

EC

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

AUG 15 2008

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of Work: ☒ DRILL ☐ REENTER

CONFIDENTIAL

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 NENE 330FNL 480FEL

At proposed prod. zone NWNW 330FNL 330FWL

14. Distance in miles and direction from nearest town or post office*
APPROXIMATELY 7 MILES SE OF MALAGA, NM.15 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
1275.2818 Distance from proposed location to nearest well, drilling,
completed, applied for, on this lease, ft19 Proposed Depth
6733 MD21 Elevations (Show whether DF, KB, RT, GL, etc.)
2930 GL

22. Approximate date work will start

5 Lease Serial No
NMNM117121

7b If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No

8. Lease Name and Well No.
WILLOW LAKE 7 FEDERAL 1H

9. API Well No

10. Field and Pool, or Exploratory
WILLOW LAKE

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

Sec 7 T25S R29E Mer NMP
SME: BLM12. County or Parish
EDDY13 State
NM17 Spacing Unit dedicated to this well
160.0020. BLM/BIA Bond No. on file
NM2634

23 Estimated duration

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
02/14/2008Title
REGULATORY COMPLIANCE SPECIALIST

Approved by (Signature)

/s/ James Stovall

Name (Printed/Typed)

/s/ James Stovall

Date
AUG 14 2008Title
FIELD MANAGEROffice
CARLSBAD FIELD OFFICEApplication 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

NOTE: NEW PIT RULE

19-15-17 NMAC PART 17

A form C-144 must be approved
before starting drilling operations.

Carlsbad Controlled Water Basin

Submission #58621 verified by the BLM Well Information System
CHESAPEAKE OPERATING, INC., sent to the Carlsbad
SS for processing by TESSA CISNEROS on 02/14/2008 (08TLC0162AE)

SEE ATTACHED FOR

CONDITIONS OF APPROVAL

Conductor - see COA

Approval Subject to General Requirements
& Special Stipulations Attached

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

Additional Operator Remarks:

CHESAPEAKE OPERATING, INC. RESPECTFULLY REQUESTS PERMISSION TO DRILL A WELL TO 6733' 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 616000)

S

AUG 20 2008
OCD-ARTESIADISTRICT I
1825 N. FRZICH DR., HOBBS, NM 86240State of New Mexico
Energy, Minerals and Natural Resources DepartmentDISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 86210OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease -- 4 Copies
Fee Lease -- 3 CopiesDISTRICT III
1000 Rio Bravos Rd., Aztec, NM 87410DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87503

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name <i>Undes. Willow Lake; Delaware</i>
Property Code	Property Name WILLOW LAKE 7 FEDERAL	Well Number 1H
OGRID No. 147179	Operator Name CHESAPEAKE OPERATING, INC.	Elevation 2910'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	7	25-S	29-E		330	NORTH	480	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
1	7	25-S	29-E		330	NORTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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

LOT 1	GRID AZ.=269°00'59" H. DIST.=4474.0'	SEE DETAIL	330' SURF. 480'
LOT 2	BOTTOM HOLE Y=418723.1 N X=593652.5 E	P.P.	DETAIL 2911.1' 2913.4' 800' 800' 2910.1' 2936.7'
LOT 3	GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y=418799.8 N X=598124.8 E LAT.=32.151000° N LONG.=104.016276° W		
LOT 4			

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 undivided 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 Barnum 8/21/07
Signature Date
CRAG BARNUM
Printed Name

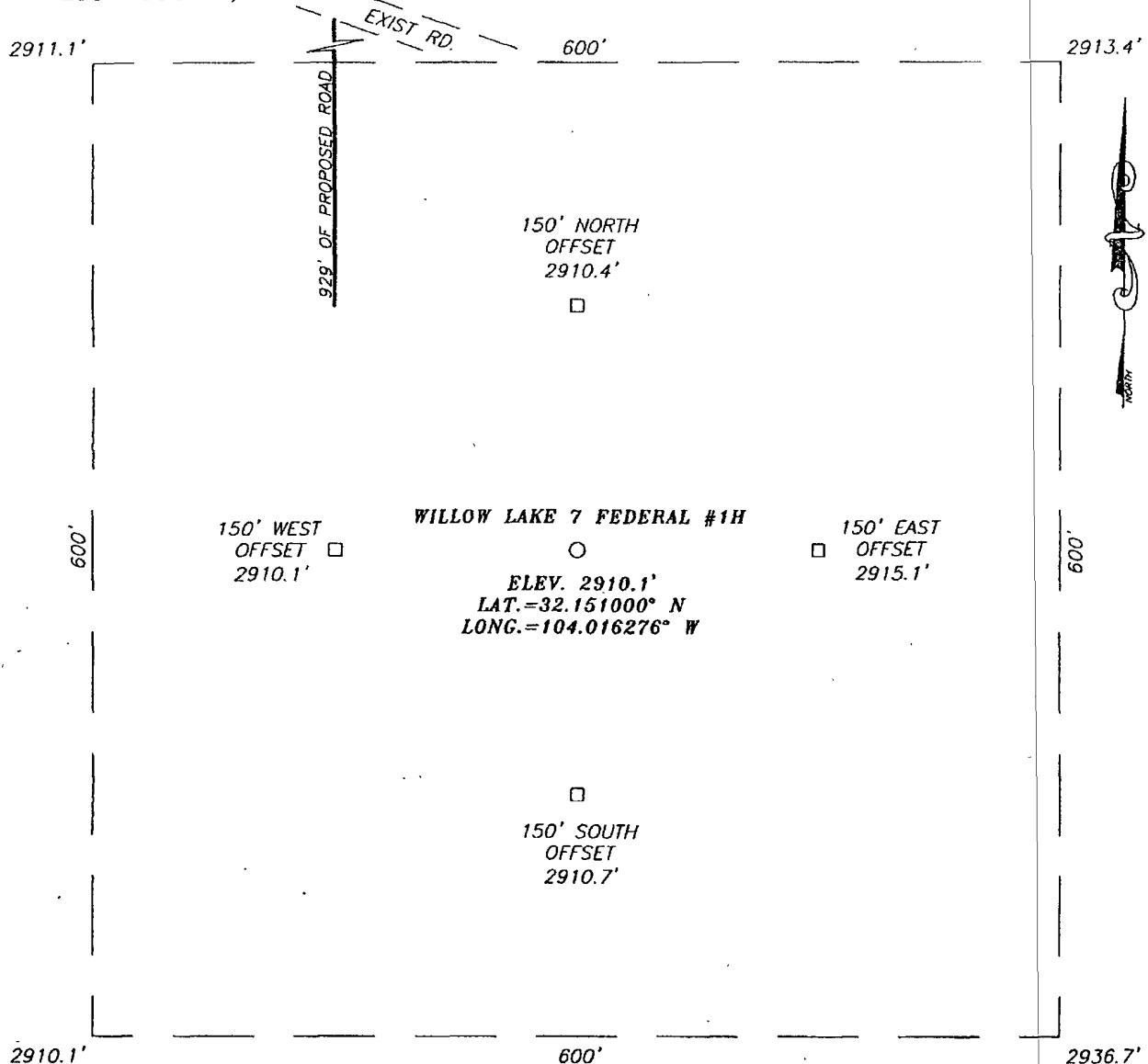
SURVEYOR CERTIFICATION

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.

RONALD J. EIDSON
Date Surveyed 8/21/07 AR
Signature & Seal of Professional Surveyor
Certificate No. GARY EIDSON 12041
RONALD J. EIDSON 3239

Revised
EXHIBIT A-1

SECTION 7, TOWNSHIP 25 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

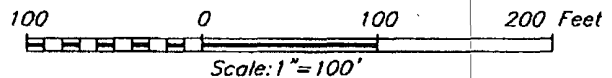


DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #285 AND CO. RD. #725 (WHITE HORN), GO NORTHEAST ON CO. RD. #725 APPROX. 4.2 MILES. VEER LEFT AND GO NORTHEAST APPROX. 2.0 MILES ON PIPELINE LEASE RD. TURN LEFT AND GO NORTH APPROX. 4.0 MILES. VEER LEFT AND GO NORTHWEST APPROX. 2.2 MILES. VEER LEFT AND GO WEST, THEN SOUTH APPROX. 0.15 MILES. TURN RIGHT ON TRAIL RD. AND GO NORTHWEST APPROX. 1.0 MILES TO A PROPOSED ROAD SURVEY. FOLLOW PROPOSED ROAD SURVEY SOUTH APPROX. 1100' TO THIS LOCATION.



