  
 Section 3, Township 20 South, Range 28 East,  
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (575) 393-7316 - Office  
 (575) 392-2206 - Fax  
 basinsurveys.com

W.O. Number: JMS 28654

Scale: 1" = 2000'

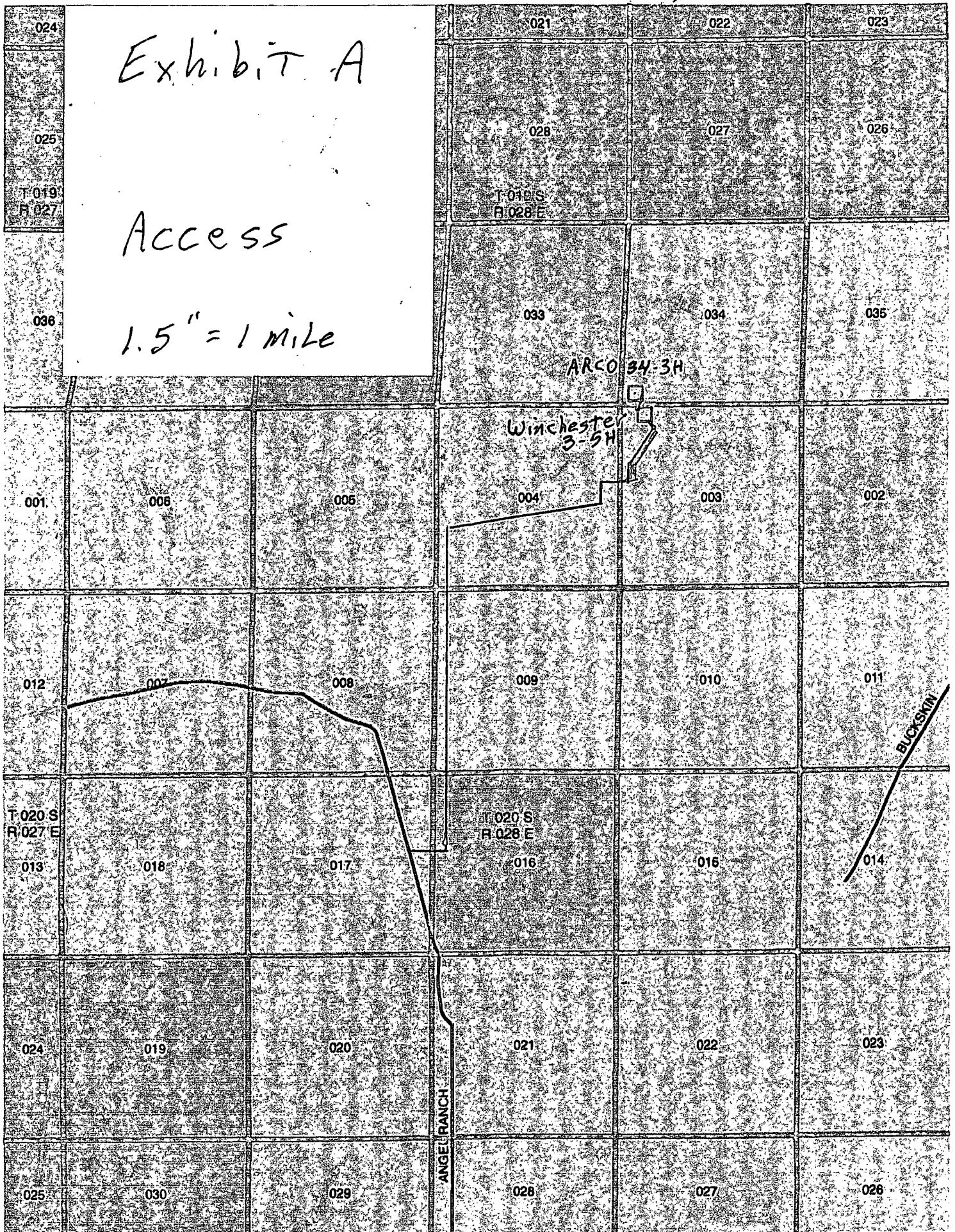
YELLOW TINT - USA LAND  
 BLUE TINT - STATE LAND  
 NATURAL COLOR - FEE LAND

**CHI**  
**OPERATING,**  
**INC.**

Exhibit A

Access

1.5" = 1 mile



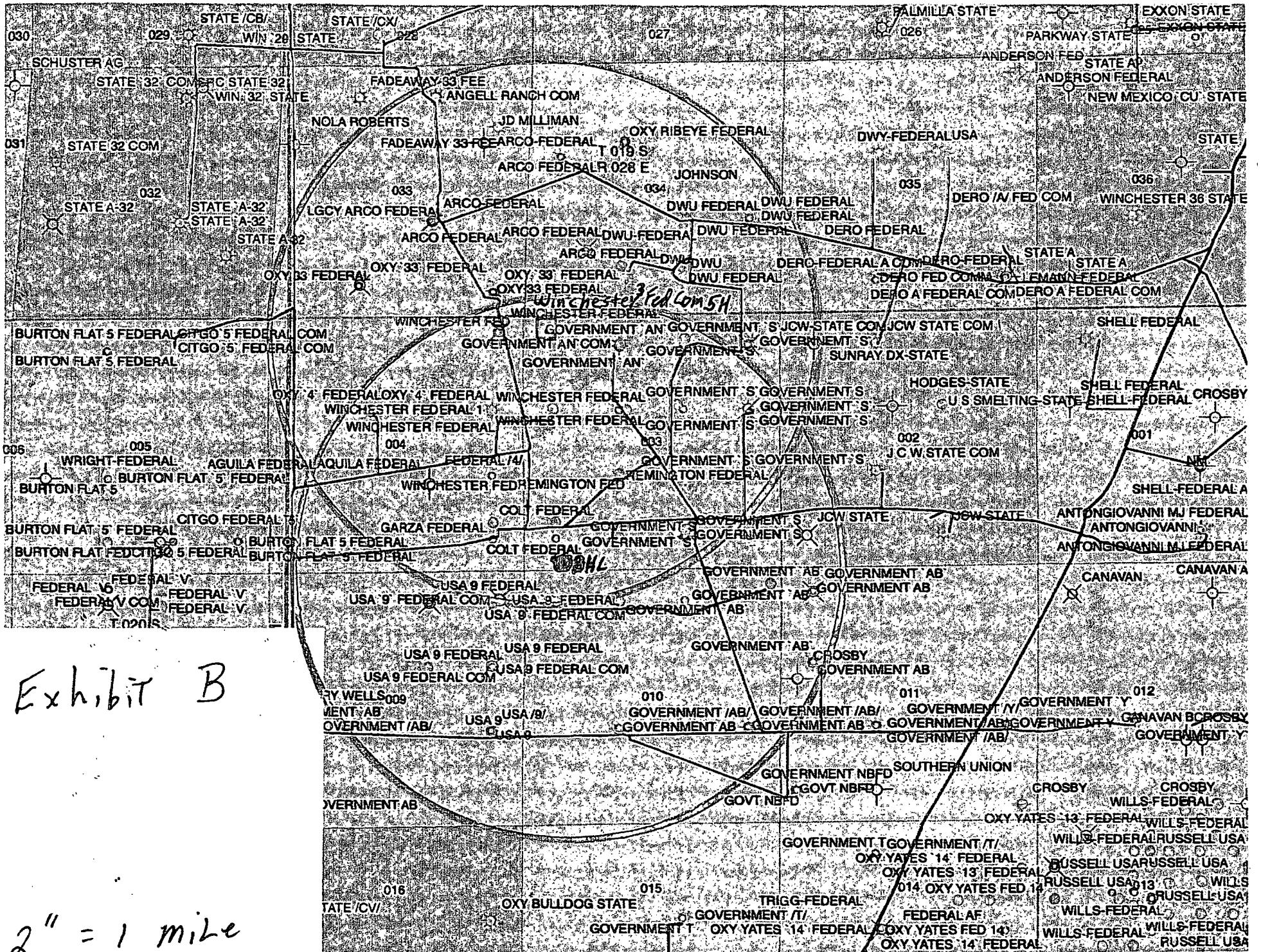


Exhibit B

2" = 1 mile

Application to Drill  
Chi Operating, Inc.  
Winchester 3 Federal Com 5H  
330' FNL & 660' FWL (SHL)  
330' FSL & 990' FWL (BHL)  
Sec 3-T20S-R28E  
Eddy County, New Mexico

1. **The estimated tops of geological markers are as follows:**

|              |       |
|--------------|-------|
| Rustler      | 150'  |
| Top Salt     | 750'  |
| Base Salt    | 950'  |
| *Yates       | 1243' |
| Seven Rivers | 1375' |
| Queen        | 1867' |
| *Delaware    | 2944' |
| *Bone Spring | 4612' |
| TVD          | 7330' |

2. **Estimated depths of anticipated fresh water, oil, or gas:**

Water: Fresh water is anticipated at 65' and will be protected by setting surface casing at <sup>300'</sup> 450' and cementing to surface.

S4  
COA

Hydrocarbons: Oil and gas are anticipated in the above (\*) formations. These zones will be protected by casing as necessary.

3. **Pressure control equipment:**

A 5000psi working pressure BOP tested as a 3M, consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with Floor and remote operating stations and auxiliary power system. Rotating head as needed. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

BOP unit will be hydraulically operated. BOP will be ~~tripped up and~~ operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling from the base of the surface pipe through the running of production casing, the well will be equipped with a 5000psi BOP tested to a 3M system. The testing will be done by an independent service company.

