

OCD-ARTESIA

ATS-08-241  
EA-08-622  
FORM APPROVED  
OMB No. 1004-0136  
Expires July 31, 2010

EC

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APR 11 2008

OCD-ARTESIA

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☒ DRILL ☐ REENTER

CONFIDENTIAL

5. Lease Serial No.  
NMNM111533

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.  
DIAMOND 31 FEDERAL 4H

9. API Well No.

30-015-36337  
WILLOW LAKE Bone Spring

11. Sec., T., R., M., or Blk. and Survey or Area

Sec 31 T24S R29E Mer NMP  
SME: STATE12. County or Parish  
EDDY13. State  
NM

17. Spacing Unit dedicated to this well

120.00

20. BLM/BIA Bond No. on file

NM 2634

23. Estimated duration

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone2. Name of Operator  
CHESAPEAKE OPERATING, INC. E-Mail linda.good@chk.com

Contact: LINDA GOOD

3a. Address  
PO BOX 18496  
OKLAHOMA CITY, OK 73154-04963b. Phone No. (include area code)  
Ph: 405-767-4275  
Fx: 405-879-7899

4. Location of Well (Report location clearly and in accordance with any State requirements. \*)

At surface SENE 2200FNL 150FEL

At proposed prod. zone SENW 2200FNL 1650FWL

Split Estate

14. Distance in miles and direction from nearest town or post office\*  
APPROXIMATELY 10 MILES SOUTH OF MALAGA, NM15. Distance from proposed location to nearest property or  
lease line, ft. (Also to nearest drig. unit line, if any)

16. No. of Acres in Lease

360.00

18. Distance from proposed location to nearest well, drilling,  
completed, applied for, on this lease, ft.

19. Proposed Depth

10700 MD 7485 TVD

21. Elevations (Show whether DF, KB, RT, GL, etc.)  
2910 GL

22. Approximate date work will start

## 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: 405-767-4275Date  
02/05/2008Title  
REGULATORY COMPLIANCE SPECIALIApproved by (Signature)  
/s/ Don PetersonName (Printed/Typed)  
CARLSBAD FIELD OFFICEDate  
APR 9 2008Title  
FIELD MANAGER

Office

If earthen pits are used in  
association with the drilling of this  
well, an OCD pit permit must be  
obtained prior to pit construction.

holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct

APPROVAL FOR TWO YEARS

, make it a crime for any person knowingly and willfully to make to any department or agency of the United  
ations as to any matter within its jurisdiction.

Additional Operator Remarks (see next page)

Carlsbad Controlled Water Basin

Electronic Submission #58443 verified by the BLM Well Information System

For CHESAPEAKE OPERATING, INC., sent to the Carlsbad

Committed to AFMSS for processing by TESSA CISNEROS on 02/05/2008 (08TLC0155AE)

SEE ATTACHED FOR  
CONDITIONS OF APPROVALApproval Subject to General Requirements  
& Special Stipulations Attached

\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\*

**Additional Operator Remarks:**

BS CHESAPEAKE OPERATING, INC. RESPECTFULLY REQUESTS PERMISSION TO DRILL A WELL TO 10,700' 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.

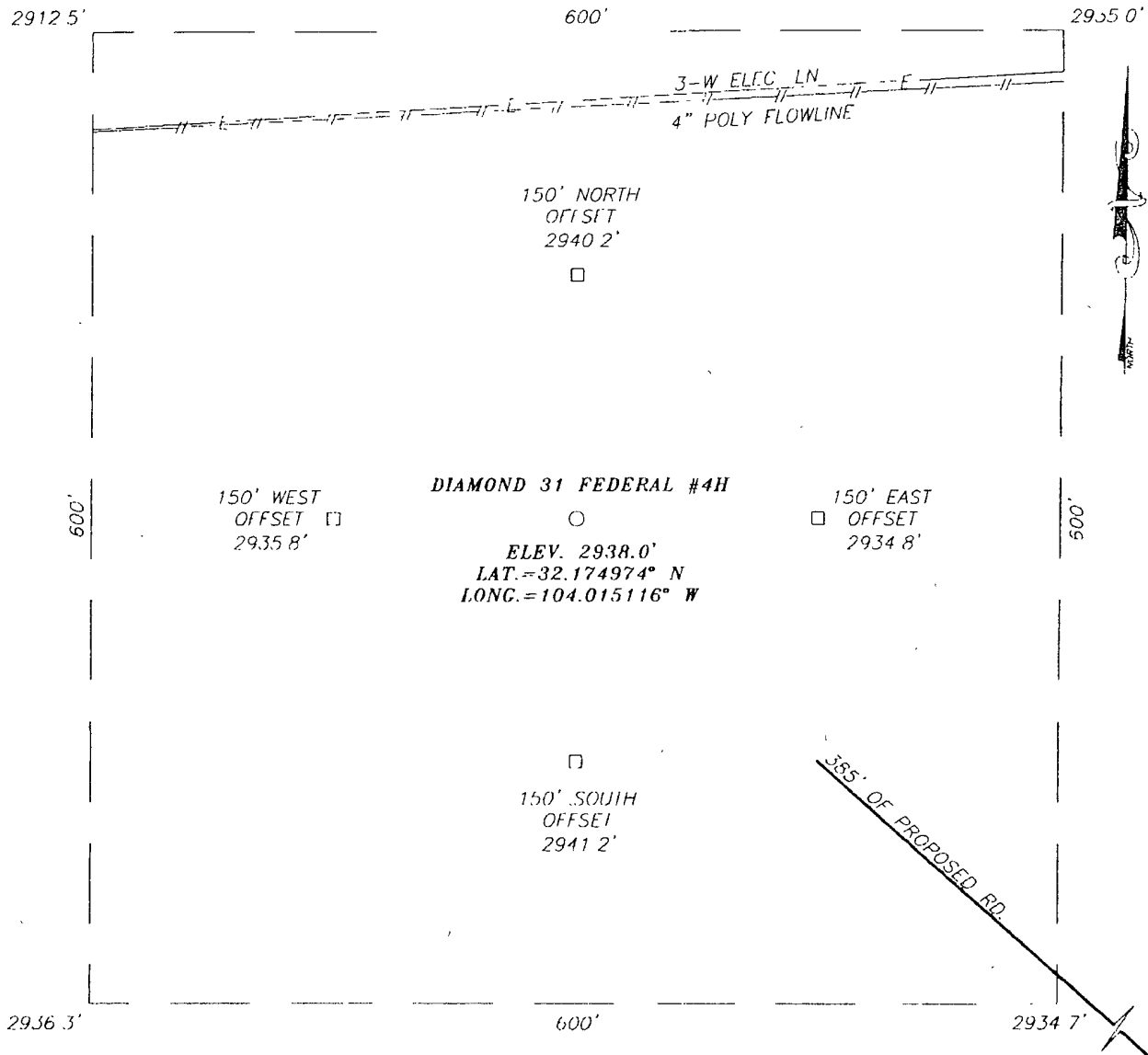
PLEASE FIND THE SURFACE USE PLAN AND DRILLING PLAN AS REQUIRED BY ONSHORE ORDER NO. 1.

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.

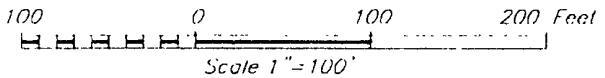
(CHK PN 617972)

**SECTION 31, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,**  
 EDDY COUNTY, NEW MEXICO



**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF CO. RD. #746 (MCDONALD RD.) AND CO. RD. #788A (SPUR RD.), GO WEST APPROX. 0.2 MILES. TURN LEFT AND GO SOUTH APPROX. 0.7 MILES. TURN WEST AND GO APPROX. 0.1 MILE. TURN SOUTH AND GO APPROX. 0.15 MILES. TURN SOUTHWEST AND GO APPROX. 0.6 MILES. TURN SOUTHEAST-EAST AND GO APPROX. 0.4 MILES. TURN SOUTH AND GO APPROX. 0.2 MILES. TURN EAST AND GO SOUTH APPROX. 0.25 MILES. TURN SOUTH AND GO APPROX. 0.25 MILES. TURN WEST-SOUTHWEST AND GO APPROX. 0.2 MILES. THIS LOCATION IS APPROX. 535 FEET NORTHWEST.



