12-1234

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia
RECEIVED
FEB 20 2013
NMOCD ARTESIA

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMLC061616A	
6. If Indian, Allottee or Tribe Name	TS 2/20/2013
7. If Unit or CA Agreement, Name and No. NMNM071016X	
8. Lease Name and Well No. PLU PIERCE CANYON 4 25 30 USA 1H	39978
9. API Well No. 30-015-41137	
10. Field and Pool, or Exploratory SEE ADDITIONAL INFO PLEAS Nash Draw; Delaware - BS AV SD	49545
11. Sec., T., R., M., or Blk. and Survey or Area Sec 4 T25S R30E Mer NMP	
12. County or Parish EDDY	13. State NM
14. Distance in miles and direction from nearest town or post office* 41.5 MILES FROM LOVING, NM	
15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 150 FT FROM THE NORTH LINE	16. No. of Acres in Lease 2402.60
17. Spacing Unit dedicated to this well 160 ~~0~~ 66	
18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft. 590 FT FROM PROPOSED LATERAL PATH	19. Proposed Depth 13791 MD 8936 TVD
20. BLM/BIA Bond No. on file ESB000159	
21. Elevations (Show whether DF, KB, RT, GL, etc. 3300 GL	22. Approximate date work will start 02/01/2013
23. Estimated duration 30 DAYS	

1a. Type of Work: ☒ DRILL ☐ REENTER — CONFIDENTIAL

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator CHESAPEAKE AGENT FOR BOPCO — Contact: ERIN CARSON — E-Mail: erin.carson@chk.com — 260737

3a. Address PO BOX 18496 OKLAHOMA CITY, OK 73154-0496

3b. Phone No. (include area code) Ph: 405-935-2896

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

At surface NENE Lot X 150FNL 660FEL 32.166451 N Lat, 103.879099 W Lon

At proposed prod. zone SESE Lot P 100FSL 660FEL 32.152454 N Lat, 103.879117 W Lon

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	Name (Printed/Typed)	Date
(Electronic Submission)	ERIN CARSON Ph: 405-935-2896	08/30/2012

Title: AUTHORIZED REPRESENTATIVE

Approved by (Signature)	Name (Printed/Typed)	Date
/s/ Don Peterson		FEB 15 2013
Title: FIELD MANAGER	Office: CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Additional Operator Remarks (see next page)

Approval Subject to General Requirements & Special Stipulations Attached

Electronic Submission #148226 verified by the BLM Well Information System
For CHESAPEAKE AGENT FOR BOPCO, sent to the Carlsbad
Committed to AFMSS for processing by KURT SIMMONS on 09/17/2012 ()

Carlsbad Controlled Water Basin

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015-41137	47545	NASH DRAW; DELAWARE/BONE SPRING (AVALON SAND)

4 Property Code	5 Property Name	6 Well Number
39739	PLU PIERCE CANYON 4 25 30 USA	1H

7 OGRID No.	8 Operator Name	9 Elevation
147179	CHESAPEAKE OPERATING, INC.	+3300'

10 Surface Location

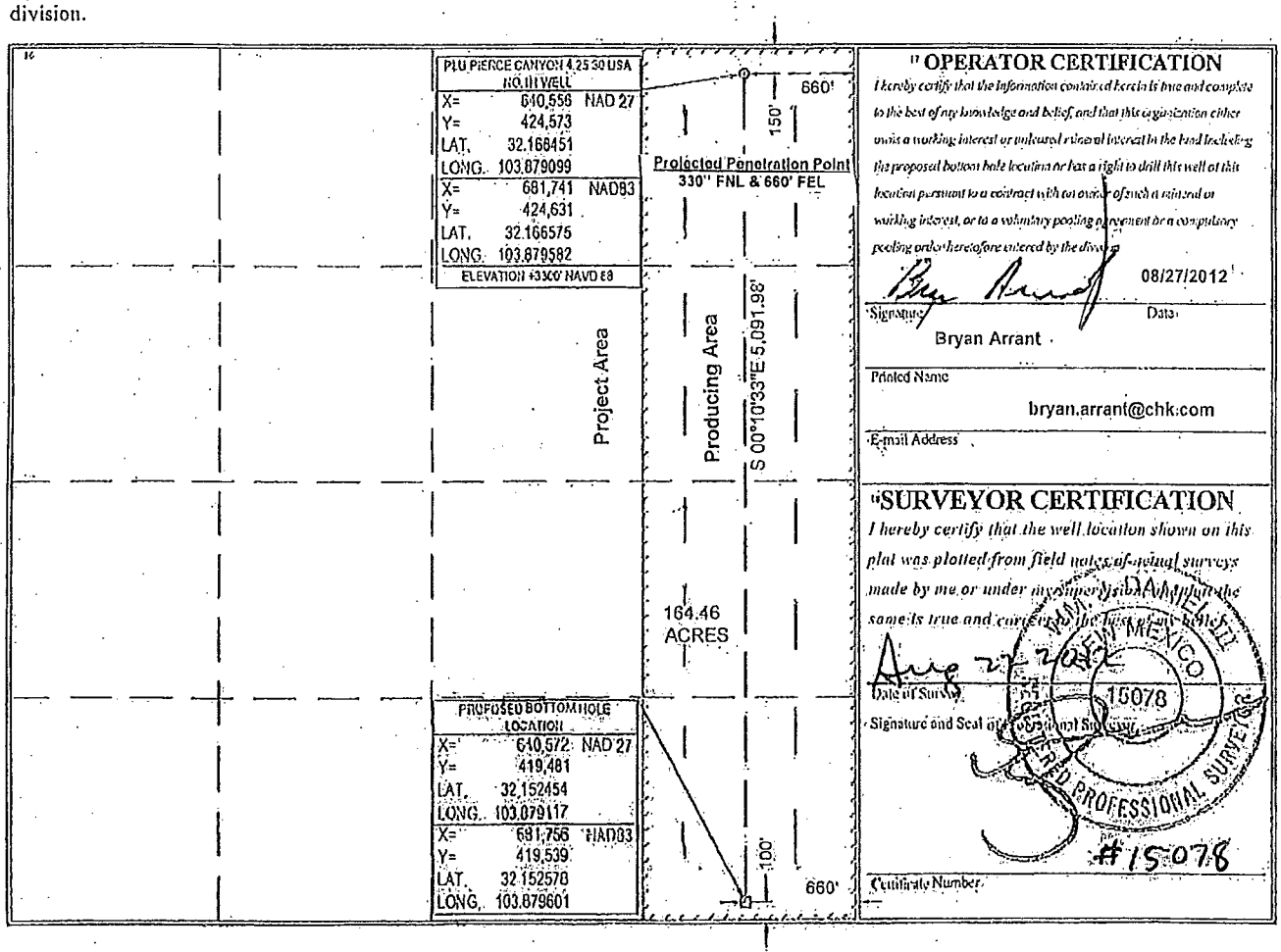
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	4	25S	30E	1	150'	NORTH	660'	EAST	EDDY