Chi Operating, Inc. proposes to drill a vertical wellbore to 6747' & kick off to horizontal @ 7330' TVD. The well will be drilled to 11702' MD (7330' TVD). See attached directional plan.

7447

4. Proposed casing and cementing program:

A. Casing Program: **ALL NEW CASING**

See COA

| <u>Hole Size</u> | <u>Casing</u> | <u>Wt/Ft.</u> | <u>Grade</u> | <u>Depth</u>                                   | <u>Jt Type</u> |
|------------------|---------------|---------------|--------------|--|----------------|
| 17 1/2"          | 13 3/8" (new) | 54.5#         | J55          | 0'- <del>450'</del> 350'                       | ST&C           |
| 12 1/4"          | 9 5/8" (new)  | 36#           | J55          | 0'-3100'                                       | LT&C           |
| 8 3/4"           | 7" (new)      | 26#           | P110         | <sup>7447 M</sup><br>0'- <del>7330'</del> TVD  | LT&C           |
| 6 1/8"           | 4 1/2" (new)  | 11.6#         | P110         | <sup>7147</sup><br><del>7030'</del> -11702' MD | LT&C           |

per John Qualls 9/10/13

Minimum casing design factors: Collapse 1.125, Burst 1.0, Tensile strength 1.8

\*Subject to availability of casing

B. Cementing Program:

Surface <sup>13 3/8"</sup> 410sx Premium Plus + 3% Salt + 25 CaCl<sub>2</sub>(wt 14.8, yld 1.34). 100% excess.  
TOC Surface

Intermediate <sup>9 5/8"</sup> Lead: 550sx EconoCem + 3% Salt + 2% CaCl<sub>2</sub> + 3 lbm/sk Gilsonite(wt 11.7, yld 2.06).  
51% excess.

Tail: 225sx Premium Plus + 1% CaCl<sub>2</sub>(wt 14.8, yld 1.34). 51% excess.

TOC Surface

Production <sup>7"</sup> Lead: 535sx EconoCem + 3% Salt + 5 lbm/sk gilsonite(wt 13.0, yld 1.71). 30% excess.

Tail: 995sx Halcem(wt14.8, yld 1.34). 25% excess.

TOC Surface

Lateral <sup>4 1/2"</sup> No cement needed. Open hole completion assembly.

Fresh water zones will be protected by setting 13 3/8" casing at <sup>350'</sup> ~~450'~~ and cementing to surface.

Hydrocarbon zones will be protected by setting 9 5/8" casing at 3100' and cementing to surface, and by setting 7" casing at ~~7330'~~.

<sup>7447</sup>

5. Mud Program:

See COA

| <u>Interval</u>                     | <u>Type System</u>  | <u>Weight</u> | <u>Viscosity</u> | <u>Fluid Loss</u> |
|-------------------------------------|---------------------|---------------|------------------|-------------------|
| 0'- <del>450'</del> <sup>350'</sup> | FW                  | 8.5-8.9       | 32-36            | NA                |
| 450'-3100'                          | Brine Water         | 9.0-10.0      | 28-30            | NA                |
| 3100'- TD                           | Cut Brine w/Polymer | 8.9-9.1       | 28-36            | 15                |

The necessary mud products for weight addition and fluid loss control will be on location at all times. Electronic pit monitoring equipment will be utilized with a Pason system. Electronic mud monitoring and mud logging will be utilized below the 9 5/8" casing.

**6. Evaluation Program:**

Samples: 10' samples from surface casing to TD  
Logging: GR/N & Gyro from KOP-100' (6747') to surface. GR from 7330' to TD.  
No coring is planned 7447

**7. Downhole Conditions:**

|                                  |   |
|----------------------------------|---|
| Zones of H2S                     | None Present but if encountered the operator will comply with the provisions of Onshore Order No. 6.                                  |
| Zones of abnormal pressure:      | None anticipated  |
| Zones of lost circulation:       | Anticipated in surface and intermediate holes. Equipment and material will be available on location in the event of lost circulation. |
| Maximum bottom hole temperature: | 120 degrees F   |
| Maximum bottom hole pressure:    | 3225 psi.   |

**8. Anticipated Starting Date:**

Chi Operating, Inc. intends to drill this well as soon as possible after receiving approval with approximately 40 days involved in drilling operations and an additional 10 days involved in completions operations on the project.



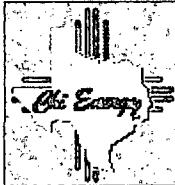
**Weatherford<sup>®</sup>**

**Drilling Services**

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**Proposal**

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**WINCHESTER 3 FEDERAL COM #5H**

**EDDY COUNTY, NEW MEXICO**

**WELL FILE: PLAN 1**

**JULY 1, 2013**

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**Weatherford International, Ltd.**

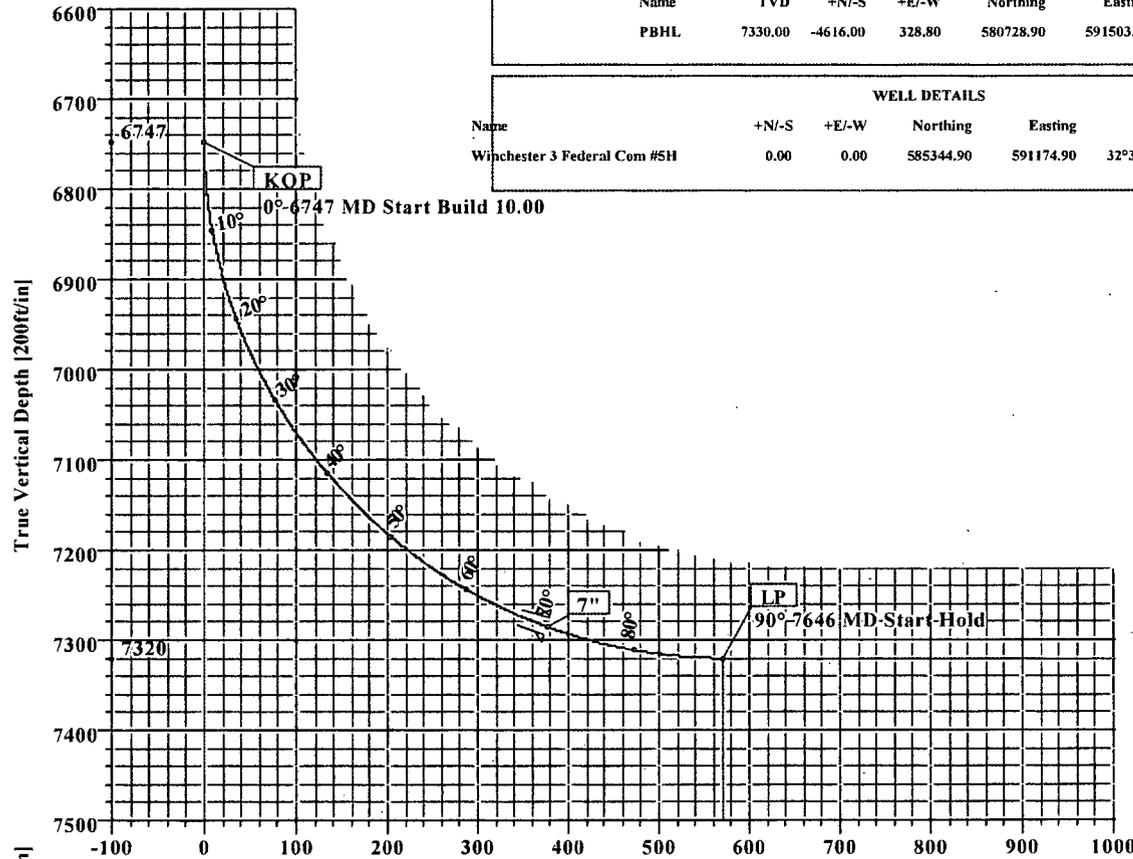
P.O. Box 61028  
Midland, TX 79711 USA  
+1.432.561.8892 Main  
+1.432.561.8895 Fax  
[www.weatherford.com](http://www.weatherford.com)



