ATS-08-146

Form 3160-3
(August 2007)

OCD-ARTESIA

SECRETARYS POTASH

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

155

FORM APPROVED
OMB No. 1004-0136
Expires July 31, 2010

## APPLICATION FOR PERMIT TO DRILL OR REENTER

| | |
|---|---|
| 1a. Type of Work: ☒ DRILL ☐ REENTER | 5. Lease Serial No. NMNM111960 |
| JAN 28 2008 OCD-ARTESIA | 6. If Indian, Allottee or Tribe Name |
| 1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone | 7. If Unit or CA Agreement, Name and No. |
| 2. Name of Operator CHESAPEAKE OPERATING, INC. Contact: LINDA GOOD E-Mail: lgood@chkenergy.com | 8. Lease Name and Well No. LOTOS 14 FEDERAL 1 |
| 3a. Address P.O. BOX 18496 OKLAHOMA CITY, OK 73154-0496 | 3b. Phone No. (include area code) Ph: 405-767-4275 Fx: 405-753-5469 |
| | 9. API Well No. 30-015-36069 |
| | 10. Field and Pool, or Exploratory POKER LAKE; DELAWARE |
| 4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface SWNW 2310FNL 990FWL At proposed prod. zone SWNW 2310FNL 990FWL | 11. Sec., T., R., M., or Blk. and Survey or Area Sec 14 T24S R31E Mer NMP |
| 14 Distance in miles and direction from nearest town or post office* APPROX. 19 MILES ESE OF LOVING, NM | 12. County or Parish EDDY / 13. State NM |
| 15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) | 16. No. of Acres in Lease 800.00 / 17. Spacing Unit dedicated to this well 40.00 |
| 18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth 8500 MD / 20. BLM/BIA Bond No. on file NM #2634 |
| 21. Elevations (Show whether DF, KB, RT, GL, etc. 3565 GL | 22. Approximate date work will start / 23. Estimated duration |

CONFIDENTIAL

Carlsbad Controlled Water Basin

### 24. Attachments

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

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

| | | |
|---|---|---|
| 25. Signature (Electronic Submission) | Name (Printed/Typed) LINDA GOOD Ph: 405-767-4275 | Date 11/12/2007 |
| Title FEDERAL REGULATORY ANALYST | | |
| Approved by (Signature) /s/ Linda S.C. Rundell | Name (Printed/Typed) /s/ Linda S.C. Rundell | Date JAN 22 2008 |
| Title STATE DIRECTOR | Office NM STATE OFFICE | |

Application approval does not warrant or certify 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.

**Additional Operator Remarks (see next page)**

**Electronic Submission #57107 verified by the BLM Well Information System**
**For CHESAPEAKE OPERATING, INC., sent to the Carlsbad**

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

Bureau of Land Management
Received
NOV 13 2007
Carlsbad Field Office
Carlsbad, N.M.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

DISTRICT I
1625 N FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S ST FRANCIS DR., SANTA FE, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

# OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease – 4 Copies
Fee Lease – 3 Copies

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

| API Number | Pool Code | Pool Name |
|---|---|---|
| | 33745 | Ingle Wells; Delaware |

| Property Code | Property Name | Well Number |
|---|---|---|
| 36963 | LOTOS 14 FEDERAL | 1 |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 147179 | CHESAPEAKE OPERATING, INC. | 3574' |

### Surface Location

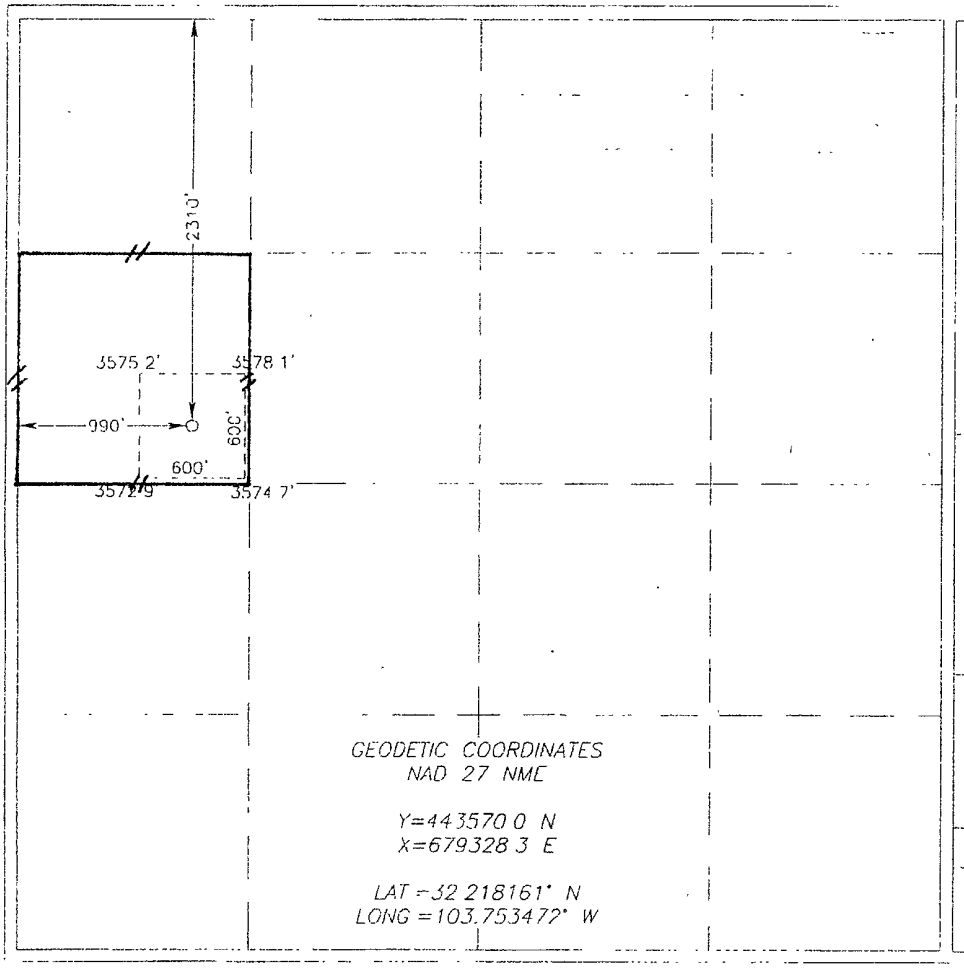
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| E | 14 | 24-S | 31-E | | 2310 | NORTH | 990 | WEST | EDDY |

### 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 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 40 | | | |

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




GEODETIC COORDINATES
NAD 27 NME

Y=443570.0 N
X=679328.3 E

LAT = 32.218161° N
LONG = 103.753472° W

### OPERATOR CERTIFICATION

*I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Craig Barnard 6/8/07
Signature Date

CRAIG BARNARD
Printed Name

### SURVEYOR CERTIFICATION

*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.*

GARY G. EIDSON
MAY 25, 2007
NEW MEXICO
12641
REGISTERED PROFESSIONAL SURVEYOR

Date Surveyed: JR

Signature & Seal of Professional Surveyor

Basin Surveys 6/7/07
07-11-0664

Certificate No. GARY EIDSON 12641
RONALD EIDSON 3239

EXHIBIT A-1

**Additional Operator Remarks:**

CHESAPEAKE OPERATING, INC. RESPECTFULLY REQUESTS PERMISSION TO DRILL A WELL TO 8500' TO TEST THE DELAWARE FORMATION. IF PRODUCTIVE, CASING WILL BE RUN AND THE WELL COMPLETED. IF DRY, THE WELL WILL BE PLUGGED AND AVANDONED AS PER BLM AND NEW MEXICO OIL CONSERVATION DIVISION REQUIREMENTS.

PLEASE FIND THE SURFACE USE PLAN AND DRILLING PLAN AS REQUIRED BY ONSHORE ORDER NO. 1.

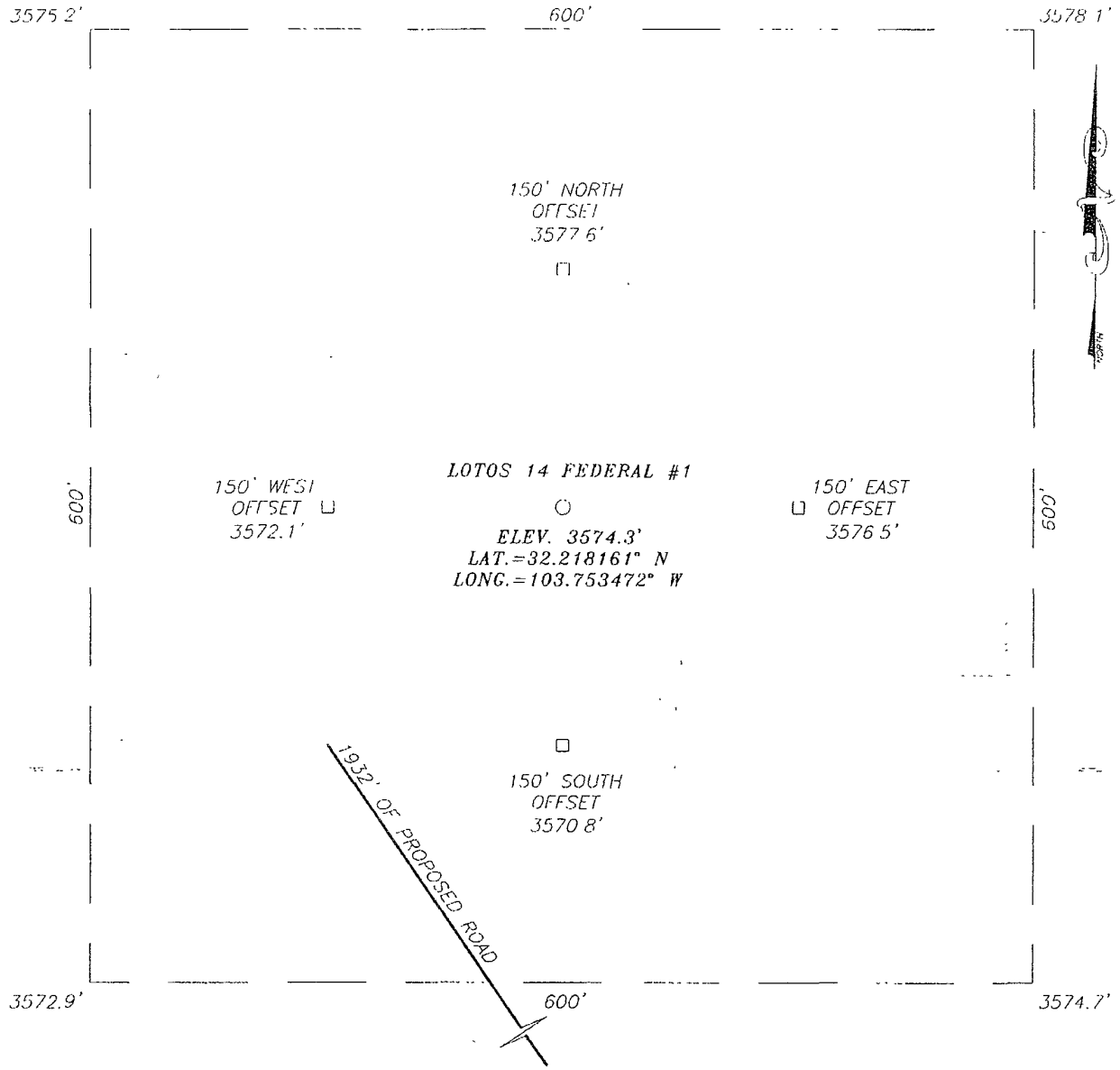
CHESAPEAKE OPERATING, INC. HAS AN AGREEMENT WITH THE GRAZING LESSEE.