PROVIDING SURVEYING SERVICES
SINCE 1948
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

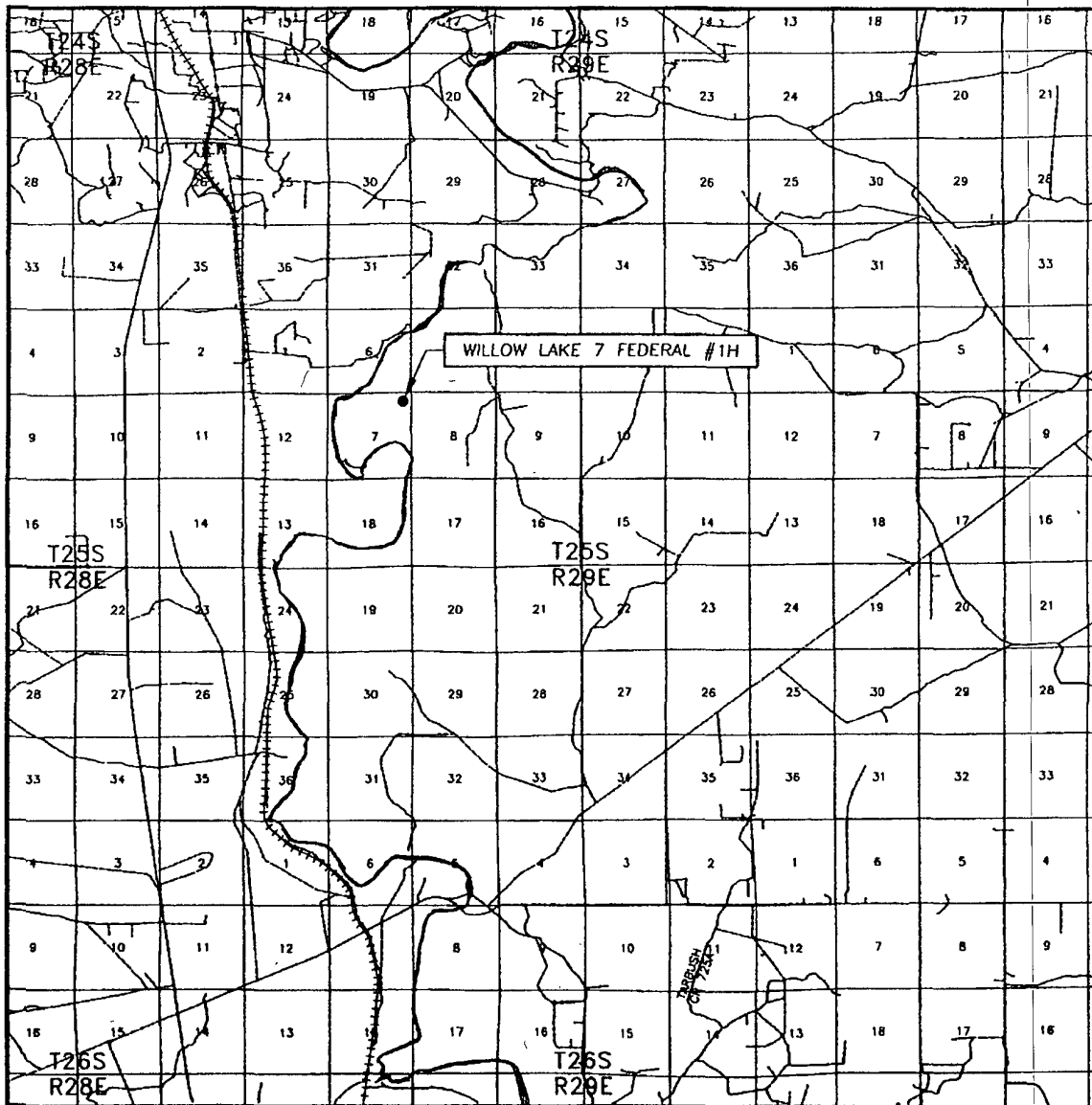


CHESAPEAKE OPERATING, INC.

WILLOW LAKE 7 FEDERAL #1H WELL
LOCATED 330 FEET FROM THE NORTH LINE
AND 480 FEET FROM THE EAST LINE OF SECTION 7,
TOWNSHIP 25 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 07/20/07	Sheet 1 of 1 Sheets
W.O. Number: 07.13.1138	Dr By: AR
Date: 08/20/07	Disc: 07.13.1138
Scale: 1" = 100'	

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 7 TWP. 25-S RGE. 29-E
 SURVEY N.M.P.M.
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 330' FNL & 480' FEL
 ELEVATION 2910'
 OPERATOR CHESAPEAKE OPERATING, INC.
 LEASE WILLOW LAKE 7 FEDERAL

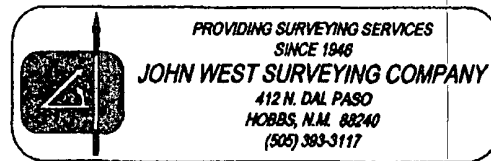
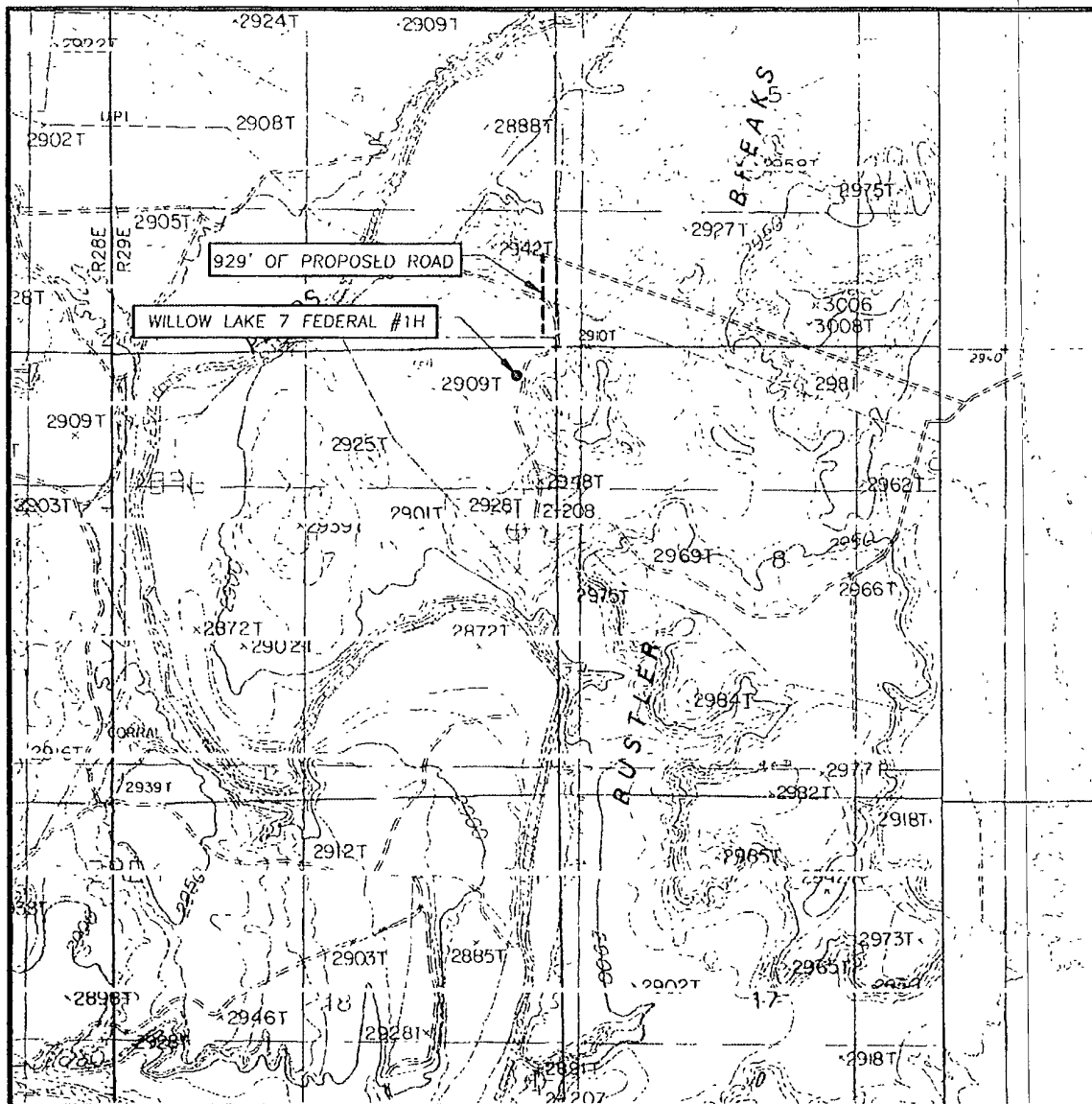