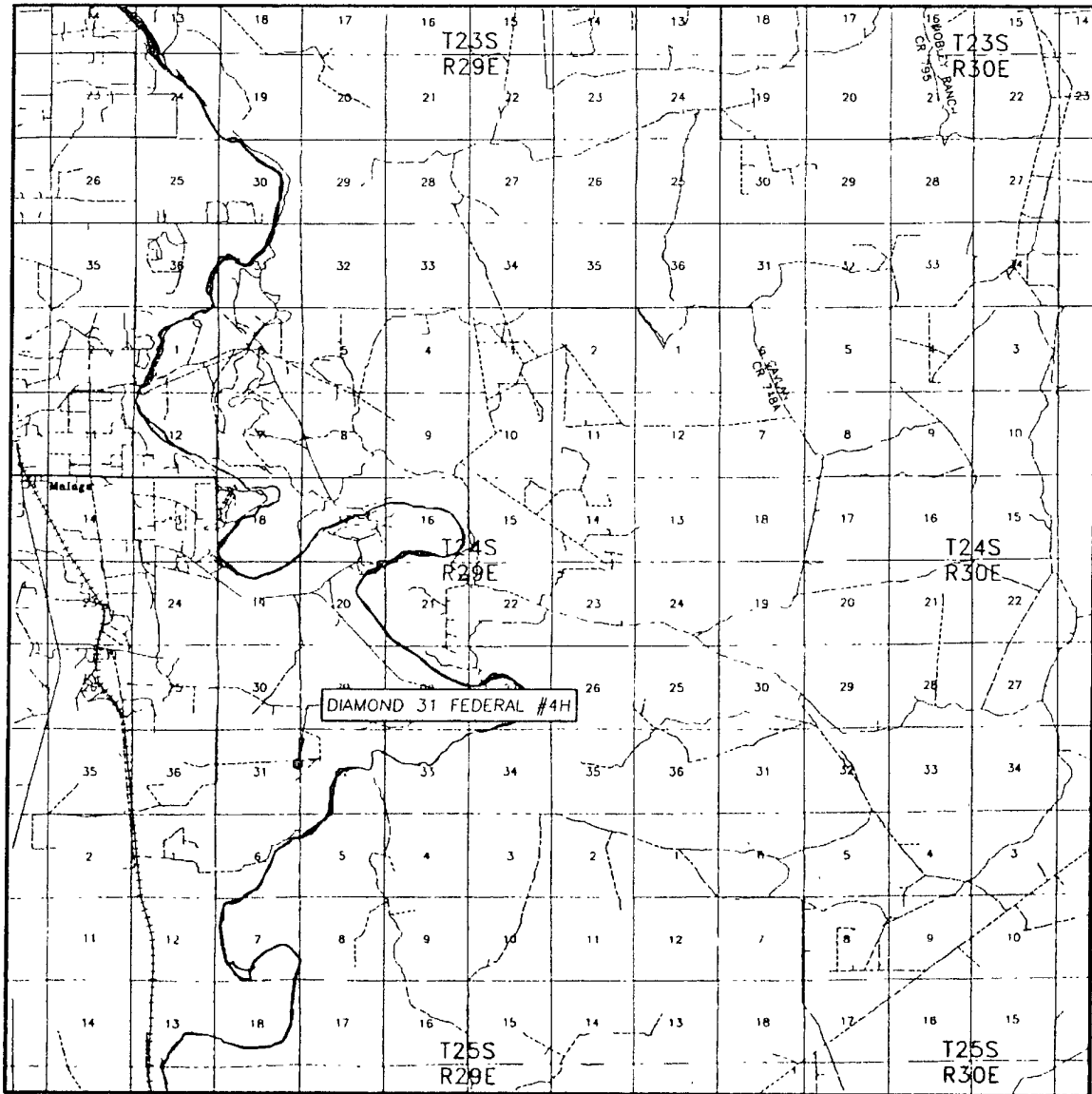
**CHESAPEAKE OPERATING, INC.**

DIAMOND 31 FEDERAL #4H WELL  
 LOCATED 2200' FROM THE NORTH LINE  
 AND 150 FEET FROM THE EAST LINE OF SECTION 31,  
 TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO

Sheet 1 of 1

Dr. By 1A

# VICINITY MAP



SCALE. 1" = 2 MILES

SFC. 31 IWP 24-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 2200' FNI & 150' FEL

ELEVATION 2938'

CHESAPEAKE  
OPERATING, INC.

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

DISTRICT I  
1626 N. FRENCH DR., BOBBS, 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 <b>644.50</b>	Pool Name <b>Willow Lake Bong Spring</b>	<b>OIL</b>
Property Code <b>36925</b>	Property Name <b>DIAMOND 31 FEDERAL</b>		Well Number <b>4H</b>
Section No. <b>14717.9</b>	Operator Name <b>CHESAPEAKE OPERATING, INC.</b>		Elevation <b>2938'</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
H	31	24-S	29-E		2200	NORTH	150	EAST	EDDY

Bottom Hole Location If Different From Surface

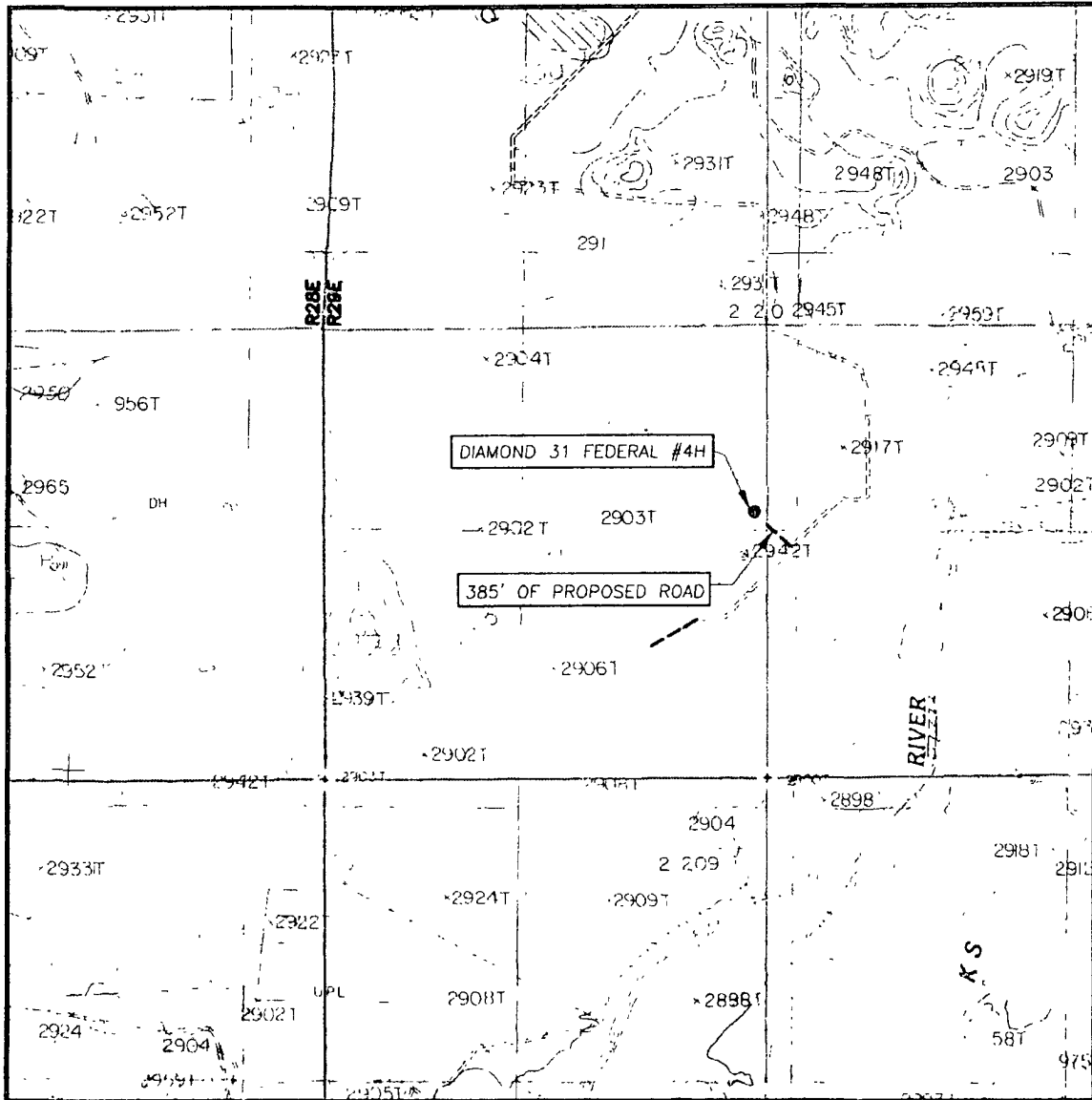
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	31	24-S	29-E		2200	NORTH	1650	WEST	EDDY

Dedicated Acres <b>120</b>	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

	<p><b>OPERATOR CERTIFICATION</b></p> <p>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.</p> <p><i>Craig Barnard</i> 12/17/07 Signature Date <b>CRAIG BARNARD</b> Printed Name</p>
	<p><b>SURVEYOR CERTIFICATION</b></p> <p>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>DECEMBER 6, 2007 Date Surveyed Signature &amp; Seal of Professional Surveyor <i>Ronald J. Eidson</i> 12/14/07 07:11:1349 Certificate No. GARY EIDSON 12841 RONALD J. EIDSON 3239</p>
	<p><b>EXHIBIT A-1</b></p>

# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:  
MALAGA, N.M. - 10'  
SUPPLEMENTAL - 5'

SEC 31 TWP 24-S RGE. 29 E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

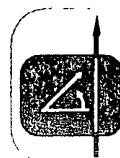
DESCRIPTION 2200' ENL & 150' FILL

ELEVATION 2938'

OPERATOR CHESAPEAKE OPERATING, INC.

PROJECT DIAMOND 31 FEDERAL

MAP TOPOGRAPHIC MAP



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

EXHIBIT A-4

ONSHORE ORDER NO. 1  
Chesapeake Operating, Inc.  
Diamond 31 Federal 4H  
SL: 2200' FNL & 150' FEL  
BL: 2200' FNL & 1650' FWL  
Section 31-24S-29E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
Lease Contract No. NMNM 111533

DRILLING PLAN

Page 1

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 KBTVD	KBTVD
BASE OF SALT	1526'	2,775'
*BELL CANYON	100'	2,826'
MANZANITA MARKER	-897'	3,823'
KOP		
BRUSHY CANYON	-2,392'	5,318'
BONE SPRING LIME	-3,595'	6,521'
1 <sup>ST</sup> BONE SPRING CARBONATE	-4,138'	7,064'
**1 <sup>ST</sup> BONE SPRING SAND	-4,540'	7,466'
**Potentially productive zones		
TD		7500'

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	2,826'
Oil/Gas	Cherry Canyon	3,682'
	Bone Spring	rev operator 3-3-08 WWI

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

DRILLING PLAN

Page 2

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 TO F-3.

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.
5. The subsequent "high pressure" test will be conducted at the rated working pressure of the equipment for all equipment except the annular preventer.
6. The "high pressure" test for the annular preventer will be conducted at 70% of
7. the rated working pressure.
8. A record of all pressures will be made on a pressure-recording chart.