PLEASE BE ADVISED THAT CHESAPEAKE OPERATING, INC. IS CONSIDERED TO BE THE OPERATOR OF THE ABOVE MENTIONED WELL. CHESAPEAKE OPERATING, INC. AGREES TO BE RESPONSIBLE UNDER THE TERMS AND CONDITIONS OF THE LEASE FOR THE OPERATIONS CONDUCTED UPON THE LEASE LANDS.

(CHK PN 615816)

# SECTION 14, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO




DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ST. HWY #128 AND CO. RD. #786 (BUCK JACKSON RD.) GO SOUTHWEST ON CO. RD. #786 APPROX. 2.3 MILES TO A PROPOSED ROAD SURVEY FOLLOW ROAD SURVEY NORTHWEST APPROX. 1932 FEET TO THIS LOCATION

100 0 100 200 Feet

Scale: 1"=100'


PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

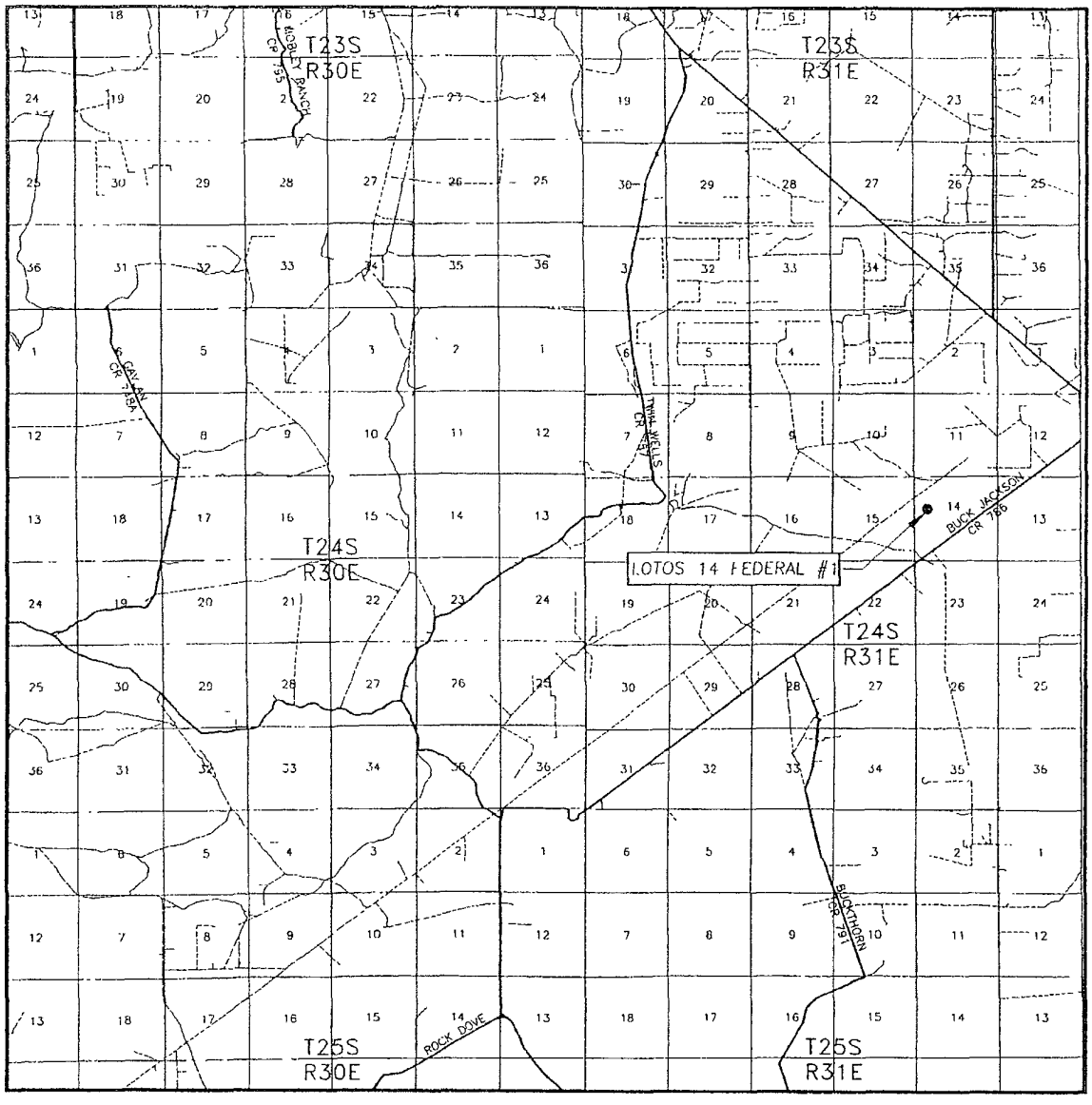

## CHESAPEAKE OPERATING, INC.

LOTOS 14 FEDERAL #1 WELL
LOCATED 2310 FEET FROM THE NORTH LINE
AND 990 FEET FROM THE WEST LINE OF SECTION 14,
TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

| | | | |
|---|---|---|---|
| Survey Date: 05/25/07 | Sheet 1 of 1 Sheets | | |
| W.O. Number 07.11.0664 | Dr. By J.R. | Rev 1 N/A | |
| Date. 05/30/07 | Disk. CD#7 | 07110664 | Scale. 1"=100' |

EXHIBIT A-2

# VICINITY MAP




SCALE: 1" = 2 MILES

SEC. 14 TWP. 24-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 2310' FNL & 990' FWL

ELEVATION 3574'

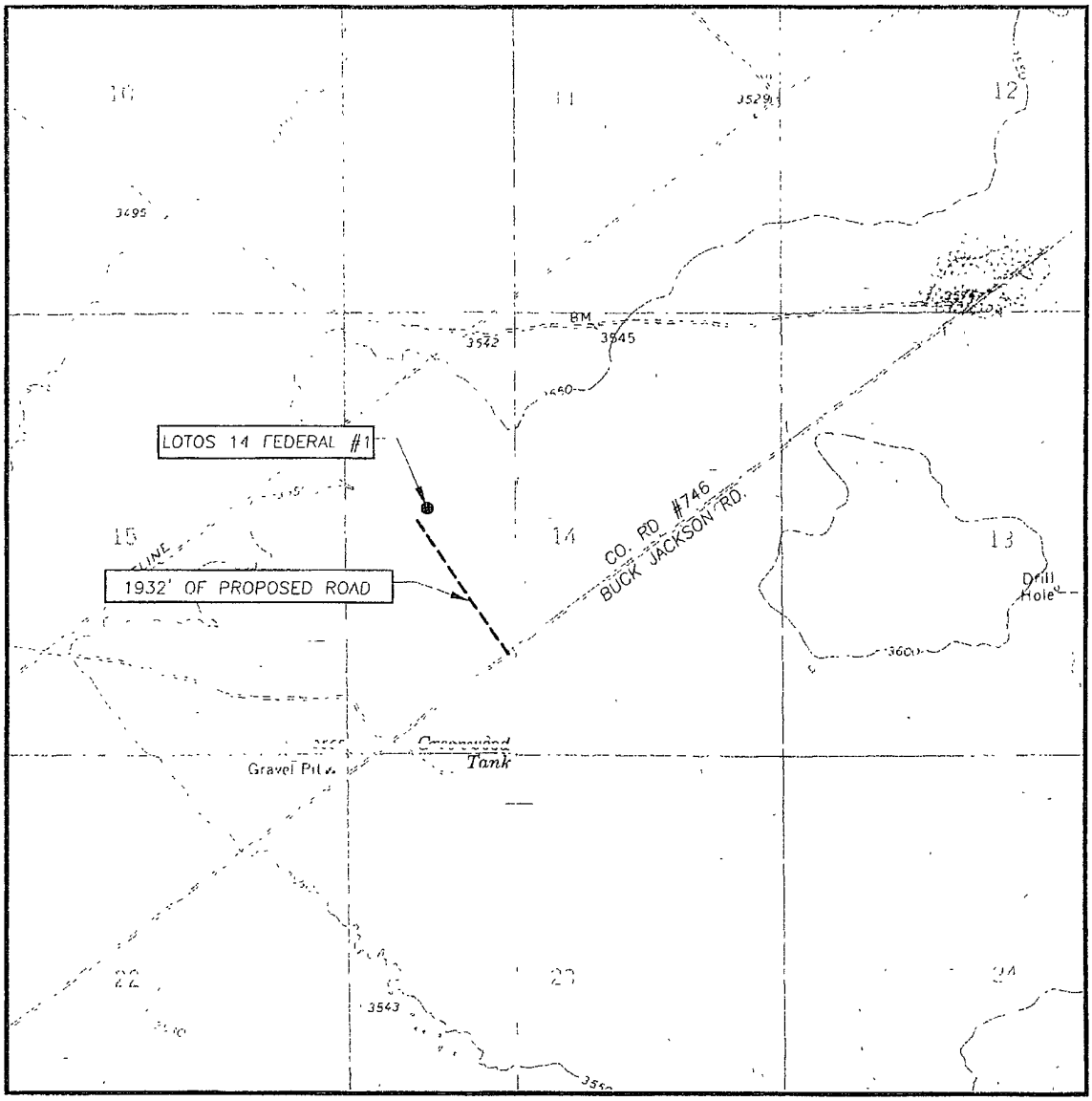
OPERATOR CHESAPEAKE OPERATING, INC.