EXHIBIT A-3

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
MALAGA, N.M. - 10'
PIERCE CANYON, N.M. - 10'

SEC. 7 TWP. 25-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 330' FNL & 480' FEL

ELEVATION 2910'

OPERATOR CHESAPEAKE
OPERATING, INC.

LEASE WILLOW LAKE 7 FEDERAL

U.S.G.S. TOPOGRAPHIC MAP

MALAGA, N.M.

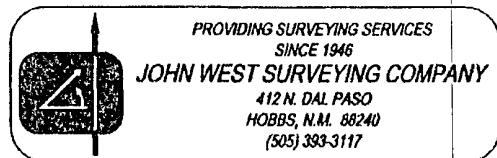


EXHIBIT A-4

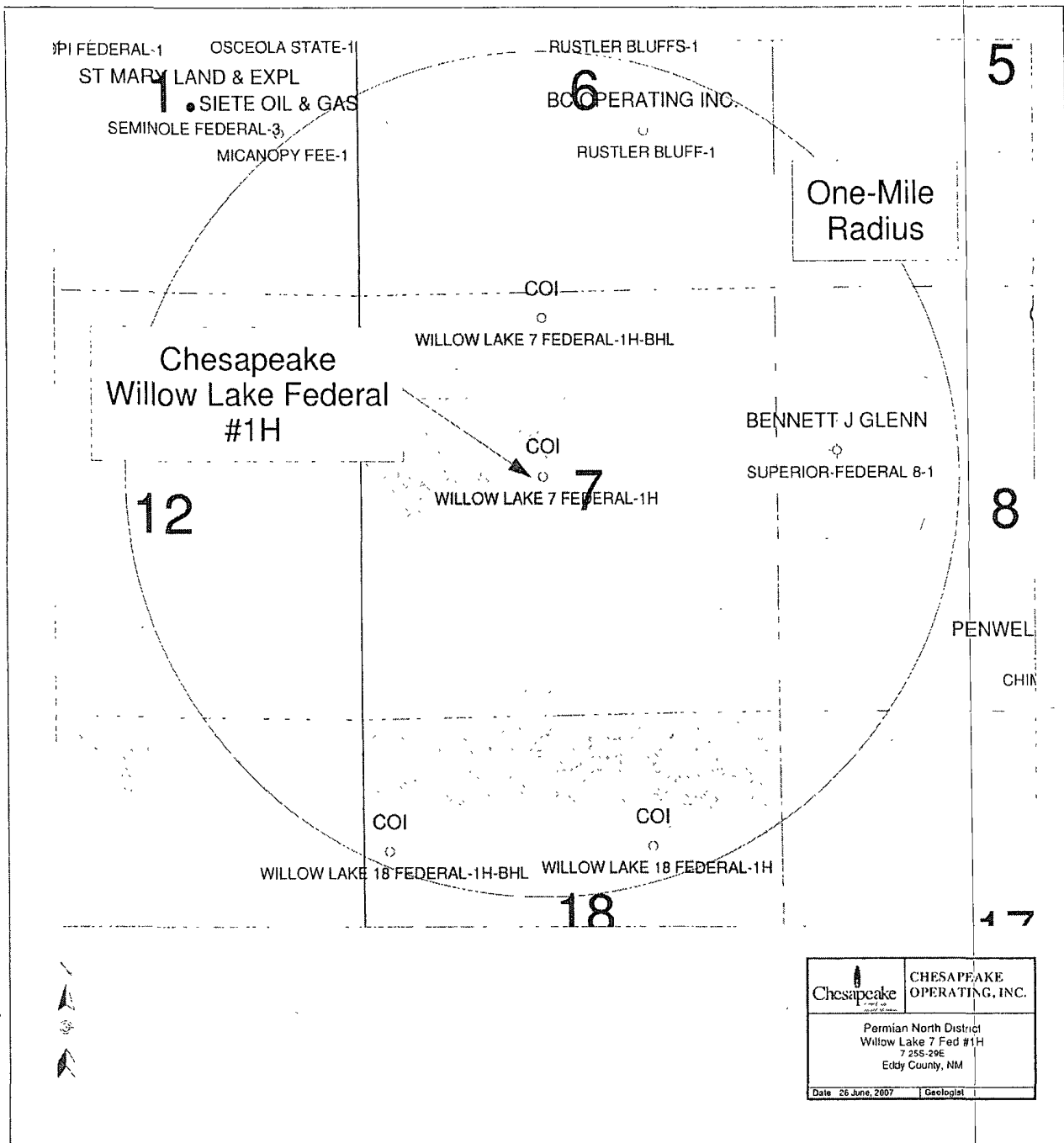


EXHIBIT B

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Willow Lake 7 Federal 1H
SL: 330' FNL & 480' FEL,
BHL: 330' FSL & 330' FWL,
Section 7-25S-29E
EDDY County, New Mexico

CONFIDENTIAL – TIGHT HOLE
Lease No. OKNM 117121

REVISED DRILLING PROGRAM

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	Depth KBTVD
BASE OF SALT	206'	2,742'
*BELL CANYON	161'	2,787'
MANZANITA MARKER	-844'	3,792'
KOP		
**WILLOW LAKE HORIZ. TOP	-2,097'	5,045'
**WILLOW LAKE HORIZONTAL TARGET LINE	-2,116'	5,064'
** WILLOW LAKE HORIZ. BASE	-2,134'	5,082'
**Potentially productive zones		
PILOT HOLE	TD (MD)	5,300'

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	2787'
Oil/Gas	Cherry Canyon	3692'

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

Willow Lake 5045 - 5064' per operator 3/13/08

REVISED DRILLING PROGRAM

Page 2

Will have a 2000 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.

REVISED DRILLING PROGRAM

Page 3

D. Test Duration

1. In each case, the individual components should be monitored for leaks for 5 ¹⁰ minutes, with no observable pressure decline, once the test pressure has 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. ^{see COA 0,0,2}

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.

<u>System Operating Pressures</u>	<u>Precharge Pressure</u>
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.

REVISED DRILLING PROGRAM

Page 4

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:

<u>System Pressure</u>	<u>Remaining Pressure At Conclusion of Test</u>
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 PROGRAM

- a. The proposed casing program will be as follows:

Conductor to 125' - see COA

<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 – 2,750'	12-1/4"	9-5/8"	40.0#	J-55	LTC	New
Production	Surface – 7,350'	8-3/4" / 8-1/2"	5-1/2"	17.0#	N-80	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 = 2.09, SFc = 2.0 and SFt = 5.0
 5-1/2" Production Casing: SFb = 1.55, SFc = 1.77 and SFt = 2.13
- d. The cementing program will be as follows:

REVISED DRILLING PROGRAM

Page 5

5. Cementing Program

Conductor — see COA

<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 ₂ (Accelerator) Tail: Class C 2% CaCl ₂ (Accelerator)	300 sks	2.10	Surface	100%
Intermediate	Lead: 35/65 Poz/Class C 1% CaCl ₂ (Accelerator)	220 sks	1.34	Surface	75%
	Tail: Class C 2% CaCl ₂	250 sks	1.34		
Production	TXI LW + additives	800 sks	1.60	2,250'	20%

6. MUD PROGRAM

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

<u>Interval</u>	<u>Mud Type</u>	<u>Mud Weight</u>	<u>Viscosity</u>	<u>Fluid Loss</u>
0' – 650'	FW/Gel	8.4 – 9.0	28-32	NC
650' – 2,750'	Native/Brine	9.9 – 10.1	30-32	NC
2,750' - 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. Sanitary wastes will be contained in a chemical porta-toilet and then hauled to an approved sanitary landfill.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

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

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Willow Lake 7 Federal 1H
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CONFIDENTIAL – TIGHT HOLE
Lease No. OKNM 117121

REVISED DRILLING PROGRAM

Page 6

7. 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.