D. Test Duration

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



DRILLING PLAN

Page 3

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:

ONSHORE ORDER NO. 1  
Chesapeake Operating, Inc.  
Diamond 31 Federal 4H  
SL: 2200' FNL & 150' FEL  
BL: 2200' FNL & 1650' FWL  
Section 31-24S-29E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
Lease Contract No. NMNM 111533

DRILLING PLAN

Page 4

System Pressure

1,500 PSI  
2,000 PSI  
3,000 PSI

Remaining Pressure At Conclusion of

Test

950 PSI  
1,200 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:

<u>Purpose</u>	<u>Interval</u>	<u>Hole Size</u>	<u>Casing Size</u>	<u>Weight</u>	<u>Grade</u>	<u>Thread</u>	<u>Condition</u>
Surface	Surface – 650'	17-1/2"	13-3/8"	48.0#	H-40	STC	New
Intermediate	Surface – 2,775'	12-1/4"	9-5/8"	40.0#	J-55	LTC	New
Production	Surface – 10,700'	8-3/4"/ 8-1/2"	5-1/2"	17.0#	P-110	LTC	New

- b. Casing design subject to revision based on geologic conditions encountered.

- c. Casing Safety Factors:

13-3/8" Surface Casing: SFb = 1.44, SFc = 2.87 and SFt = 2.11  
9-5/8" Intermediate Casing: SFb = 1.77, SFc = 1.49 and SFt = 5.0  
5-1/2" Production Casing: SFb = 1.8, SFc = 2.43 and SFt = 1.54

- d. The cementing program will be as follows:

5. Cementing Program

<u>Interval</u>	<u>Type</u>	<u>Amount</u>	<u>Yield</u>	<u>Top Of Cement</u>	<u>Excess</u>
Surface	Lead: 35:65 Poz/C 1% CaCl <sub>2</sub> (Accelerator) Tail: Class C 2% CaCl <sub>2</sub> (Accelerator)	300 sks	2.10	Surface	100%
Intermediate	Lead: 35/65 Poz/Class C 1% CaCl <sub>2</sub> (Accelerator)	220 sks 600 sks	1.34 2.10	Surface	75%

DRILLING PLAN

Page 5

	Tail: Class C 2% CaCl <sub>2</sub>	250 sks	1.34		50%
Production	Class H 0.5% LAP-1 (Fluid Loss Control) 0.4% CFR-3 (Dispersant) 1 lbm/sk Salt 0.3% HR-7 (Retarder) 0.25 lbm D-AIR 3000 (Defoamer)	1500 sks	1.60	2,275'	20%

6. MUD PROGRAM

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

Interval	Mud Type	Mud Weight	Viscosity	Fluid Loss
0' – 650'	FW/Gel	8.4 – 9.0	28-32	NC
650' – 2,775'	Native/Brine	9.9 – 10.1	30-32	NC
2,775' - TD	FW/LSND	8.8 – 9.3	28-36	20-5

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:

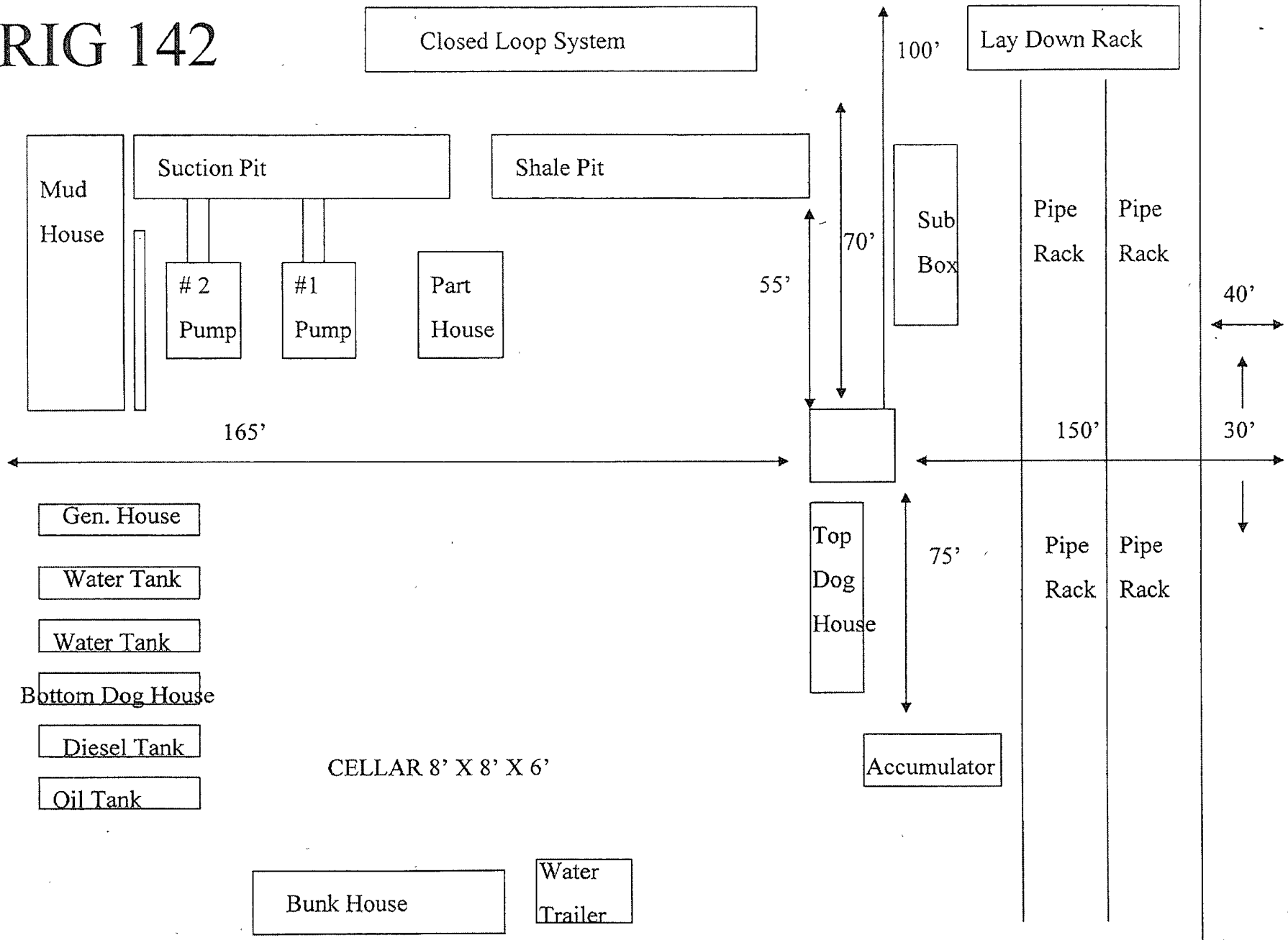
- Drill stem tests are not planned.
- The logging program will consist of Natural GR, Density-Neutron, PE & Dual Laterolog from TD to surface casing; Neutron-GR surface casing to surface.
- Cores samples are not planned.

7. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- The estimated bottom hole pressure is 3250 psi. No abnormal pressures or temperatures are anticipated.
- Hydrogen sulfide gas is not anticipated.

# RIG 142

Closed Loop System



EXHIBIT

D

# BLOWOUT PREVENTOR SCHEMATIC

## CHESAPEAKE OPERATING INC

WELL : Diamond 31 Federal 4H

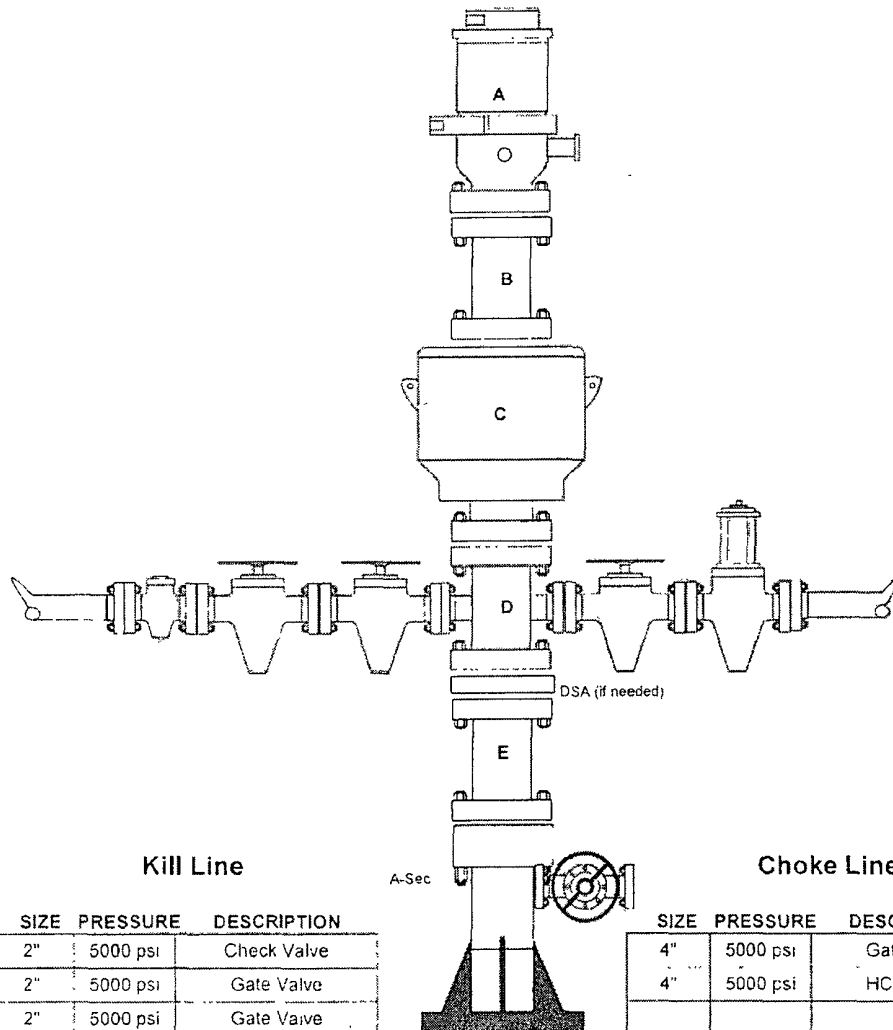
RIG : Patterson 142

COUNTY : Eddy

STATE: New Mexico

OPERATION: Drill out below 13-3/8" Casing (12-1/4" 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