LEASE LOTOS 14 FEDERAL


PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N DAL PASO
HOBBS, N.M. 88240
(505) 393-3117


EXHIBIT A-3

# LOCATION VERIFICATION MAP




SCALE: 1" = 2000'

CONTOUR INTERVAL:
BIG SINKS, N.M – 10'
PADUCA BREAKS, N.M. – 10'

SEC. 14 TWP. 24-S RGE 31-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 2310' FNL & 990' FWL

ELEVATION 3574'

OPERATOR CHESAPEAKE OPERATING, INC

LEASE LOTOS 14 FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
BIG SINKS, N.M.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

EXHIBIT A-4

ONSHORE OIL & GAS ORDER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

All lease and/or unit operations are to be conducted in such a manner that full compliance is made with the applicable laws, regulations (CFR 43, Part 3160) and the approved Application for Permit to Drill. The operator is considered fully responsible for the actions of his subcontractors. A copy of the approved APD must be on location during construction, drilling and completion operations.

Approval of this application 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.

1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

| Formation | Subsea | Depth |
|---|---|---|
| RUSTLER | 2,861' | 721' |
| SALADO (ANHY. & SALT) | 2,520' | 1,063' |
| BASE OF SALT | -714' | 4,297' |
| *BELL CANYON FM. | -974' | 4,557' |
| *CHERRY CANYON MKR. | -2,016' | 5,599' |
| *BRUSHY CANYON FM. | -3,088' | 6,671' |
| **BRSC IV | -3,220' | 6,803' |
| **BRSC 1W | -3,243' | 6,826' |
| **BRSC 1Z | -3,307' | 6,890' |
| **BRSC 3 | -3,377' | 6,960' |
| **BRSC 4 | -3,418' | 7,001' |
| **BRSC 6 | -3,712' | 7,295' |
| **LOWER BRUSHY "B" ZONE | -4,590' | 7,174' |
| **LOWER BRUSHY 'C" ZONE | -4,670' | 8,253' |
| **LOWER BRUSHY "D" ZONE | -4,711' | 8,294' |
| BONE SPRING | -4,794 | 8,377' |
| *Potentially productive zones | **Total Depth:** | **8,500'** |

2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS

The estimated depths at which the top and bottom of the anticipated water, oil, gas or other mineral bearing formations are expected to be encountered are as follows:

| Substance | Formation | Depth |
|---|---|---|
| Oil/Gas | Bell Canyon | 4557' |
| Oil/Gas | Cherry Canyon | 5599' |
| Oil/Gas | Brushy Canyon | 6671' |

All shows of fresh water and minerals will be reported and protected.

3. BOP EQUIPMENT:

Will have a 3000 psi simplified rental stack (see proposed schematic) for drill out below surface casing; this system will be tested to 2000 psi working pressure.

Will have a 5000 psi rig stack (see proposed schematic) for drill out below intermediate casing; this system will be tested to 3000 psi working pressure.

Chesapeake Operating, Inc.'s minimum specifications for pressure control equipment are as follows:

I. BOP, Annular, Choke Manifold, Pressure Test - See Exhibit F-1 and F-2.

A. Equipment
1. The equipment to be tested includes all of the following that is installed on the well:
(a) Ram-type and annular preventers,
(b) Choke manifolds and valves,
(c) Kill lines and valves, and
(d) Upper and lower kelly cock valves, inside BOP's and safety valves.

B. Test Frequency
1. All tests should be performed with clear **water**,
(a) when installed,
(b) before drilling out each casing string,
(c) at any time that there is a repair requiring a pressure seal to be broken in the assembly, and
(d) at least once every **30 days** while drilling.

C. Test Pressure
1. In some drilling operations, the pressures to be used for low and high-pressure testing of preventers and casing may be different from those given below due to governmental regulations, or approved local practices.
2. If an individual component does not test at the low pressure, **do not,** test to the high pressure and then drop back down to the low pressure.
3. All valves located downstream of a valve being tested must be placed in the open position.
4. All equipment will be tested with an initial "low pressure" test at 250 psi.

1. In each case, the individual components should be monitored for leaks for **5 minutes,** with no observable pressure decline, once the test pressure as been applied

II. Accumulator Performance Test

A. Scope

1. The purpose of this test is to check the capabilities of the BOP control systems, and to detect deficiencies in the hydraulic oil volume and recharge time.

B. Test Frequency

1. The accumulator is to be tested each time the BOP's are tested, or any time a major repair is performed.

C. Minimum Requirements

1. The accumulator should be of sufficient volume to supply 1.5 times the volume to close and hold all BOP equipment in sequence, **without recharging** and the **pump turned off**, and have remaining pressures of **200 PSI above the precharge pressure**.

2. Minimum precharge pressures for the various accumulator systems per **manufacturers recommended specifications** are as follows:

3.

| System Operating Pressures | Precharge Pressure |
|---|---|
| 1500 PSI | 750 PSI |
| 2000 PSI | 1,000 PSI |
| 3000 PSI | 1,000 PSI |

3. Closing times for the Hydril should be less than **20 seconds**, and for the ram-type preventers less than **10 seconds**.

4. System Recharge time should not exceed **10 minutes**.

D. Test Procedure

1. Shut accumulator pumps off and record accumulator pressure.

2. In sequence, close the annular and one set of properly sized pipe rams, and open the HCR valve.

3. Record time to close or open each element and the remaining accumulator pressure after each operation.

4. Record the remaining accumulator pressure at the end of the test sequence. Per the previous requirement, this pressure **should not be less** than the following pressures:

| System Pressure | Remaining Pressure At Conclusion of Test |
|---|---|
| 1,500 PSI | 950 PSI |
| 2,000 PSI | 1,200 PSI |
| 3,000 PSI | 1,200 PSI |

5. Turn the accumulator pumps on and record the recharge time. This time should not exceed **10 minutes.**

6. Open annular and ram-type preventers. Close HCR valve.

7 Place all 4-way control valves in **full open** or **full closed** position. **Do not leave in neutral position**.

4. CASING AND CEMENTING PROGRAM

a. The proposed casing program will be as follows:

See COA

| Purpose | Interval | Hole Size | Casing Size | Weight | Grade | Thread | Condition |
|---|---|---|---|---|---|---|---|
| Surface | 0-750' | 17.5" | 13.375" | 48.0 | H-40 | STC | New |
| Intermediate | 0-4350' | 11.0" | 8.625" | 32.0 | J-55 | STC | New |
| Production | 0-8500' | 7.875" | 5.5" | 17.0 | N-80 | LTC | New |

b. Casing design subject to revision based on geologic conditions encountered.
c. Safety Factors:
13-3/8" Surface Casing: SFb = 1.44, SFc = 2.11 and SFt = 2.11
8-5/8" Intermediate Casing: SFb = 1.34, SFc = 1.51 and SFt = 1.87
5-1/2" Production Casing: SFb = 1.94, SFc = 1.78 and SFt = 1.88
d. The cementing program will be as follows:

See COA

| Interval | Type | Amount | Yield | Washout | Excess |
|---|---|---|---|---|---|
| 0' – 750' | 35:65 Poz:C | 417 | 2.10 | 0 | 100 |
| | Class C (550' – sect TD) | 204 | 1.34 | 0 | 70 |
| 0' – 4350' | 35:65 Poz:C | 859 | 2.10 | 0 | 75 |
| | Class C (3750' – sect TD) | 192 | 1.34 | 0 | 50 |
| 4100' – 8500' | Interfill H (lead) | 340 | 2.45 | 0 | 20 |
| | Premium plus (tail) | 135 | 1.31 | 0 | 20 |

5. MUD PROGRAM

a. The proposed circulating mediums to be used in drilling are as follows:

See COA

| Interval | Mud Type | Mud Weight | Viscosity | Fluid Loss |
|---|---|---|---|---|
| 0-750 | FW | 8.6-9.0 | 32-36 | NC |
| 750-4,350 | *FW/Brine | 9.9-10 | 28-29 | NC |
| 4,350-8,500 | FW/Brine | 8.4-8.5 | 30-31 | 20-25 |

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

6. TESTING, LOGGING AND CORING

The anticipated type and amount of testing, logging and coring are as follows:

a. Drill stem tests are not planned.
b. The logging program will consist of Natural GR, Density-Neutron, PE & Dual Laterolog from TD to surface casing; Neutron-GR surface casing to surface.
c. Cores samples are not planned.

7. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

a. The estimated bottom hole pressure is 3825 psi (0.45 psi/ft @ 8,500' tvd). No abnormal pressures or temperatures are anticipated.
b. Hydrogen sulfide gas is not anticipated.