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- a. The estimated bottom hole pressure is 2250 psi. No abnormal pressures or temperatures are anticipated.
- b. Hydrogen sulfide gas is not anticipated.

Permian District

NM - Eddy - Morrow Project

Willow Lake 7 Federal 1

Well #1

Wellbore #1

Plan: Plan #1

Standard Planning Report

13 August, 2008

Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 2948.0ft
Project:	NM - Eddy - Morrow Project	MD Reference:	RKB @ 2948.0ft
Site:	Willow Lake 7 Federal 1	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:	Willow Lake 7 Federal 1		
Site Position:	Northings:	598,124.80 ft	Latitude: 32° 38' 38.64050132 N
From:	Map	Easting: 418,799.80 ft	Longitude: 104° 35' 49.69279847 W
Position Uncertainty:	ft	Slot Radius: in	Grid Convergence: -0.14 °

Well:	Well #1		
Well Position	+N/-S	0.0 ft	Northings: 598,124.80 ft
	+E/-W	0.0 ft	Easting: 418,799.80 ft
Position Uncertainty	ft	Wellhead Elevation:	ft
			Ground Level: 2,910.0 ft

Wellbore:	Wellbore #1		
Magnetics:	Model Name	Sample Date	Declination
	User Defined	2/12/2008	0.00
			Dip Angle
			0.00
			Field Strength
			0

Design:	Plan #1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction
			269.00

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,585.0	0.00	0.00	4,585.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,352.4	91.75	269.00	5,064.0	-8.6	-493.8	11.96	11.96	0.00	269.00	
7,353.2	91.75	269.00	5,002.9	-43.5	-2,493.3	0.00	0.00	0.00	0.00	

Panning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 2948.0ft
Project:	NM - Eddy - Morrow Project	MD Reference:	RKB @ 2948.0ft
Site:	Willow Lake 7 Federal 1	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
2,750.0	0.00	0.00	2,750.0	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
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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
4,585.0	0.00	0.00	4,585.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	1.79	269.00	4,600.0	0.0	-0.2	0.2	11.96	11.96	0.00
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Planning Report

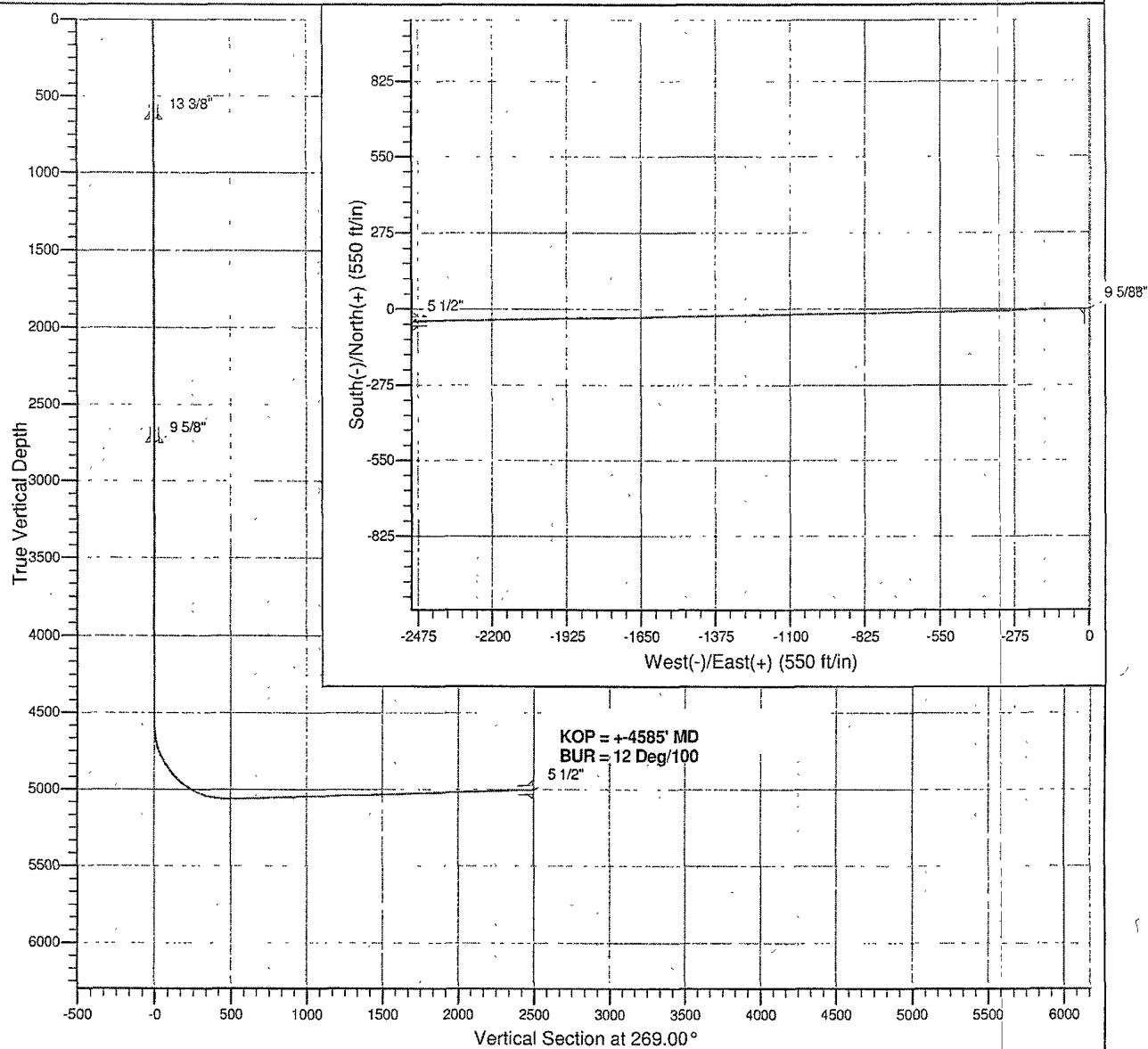
Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 2948.0ft
Project:	NM - Eddy - Morrow Project	MD Reference:	RKB @ 2948.0ft
Site:	Willow Lake 7 Federal 1	North Reference:	True
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
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)	
4,800.0	25 71	269.00	4,792.9	-0.8	-47.4	47.4	11.96	11.96	0.00	
4,900.0	37 66	269.00	4,877.8	-1.7	-99.8	99.9	11.96	11.96	0.00	
5,000.0	49.62	269.00	4,950.0	-2.9	-168.7	168.7	11.96	11.96	0.00	
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5,200.0	73 53	269.00	5,044.6	-6.0	-343.3	343.4	11.96	11.96	0.00	
5,300.0	85 49	269.00	5,062.7	-7.7	-441.4	441.5	11.96	11.96	0.00	
5,352.4	91.75	269.00	5,064.0	-8.6	-493.8	493.9	11.96	11.96	0.00	
5,400.0	91 75	269.00	5,062.5	-9.4	-541.4	541.4	0.00	0.00	0.00	
5,500.0	91.75	269.00	5,059.5	-11.2	-641.3	641.4	0.00	0.00	0.00	
5,600.0	91.75	269.00	5,056.4	-12.9	-741.2	741.3	0.00	0.00	0.00	
5,700.0	91 75	269.00	5,053.4	-14.7	-841.2	841.3	0.00	0.00	0.00	
5,800.0	91 75	269.00	5,050.3	-16.4	-941.1	941.2	0.00	0.00	0.00	
5,900.0	91.75	269.00	5,047.3	-18.2	-1,041.0	1,041.2	0.00	0.00	0.00	
6,000.0	91.75	269.00	5,044.2	-19.9	-1,141.0	1,141.2	0.00	0.00	0.00	
6,100.0	91 75	269.00	5,041.2	-21.7	-1,240.9	1,241.1	0.00	0.00	0.00	
6,200.0	91 75	269.00	5,038.1	-23.4	-1,340.9	1,341.1	0.00	0.00	0.00	
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6,400.0	91 75	269.00	5,032.0	-26.9	-1,540.7	1,541.0	0.00	0.00	0.00	
6,500.0	91.75	269.00	5,029.0	-28.6	-1,640.7	1,640.9	0.00	0.00	0.00	
6,600.0	91.75	269.00	5,025.9	-30.4	-1,740.6	1,740.9	0.00	0.00	0.00	
6,700.0	91 75	269.00	5,022.8	-32.1	-1,840.5	1,840.8	0.00	0.00	0.00	
6,800.0	91.75	269.00	5,019.8	-33.9	-1,940.5	1,940.8	0.00	0.00	0.00	
6,900.0	91 75	269.00	5,016.7	-35.6	-2,040.4	2,040.7	0.00	0.00	0.00	
7,000.0	91.75	269.00	5,013.7	-37.4	-2,140.4	2,140.7	0.00	0.00	0.00	
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7,300.0	91.75	269.00	5,004.5	-42.6	-2,440.2	2,440.6	0.00	0.00	0.00	
7,353.2	91 75	269.00	5,002.9	-43.5	-2,493.3	2,493.7	0.00	0.00	0.00	