# BLOWOUT PREVENTOR SCHEMATIC

## CHESAPEAKE OPERATING INC

WELL : Diamond 31 Federal 4H

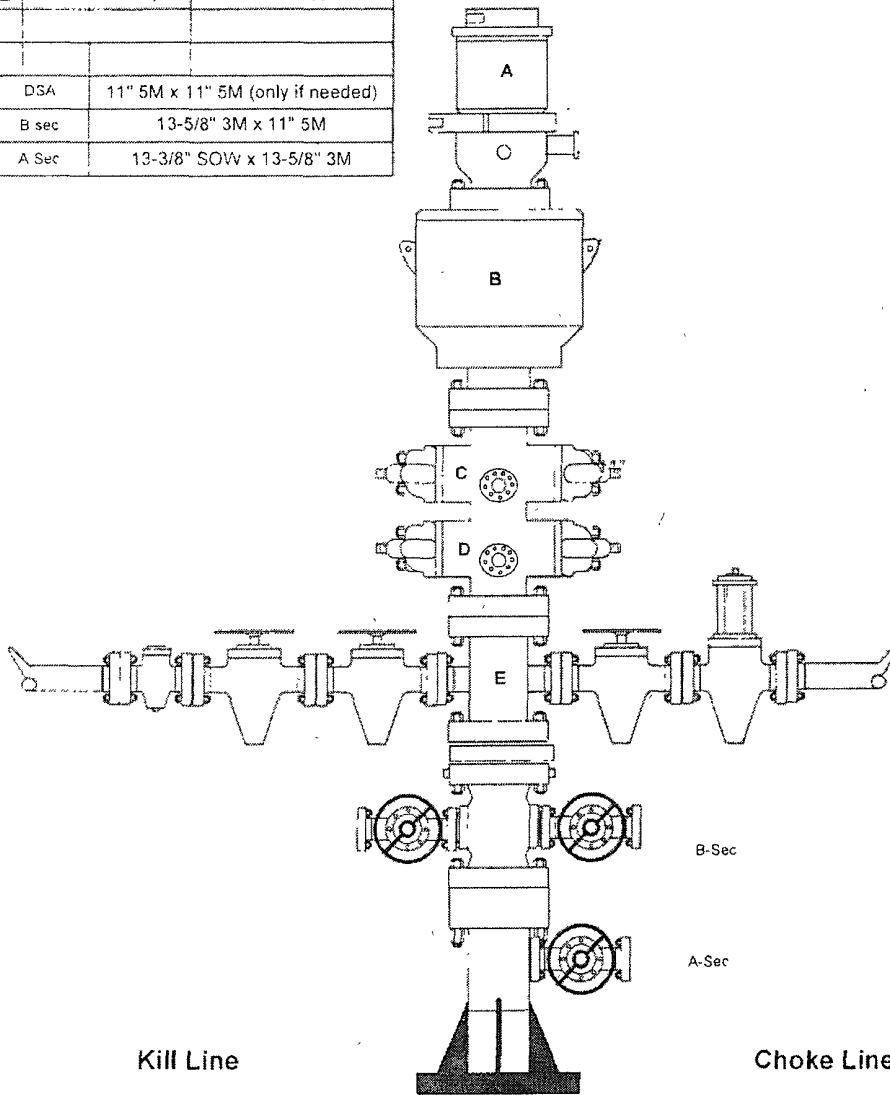
RIG : Patterson 142

COUNTY : Eddy

STATE: New Mexico

OPERATION: Drill out below 9-5/8" Casing (8-3/4"/8-1/2" 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		



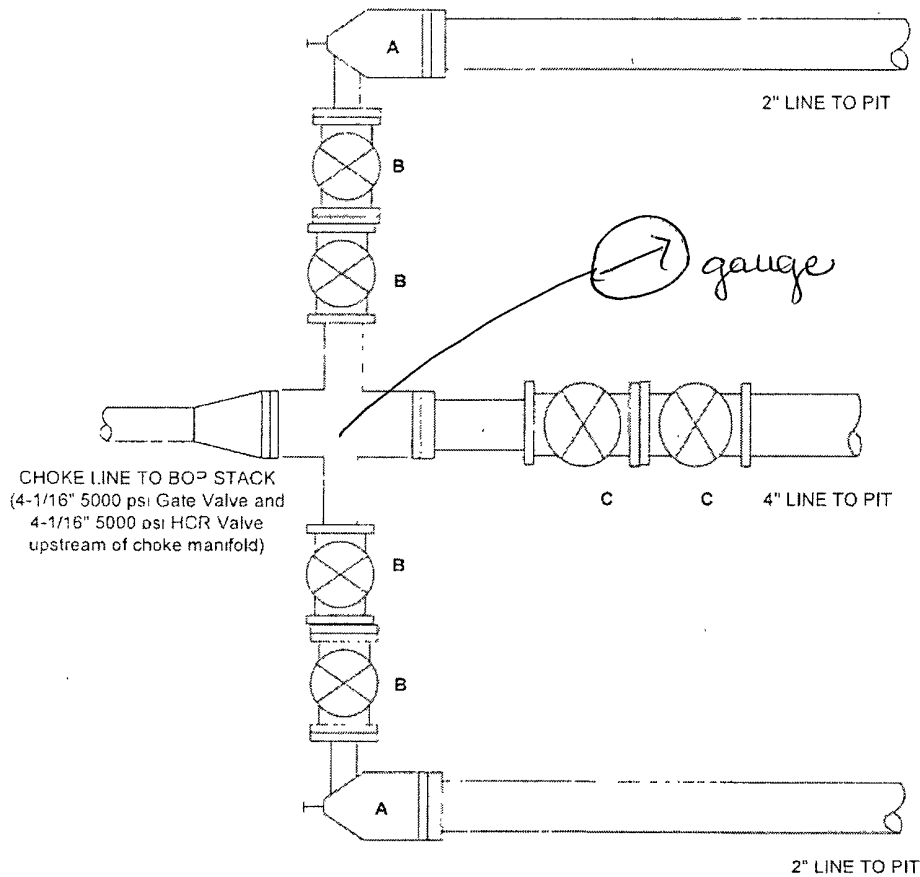
SIZE	PRESSURE	DESCRIPTION
2"	5000 psi	Check Valve
2"	5000 psi	Gate Valve
2"	5000 psi	Gate Valve

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

EXHIBIT F-8

# CHOKE MANIFOLD SCHEMATIC CHESAPEAKE OPERATING, INC.

WELL : Diamond 31 Federal 4H  
 RIG : Patterson #142  
 COUNTY : Eddy STATE : New Mexico  
 OPERATION: Drilling below/beyond 13-3/8" surface casing



*one choke to be remotely operated.*

	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

# **Permian District**

**NM - Eddy - Morrow Project**

**Diamond 31 Federal 4H**

**Well #1**

**Wellbore #1**

**Plan: Plan #1**

## **Standard Planning Report**

**31 January, 2008**



# Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 2956 0ft
Project:	NM - Eddy - Morrow Project	MD Reference:	RKB @ 2956 0ft
Site:	Diamond 31 Federal 4H	North Reference:	True
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project:	NM - Eddy - Morrow Project		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Ground Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site: Diamond 31 Federal 4H

Site Position:		Northing:	ft	Latitude:	
From:	None	Easting:	ft	Longitude:	
Position Uncertainty:	ft	Slot Radius:	in	Grid Convergence:	0 00

Well: Well #1

Well Position	+N/-S	0 0 ft	Northing:	0 00 ft	Latitude:	30° 59' 24 51165130 N
	+E/-W	0 0 ft	Easting:	0 00 ft	Longitude:	105° 55' 44 13731823 W
Position Uncertainty		ft	Wellhead Elevation:	ft	Ground Level:	2,938 0 ft

Wellbore: Wellbore #1

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	User Defined	1/30/2008	(°)	(°)	(nT)
			0 00	0 00	0

Design: Plan #1

Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0 0
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Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0 0	0 0	0 0	270 00

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Bulld Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 00	0 00	0 00	
4,500 0	0 00	0 00	4,500 0	0 0	0 0	0 00	0 00	0 00	0 00	
4,850 0	7 00	270 00	4,849 1	0 0	-21 4	2 00	2 00	0 00	270 00	
5,918 1	7 00	270 00	5,909 3	0 0	-151 5	0 00	0 00	0 00	0 00	
6,384 8	0 00	0 00	6,374 8	0 0	-180 0	1 50	-1 50	0 00	180 00	
6,531 0	0 00	0 00	6,521 0	0 0	-180 0	0 00	0 00	0 00	0 00	Bone Spring
7,010 0	0 00	0 00	7,000 0	0 0	-180 0	0 00	0 00	0 00	0 00	
7,787 0	91 75	270 00	7,485 0	0 0	-680 0	11 81	11 81	0 00	270 00	
10,700 0	91 75	270 00	7,396 0	0 0	-3,591 7	0 00	0 00	0 00	0 00	

# Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 2956 0ft
Project:	NM - Eddy - Morrow Project	MD Reference:	RKB @ 2956 0ft
Site:	Diamond 31 Federal 4H	North Reference:	True
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0 0	0 00	0 00	0 0	0 0	0 0	0 0	0 00	0 00	0 00
100 0	0 00	0 00	100 0	0 0	0 0	0 0	0 00	0 00	0 00
200 0	0 00	0 00	200 0	0 0	0 0	0 0	0 00	0 00	0 00
300 0	0 00	0 00	300 0	0 0	0 0	0 0	0 00	0 00	0 00
400 0	0 00	0 00	400 0	0 0	0 0	0 0	0 00	0 00	0 00
500 0	0 00	0 00	500 0	0 0	0 0	0 0	0 00	0 00	0 00
600 0	0 00	0 00	600 0	0 0	0 0	0 0	0 00	0 00	0 00
650 0	0 00	0 00	650 0	0 0	0 0	0 0	0 00	0 00	0 00
13 3/8"									
700 0	0 00	0 00	700 0	0 0	0 0	0 0	0 00	0 00	0 00
800 0	0 00	0 00	800 0	0 0	0 0	0 0	0 00	0 00	0 00
900 0	0 00	0 00	900 0	0 0	0 0	0 0	0 00	0 00	0 00
1,000 0	0 00	0 00	1,000 0	0 0	0 0	0 0	0 00	0 00	0 00
1,100 0	0 00	0 00	1,100 0	0 0	0 0	0 0	0 00	0 00	0 00
1,200 0	0 00	0 00	1,200 0	0 0	0 0	0 0	0 00	0 00	0 00
1,300 0	0 00	0 00	1,300 0	0 0	0 0	0 0	0 00	0 00	0 00
1,400 0	0 00	0 00	1,400 0	0 0	0 0	0 0	0 00	0 00	0 00
1,500 0	0 00	0 00	1,500 0	0 0	0 0	0 0	0 00	0 00	0 00
1,600 0	0 00	0 00	1,600 0	0 0	0 0	0 0	0 00	0 00	0 00
1,700 0	0 00	0 00	1,700 0	0 0	0 0	0 0	0 00	0 00	0 00
1,800 0	0 00	0 00	1,800 0	0 0	0 0	0 0	0 00	0 00	0 00
1,900 0	0 00	0 00	1,900 0	0 0	0 0	0 0	0 00	0 00	0 00
2,000 0	0 00	0 00	2,000 0	0 0	0 0	0 0	0 00	0 00	0 00
2,100 0	0 00	0 00	2,100 0	0 0	0 0	0 0	0 00	0 00	0 00
2,200 0	0 00	0 00	2,200 0	0 0	0 0	0 0	0 00	0 00	0 00
2,300 0	0 00	0 00	2,300 0	0 0	0 0	0 0	0 00	0 00	0 00
2,400 0	0 00	0 00	2,400 0	0 0	0 0	0 0	0 00	0 00	0 00
2,500 0	0 00	0 00	2,500 0	0 0	0 0	0 0	0 00	0 00	0 00
2,600 0	0 00	0 00	2,600 0	0 0	0 0	0 0	0 00	0 00	0 00
2,700 0	0 00	0 00	2,700 0	0 0	0 0	0 0	0 00	0 00	0 00
2,775 0	0 00	0 00	2,775 0	0 0	0 0	0 0	0 00	0 00	0 00
9 5/8"									
2,800 0	0 00	0 00	2,800 0	0 0	0 0	0 0	0 00	0 00	0 00
2,900 0	0 00	0 00	2,900 0	0 0	0 0	0 0	0 00	0 00	0 00
3,000 0	0 00	0 00	3,000 0	0 0	0 0	0 0	0 00	0 00	0 00
3,100 0	0 00	0 00	3,100 0	0 0	0 0	0 0	0 00	0 00	0 00
3,200 0	0 00	0 00	3,200 0	0 0	0 0	0 0	0 00	0 00	0 00
3,300 0	0 00	0 00	3,300 0	0 0	0 0	0 0	0 00	0 00	0 00
3,400 0	0 00	0 00	3,400 0	0 0	0 0	0 0	0 00	0 00	0 00
3,500 0	0 00	0 00	3,500 0	0 0	0 0	0 0	0 00	0 00	0 00
3,600 0	0 00	0 00	3,600 0	0 0	0 0	0 0	0 00	0 00	0 00
3,700 0	0 00	0 00	3,700 0	0 0	0 0	0 0	0 00	0 00	0 00
3,800 0	0 00	0 00	3,800 0	0 0	0 0	0 0	0 00	0 00	0 00
3,900 0	0 00	0 00	3,900 0	0 0	0 0	0 0	0 00	0 00	0 00
4,000 0	0 00	0 00	4,000 0	0 0	0 0	0 0	0 00	0 00	0 00
4,100 0	0 00	0 00	4,100 0	0 0	0 0	0 0	0 00	0 00	0 00
4,200 0	0 00	0 00	4,200 0	0 0	0 0	0 0	0 00	0 00	0 00
4,300 0	0 00	0 00	4,300 0	0 0	0 0	0 0	0 00	0 00	0 00
4,400 0	0 00	0 00	4,400 0	0 0	0 0	0 0	0 00	0 00	0 00
4,500 0	0 00	0 00	4,500 0	0 0	0 0	0 0	0 00	0 00	0 00
4,600 0	2 00	270 00	4,600 0	0 0	-1 7	1 7	2 00	2 00	0 00
4,700 0	4 00	270 00	4,699 8	0 0	7 0	7 0	2 00	2 00	0 00
4,800 0	5 00	270 00	4,799 6	0 0	-15 7	15 7	2 00	2 00	0 00

# Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 2956.0ft
Project:	NM - Eddy - Morrow Project	MD Reference:	RKB @ 2956.0ft
Site:	Diamond 31 Federal 4H	North Reference:	True
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,850.0	7.00	270.00	4,849.1	0.0	-21.4	21.4	2.00	2.00	0.00
4,900.0	7.00	270.00	4,898.8	0.0	-27.4	27.4	0.00	0.00	0.00
5,000.0	7.00	270.00	4,998.0	0.0	-39.6	39.6	0.00	0.00	0.00
5,100.0	7.00	270.00	5,097.3	0.0	-51.8	51.8	0.00	0.00	0.00
5,200.0	7.00	270.00	5,196.5	0.0	-64.0	64.0	0.00	0.00	0.00
5,300.0	7.00	270.00	5,295.8	0.0	-76.2	76.2	0.00	0.00	0.00
5,400.0	7.00	270.00	5,395.0	0.0	-88.4	88.4	0.00	0.00	0.00
5,500.0	7.00	270.00	5,494.3	0.0	-100.6	100.6	0.00	0.00	0.00
5,600.0	7.00	270.00	5,593.5	0.0	-112.8	112.8	0.00	0.00	0.00
5,700.0	7.00	270.00	5,692.8	0.0	-124.9	124.9	0.00	0.00	0.00
5,800.0	7.00	270.00	5,792.0	0.0	-137.1	137.1	0.00	0.00	0.00
5,900.0	7.00	270.00	5,891.3	0.0	-149.3	149.3	0.00	0.00	0.00
5,918.1	7.00	270.00	5,909.3	0.0	-151.5	151.5	0.00	0.00	0.00
6,000.0	5.77	270.00	5,990.7	0.0	-160.6	160.6	1.50	-1.50	0.00
6,100.0	4.27	270.00	6,090.3	0.0	-169.4	169.4	1.50	-1.50	0.00
6,200.0	2.77	270.00	6,190.1	0.0	-175.5	175.5	1.50	-1.50	0.00
6,300.0	1.27	270.00	6,290.0	0.0	-179.1	179.1	1.50	-1.50	0.00
6,384.8	0.00	0.00	6,374.8	0.0	-180.0	180.0	1.50	-1.50	0.00
6,400.0	0.00	0.00	6,390.0	0.0	-180.0	180.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,490.0	0.0	-180.0	180.0	0.00	0.00	0.00
6,531.0	0.00	0.00	6,521.0	0.0	-180.0	180.0	0.00	0.00	0.00
Bone Spring									
6,600.0	0.00	0.00	6,590.0	0.0	-180.0	180.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,690.0	0.0	-180.0	180.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,790.0	0.0	-180.0	180.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,890.0	0.0	-180.0	180.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,990.0	0.0	-180.0	180.0	0.00	0.00	0.00
7,010.0	0.00	0.00	7,000.0	0.0	-180.0	180.0	0.00	0.00	0.00
7,100.0	10.63	270.00	7,089.5	0.0	-188.3	188.3	11.81	11.81	0.00
7,200.0	22.44	270.00	7,185.2	0.0	-216.7	216.7	11.81	11.81	0.00
7,300.0	34.24	270.00	7,273.0	0.0	-264.1	264.1	11.81	11.81	0.00
7,400.0	46.05	270.00	7,349.4	0.0	-328.5	328.5	11.81	11.81	0.00
7,500.0	57.86	270.00	7,410.9	0.0	-407.1	407.1	11.81	11.81	0.00
7,600.0	69.67	270.00	7,455.0	0.0	-496.6	496.6	11.81	11.81	0.00
7,700.0	81.48	270.00	7,479.9	0.0	-593.3	593.3	11.81	11.81	0.00
7,787.0	91.75	270.00	7,485.0	0.0	-680.0	680.0	11.81	11.81	0.00
7,800.0	91.75	270.00	7,484.6	0.0	-693.0	693.0	0.00	0.00	0.00
7,900.0	91.75	270.00	7,481.5	0.0	-793.0	793.0	0.00	0.00	0.00
8,000.0	91.75	270.00	7,478.5	0.0	-892.9	892.9	0.00	0.00	0.00
8,100.0	91.75	270.00	7,475.4	0.0	-992.9	992.9	0.00	0.00	0.00
8,200.0	91.75	270.00	7,472.4	0.0	-1,092.8	1,092.8	0.00	0.00	0.00
8,300.0	91.75	270.00	7,469.3	0.0	-1,192.8	1,192.8	0.00	0.00	0.00
8,400.0	91.75	270.00	7,466.3	0.0	-1,292.8	1,292.8	0.00	0.00	0.00
8,500.0	91.75	270.00	7,463.2	0.0	-1,392.7	1,392.7	0.00	0.00	0.00
8,600.0	91.75	270.00	7,460.2	0.0	-1,492.7	1,492.7	0.00	0.00	0.00
8,700.0	91.75	270.00	7,457.1	0.0	-1,592.6	1,592.6	0.00	0.00	0.00
8,800.0	91.75	270.00	7,454.1	0.0	-1,692.6	1,692.6	0.00	0.00	0.00
8,900.0	91.75	270.00	7,451.0	0.0	-1,792.5	1,792.5	0.00	0.00	0.00
9,000.0	91.75	270.00	7,448.0	0.0	-1,892.5	1,892.5	0.00	0.00	0.00
9,100.0	91.75	270.00	7,444.9	0.0	-1,992.4	1,992.4	0.00	0.00	0.00
9,200.0	91.75	270.00	7,441.8	0.0	-2,092.4	2,092.4	0.00	0.00	0.00
9,300.0	91.75	270.00	7,438.8	0.0	-2,192.3	2,192.3	0.00	0.00	0.00
9,400.0	91.75	270.00	7,435.7	0.0	-2,292.2	2,292.2	0.00	0.00	0.00