**From:** Linda Good
**Sent:** Monday, December 17, 2007 3:17 PM
**To:** Todd Nance
**Subject:** Lotos 14 Fed 1 & Lotos 15 Fed 1 Casing Safety Factors

Todd,

Please review.

Lotos 14 Federal 1:

b. Casing Safety Factors:

13-3/8" Surface Casing: SFb = 1.44, SFc = 2.11 and SFt = 2.11

8-5/8" Intermediate Casing: SFb = 1.34, SFc = 1.51 and SFt = 1.87
5-1/2" Production Casing: SFb = 1.94, SFc = 1.78 and SFt = 1.88

Lotos 15 Federal 1:

b. Casing Safety Factors:

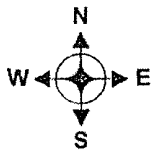
13-3/8" Surface Casing: SFb = 1.44, SFc = 2.11 and SFt = 2.11

8-5/8" Intermediate Casing: SFb = 1.34, SFc = 1.51 and SFt = 1.87
5-1/2" Production Casing: SFb = 1.94, SFc = 1.78 and SFt = 1.88

If this is OK I will send to the BLM.

Thank you,

*Linda Good*
Chesapeake Energy Corporation
Federal Regulatory Analyst
P.O. Box 18496
Oklahoma City, OK 73154
Phone: 405-767-4275
Bldg: The Terraces, #211
email: lgood@chkenergy.com




Chesapeake plans to lay 3,532' of 4" SDR 11 poly line from the Lotos 15 Federal #1 to the Lotos 14 Federal #1 well pad to sale gas to DCP thru a CDP gas meter. Chesapeake will lay the line on top of the ground along existing roads.

DCP Gas Sales Line

The Lotos 15 Federal #1 & Lotos 14 Federal #1 are approximately 19 miles ESE of Loving New Mexico.

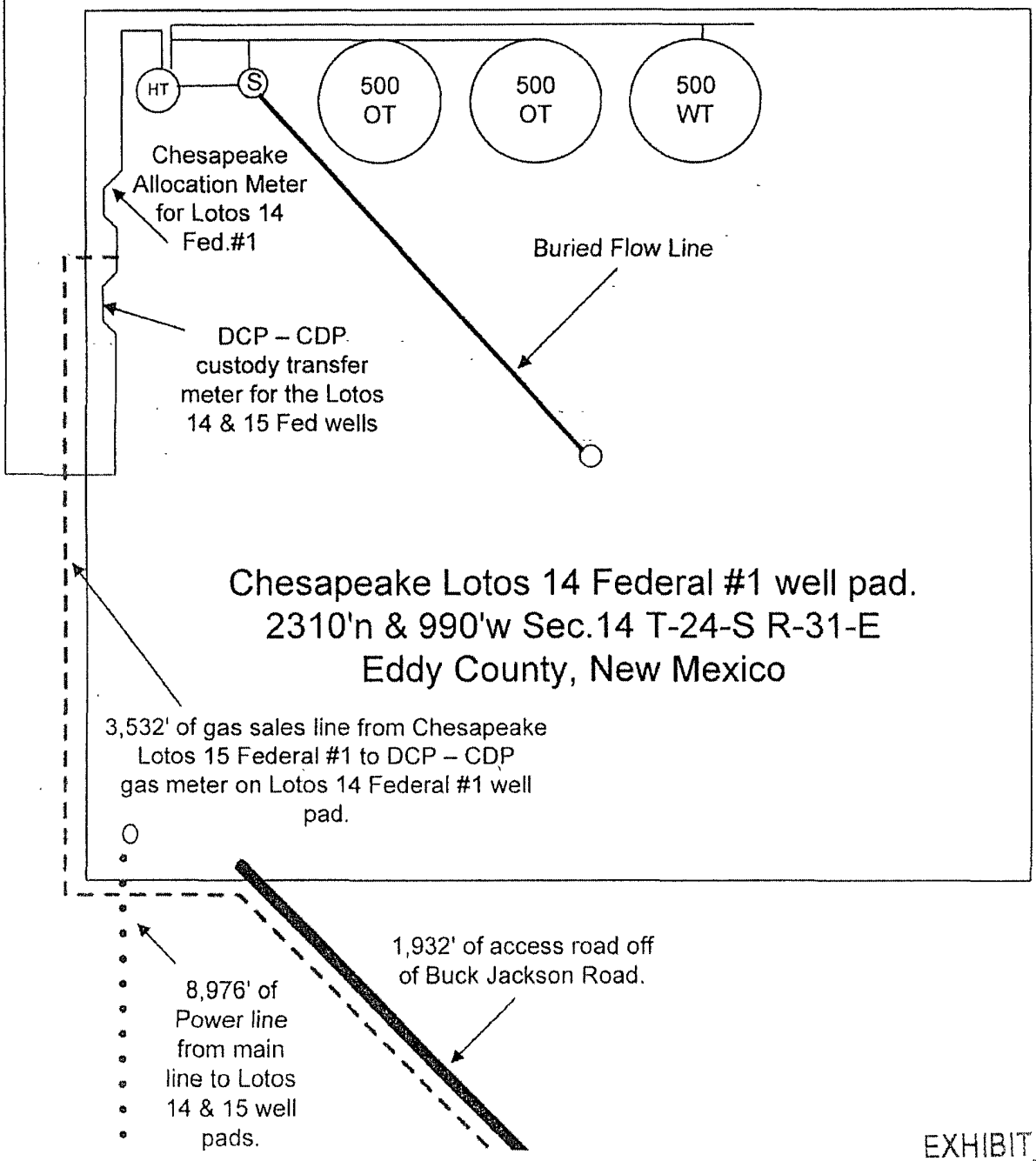
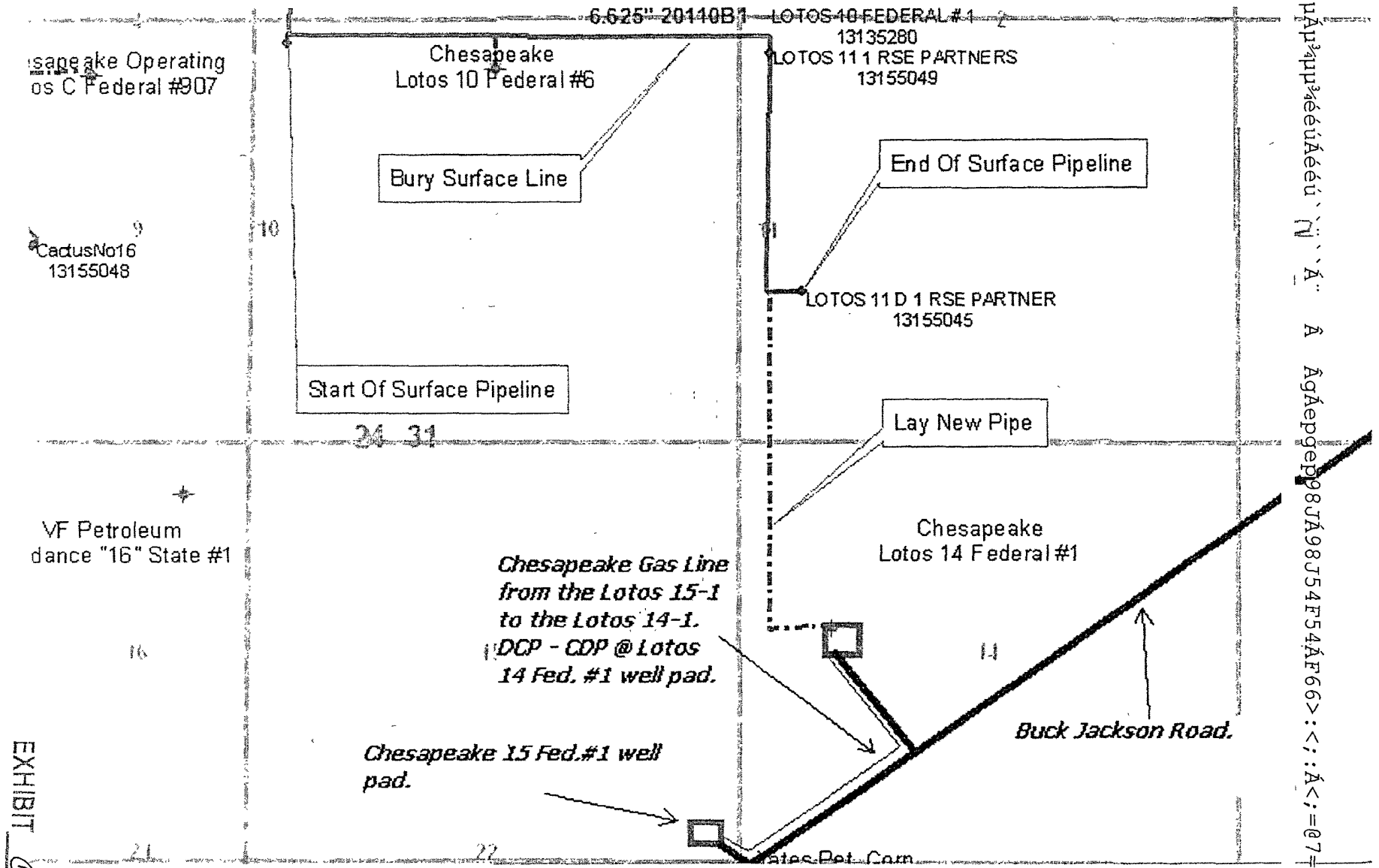
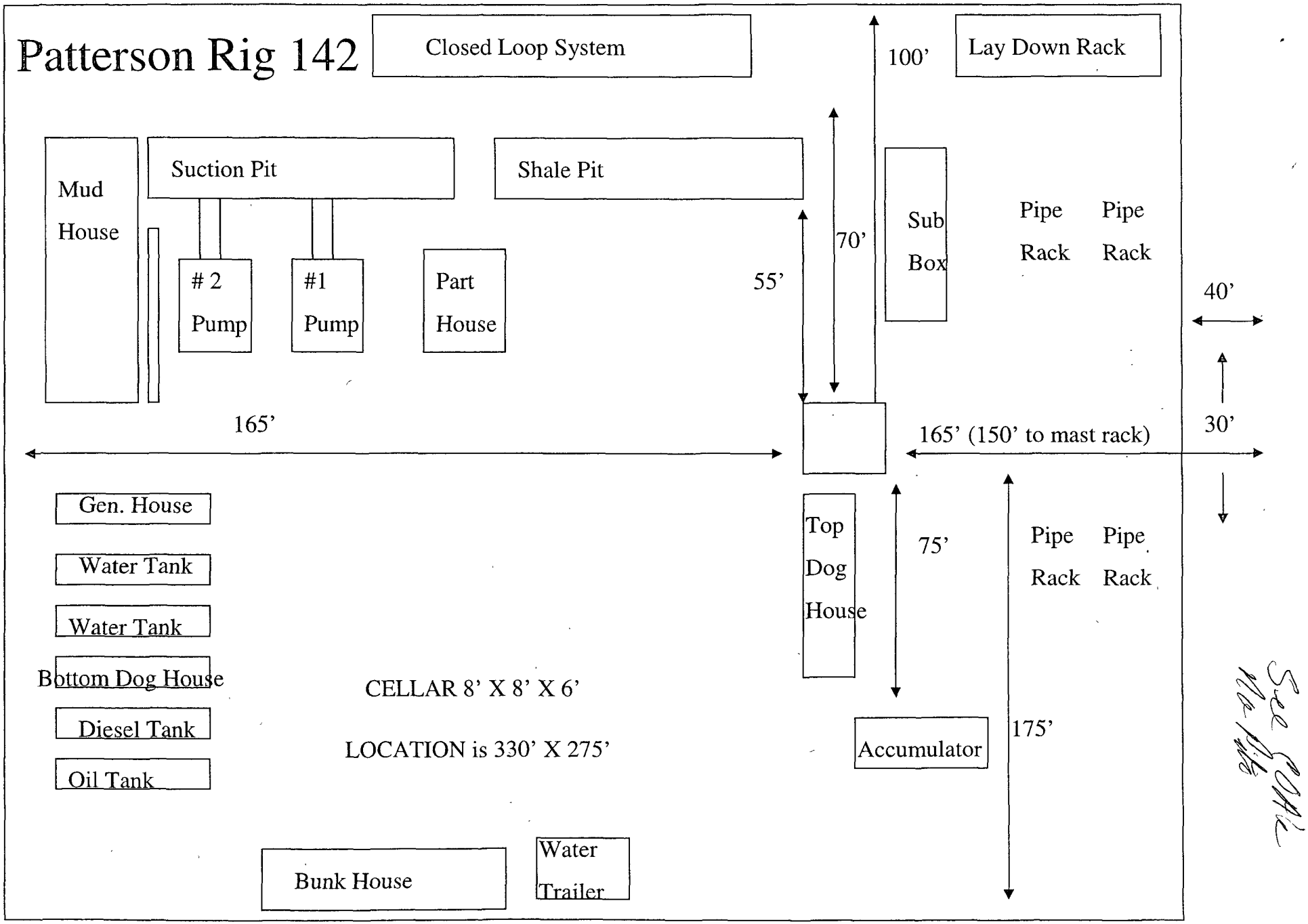