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	
2,750.0	2,750.0	9 5/8"	9.625	12.250	
7,353.2	5,002.9	5 1/2"	5.500	8.750	

Chesapeake Operating Inc. Willow Lake 7 Federal 1H County: Eddy, NM

Section 7-25S-29E



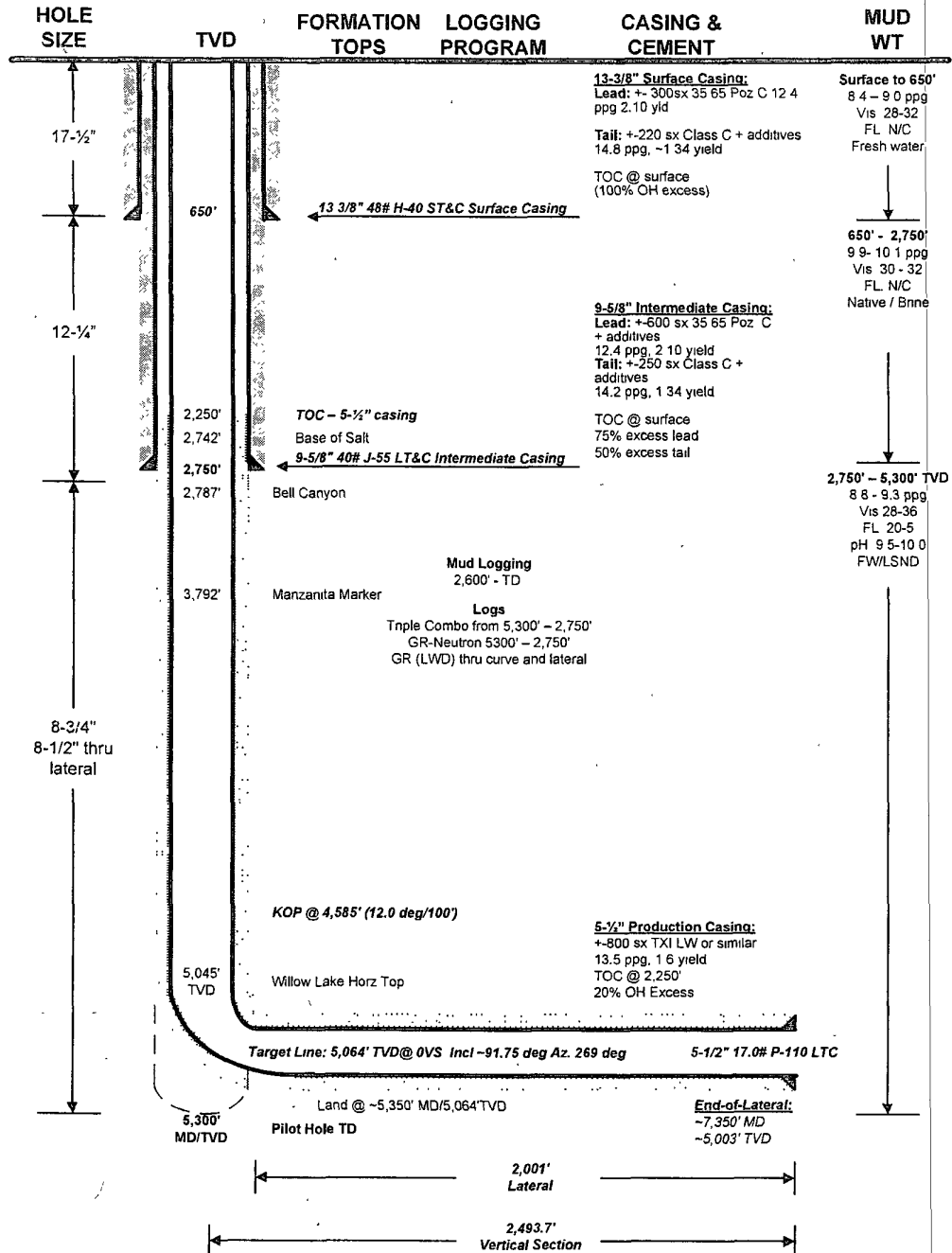
SECTION DETAILS

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	4585.0	0.00	0.00	4585.0	0.0	0.0	0.00	0.00	0.0	
3	5352.4	91.75	269.00	5064.0	-8.6	-493.8	11.96	269.00	493.9	
4	7353.2	91.75	269.00	5002.9	-43.5	-2493.3	0.00	0.00	2493.7	

CHESAPEAKE OPERATING INC

Proposed Well-Schematic (drilling)

WELL : Willow Lake 7 Federal 1H
 SHL : Section 7 - 25S - 29E, 330' FNL & 480' FEL
 BHL : Section 7 - 25S - 29E, 330' FNL & 2,310' FWL
 COUNTY : Eddy
 STATE : New Mexico
 FIELD : Willow Lake
 ELEVATION : GL - 2,910' RKB - 2,928'



PREPARED BY: TAN
 APPROVED BY:

DATE: 8/13/08
 DATE:

CHESAPEAKE OPERATING, INC.