**Winchester 3 Federal Com #5H  
Eddy Co, NM**



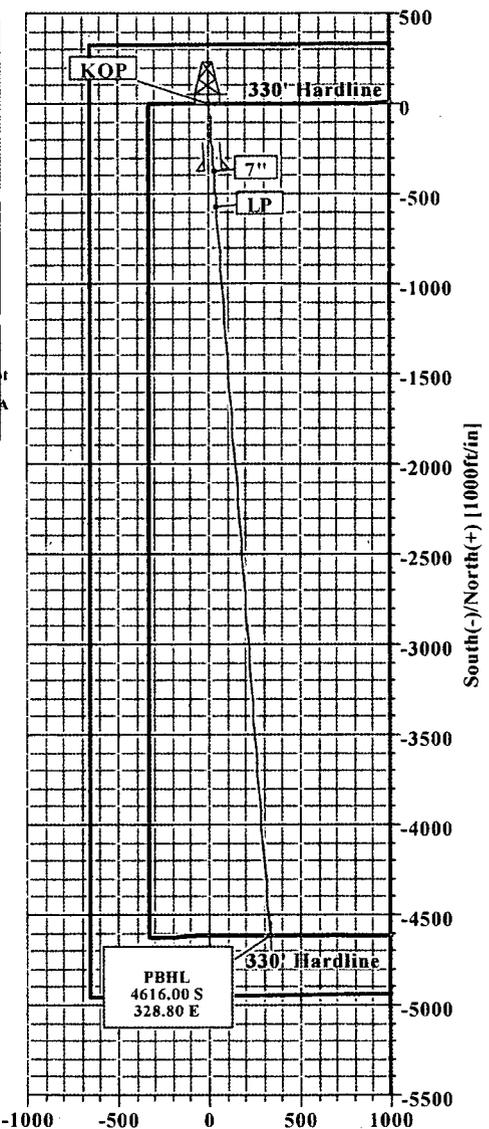
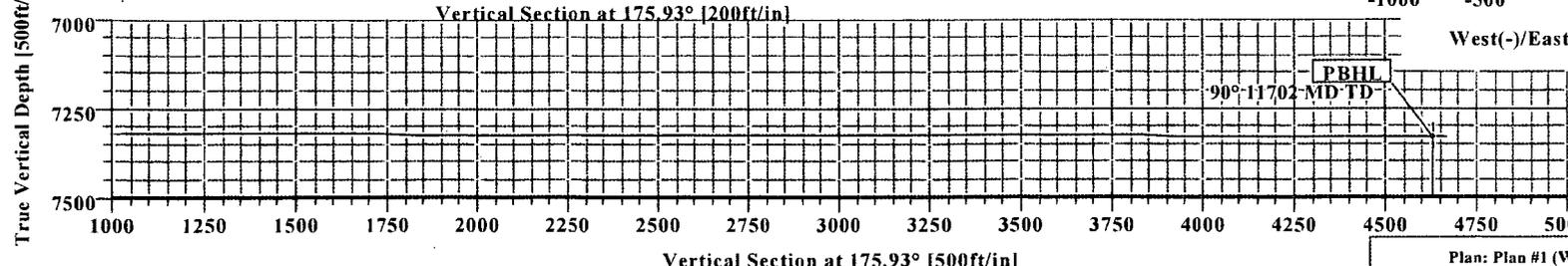
KB ELEV: 3312  
GL ELEV: 3295



| SECTION DETAILS |          |       |        |         |          |        |       |        |         |        |
|-----------------|----------|-------|--------|---------|----------|--------|-------|--------|---------|--------|
| Sec             | MD       | Inc   | Azi    | TVD     | +N/-S    | +E/-W  | DLeg  | TFace  | VSec    | Target |
| 1               | 0.00     | 0.00  | 175.93 | 0.00    | 0.00     | 0.00   | 0.00  | 0.00   | 0.00    |        |
| 2               | 6747.04  | 0.00  | 175.93 | 6747.04 | 0.00     | 0.00   | 0.00  | 0.00   | 0.00    |        |
| 3               | 7645.63  | 89.86 | 175.93 | 7320.00 | -570.10  | 40.61  | 10.00 | 175.93 | 571.54  |        |
| 4               | 11701.79 | 89.86 | 175.93 | 7330.00 | -4616.00 | 328.80 | 0.00  | 0.00   | 4627.70 | PBHL   |

| TARGET DETAILS |         |          |        |           |           |       |
|----------------|---------|----------|--------|-----------|-----------|-------|
| Name           | TVD     | +N/-S    | +E/-W  | Northing  | Easting   | Shape |
| PBHL           | 7330.00 | -4616.00 | 328.80 | 580728.90 | 591503.70 | Point |

| WELL DETAILS                 |       |       |           |           |               |                |      |
|------------------------------|-------|-------|-----------|-----------|---------------|----------------|------|
| Name                         | +N/-S | +E/-W | Northing  | Easting   | Latitude      | Longitude      | Slot |
| Winchester 3 Federal Com #5H | 0.00  | 0.00  | 585344.90 | 591174.90 | 32°36'32.606N | 104°10'17.350W | N/A  |





# Weatherford

## Wft Plan Report X Y's.



**Weatherford**

|                                    |   |                |         |
|------------------------------------|---|----------------|---------|
| Company: Chi Energy                | Date: 7/1/2013  | Time: 10:54:42 | Page: 1 |
| Field: Eddy Co., NM (Nad 83)       | Co-ordinate(NE) Reference: Well: Winchester 3 Federal Com #5H |                |         |
| Site: Winchester 3 Federal Com #5H | Vertical (TVD) Reference: SITE 3312.0                         |                |         |
| Well: Winchester 3 Federal Com #5H | Section (VS) Reference: Well (0.00N;0.00E;175.93Azi)          |                |         |
| Wellpath: 1                        | Survey Calculation Method: Minimum Curvature                  | Db: Sybase     |         |

|                |                         |                       |  |
|----------------|-------------------------|-----------------------|--|
| Plan: Plan #1  | Date Composed: 7/1/2013 |                       |  |
| Principal: Yes | Version: 1              | Tied-to: From Surface |  |

Site: Winchester 3 Federal Com #5H

|                               |                        |                            |
|-------------------------------|------------------------|----------------------------|
| Site Position:                | Northing: 585344.90 ft | Latitude: 32 36 32.606 N   |
| From: Map                     | Easting: 591174.90 ft  | Longitude: 104 10 17.350 W |
| Position Uncertainty: 0.00 ft |                        | North Reference: Grid      |
| Ground Level: 3295.00 ft      |                        | Grid Convergence: 0.09 deg |

|                                    |                        |                            |
|------------------------------------|------------------------|----------------------------|
| Well: Winchester 3 Federal Com #5H | Slot Name:             |                            |
| Well Position: +N/-S 0.00 ft       | Northing: 585344.90 ft | Latitude: 32 36 32.606 N   |
| +E/-W 0.00 ft                      | Easting: 591174.90 ft  | Longitude: 104 10 17.350 W |
| Position Uncertainty: 0.00 ft      |                        |                            |

|                                    |                       |                                    |           |
|------------------------------------|-----------------------|------------------------------------|-----------|
| Wellpath: 1                        | Drilled From: Surface |                                    |           |
| Current Datum: SITE                | Height 3312.00 ft     | Tie-on Depth: 0.00 ft              |           |
| Magnetic Data: 9/30/2013           |                       | Above System Datum: Mean Sea Level |           |
| Field Strength: 48578 nT           |                       | Declination: 7.61 deg              |           |
| Vertical Section: Depth From (TVD) | +N/-S                 | Mag Dip Angle: 60.38 deg           |           |
| ft                                 | ft                    | +E/-W                              | Direction |
|                                    |                       | ft                                 | deg       |
| 0.00                               | 0.00                  | 0.00                               | 175.93    |

| Plan Section Information |       |        |         |          |        |           |           |           |        |        |
|--------------------------|-------|--------|---------|----------|--------|-----------|-----------|-----------|--------|--------|
| MD                       | Incl  | Azim   | TVD     | +N/-S    | +E/-W  | DLS       | Build     | Turn      | TFO    | Target |
| ft                       | deg   | deg    | ft      | ft       | ft     | deg/100ft | deg/100ft | deg/100ft | deg    |        |
| 0.00                     | 0.00  | 175.93 | 0.00    | 0.00     | 0.00   | 0.00      | 0.00      | 0.00      | 0.00   |        |
| 6747.04                  | 0.00  | 175.93 | 6747.04 | 0.00     | 0.00   | 0.00      | 0.00      | 0.00      | 0.00   |        |
| 7645.63                  | 89.86 | 175.93 | 7320.00 | -570.10  | 40.61  | 10.00     | 10.00     | 0.00      | 175.93 |        |
| 11701.79                 | 89.86 | 175.93 | 7330.00 | -4616.00 | 328.80 | 0.00      | 0.00      | 0.00      | 0.00   | PBHL   |