EXHIBIT C-1


6.625" 20110B1
LOTOS 10 FEDERAL #1
13135280
LOTOS 11 1 RSE PARTNERS
13155049
Chesapeake
Lotos 10 Federal #6
Bury Surface Line
End Of Surface Pipeline
LOTOS 11 D 1 RSE PARTNER
13155045
Start Of Surface Pipeline
Lay New Pipe
Chesapeake
Lotos 14 Federal #1
Chesapeake Gas Line from the Lotos 15-1 to the Lotos 14-1. DCP - CDP @ Lotos 14 Fed. #1 well pad.
Buck Jackson Road.
Chesapeake 15 Fed.#1 well pad.
CactusNo16
13155048
VF Petroleum
dance "16" State #1
EXHIBIT A-2

1- Lotos 14 Fed




See COA

# BLOWOUT PREVENTOR SCHEMATIC

## CHESAPEAKE OPERATING INC

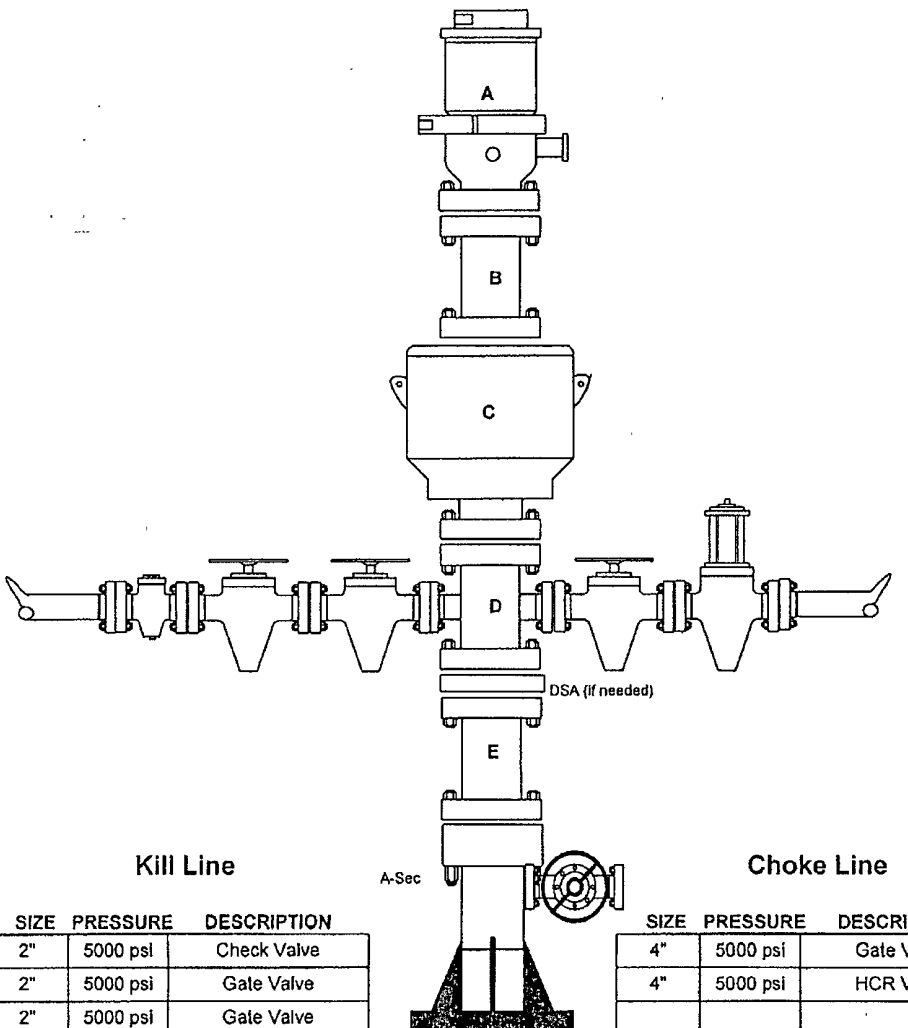
**WELL** : Lotos 14 Federal 1

**RIG** : Patterson 142

**COUNTY** : Eddy **STATE:** New Mexico

**OPERATION:** Drill out below 13-3/8" Casing (11" hole size)

| | SIZE | PRESSURE | DESCRIPTION |
|---|---|---|---|
| A | 13-5/8" | 500 psi | Rot Head |
| B | 13-5/8" | 3000 psi | Spacer Spool |
| C | 13-5/8" | 3000 psi | Annular |
| D | 13-5/8" | 3000 psi | Mud Cross |
| E | 13-5/8" | 3000 psi | Spacer Spool |
| | | | |
| | | | |
| | | | |
| DSA | | 13-5/8" 3M x 13-5/8" 3M (if needed) | |
| A-Sec | | 13-3/8" SOW x 13-5/8" 3M | |




### Kill Line

| SIZE | PRESSURE | DESCRIPTION |
|---|---|---|
| 2" | 5000 psi | Check Valve |
| 2" | 5000 psi | Gate Valve |
| 2" | 5000 psi | Gate Valve |
| | | |
| | | |

### Choke Line

| SIZE | PRESSURE | DESCRIPTION |
|---|---|---|
| 4" | 5000 psi | Gate Valve |
| 4" | 5000 psi | HCR Valve |
| | | |
| | | |
| | | |