Willow Lake 7 Federal #1H

330'N & 480'E of Sec. 7-T25S-R29E

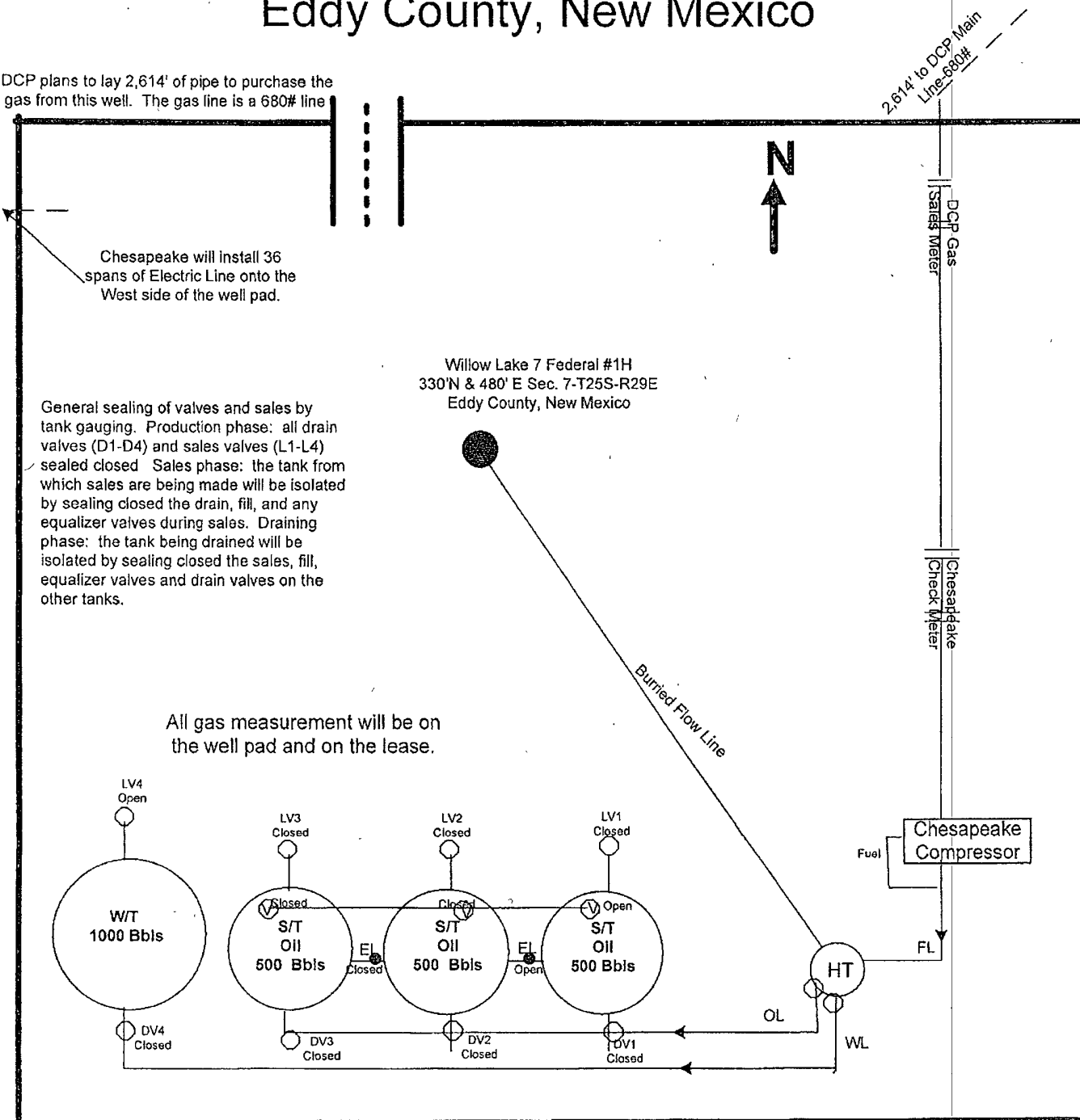
Eddy County, New Mexico

DCP plans to lay 2,614' of pipe to purchase the gas from this well. The gas line is a 680# line

Chesapeake will install 36 spans of Electric Line onto the West side of the well pad.

General sealing of valves and sales by tank gauging. Production phase: all drain valves (D1-D4) and sales valves (L1-L4) sealed closed. Sales phase: the tank from which sales are being made will be isolated by sealing closed the drain, fill, and any equalizer valves during sales. Draining phase: the tank being drained will be isolated by sealing closed the sales, fill, equalizer valves and drain valves on the other tanks.

All gas measurement will be on the well pad and on the lease.



WILLOW LAKE 7 FEDERAL #1H

The Willow Lake 7 Federal #1H well is 7 miles South of East of Malaga, New Mexico

Direction of Flow off Site: N

This lease is subject to Chesapeake's Site Security Plan located at 6100 N. Western Oklahoma City, OK 73118

Prepared by: DEBBIE HERNANDEZ
Date: 8-27-2007

Approved by:
Date:

EXHIBIT

RIG 142

Closed Loop System

Lay Down Rack

Mud House

Suction Pit

Shale Pit

2

Pump

#1

Pump

Part

House

Sub
Box

Pipe
Rack

Pipe
Rack

165'

55'

70'

100'

40'

30'

150'

Gen. House

Water Tank

Water Tank

Bottom Dog House

Diesel Tank

Oil Tank

Top
Dog
House

75'

Pipe
Rack

Pipe
Rack

Accumulator

CELLAR 8' X 8' X 6'