# Planning Report

**Database:** Drilling Database  
**Company:** Permian District  
**Project:** NM - Eddy - Morrow Project  
**Site:** Diamond 31 Federal 4H  
**Well:** Well #1  
**Wellbore:** Wellbore #1  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Well #1  
**TVD Reference:** RKB @ 2956.0ft  
**MD Reference:** RKB @ 2956.0ft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,500.0	91.75	270.00	7,432.7	0.0	-2,392.2	2,392.2	0.00	0.00	0.00
9,600.0	91.75	270.00	7,429.6	0.0	-2,492.2	2,492.2	0.00	0.00	0.00
9,700.0	91.75	270.00	7,426.6	0.0	-2,592.1	2,592.1	0.00	0.00	0.00
9,800.0	91.75	270.00	7,423.5	0.0	-2,692.1	2,692.1	0.00	0.00	0.00
9,900.0	91.75	270.00	7,420.5	0.0	-2,792.1	2,792.1	0.00	0.00	0.00
10,000.0	91.75	270.00	7,417.4	0.0	-2,892.0	2,892.0	0.00	0.00	0.00
10,100.0	91.75	270.00	7,414.4	0.0	-2,992.0	2,992.0	0.00	0.00	0.00
10,200.0	91.75	270.00	7,411.3	0.0	-3,091.9	3,091.9	0.00	0.00	0.00
10,300.0	91.75	270.00	7,408.3	0.0	-3,191.9	3,191.9	0.00	0.00	0.00
10,400.0	91.75	270.00	7,405.2	0.0	-3,291.8	3,291.8	0.00	0.00	0.00
10,500.0	91.75	270.00	7,402.1	0.0	-3,391.8	3,391.8	0.00	0.00	0.00
10,600.0	91.75	270.00	7,399.1	0.0	-3,491.7	3,491.7	0.00	0.00	0.00
10,700.0	91.75	270.00	7,396.0	0.0	-3,591.7	3,591.7	0.00	0.00	0.00

## Targets

### Target Name

hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
Bone Spring	0.00	0.00	6,521.0	0.0	-180.0	2.58	-1/9.98	0° 59' 24.51164882 N	5° 55' 46.20474180 W
- plan hits target									
- Point									

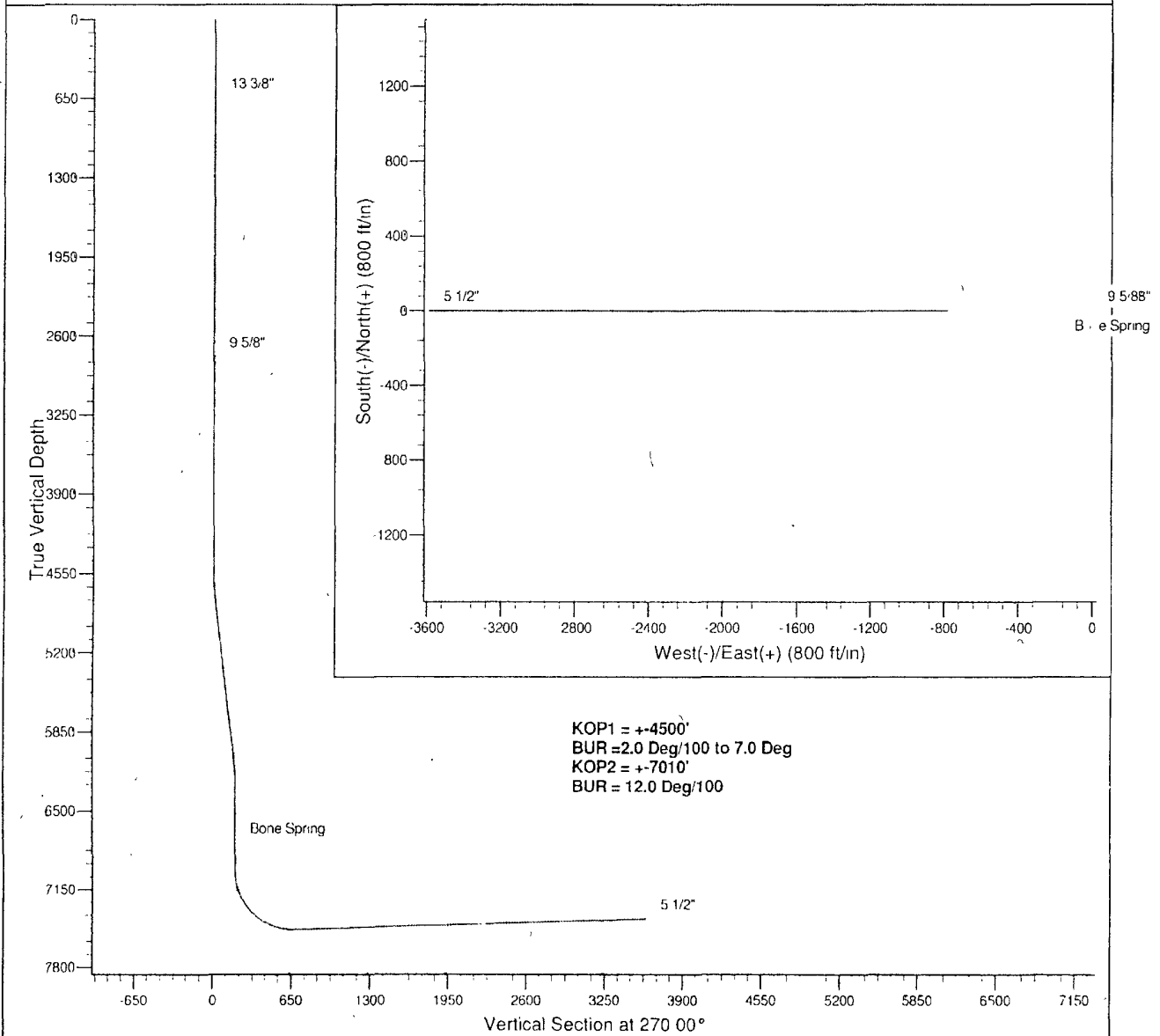
## Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
650.0	650.0	13 3/8"	13.375	17.500
2,775.0	2,775.0	9 5/8"	9.625	12.250
10,778.0		5 1/2"	5.500	8.750

Chesapeake Operating Inc. Diamond 31 Federal 4H

County: Eddy, NM

Section 31-24S-29E



# SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4500.0	0.00	0.00	4500.0	0.0	0.0	0.00	0.00	0.0	
3	4850.0	7.00	270.00	4849.1	0.0	-21.4	2.00	270.00	21.4	
4	5918.1	7.00	270.00	5909.3	0.0	-151.5	0.00	0.00	151.5	
5	6384.8	0.00	0.00	6374.8	0.0	-180.0	1.50	180.00	180.0	
6	6531.0	0.00	0.00	6521.0	0.0	0.0	0.00	0.00	180.0	Bone Spring
7	7010.0	0.00	0.00	7000.0	0.0	0.0	0.00	0.00	180.0	
8	7757.0	91.75	270.00	7484.0	0.0	0.0	11.81	270.00	680.0	
9	8100.0	91.75	270.00	7890.0	0.0	0.0	0.00	0.00	3591.7	

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. A proposed access road 385' 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 Co. Rd. 746 (McDonald Rd) and Co. Rd. 788A (Spur Rd), go West approx. 0.2 miles. Turn left and go South approx. 0.7 miles. Turn west and go approx. 0.1 miles. Turn South and go approx 0.15 miles. Turn Southwest and go approx. 0.6 miles. Turn Southeast-East and go approx. 0.4 miles. Turn South and go approx. 0.2 miles. Turn East and go South approx. 0.25 miles. Turn south and go approx. 0.25 miles. Turn West-Southwest and go approx 0.2 miles. This location is approx. 535 feet Northwest.

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

ONSHORE ORDER NO. 1  
Chesapeake Operating, Inc.  
Diamond 31 Federal 4H  
SL: 2200' FNL & 150' FEL  
BL: 2200' FNL & 1650' FWL  
Section 31-24S-29E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE

Lease No. NMNM 111533

SURFACE USE PLAN

Page 2

4. LOCATION OF PRODUCTION FACILITIES

The gas measurement for this well will be on the well pad of the Diamond 31 Federal 2H thru a common meter to DCP. Chesapeake will have a allocation meter for both wells up stream to the DCP meter. – See Exhibit C

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 31-24S-29E. 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. WELLSITE LAYOUT

The proposed site layout plat is attached showing Patterson #142 rig orientation and equipment location. See Exhibit D. Also see Exhibit A-2 for the size of the pad.

10. 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 removed.

11. MINERAL OWNERSHIP

United States of America  
Department of Interior  
Bureau of Land Management

SURFACE OWNERSHIP

State of New Mexico

ONSHORE ORDER NO. 1  
Chesapeake Operating, Inc.  
Diamond 31 Federal 4H  
SL: 2200' FNL & 150' FEL  
BL: 2200' FNL & 1650' FWL  
Section 31-24S-29E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE

Lease No. NMNM 111533

SURFACE USE PLAN

Page 3

GRAZING LESSEE

Jerry Ballard 505-745-3347

P. O. Box 60

Malaga, NM 88263

(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)

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**Drilling Engineer II**

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ONSHORE ORDER NO. 1  
Chesapeake Operating, Inc.  
Diamond 31 Federal 4H  
SL: 2200' FNL & 150' FEL  
BL: 2200' FNL & 1650' FWL  
Section 31-24S-29E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
Lease No. NMNM 111533

OPERATOR CERTIFICATION

PAGE 1

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 5TH day of February, 2008.