EXHIBIT F-1

# BLOWOUT PREVENTOR SCHEMATIC

## CHESAPEAKE OPERATING INC

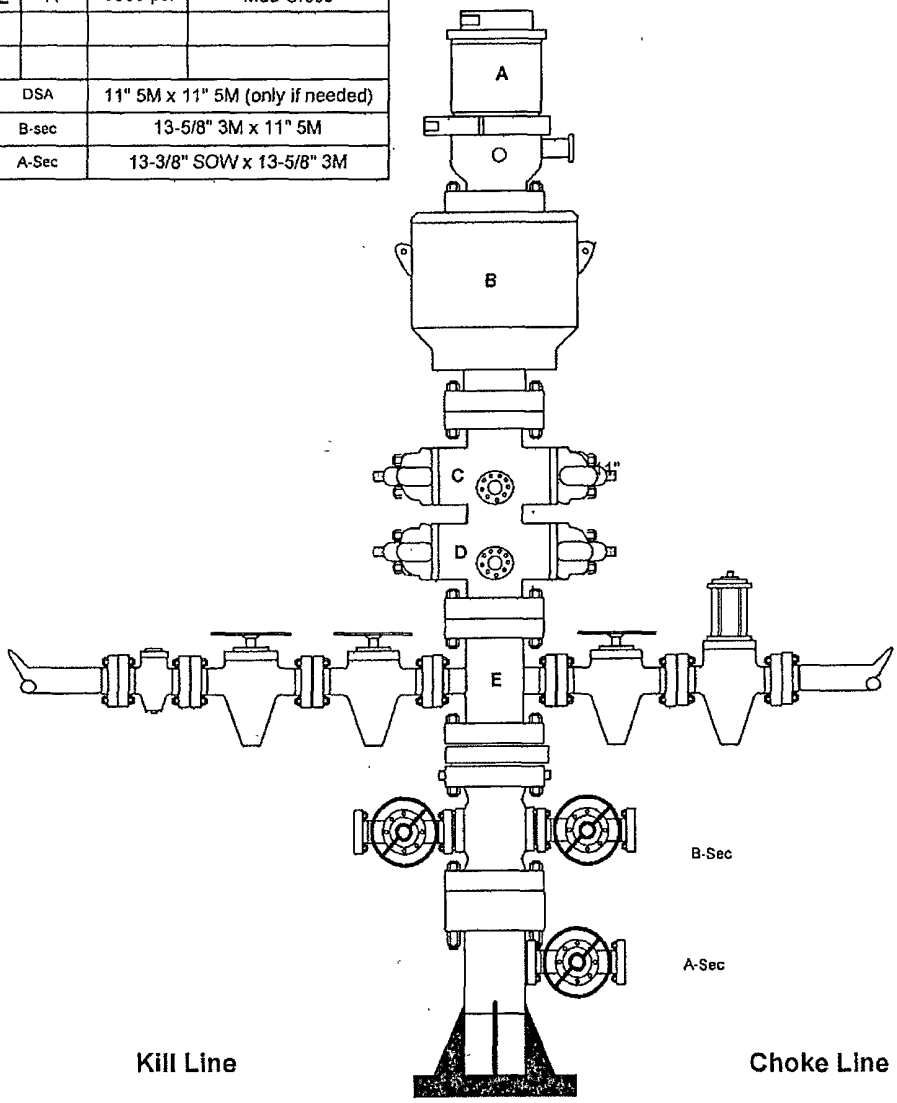
**WELL** : Lotos 14 Federal 1

**RIG** : Patterson 142

**COUNTY** : Eddy **STATE:** New Mexico

**OPERATION:** Drill out below 8-5/8" Casing (7-7/8" hole size)

| | SIZE | PRESSURE | DESCRIPTION |
|---|---|---|---|
| A | 11" | 500 psi | Rot Head |
| B | 11" | 5000 psi | Annular |
| C | 11" | 5000 psi | Pipe Rams |
| D | 11" | 5000 psi | Blind Rams |
| E | 11" | 5000 psi | Mud Cross |
| | | | |
| | | | |
| DSA | | 11" 5M x 11" 5M (only if needed) | |
| B-sec | | 13-5/8" 3M x 11" 5M | |
| A-Sec | | 13-3/8" SOW x 13-5/8" 3M | |




### Kill Line

| SIZE | PRESSURE | DESCRIPTION |
|---|---|---|
| 2" | 5000 psi | Check Valve |
| 2" | 5000 psi | Gate Valve |
| 2" | 5000 psi | Gate Valve |
| | | |
| | | |

### Choke Line

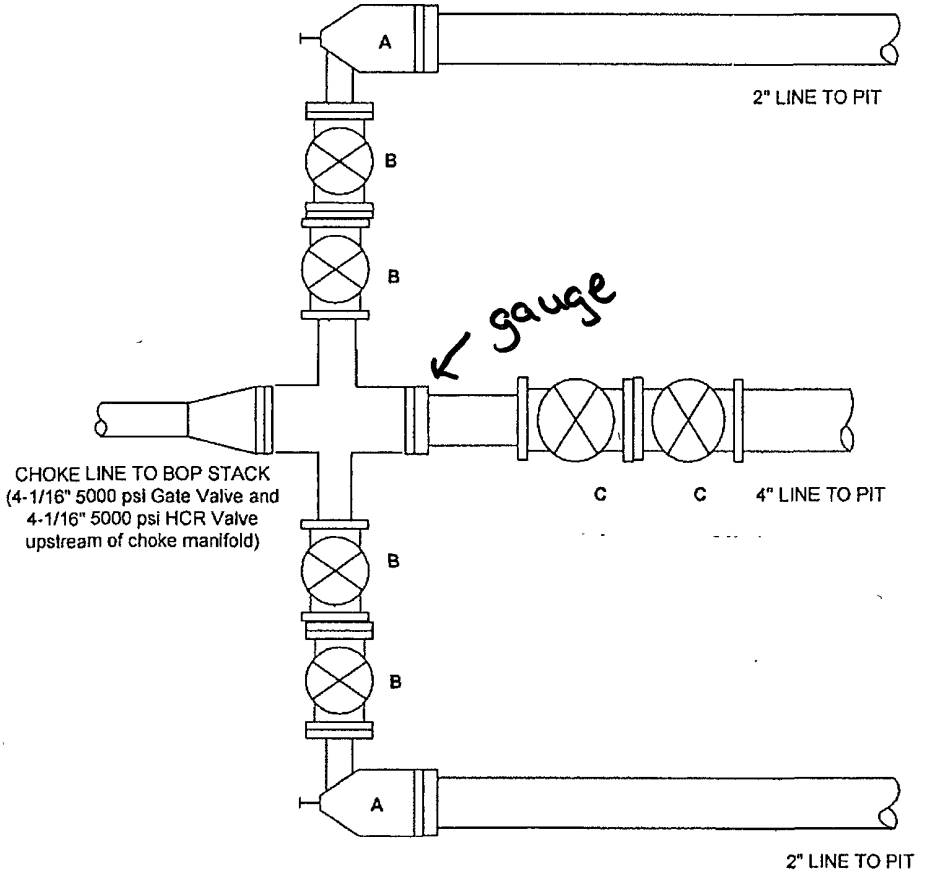
| SIZE | PRESSURE | DESCRIPTION |
|---|---|---|
| 4" | 5000 psi | Gate Valve |
| 4" | 5000 psi | HCR Valve |
| | | |
| | | |
| | | |

EXHIBIT F-2

# CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING, INC.

WELL : Lotos 14 Federal 1
RIG : Patterson #142
COUNTY : Eddy STATE : New Mexico
OPERATION: Drilling below/beyond 13-3/8" surface casing




| | SIZE | PRESSURE | DESCRIPTION |
|---|---|---|---|
| A | 2-1/16" | 5000 psi | Manual Choke |
| B | 2-1/16" | 5000 psi | Gate Valve |
| C | 4-1/16" | 5000 psi | Gate Valve |
| | | | |
| | | | |
| | | | |

EXHIBIT F-3

| Depth | Hole Size | | OD | ID | Shoe Track | Tail Height | Tail ppg | Tail Yield | Tail Excess | Lead ppg | Lead Yield | Lead Excess | Lead TOC | Bbls to Circ | Flush ppg | Sx Tail | Sx Lead |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 24.000 | | 20.000 | 19.000 | | | | | | | | | | | | | |
| | | | DV @ | | | | | | | | | | | | | | |
| 750 | 17.500 | | 13.375 | 12.715 | 42 | 200 | 14.8 | 1.34 | 70 | 12.4 | 2.10 | 100 | 0 | 20 | 9.0 | 204 | 417 |
| | | | DV @ | | | | | | | | | | | | | | |
| 4,350 | 11.000 | | 8.625 | 8.097 | 80 | 600 | 14.8 | 1.34 | 50 | 12.4 | 2.10 | 75 | 0 | 20 | 10.0 | 192 | 859 |
| | | | DV @ | | | | | | | | | | | | | | |
| 8,500 | 7.875 | | 5.500 | 4.892 | 80 | 800 | 14.2 | 1.31 | 20 | 11.9 | 2.45 | 20 | 4,100 | 0 | 10.0 | 135 | 304 |
| 8,500 | 7.875 | | 5.500 | 4.892 | | | | | | | | | | | | #DIV/0! | #DIV/0! |