Bunk House

Water
Trailer

EXHIBIT

2

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Willow Lake 7 Federal 1H

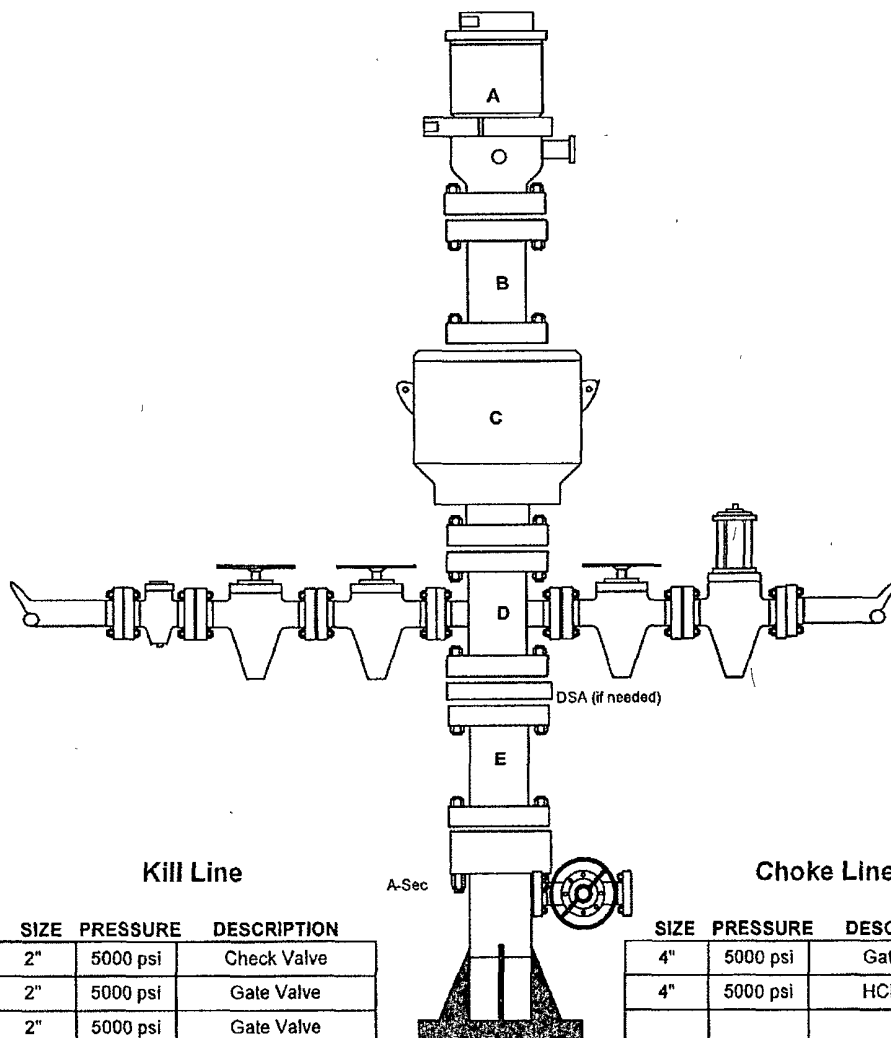
RIG : Patterson 142

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

EXHIBIT

F-1

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Willow Lake 7 Federal 1H

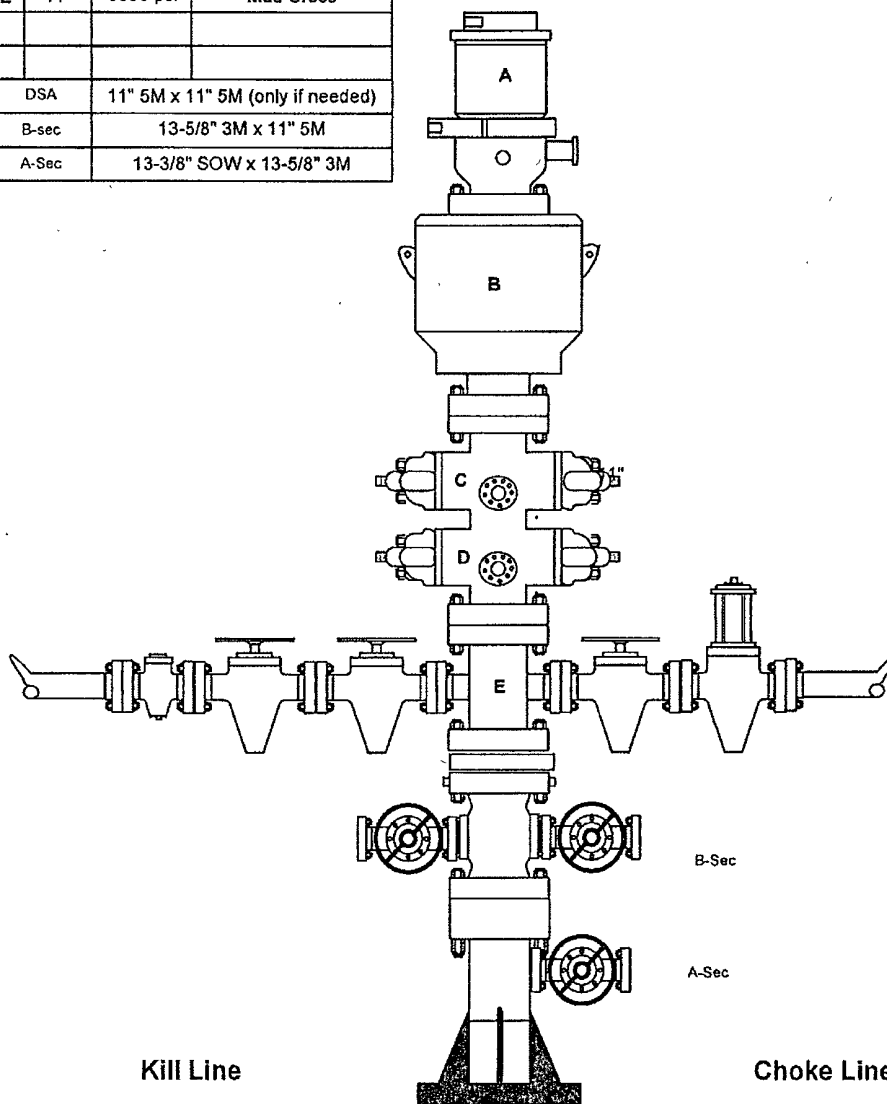
RIG : Patterson 142

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

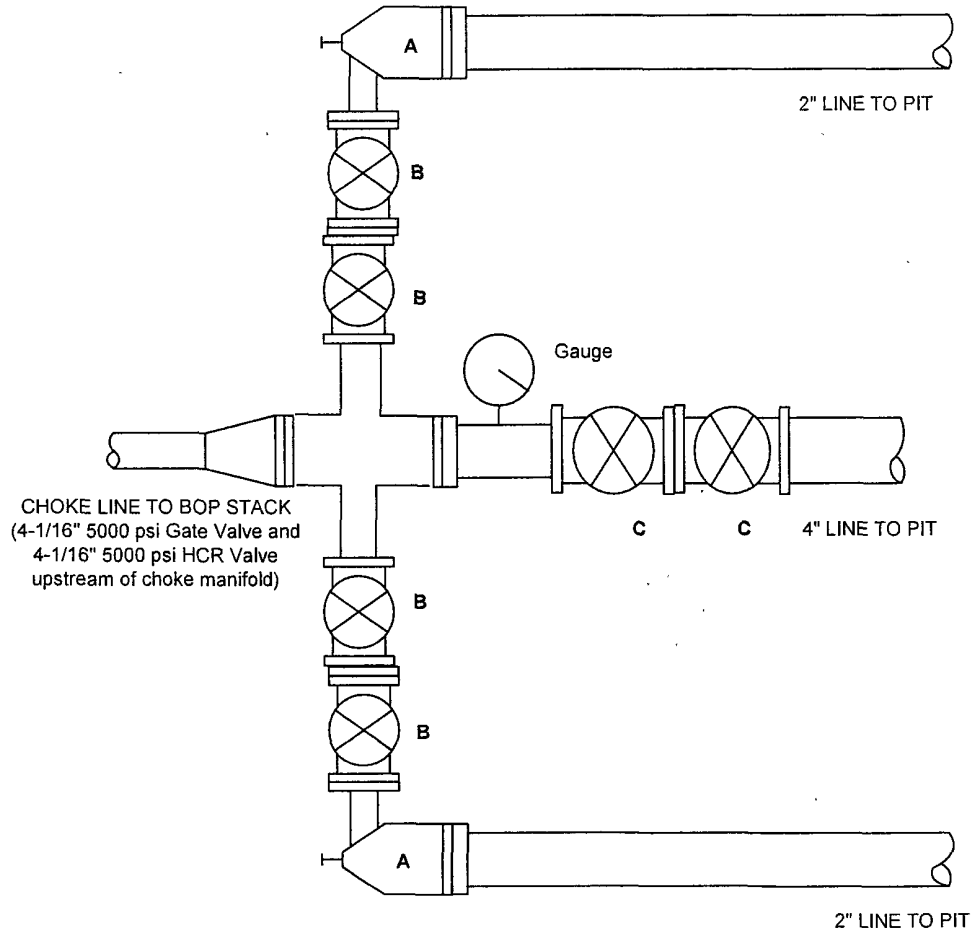
EXHIBIT

F-2

CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING, INC.

WELL : Willow Lake 7 Federal 1H
 RIG : Patterson 142
 COUNTY : Eddy STATE : New Mexico
 OPERATION: Drilling below/beyond 13-3/8" surface casing



Choke Controls - At Least One Choke Also
 Remotely Controlled From Rig Floor

	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

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 LOCATION

- a. 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.
- b. A locking gate will be installed at the site entrance.
- c. Any fences cut will be repaired. Cattle guards will be installed, if needed.
- d. 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.
- e. Driving directions are from the intersection of US Hwy #285 and Co. Rd #725 (White Horn), go Northeast on Co. Rd #725 approximately 4.2 miles. Veer left and go Northeast approximately 2.0 miles on Pipeline Lease Rd, turn left and go North approximately 4.0 miles. Veer left and go Northwest approximately 2.2 miles. Veer left and go West, then South approximately 0.7 miles. Turn right on Trail Rd and go West approximately 1.3 miles 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

It is anticipated that production facilities will be located on the well pad as product will be sold at the wellhead and/or tank battery. DCP plans to lay 3300' of pipe to purchase the gas from this well. The gas line is a 680# line. Plan to run 29 spans of Electric line onto the West side of the well pad. – 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.

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Willow Lake 7 Federal 1H
SL: 330' FNL & 480' FEL,
BHL: 330' FNL & 330' FWL,
Section 7-25S-29E
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE

Lease No. NMNM 117121

SURFACE USE PLAN

Page 2

6. CONSTRUCTION MATERIALS

No construction materials will be used from Section 7-25S-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 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. SURFACE & MINERAL OWNERSHIP

United States of America
Department of Interior
Bureau of Land Management

GRAZING LESSEE

Waylan Terry 325-372-8503
Austin, TX

(Chesapeake Operating, Inc. has an agreement with the grazing lessee)

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Willow Lake 7 Federal 1H
SL: 330' FNL & 480' FEL,
BHL: 330' FNL & 330' FWL,
Section 7-25S-29E
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE

Lease No. NMNM 117121

SURFACE USE PLAN

Page 3

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

Randy Herring
Sr Asset Manager
P.O. Box 18496
Oklahoma City, OK 73154
(405) 767-4399 (OFFICE)
(405) 879-7930 (FAX)
randy.herring@chk.com

Sr. Drilling Engineer

Todd Nance
P.O. Box 14896
Oklahoma City, OK 73154
(405) 879-9301 (OFFICE)
(405) 810-2795 (FAX)
(405) 919-9148 (MOBILE)
todd.nance@chk.com

Field Representative

Curtis Griffin
1616 W. Bender
Hobbs, NM
505-391-1462 (OFFICE)
505-391-6679 (FAX)
curtis.griffin@chk.com

Assett Manager

Jeff Finnell
P.O. Box 18496
Oklahoma City, OK 73154-0496
405-767-4347 (OFFICE)
405-879-7930 (FAX)
jeff.finnell@chk.com

Regulatory Compliance

Linda Good
Regulatory Compliance Specialist
P.O. Box 18496
Oklahoma City, OK 73154
(405) 767-4275 (OFFICE)
(405) 879-7899 (FAX)
linda.good@chk.com

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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 14 day of February, 2008.