| Survey  |       |        |         |          |        |         |           |           |           |         |
|---------|-------|--------|---------|----------|--------|---------|-----------|-----------|-----------|---------|
| MD      | Incl  | Azim   | TVD     | N/S      | E/W    | VS      | DLS       | MapN      | MapE      | Comment |
| ft      | deg   | deg    | ft      | ft       | ft     | ft      | deg/100ft | ft        | ft        |         |
| 6700.00 | 0.00  | 175.93 | 6700.00 | 0.00     | 0.00   | 0.00    | 0.00      | 585344.90 | 591174.90 |         |
| 6747.04 | 0.00  | 175.93 | 6747.04 | 0.00     | 0.00   | 0.00    | 0.00      | 585344.90 | 591174.90 | KOP     |
| 6800.00 | 5.30  | 175.93 | 6799.92 | -2.44    | 0.17   | 2.45    | 10.00     | 585342.46 | 591175.07 |         |
| 6900.00 | 15.30 | 175.93 | 6898.19 | -20.25   | 1.44   | 20.30   | 10.00     | 585324.65 | 591176.34 |         |
| 7000.00 | 25.30 | 175.93 | 6991.86 | -54.80   | 3.90   | 54.94   | 10.00     | 585290.10 | 591178.80 |         |
| 7100.00 | 35.30 | 175.93 | 7078.10 | -105.06  | 7.48   | 105.32  | 10.00     | 585239.84 | 591182.38 |         |
| 7200.00 | 45.30 | 175.93 | 7154.27 | -169.48  | 12.07  | 169.91  | 10.00     | 585175.42 | 591186.97 |         |
| 7300.00 | 55.30 | 175.93 | 7218.07 | -246.13  | 17.53  | 246.75  | 10.00     | 585098.77 | 591192.43 |         |
| 7400.00 | 65.30 | 175.93 | 7267.56 | -332.66  | 23.70  | 333.50  | 10.00     | 585012.24 | 591198.60 |         |
| 7447.04 | 70.00 | 175.93 | 7285.44 | -376.04  | 26.79  | 376.99  | 10.00     | 584968.86 | 591201.69 | 7"      |
| 7500.00 | 75.30 | 175.93 | 7301.23 | -426.45  | 30.38  | 427.53  | 10.00     | 584918.45 | 591205.28 |         |
| 7600.00 | 85.30 | 175.93 | 7318.07 | -524.64  | 37.37  | 525.97  | 10.00     | 584820.26 | 591212.27 |         |
| 7645.63 | 89.86 | 175.93 | 7320.00 | -570.10  | 40.61  | 571.54  | 10.00     | 584774.80 | 591215.51 | LP      |
| 7700.00 | 89.86 | 175.93 | 7320.13 | -624.34  | 44.47  | 625.92  | 0.00      | 584720.56 | 591219.37 |         |
| 7800.00 | 89.86 | 175.93 | 7320.38 | -724.08  | 51.58  | 725.92  | 0.00      | 584620.82 | 591226.48 |         |
| 7900.00 | 89.86 | 175.93 | 7320.62 | -823.83  | 58.68  | 825.92  | 0.00      | 584521.07 | 591233.58 |         |
| 8000.00 | 89.86 | 175.93 | 7320.87 | -923.58  | 65.79  | 925.92  | 0.00      | 584421.32 | 591240.69 |         |
| 8100.00 | 89.86 | 175.93 | 7321.12 | -1023.32 | 72.89  | 1025.92 | 0.00      | 584321.58 | 591247.79 |         |
| 8200.00 | 89.86 | 175.93 | 7321.36 | -1123.07 | 80.00  | 1125.92 | 0.00      | 584221.83 | 591254.90 |         |
| 8300.00 | 89.86 | 175.93 | 7321.61 | -1222.82 | 87.10  | 1225.92 | 0.00      | 584122.08 | 591262.00 |         |
| 8400.00 | 89.86 | 175.93 | 7321.86 | -1322.56 | 94.21  | 1325.92 | 0.00      | 584022.34 | 591269.11 |         |
| 8500.00 | 89.86 | 175.93 | 7322.10 | -1422.31 | 101.31 | 1425.92 | 0.00      | 583922.59 | 591276.21 |         |
| 8600.00 | 89.86 | 175.93 | 7322.35 | -1522.06 | 108.42 | 1525.91 | 0.00      | 583822.84 | 591283.32 |         |



# Weatherford

## Wft Plan Report X Y's.



**Weatherford**

|                                    |   |                |         |
|------------------------------------|---|----------------|---------|
| Company: Chi Energy                | Date: 7/1/2013  | Time: 10:54:42 | Page: 2 |
| Field: Eddy Co., NM (Nad'83)       | Co-ordinate(NE) Reference: Well: Winchester 3 Federal Com #5H |                |         |
| Site: Winchester 3 Federal Com #5H | Vertical (TVD) Reference: SITE 3312.0                         |                |         |
| Well: Winchester 3 Federal Com #5H | Section (VS) Reference: Well (0.00N, 0.00E, 175.93Azi)        |                |         |
| Wellpath: 1                        | Survey Calculation Method: Minimum Curvature                  | Db: Sybase     |         |

### Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | N/S<br>ft | E/W<br>ft | VS<br>ft | DLS<br>deg/100ft | MapN<br>ft | MapE<br>ft | Comment |
|----------|-------------|-------------|-----------|-----------|-----------|----------|------------------|------------|------------|---------|
| 8700.00  | 89.86       | 175.93      | 7322.60   | -1621.81  | 115.52    | 1625.91  | 0.00             | 583723.09  | 591290.42  |         |
| 8800.00  | 89.86       | 175.93      | 7322.84   | -1721.55  | 122.63    | 1725.91  | 0.00             | 583623.35  | 591297.53  |         |
| 8900.00  | 89.86       | 175.93      | 7323.09   | -1821.30  | 129.73    | 1825.91  | 0.00             | 583523.60  | 591304.63  |         |
| 9000.00  | 89.86       | 175.93      | 7323.34   | -1921.05  | 136.84    | 1925.91  | 0.00             | 583423.85  | 591311.74  |         |
| 9100.00  | 89.86       | 175.93      | 7323.58   | -2020.79  | 143.94    | 2025.91  | 0.00             | 583324.11  | 591318.84  |         |
| 9200.00  | 89.86       | 175.93      | 7323.83   | -2120.54  | 151.05    | 2125.91  | 0.00             | 583224.36  | 591325.95  |         |
| 9300.00  | 89.86       | 175.93      | 7324.08   | -2220.29  | 158.15    | 2225.91  | 0.00             | 583124.61  | 591333.05  |         |
| 9400.00  | 89.86       | 175.93      | 7324.32   | -2320.03  | 165.26    | 2325.91  | 0.00             | 583024.87  | 591340.16  |         |
| 9500.00  | 89.86       | 175.93      | 7324.57   | -2419.78  | 172.36    | 2425.91  | 0.00             | 582925.12  | 591347.26  |         |
| 9600.00  | 89.86       | 175.93      | 7324.82   | -2519.53  | 179.47    | 2525.91  | 0.00             | 582825.37  | 591354.37  |         |
| 9700.00  | 89.86       | 175.93      | 7325.06   | -2619.28  | 186.57    | 2625.91  | 0.00             | 582725.62  | 591361.47  |         |
| 9800.00  | 89.86       | 175.93      | 7325.31   | -2719.02  | 193.68    | 2725.91  | 0.00             | 582625.88  | 591368.58  |         |
| 9900.00  | 89.86       | 175.93      | 7325.56   | -2818.77  | 200.78    | 2825.91  | 0.00             | 582526.13  | 591375.68  |         |
| 10000.00 | 89.86       | 175.93      | 7325.80   | -2918.52  | 207.89    | 2925.91  | 0.00             | 582426.38  | 591382.79  |         |
| 10100.00 | 89.86       | 175.93      | 7326.05   | -3018.26  | 214.99    | 3025.91  | 0.00             | 582326.64  | 591389.89  |         |
| 10200.00 | 89.86       | 175.93      | 7326.30   | -3118.01  | 222.10    | 3125.91  | 0.00             | 582226.89  | 591397.00  |         |
| 10300.00 | 89.86       | 175.93      | 7326.54   | -3217.76  | 229.20    | 3225.91  | 0.00             | 582127.14  | 591404.10  |         |
| 10400.00 | 89.86       | 175.93      | 7326.79   | -3317.50  | 236.31    | 3325.91  | 0.00             | 582027.40  | 591411.21  |         |
| 10500.00 | 89.86       | 175.93      | 7327.04   | -3417.25  | 243.41    | 3425.91  | 0.00             | 581927.65  | 591418.31  |         |
| 10600.00 | 89.86       | 175.93      | 7327.28   | -3517.00  | 250.52    | 3525.91  | 0.00             | 581827.90  | 591425.42  |         |
| 10700.00 | 89.86       | 175.93      | 7327.53   | -3616.74  | 257.62    | 3625.91  | 0.00             | 581728.16  | 591432.52  |         |
| 10800.00 | 89.86       | 175.93      | 7327.78   | -3716.49  | 264.73    | 3725.91  | 0.00             | 581628.41  | 591439.63  |         |
| 10900.00 | 89.86       | 175.93      | 7328.02   | -3816.24  | 271.83    | 3825.91  | 0.00             | 581528.66  | 591446.73  |         |
| 11000.00 | 89.86       | 175.93      | 7328.27   | -3915.99  | 278.94    | 3925.91  | 0.00             | 581428.91  | 591453.84  |         |
| 11100.00 | 89.86       | 175.93      | 7328.52   | -4015.73  | 286.04    | 4025.91  | 0.00             | 581329.17  | 591460.94  |         |
| 11200.00 | 89.86       | 175.93      | 7328.76   | -4115.48  | 293.15    | 4125.91  | 0.00             | 581229.42  | 591468.05  |         |
| 11300.00 | 89.86       | 175.93      | 7329.01   | -4215.23  | 300.25    | 4225.91  | 0.00             | 581129.67  | 591475.15  |         |
| 11400.00 | 89.86       | 175.93      | 7329.26   | -4314.97  | 307.36    | 4325.91  | 0.00             | 581029.93  | 591482.26  |         |
| 11500.00 | 89.86       | 175.93      | 7329.50   | -4414.72  | 314.46    | 4425.91  | 0.00             | 580930.18  | 591489.36  |         |
| 11600.00 | 89.86       | 175.93      | 7329.75   | -4514.47  | 321.57    | 4525.91  | 0.00             | 580830.43  | 591496.47  |         |
| 11700.00 | 89.86       | 175.93      | 7330.00   | -4614.21  | 328.67    | 4625.91  | 0.00             | 580730.69  | 591503.57  |         |
| 11701.79 | 89.86       | 175.93      | 7330.00   | -4616.00  | 328.80    | 4627.70  | 0.00             | 580728.90  | 591503.70  | PBHL    |

### Targets

| Name | Description<br>Dip | TVD<br>Dir | +N/-S<br>ft | +E/-W<br>ft | Map<br>Northing<br>ft | Map<br>Easting<br>ft | Latitude<br>Deg Min Sec | Longitude<br>Deg Min Sec       |
|------|--------------------|------------|-------------|-------------|-----------------------|----------------------|-------------------------|--------------------------------|
| PBHL |                    |            | 7330.00     | -4616.00    | 328.80                | 580728.90            | 591503.70               | 32 35 46.924 N 104 10 13.589 W |