Name: Paul Hagermeier  
Paul Hagermeier, Vice President – Regulatory Compliance

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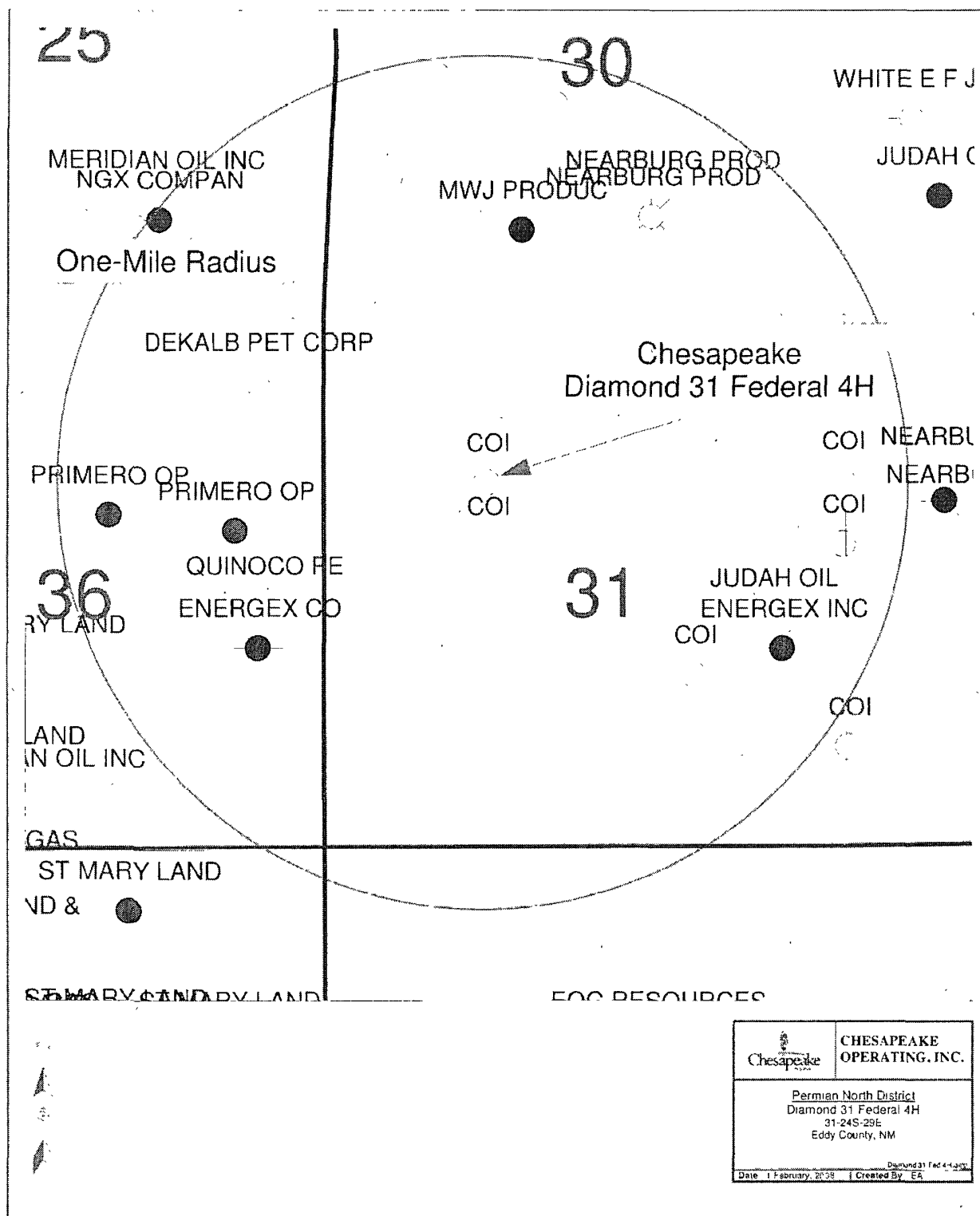
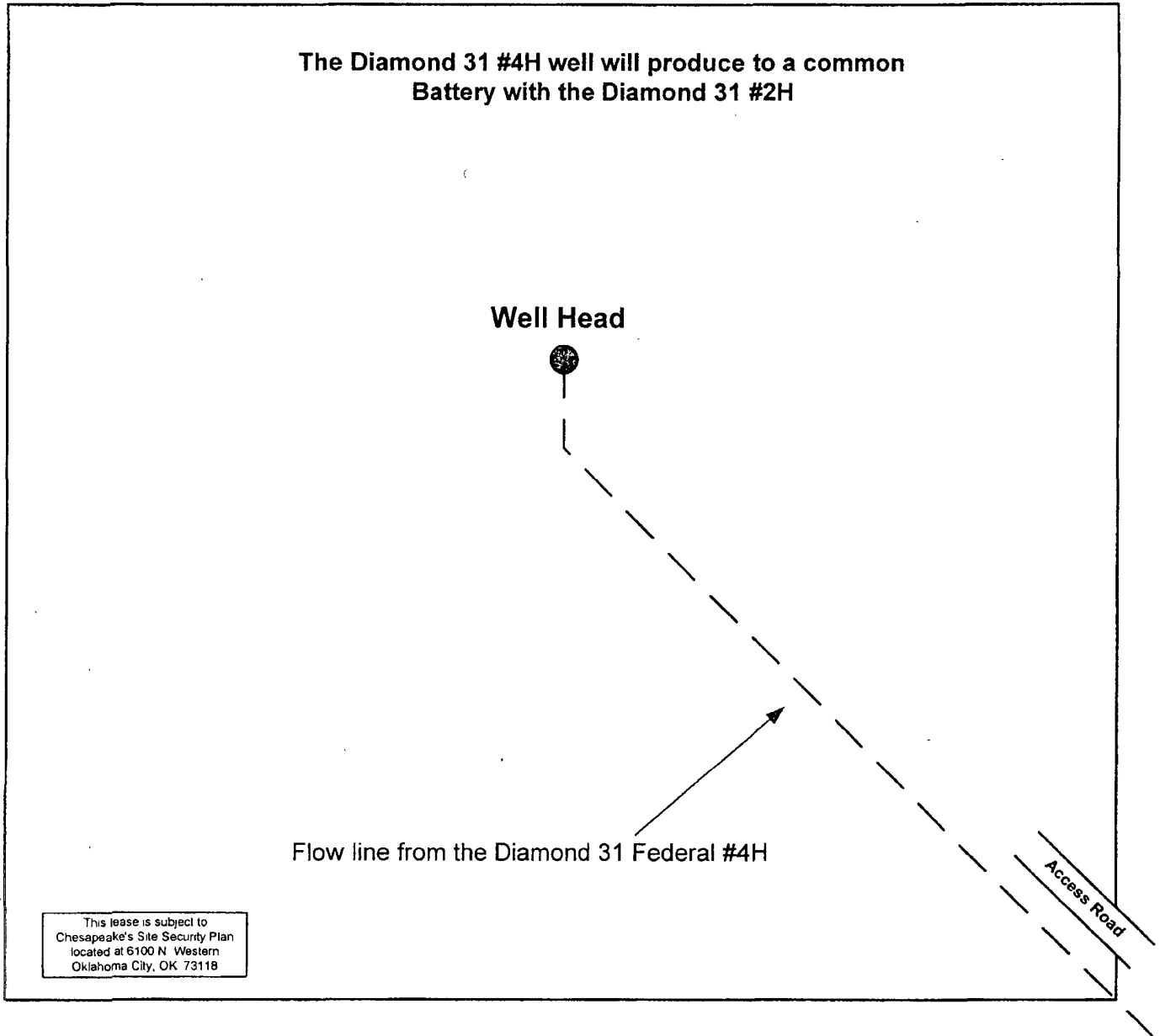


EXHIBIT **B**

# **CHESAPEAKE OPERATING, INC.**

**Diamond 31 Federal #4H  
2200' FNL & 150' FEL  
Section 31-24-29  
Eddy Co. New Mexico**



The Chesapeake Diamond 31 Federal 4H is 10 miles South East of Malaga NM

The gas measurement for this well will be on the well pad of the Diamond 31 Federal #2H thru a common meter to DCP. Chesapeake will have a allocation meter for both wells up stream to the DCP meter.

**EXHIBIT C-1**

# CHESAPEAKE OPERATING, INC.

The Diamond 31 #4H well located 2200'n & 150'e – 31-24-29 Eddy Co. New Mexico  
will product to a common battery with the Diamond 31 2H