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: curtis.griffin@chk.com

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Chesapeake Operating
LEASE NO.:	NMNM117121
WELL NAME & NO.:	Willow Lake 7 Federal No 1H
SURFACE HOLE FOOTAGE:	330' FNL & 480' FEL
BOTTOM HOLE FOOTAGE:	330' FNL & 330' FWL
LOCATION:	Section 7, T. 25 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

VRM

Cultural

- ☒ **Construction**

Notification

Topsoil

Reserve Pit

Federal Mineral Material Pits

Well Pads

Roads

- ☒ **Road Section Diagram**

- ☒ **Drilling**

Conductor casing depth

- ☐ **Production (Post Drilling)**

Well Structures & Facilities

Pipelines

Electric Lines

- ☒ **Interim Reclamation**

- ☐ **Final Abandonment/Reclamation**

ONSHORE ORDER NO. 1
Chesapeake Operating, Inc.
Willow Lake 7 Federal 1H
SL: 330' FNL & 480' FEL
BL: 330' FNL & 330' FWL
Section 7-25S-29E
Eddy County, NM

CONFIDENTIAL - TIGHT HOLE
Lease No. 117121

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 14 day of February, 2008.

Name: Paul Hagemeier
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: curtis.griffin@chk.com

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)

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 shall be constructed on the East side of the well pad V-Door South.

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.

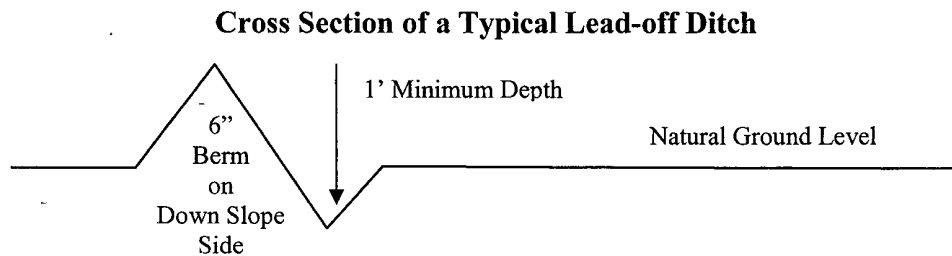
If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

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

Drainage

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



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.

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

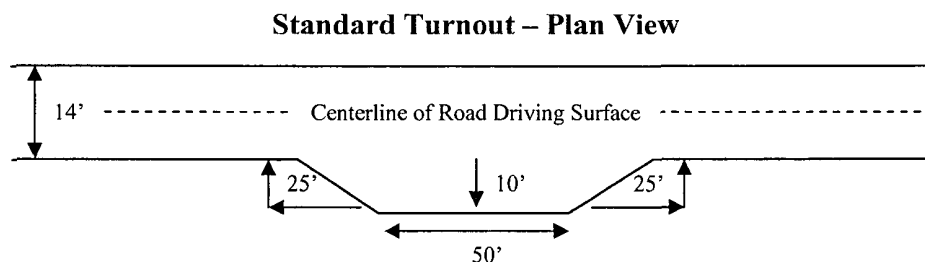
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

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:



Fence Requirement

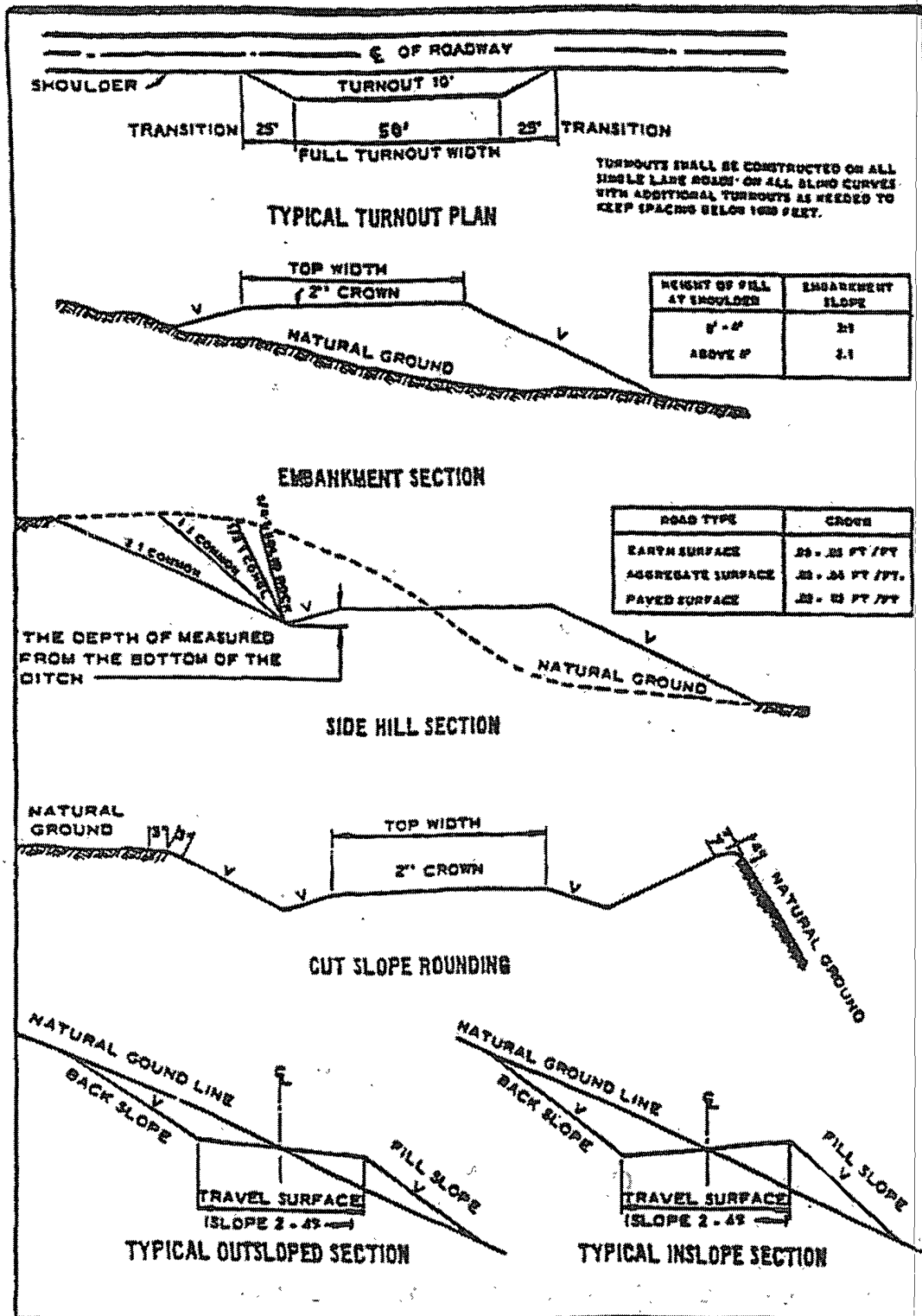
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

New plat will be required when well is complete if BHL is not as specified on existing plat since directional plan shows approximately 45' shift to south.

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 the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
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

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

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

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Lead slurry does not have to reach 500 pounds, but information still required to show compressive strength within 18-24 hours depending on water basin or potash. WOC for water basin or potash applies to entire wellbore.

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

High cave/karst.

Possible lost circulation in the Delaware Mountain Group.

Possible water and brine flows in the Salado and Delaware Mountain Group.

CONDUCTOR CASING

The Rustler formation outcrops in this area and to adequately protect the surface water, the conductor pipe is to be set at 125' and cemented to surface. Class C cement to be used, ready mix not acceptable since this is protecting water.

1. The 13-3/8 inch surface casing shall be set at approximately 650 feet and cemented to the surface.
 - 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.
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
☒ Cement to surface. If cement does not circulate see B.1.a-d above. **Casing to be set in the Lamar Limestone.**

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 500 feet into previous casing string. Operator shall provide method of verification. **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. A 3M annular will be installed and tested as a 2M. Schematic does not qualify as a 3M.**
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. A 5M BOP will be installed with a 3M manifold and tested 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.

D. DRILL STEM TEST

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

WWI 081408

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 2, for Sandy Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

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