### Casing Points

| MD<br>ft | TVD<br>ft | Diameter<br>in | Hole Size<br>in | Name |
|----------|-----------|----------------|-----------------|------|
| 7447.04  | 7285.44   | 0.000          | 0.000           | 7"   |

### Formations

| MD | TVD | Formations | Lithology | Dip Angle | Dip Direction |
|----|-----|------------|-----------|-----------|---------------|
|    |     |            |           |           |               |



# Weatherford

## Wft Plan Report X Y's.



# Weatherford

Company: Chi Energy      Date: 7/1/2013      Time: 10:54:42      Page: 3  
Field: Eddy Co. NM (Nad:83)      Co-ordinate(NE) Reference: Well: Winchester 3 Federal Com #5H  
Site: Winchester 3 Federal Com #5H      Vertical (TVD) Reference: SITE 3312:0  
Well: Winchester 3 Federal Com #5H      Section (VS) Reference: Well (0.00N,0.00E,175.93Azi)  
Wellpath: 1      Survey Calculation Method: Minimum Curvature      Db: Sybase

### Annotation

| MD<br>ft. | TVD<br>ft. |      |
|-----------|------------|------|
| 6747.04   | 6747.04    | KOP  |
| 7645.63   | 7320.00    | LP   |
| 11701.79  | 7330.00    | PBHL |



**Weatherford**

**Weatherford Drilling Services**

GeoDec v5.03

Report Date: July 01, 2013  
 Job Number: \_\_\_\_\_  
 Customer: Chi Energy  
 Well Name: Winchester 3 Federal Com #5H  
 API Number: \_\_\_\_\_  
 Rig Name: \_\_\_\_\_  
 Location: Eddy Co., NM (Nad 27)  
 Block: \_\_\_\_\_  
 Engineer: RWJ

|  |   |
|--|---|
| US State Plane 1983                          | Geodetic Latitude / Longitude               |
| System: New Mexico Eastern Zone              | System: Latitude / Longitude                |
| Projection: Transverse Mercator/Gauss Kruger | Projection: Geodetic Latitude and Longitude |
| Datum: North American Datum 1983             | Datum: North American Datum 1983            |
| Ellipsoid: GRS 1980                          | Ellipsoid: GRS 1980                         |
| North/South 585344.900 USFT                  | Latitude 32.6090605 DEG                     |
| East/West 591174.900 USFT                    | Longitude -104.1714824 DEG                  |
| Grid Convergence: .09°                       |   |
| <b>Total Correction: +7.64°</b>              |   |

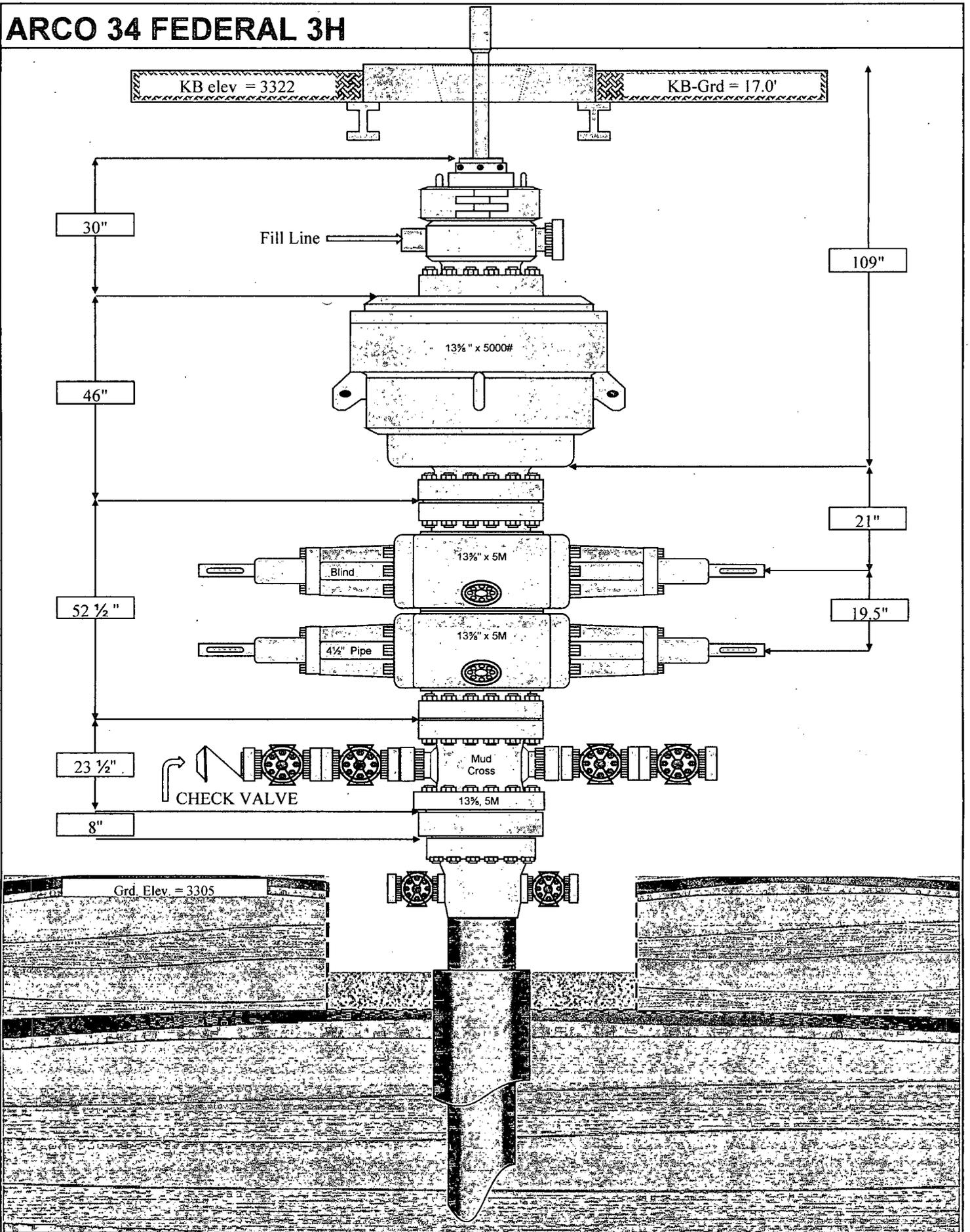
Geodetic Location WGS84      Elevation =      0.0 Meters  
 Latitude =      32.60906° N      32° 36 min 32.618 sec  
 Longitude =      104.17148° W      104° 10 min 17.337 sec

|                        |              |                     |          |
|------------------------|--------------|---------------------|----------|
| Magnetic Declination = | 7.73°        | [True North Offset] |          |
| Local Gravity =        | .9988 g      | Checksum =          | 6684     |
| Local Field Strength = | 48559 nT     | Magnetic Vector X = | 23789 nT |
| Magnetic Dip =         | 60.37°       | Magnetic Vector Y = | 3229 nT  |
| Magnetic Model =       | bggm2013     | Magnetic Vector Z = | 42209 nT |
| Spud Date =            | Sep 30, 2013 | Magnetic Vector H = | 24007 nT |