EXHIBIT 6

# CHESAPEAKE OPERATING INC

## DRILLING PROGNOSIS

**WELL** : **Lotos 14 Federal 1**

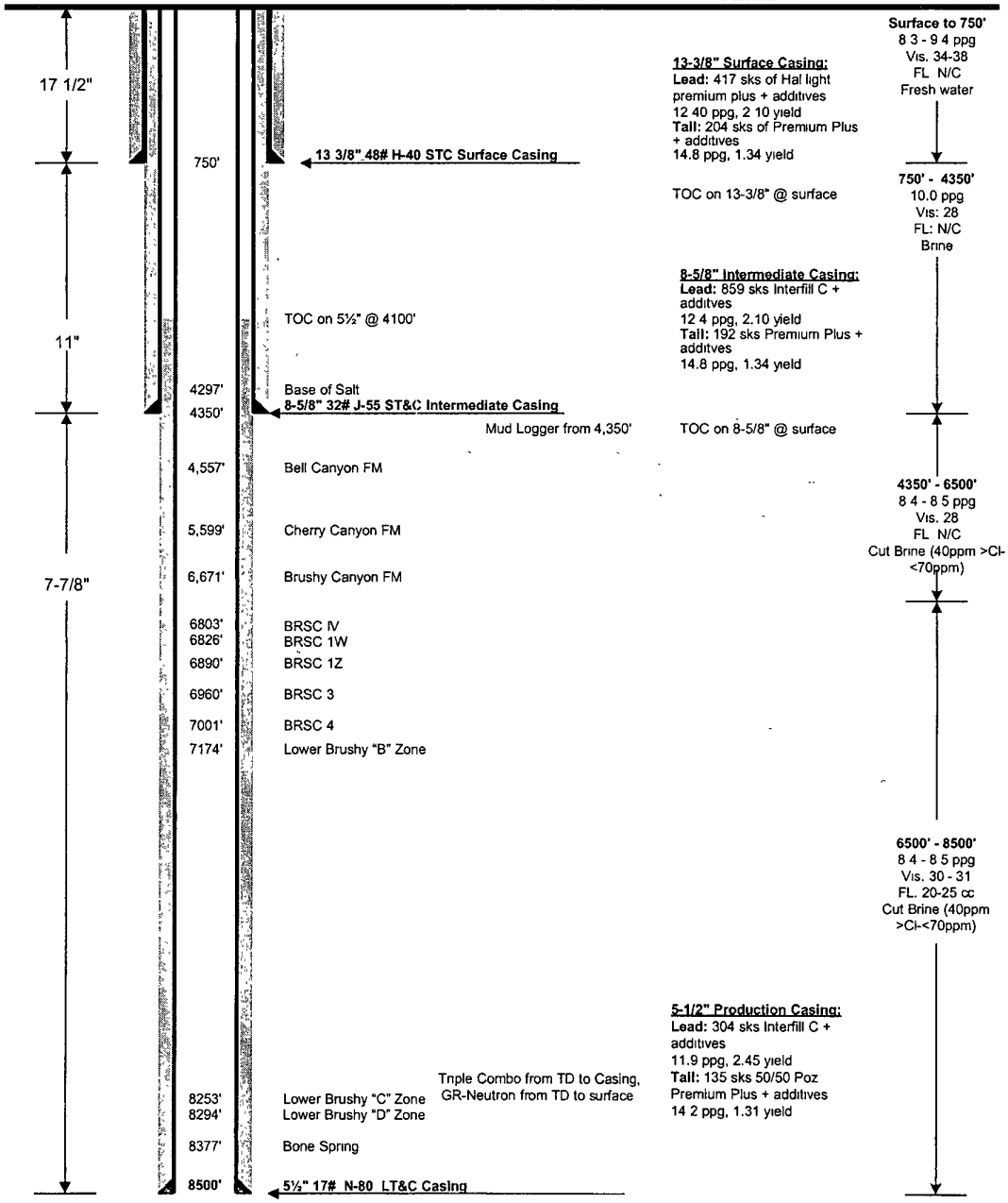
**SHL** : **Section 14-24S-31E; 2310' FNL & 990' FWL**

**BHL** : **Straight Hole Plan – BHL same as SHL**

**COUNTY** : **Eddy** **STATE : New Mexico**

**FIELD** : **Poker Lake Prospect**

**ELEVATION : GL – 3574'** **KB - 3592' (est. KB = 18' AGL)**




**PREPARED BY:** YHC **DATE:** 11/3/07

**APPROVED BY:** _____ **DATE:** _____

ONSHORE OIL & GAS ORDER NO. 1
Approval of Operations on Onshore
Federal and Indian Oil and Gas Leases

1. EXISTING ROADS

a. Existing county and lease roads will be used to enter proposed access road.
b. Location, access, and vicinity plats attached hereto. See Exhibits A-1 to A-4.

2. PLANNED ACCESS ROADS

a. The proposed access road 1932' in length and 14' in travel way width with a maximum disturbance area of 30' will be used, and in accordance with guidelines set forth in the BLM Onshore Orders. No turnouts are expected.
b. In order to level the location, cut and fill will be required. Please see attached Well Location and Acreage Dedication Plat – Exhibits A-1 to A-4.
c. A locking gate will be installed at the site entrance.
d. Any fences cut will be repaired. Cattle guards will be installed, if needed.
e. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
f. Driving directions are from the Intersection of St Hwy #128 and Co. Rd #786 (Buck Jackson Rd) go Southwest on Co. Rd #786 approx. 2.3 miles to a proposed road survey. Follow road survey Northwest approx. 1932 ft to this location.

3. LOCATION OF EXISTING WELLS WITHIN A 1-MILE RADIUS OF THE PROPOSED LOCATION – see Exhibit B.

4. LOCATION OF PRODUCTION FACILITIES

Chesapeake plans to lay 3,552' of 4" SDR 11 poly line from the Lotos 15 Federal 1 to the Lotos 14 Federal 1 well pad to sale gas to DCP thru a CDP gas meter. Chesapeake will lay the line on top of the ground along the existing roads. – See Exhibit C-1 TO C-2.

5. LOCATION AND TYPE OF WATER SUPPLY

Water will be obtained from a private water source. Chesapeake Operating, Inc. will ensure all proper notifications and filings are made with the state.

6. CONSTRUCTION MATERIALS

No construction materials will be used from Section 14-24S-31E. All material (i.e. shale) will be acquired from private or commercial sources.

7. METHODS FOR HANDLING WASTE DISPOSAL

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and deposited in an approved sanitary landfill.

8. ANCILLARY FACILITIES

None

9. PLANS FOR RECLAMATION OF THE SURFACE

The location will be restored to as near as original condition as possible. Reclamation of the surface shall be done in strict compliance with the existing New Mexico Oil Conservation Division regulations.

Backfilling leveling, and contouring are planned as soon as the drilling rig and steel tanks are removed. Wastes and spoils materials will be buried immediately after drilling is completed. If production is obtained, the unused area will be restored as soon as possible. The rehabilitation will begin after the drilling rig is remove

11. SURFACE & MINERAL OWNERSHIP

United States of America
Department of Interior
Bureau of Land Management

GRAZING LESSEE

Richardson Cattle Company
P.O. Box 487
Carlsbad, NM 88221
**(Chesapeake Operating, Inc. has an agreement with the grazing lessee)**

12. ADDITIONAL INFORMATION

A Class III cultural resource inventory report was prepared by Boone Archaeological Services, Carlsbad, New Mexico for the proposed location. A copy of the report has been sent to the BLM office under separate cover and is also attached for reference. See Exhibit E.

**Chesapeake Operating, Inc. agrees to be responsible under the terms and conditions of the lease for the operations conducted upon the lease lands.**

13. OPERATOR'S REPRESENTATIVES

**Drilling and Completion Operations**
Jarvis Hensley
District Manager – Northern Permian
P.O. Box 18496
Oklahoma City, OK 73154
(405) 879-7863 (OFFICE)
(405) 879-9529 (FAX)
jhensley@chkenergy.com

**Sr. Drilling Engineer**
Randy Patterson
P.O. Box 14896
Oklahoma City, OK 73154
(405) 767-4056 (OFFICE)
(405) 767-4225 (FAX)
(405) 388-9002 (MOBILE)
rpatterson@chkenergy.com

**Field Representative**
Curtis Griffin
1616 W. Bender
Hobbs, NM
505-391-1462 (OFFICE)
505-391-6679 (FAX)
cgriffin@chkenergy.com

**Assett Manager**
Jeff Finnell
P.O. Box 18496
Oklahoma City, OK 73154-0496
405-767-4347 (OFFICE)
405-879-7930 (FAX)
jfinnell@chkenergy.com

**Regulatory Compliance**
Linda Good
Regulatory Analyst
P.O. Box 18496
Oklahoma City, OK 73154
(405) 767-4275 (OFFICE)
(405) 753-5468 (FAX)
lgood@chkenergy.com

## 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 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 the company I represent, 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 a false statement.

Executed this 12th day of November, 2009.

Name: _____
Paul Hagemeier, Vice President – Regulatory Compliance

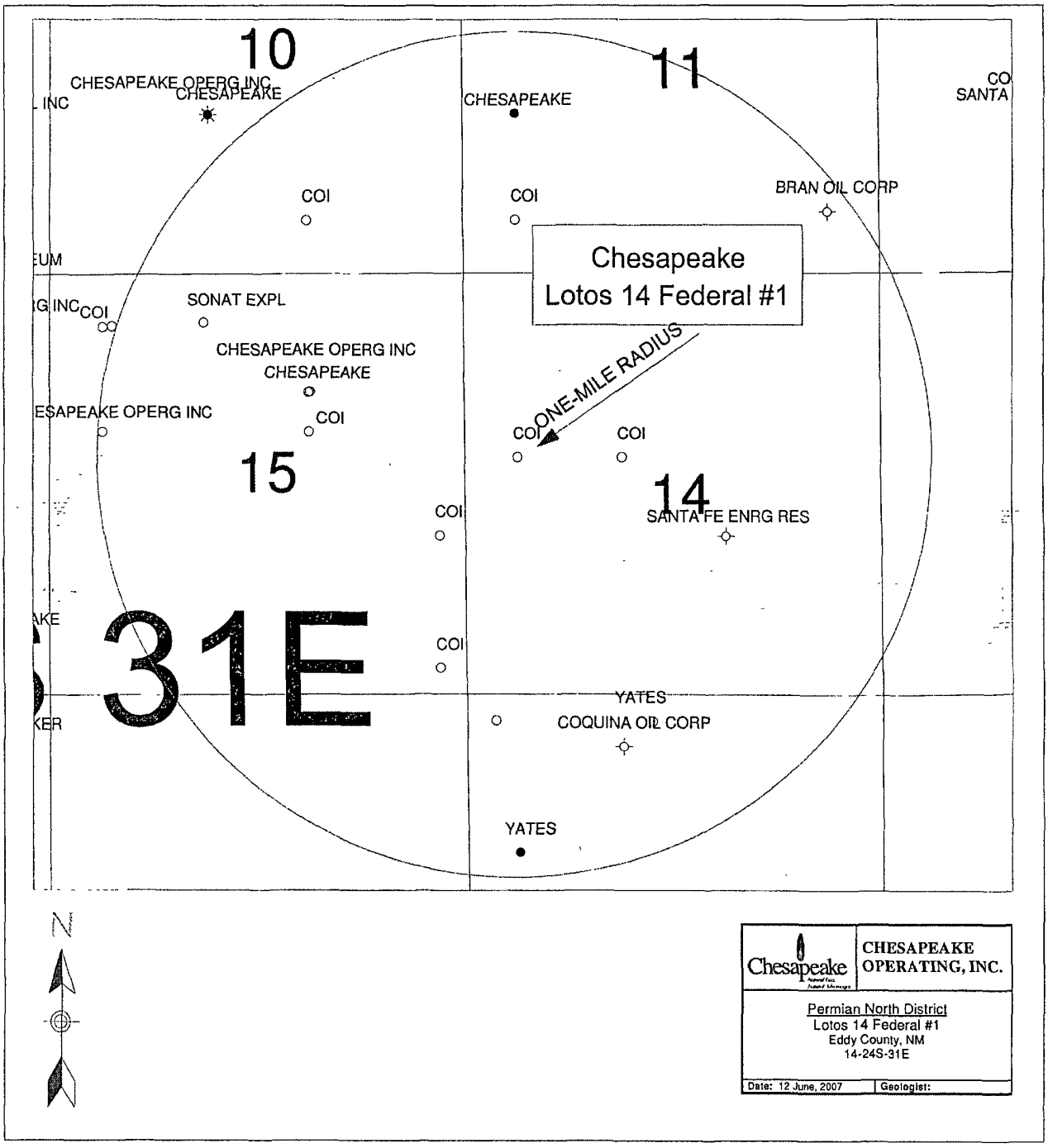
Address: P.O. Box 18496, Oklahoma City, OK 73154-0496