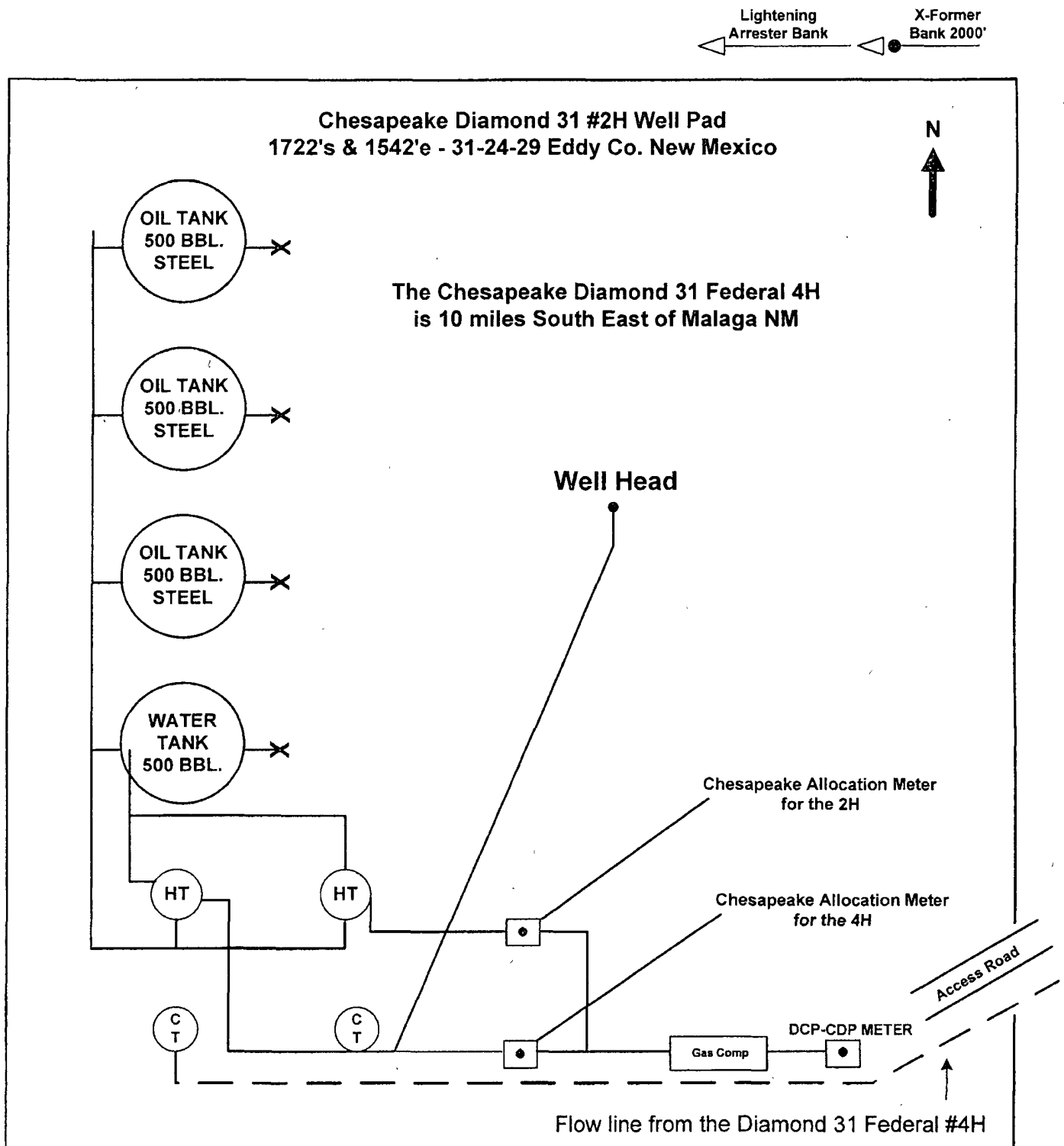


EXHIBIT C-2

# PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Chesapeake Operating, Inc.
LEASE NO.:	NMNM111533
WELL NAME & NO.:	Diamond 31 Federal No 4H
SURFACE HOLE FOOTAGE:	2200' FNL & 150' FEL
BOTTOM HOLE FOOTAGE	2200' FNL & 1650' FWL
LOCATION:	Section 31, T. 24 S., R 29 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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Cave/Karst
- ☒ **Construction**
  - Notification
  - Topsoil
  - Reserve Pit
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☒ **Road Section Diagram**
- ☒ **Drilling**
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☒ **Interim Reclamation**
- ☐ **Final Abandonment/Reclamation**

## **I. GENERAL PROVISIONS**

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

## **II. PERMIT EXPIRATION**

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

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

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

## **IV. NOXIOUS WEEDS**

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

## V. SPECIAL REQUIREMENT(S)

**Mitigation Measures:** The mitigation measures include the special drilling stipulations, the standard stipulations for high cave/karst occurrence, and the standard stipulations for permanent resource roads.

**Diamond 31 Federal # 4H:** Closed Loop North V-Door East

Cave/Karst – The location has been designated as high karst occurrence. Conditions of Approval will include berming of tanks for retention of leaks to prevent possible contamination of karst aquifers and contamination of nearby water well.

## **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 shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

**The Closed loop system will be constructed on the North side of the well pad V-Door East.**

Tanks are required for drilling operations: No Pits.

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

### **C. 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.

### **D. 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.



## **E. 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**

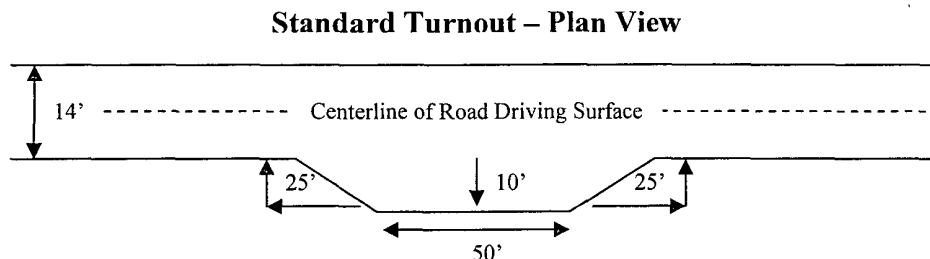
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### **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:

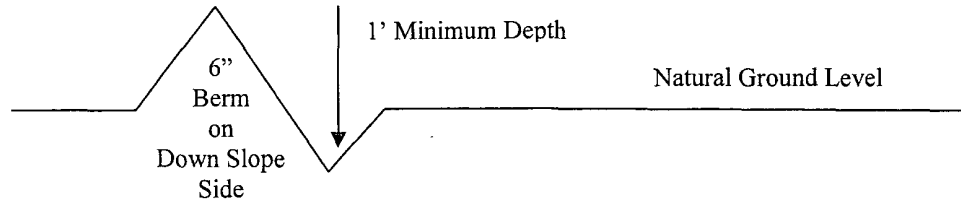


### **Drainage**

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

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

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



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

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

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

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

#### **Culvert Installations**

Appropriately sized 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**

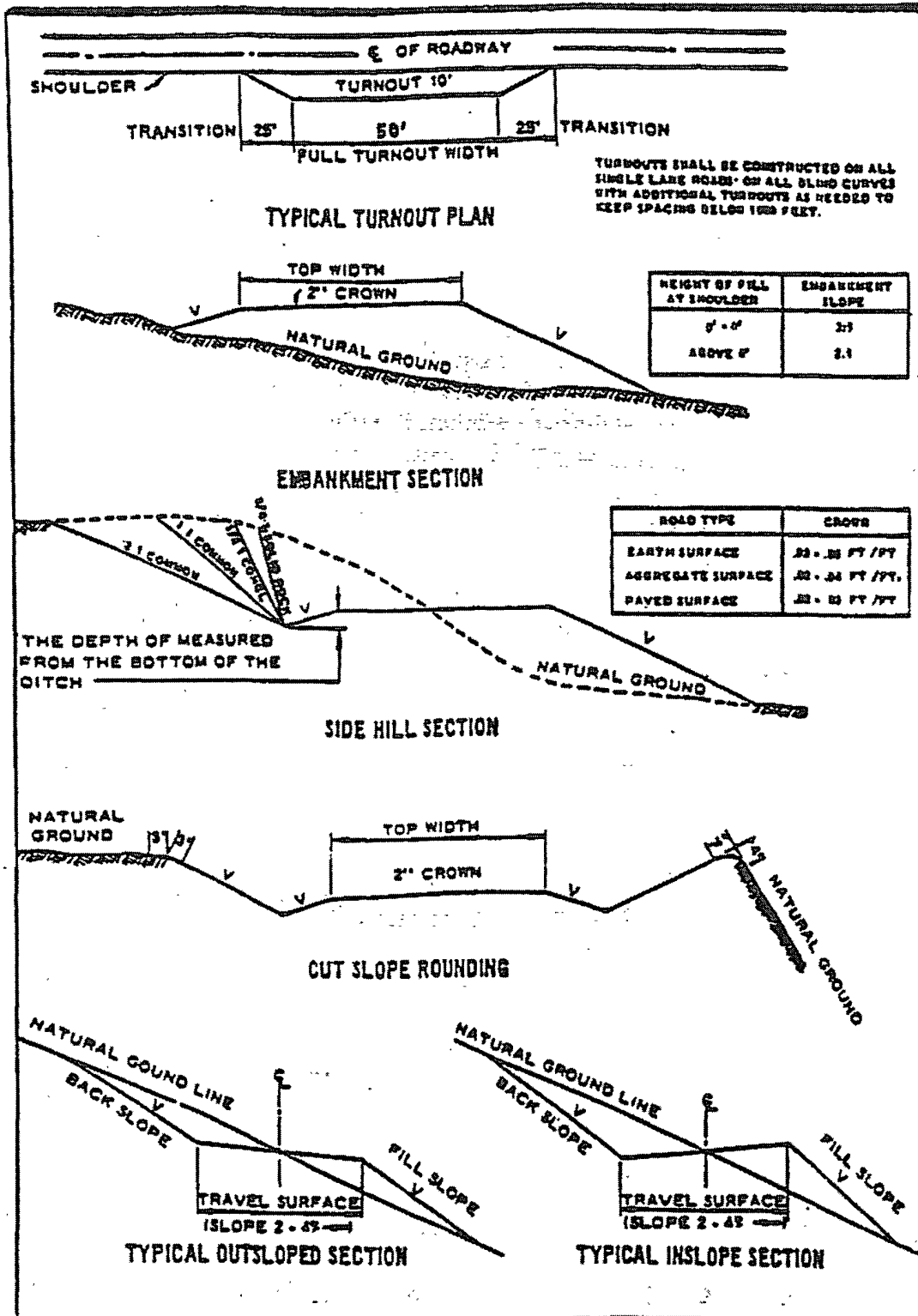
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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 **at approximately 650 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface. **Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**
  - 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.

**High cave/karst.**

**Possible lost circulation in the Delaware and Bone Spring formations.**

- 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.**

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

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

☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Centralizers required on horizontal leg, minimum of one every other joint. Additional cement may be required.**

- 4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

**C. PRESSURE CONTROL**

- 1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
- 2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi. Operator using 3M annular and testing to 2000 psi.**
- 3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8" intermediate casing shoe shall be **3000 (3M) psi. Operator using 5M, but testing to 3M.**

4. 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.

**WWI 030208**

## **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

### **B. PIPELINES**

### **C. ELECTRIC LINES**



## **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 the pad is 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 4, for Gypsum 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>
Alkali Sacaton ( <i>Sporobolus airoides</i> )	1.0
DWS <u>Four-wing saltbush</u> ( <i>Atriplex canescens</i> )	5.0

DWS: DeWinged Seed

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = 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.