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

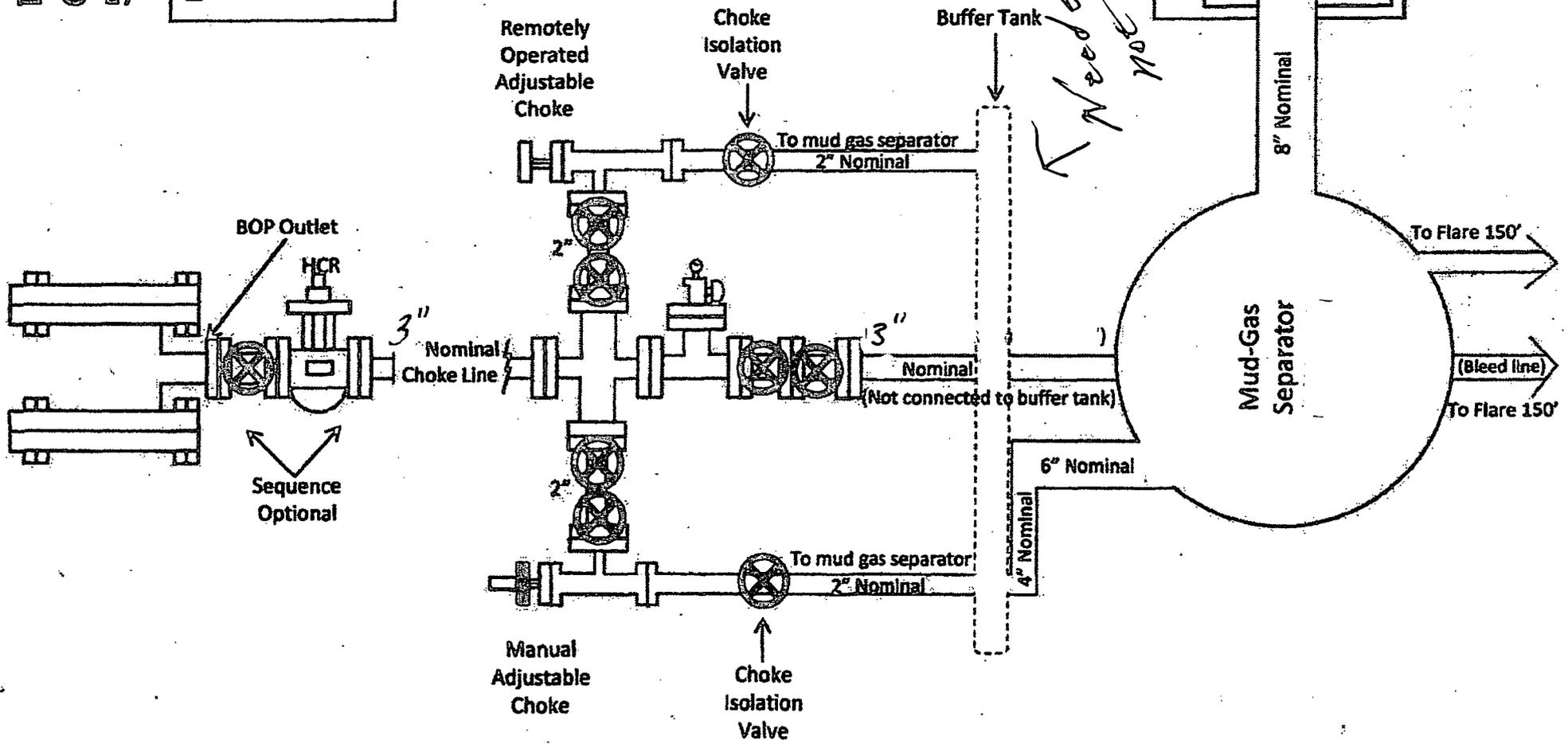
Date: \_\_\_\_\_

# ARCO 34 FEDERAL 3H



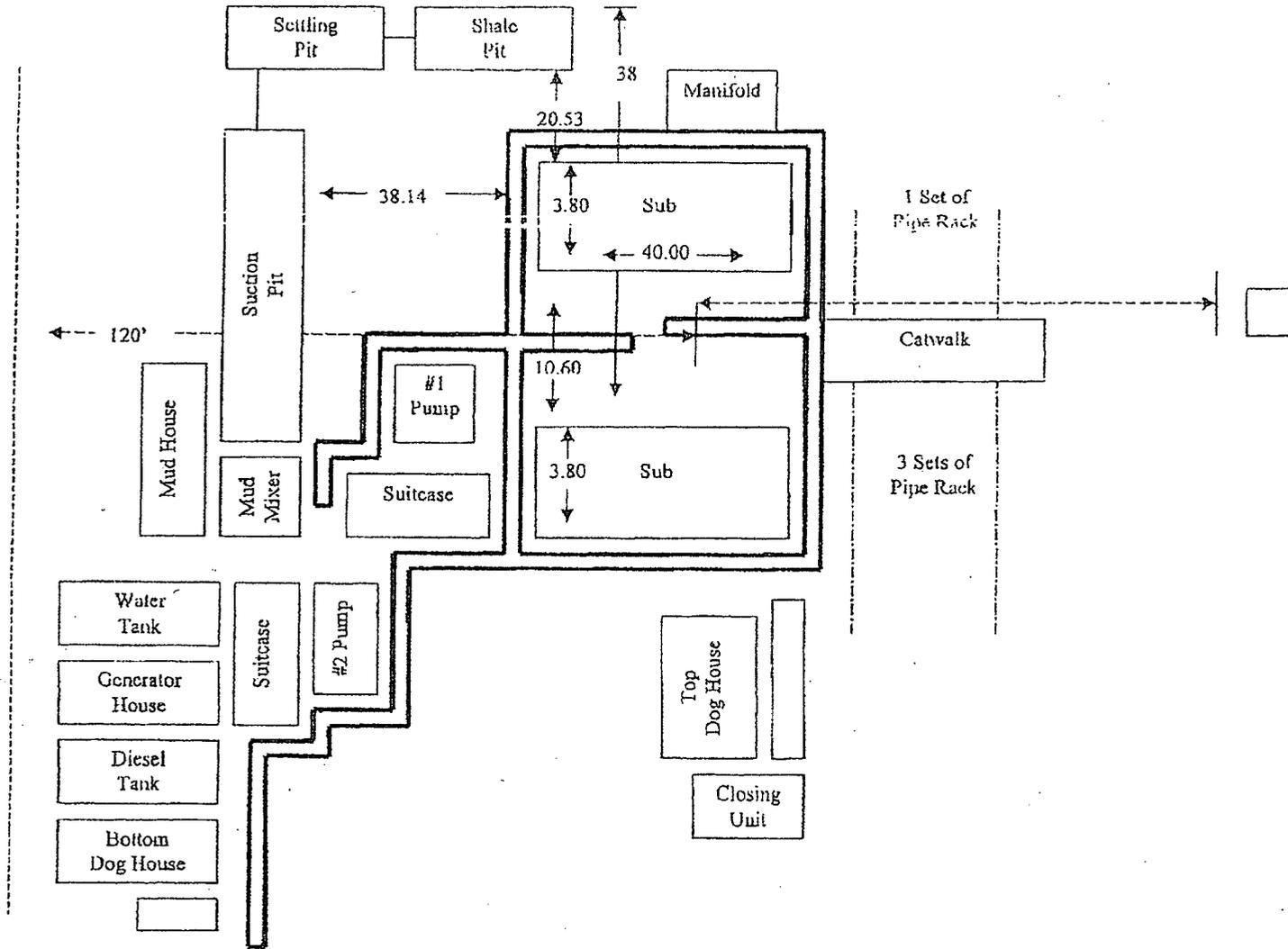
**Drilling Operations  
Choke Manifold  
SM Service**

**Exhibit E-1 - Choke Manifold Diagram**



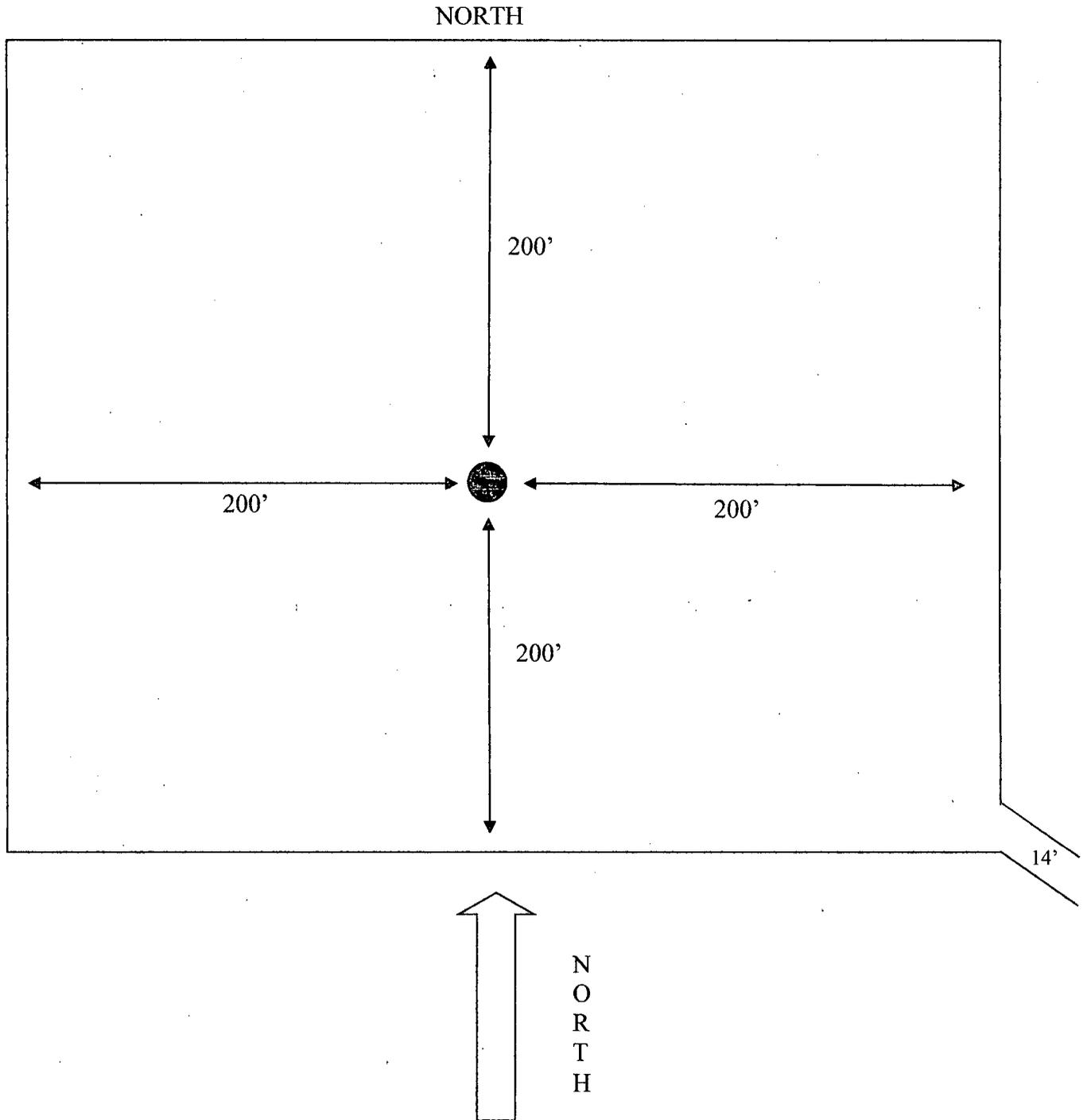
*Needs second on the line -  
Needs functionally order  
not equivalent schematic*