Telephone: 405-848-8000

Field Representative: Curtis Griffin

Telephone: 505-391-1462 Ext 6238

E-mail: cgriffin@chkenergy.com


10
11
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CHESAPEAKE OPERG INC
CHESAPEAKE
CHESAPEAKE
CO
SANTA
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COI
BRAN OIL CORP
Chesapeake
Lotos 14 Federal #1
ONE-MILE RADIUS
SONAT EXPL
CHESAPEAKE OPERG INC
CHESAPEAKE
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SANTA FE ENRG RES
31E
YATES
COQUINA OIL CORP
YATES
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Chesapeake
CHESAPEAKE OPERATING, INC.
Permian North District
Lotos 14 Federal #1
Eddy County, NM
14-24S-31E
Date: 12 June, 2007
Geologist:

EXHIBIT B

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | Chesapeake Operating |
| LEASE NO.: | NMNM111960 |
| WELL NAME & NO.: | Lotos 14 Federal No 1 |
| SURFACE HOLE FOOTAGE: | 2310' FNL & 990' FWL |
| BOTTOM HOLE FOOTAGE | |
| LOCATION: | Section 14, T. 24 S., R 31 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## TABLE OF CONTENTS

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.

## 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)

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 15 through June 15 annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

# 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 (505) 234-5972 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 stockpile the topsoil of the well pad. The topsoil to be stripped is approximately 6 inches in depth. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

## C. RESERVE PITS

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

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the
Carlsbad Field Office at (505) 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. 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 thirty (30) 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.

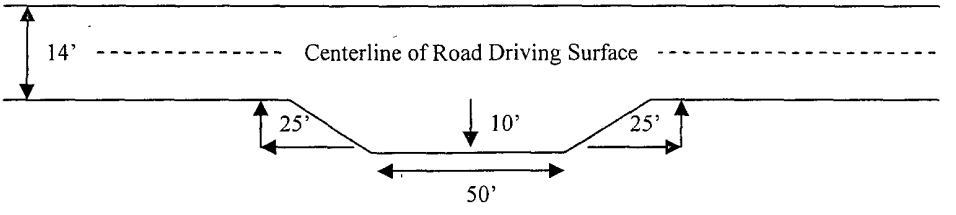
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing 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 be constructed on all blind curves. Turnouts shall conform to the following diagram:

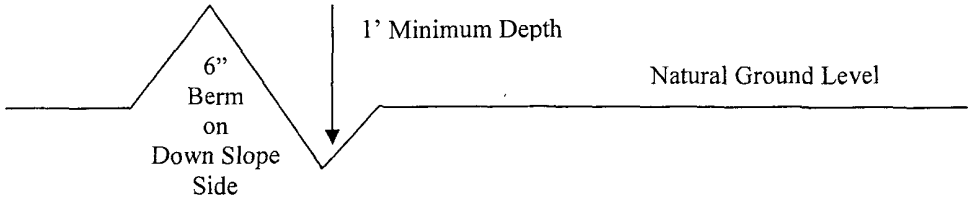
**Standard Turnout – Plan View**




**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:

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

**Culvert Installations**
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

**Cattleguards**
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road 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 cattleguard(s) that are in place and are utilized during lease operations.

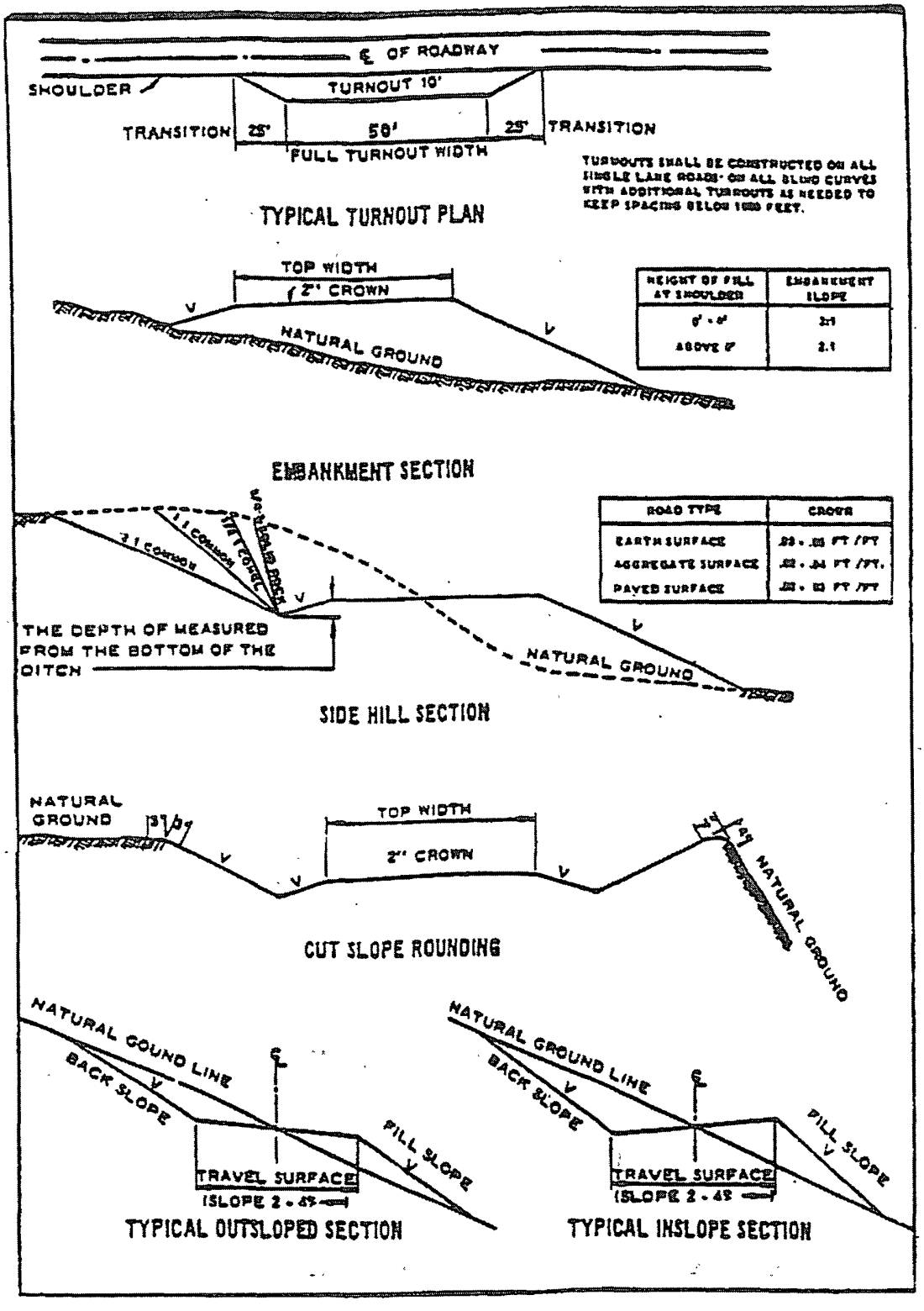
A gate shall be constructed and fastened securely to H-braces.

**Fence Requirement**
Where entry is required 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 fence(s).

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

## Figure 1 – Cross Sections and Plans For Typical Road Sections



# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **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 this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts 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.

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 are located, this does not include the dog house or stairway area.

## B. CASING

1. The **13-3/8** inch surface casing shall be set **a minimum of 25 feet into the Rustler Anhydrite and above the salt at approximately 895-915** feet and cemented to the surface. **Fresh water mud to this depth.**

    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 a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    b. Wait on cement (WOC) time 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. (This is to include the lead cement). **Please provide WOC times to inspector for cement slurries.**

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 action will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

   ☒ Cement to surface. If cement does not circulate see B.1.a-d above. **Please provide WOC times to inspector for cement slurries.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement should tie-back at least 500 feet into previous casing string. **Tie-back of 500 for Secretary's Potash.** Operator shall provide method of verification. **Please provide WOC times to inspector for cement slurries.**

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. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

   a. The tests shall be done by an independent service company.

   b. The results of the test shall be reported to the appropriate BLM office.

   c. 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.

   d. 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.

**Engineer on call phone (after hours): Carlsbad: (575) 706-2779**
**WWI 122907**

# 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.

**Containment Structures**
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

**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, Munsell Soil Color Chart # 5Y 4/2

**Utility lines applied for in this APD is not authorized due to lines crossing lease lines and requiring a ROW permit.**

# IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

## A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting 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.

At the time reserve pits are to be reclaimed, operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions 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 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.

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 bye 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:

| Species | lb/acre |
|---|---|
| Plains lovegrass (Eragrostis intermedia) | 0.5 |
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sideoats grama (Bouteloua curtipendula) | 5.0 |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent gemination = pounds pure live seed

(Insert Seed Mixture Here)

## X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.