# Plat for Closed Loop System



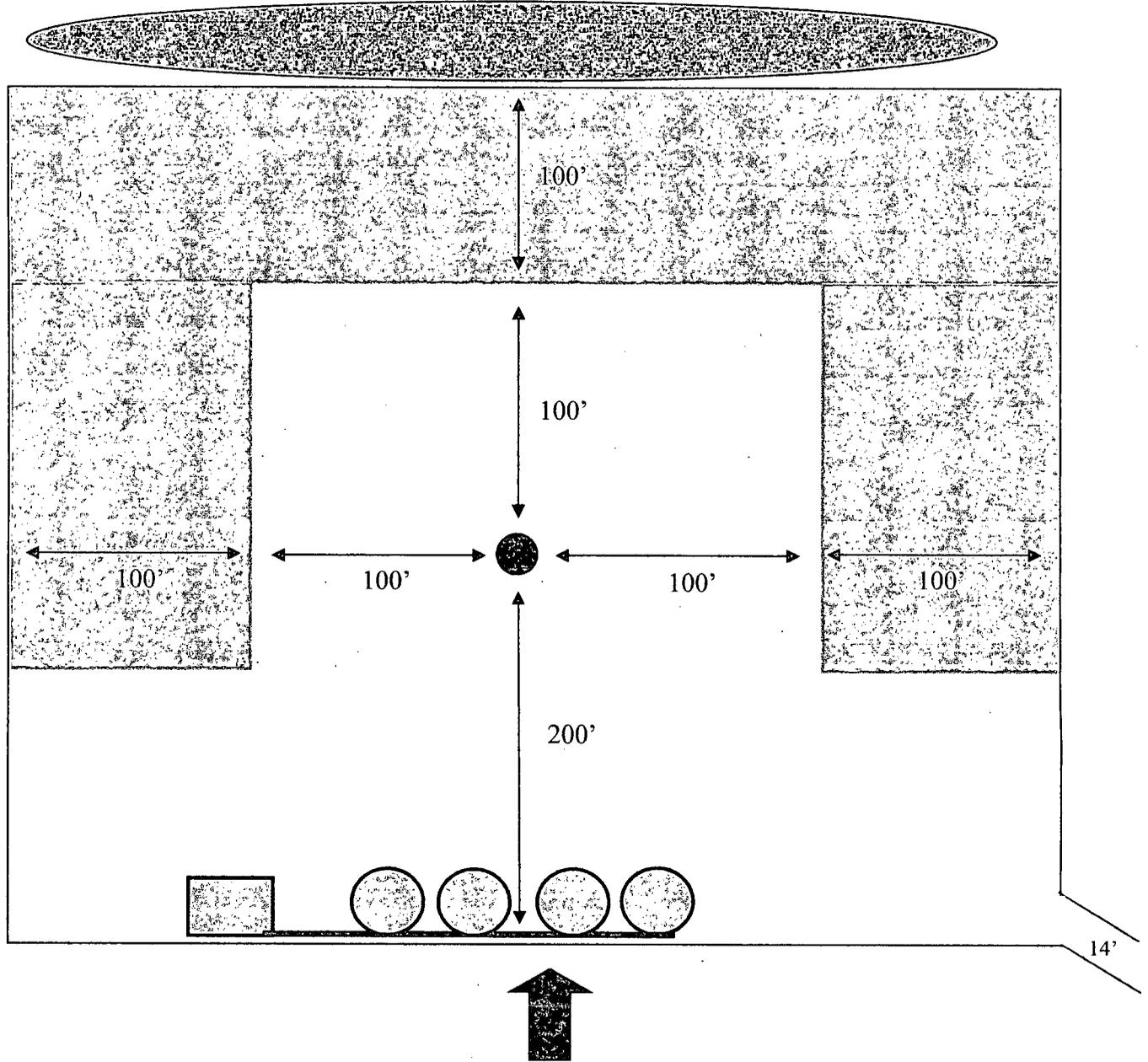
**EXHIBIT D**

**Rig Plat Only  
WINCHESTER 3 FED COM 5H  
V-DOOR EAST**



**EXHIBIT C**

**Interim Reclamation & Production Facilities  
WINCHESTER 3 FED COM 5H  
V-DOOR EAST**



**LEGEND**



Well Bore



Topsoil



Interim Reclamation



Production Facilities



Berm



**NORTH**

## SURFACE USE PLAN

### CHI OPERATING, INC.

#### WINCHESTER 3 FEDERAL COM 5H

Surface Hole: 330 FNL & 660 FWL, Section 3, T. 20 S., R. 28 E.

Bottom Hole: 330 FSL & 990 FWL, Section 3, T. 20 S., R. 28 E.

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:

A. DIRECTIONS: From Carlsbad, NM, go north on Illinois Camp Road for 8.5 miles, turn east on Angell Ranch Road for 2.25 miles, turn east on Lease Road for 1/4 mile. Turn north on lease road for 1.3 miles. Turn east northeast for 1.1 miles to the beginning point of new access road at existing pipeline road to be upgraded. All existing roads are either paved or a caliche lease road.

B. See attached plats and maps provided by Basin Surveys.

C. The access route from Angel Ranch Road (County Road) to the well location is depicted on **EXHIBIT A**. The route highlighted in red will be the access, which will require a ROW due to all of road system not being within the same lease. A road ROW has been filed with BLM Realty section.

D. Existing roads on the access route will be improved and maintained to the standard set forth in Section 2 of this Surface Use Plan of Operations.

#### 2. NEW OR RECONSTRUCTED ACCESS ROADS:

A. The new road will run from the southeast corner of the well pad and run southeast to a Navajo pipeline road (Two-track road to be upgraded) and follow pipeline road to existing east/west lease road. The total length of new road to be upgraded will be **1891.2 ft.** and all on lease.

B. The maximum width of the driving surface will be 14 feet. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1 foot deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.



#### Level Ground Section

C. Surface material will be native caliche. The average grade of the entire road will be approximately 3%.

D. Fence Cuts: No

E. Cattle guards: No

F. Turnouts: No

G. Culverts: No

- H. Cuts and Fills: Not significant
- I. Approximately 6 inches of topsoil (root zone) will be stripped from the proposed access road prior to any further construction activity. The topsoil that was stripped will be spread along the edge of the road and within the ditch. The topsoil will be seeded with the proper seed mix designated by the BLM.
- J. The access road will be constructed and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. The road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.
- K. The access road and associated drainage structures will be constructed and maintained in accordance with road guidelines contained in the joint BLM/USFS publication: Surface Operating Standards for Oil and Gas Exploration and Development, The Gold Book, Fourth Edition and/or BLM Manual Section 9113 concerning road construction standards on projects subject to federal jurisdiction.

3. LOCATION OF EXISTING WELLS:

See attached map (**EXHIBIT B**) showing all wells within a one-mile radius.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

- A. In the event the well is found productive the company will place production facilities on the South portion of the well pad (**See EXHIBIT C for production facility plat**).
- B. All permanent (on site six months or longer) aboveground structures constructed or installed on location and not subject to safety requirements will be painted to BLM specifications.
- C. Containment berms will be constructed completely around any production facilities designed to hold fluids. The containment berms will be constructed or compacted subsoil, be sufficiently impervious, hold 1 ½ times the capacity of the largest tank and away from cut or fill areas.

5. 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 and proposed roads shown in the attached survey plats. If a commercial water well is nearby, a temporary, surface poly line, will be laid along existing roads or other ROW easements and the water pumped to the well. No water well will be drilled on the location.

6. SOURCE OF CONSTRUCTION MATERIALS:

Any construction material that may be required for surfacing of the drill pad and access road will be from a contractor having a permitted source of materials within the general area. No construction materials will be removed from Federal lands without prior approval from the appropriate surface management agency. All roads will be constructed of 6" rolled and compacted caliche.

7. METHODS OF HANDLING WASTE DISPOSAL:

- A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.
- B. Drilling fluids will be contained in steel mud pits.
- C. Water produced from the well during completion will be held temporarily in steel tanks

- and then taken to an NMOCD approved commercial disposal facility.
- D. Oil produced during operations will be stored in tanks until sold.
  - E. Portable, self-contained chemical toilets will be provided for human waste disposal. Upon completion of operations, or as required, the toilet holding tanks will be pumped and the contents thereof disposed of in an approved sewage disposal facility. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
  - F. All trash, junk, and other waste materials will be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Immediately after drilling all debris and other waste materials on and around the well location, not contained in the trash cage will be cleaned up and removed from the location. No potentially adverse materials or substances will be left on the location.

8. ANCILLARY FACILITIES:

No campsite, airstrip, or other facilities will be built as a result of the operation of this well. No staging areas are needed.

9. WELL SITE LAYOUT:

- A. **Exhibit D** shows the dimensions of the proposed well pad.
- B. The proposed well pad size will be 400' x 400' (**See EXHIBIT D**). There will be no reserve pit due to the well being drilled utilizing a closed loop mud system. The closed loop system will meet the NMOCD requirements 19.15.17 .
- C. The Basin Survey's plat, Form C-102 and **Exhibit D**, shows the direction of the pad at a V-Door East.
- D. A 600' x 600' area has been staked and flagged.
- E. All equipment and vehicles will be confined to the approved disturbed areas of this APD (i.e., access road, well pad, and topsoil storage areas)

10. PLANS FOR SURFACE RECLAMATION:

- A. After concluding the drilling and/or completion operations, if the well is found non-commercial, all the equipment will be removed, the surface material, caliche, will be removed from the well pad and road and transported to the original caliche pit or used for other roads. The original stock piled top soil will be returned to the pad and contoured, as close as possible, to the original topography. The access road will have the caliche removed and the road ripped, barricaded and seeded as directed by the BLM.
- B. If the well is a producer, the portions of the pad not essential to production facilities or space required for workover operations, will be reclaimed and seeded as per BLM requirements for interim reclamation. (**SEE EXHIBIT C FOR INTERIM RECLAMATION PLAT FOR THIS WELL**)
- C. Reclamation Performance Standards  
The following reclamation performance standards will be met:

*Final Reclamation* – Includes disturbed areas where the original landform and a natural vegetative community will be restored and it is anticipated the site will not be redisturbed for future development.

- The original landform will be restored for all disturbed areas including well pads, production facilities, roads, pipelines, and utility corridors.
- A self-sustaining, vigorous, diverse, native (or otherwise approved) plant community will be established on the site, with a density sufficient to control erosion and invasion by non-native plants and to re-establish wildlife habitat or forage production. At a minimum, the established plant community will consist of species included in the seed mix and/or desirable species occurring in the surrounding natural vegetation.
- Erosion features are equal to or less than surrounding area and erosion control is sufficient so that water naturally infiltrates into the soil and gullyng, headcutting, slumping, and deep or excessive rills (greater than 3 inches) are not observed.
- The site will be free of State- or county-listed noxious weeds, oil field debris and equipment, and contaminated soil. Invasive and non-native weeds are controlled.

Seeding:

- Seedbed Preparation. Initial seedbed preparation will consist of recontouring to the appropriate interim or final reclamation standard. All compacted areas to be seeded will be ripped to a minimum depth of 18 inches with a minimum furrow spacing of 2 feet, followed by recontouring the surface and then evenly spreading the stockpiled topsoil. Prior to seeding, the seedbed will be scarified to a depth of no less than 4 – 6 inches. If the site is to be broadcast seeded, the surface will be left rough enough to trap seed and snow, control erosion, and increase water infiltration.
- If broadcast seeding is to be used and is delayed, final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.
- Seed Application. Seeding will be conducted no more than two weeks following completion of final seedbed preparation. A certified weed-free seed mix designed by the BLM to meet reclamation standards will be used.
- If the site is harrowed or dragged, seed will be covered by no more than 0.25 inch of soil.

11. SURFACE OWNERSHIP:

- A. The surface is owned by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas.

12. OTHER INFORMATION:

- A. The area surrounding the well site is in a gentle sloped, shallow sandy gypsum loam, rolling hills type area. The vegetation consists of Mesquite, Yucca, with three-awns and some dropseed species.
- B. There is no permanent or live water in the immediate area.
- C. There are no dwellings within 2 miles of this location.
- D. A Class III Cultural Resources Examination has been completed and the results will be forwarded to the BLM office.

## PECOS DISTRICT CONDITIONS OF APPROVAL

|                              |  |
|------------------------------|--|
| <b>OPERATOR'S NAME:</b>      | <b>Chi Operating, Inc.</b>                 |
| <b>LEASE NO.:</b>            | <b>NMNM-9818</b>                           |
| <b>WELL NAME &amp; NO.:</b>  | <b>Winchester 3 Federal Com 5H</b>         |
| <b>SURFACE HOLE FOOTAGE:</b> | <b>0330' FNL &amp; 0660' FWL</b>           |
| <b>BOTTOM HOLE FOOTAGE:</b>  | <b>0330' FSL &amp; 0990' FWL</b>           |
| <b>LOCATION:</b>             | <b>Section 03, T. 20 S., R 28 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**
  - Communitization Agreement
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Drilling**
  - Cement Requirements
  - High Cave/Karst
  - Logging Requirements
  - Waste Material and Fluids
- Production (Post Drilling)**
  - Well Structures & Facilities
- 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)

### **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**

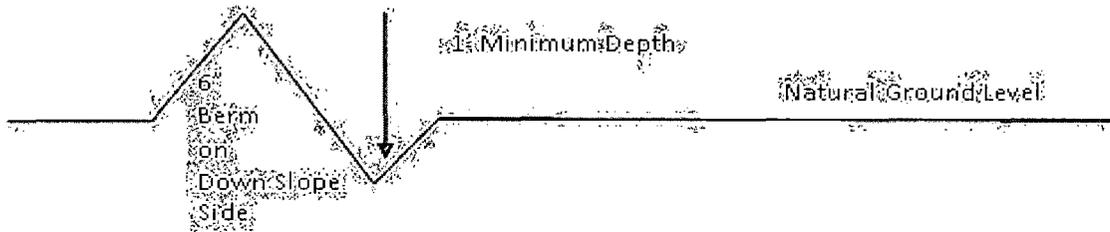
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

## Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslping 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.

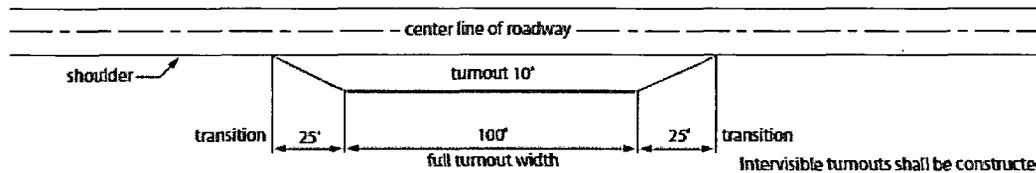
**Public Access**

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

**Construction Steps**

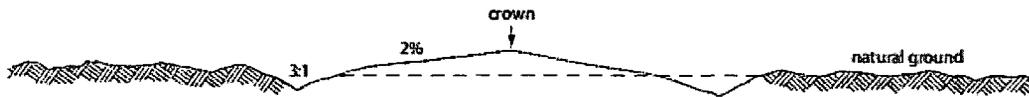
1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

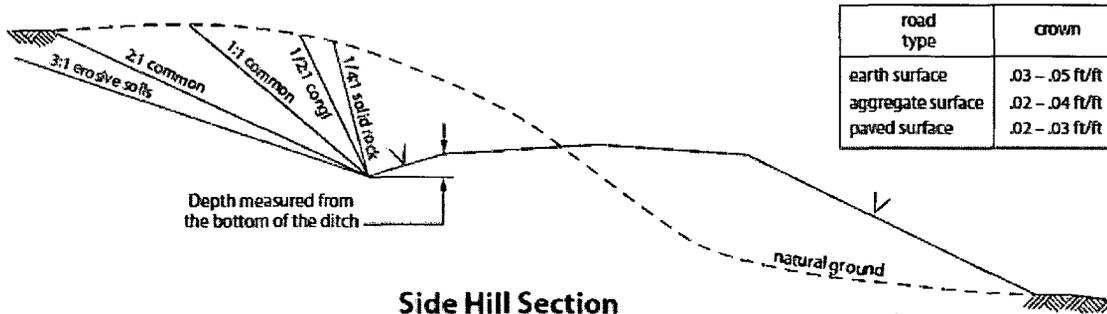


Intervisible turnouts shall be constructed on all single lane roads on all blind curves with additional turnouts as needed to keep spacing below 1000 feet.

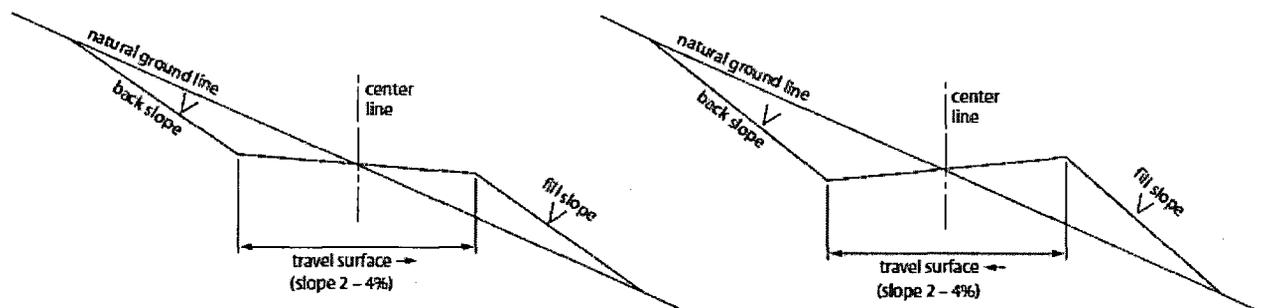
**Typical Turnout Plan**



**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. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts 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 Rustler top and 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.**

**High Cave/Karst**

**Possibility of lost circulation in the Grayburg, San Andres, Capitan Reef (if encountered), Delaware, and Bone Spring.**

1. The 13-3/8 inch surface casing shall be set at approximately 350 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) 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.
  
2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

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

3. The minimum required fill of cement behind the 7 inch production casing is:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
4. Cement not required on the 4-1/2" casing. **Packer system being used.**
5. 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 (Installing 5M testing to 3,000 psi)**.
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
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**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- 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 090913**

## 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).

**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).

Seed Mixture 2, for Sandy 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 of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/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> |
|---|----------------|
| Sand dropseed ( <i>Sporobolus cryptandrus</i> )     | 1.0            |
| Sand love grass ( <i>Eragrostis trichodes</i> )     | 1.0            |
| 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