11 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
P	4	25S	30E		100'	SOUTH	660'	EAST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
160.66			

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.



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 08/27/2012

Bryan Arrant
Printed Name

bryan.arrant@chk.com
E-mail Address

18 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.

Aug 27, 2012
Date of Survey

Signature and Seal of Professional Surveyor

NEW MEXICO — JAMES A. DANIEL — 15078 — REGISTERED PROFESSIONAL SURVEYOR

#15078
Certificate Number

EXHIBIT A-1

NOTE:
PLEASE BE ADVISED, THAT WHILE REASONABLE EFFORTS ARE MADE TO LOCATE AND VERIFY PIPELINES AND ANOMALIES USING OUR STANDARD PIPELINE LOCATING EQUIPMENT, IT IS IMPOSSIBLE TO BE 100% EFFECTIVE. AS SUCH, WE ADVISE USING CAUTION WHEN PERFORMING WORK AS THERE IS A POSSIBILITY THAT PIPELINES AND OTHER HAZARDS, SUCH AS FIBER OPTIC CABLES, PVC PIPELINES, ETC. MAY EXIST UNDETECTED ON SITE.

MANY STATES MAINTAIN INFORMATION CENTERS THAT ESTABLISH LINKS BETWEEN THOSE WHO DIG (EXCAVATORS) AND THOSE WHO OWN AND OPERATE UNDERGROUND FACILITIES (OPERATORS). IT IS ADVISABLE AND IN MOST STATES, LAW, FOR THE CONTRACTOR TO CONTACT THE CENTER FOR ASSISTANCE IN LOCATING AND MARKING UNDERGROUND UTILITIES. FOR GUIDANCE, A FEW STATES WITH SUCH PROGRAMS ARE LISTED BELOW: LOUISIANA ONE CALL℠ www.lacenecall.com; MISSISSIPPI ONE-CALL SYSTEM, http://www.ms1call.org/; TEXAS ONE CALL SYSTEM- http://www.texasonecall.com; ARKANSAS ONE CALL SYSTEM- http://www.arkonecall.com/.

DISCLAIMER: AT THIS TIME, FENSTERMAKER & ASSOCIATES, INC. HAS NOT PERFORMED NOR WAS ASKED TO PERFORM ANY TYPE OF ENGINEERING, HYDROLOGICAL MODELING, FLOOD PLAIN OR "NO RISE" CERTIFICATION ANALYSES, INCLUDING BUT NOT LIMITED TO DETERMINING WHETHER THE PROJECT WILL IMPACT FLOOD HAZARDS IN CONNECTION WITH FEDERAL/FEMA, STATE, AND/OR LOCAL LAWS, ORDINANCES AND REGULATIONS. ACCORDINGLY, FENSTERMAKER MAKES NO WARRANTY OR REPRESENTATION OF ANY KIND AS TO THE FOREGOING ISSUES, AND PERSONS OR ENTITIES USING THIS INFORMATION SHALL DO SO AT THEIR OWN RISK.

R 30 E

WM. J. DANIEL III NEW MEXICO 15078 REGISTERED PROFESSIONAL SURVEYOR

NW PAD CRN.		NE PAD CRN.	
X=	640,358 NAD 27	X=	640,681 NAD 27
Y=	424,709	Y=	424,778
ELEVATION = 3299' NAVD 88		ELEVATION = 3303' NAVD 88	
SE PAD CRN.		SW PAD CRN.	
X=	640,743 NAD 27	X=	640,421 NAD 27
Y=	424,485	Y=	424,416
ELEVATION = 3303' NAVD 88		ELEVATION = 3300' NAVD 88	
NW ARCH. AREA CRN.		NE ARCH. AREA CRN.	
X=	640,200 NAD 27	X=	640,786 NAD 27
Y=	424,803	Y=	424,929
SE ARCH. AREA CRN.		SW ARCH. AREA CRN.	
X=	640,912 NAD 27	X=	640,325 NAD 27
Y=	424,342	Y=	424,216

PLU PIERCE CANYON 4-25-30 USA NO. 1H WELL

X=	640,556 NAD 27
Y=	424,573
LAT.	32.166451
LONG.	103.879099
X=	681,741 NAD83
Y=	424,631
LAT.	32.166575
LONG.	103.879582
ELEVATION = 3300' NAVD 88	

Existing Drillsite

BOPCO Pierce Canyon No. 33H Well

Sec. 33

Sec. 34

T 24 S

T 25 S

Existing Power Line w/ Poles

Existing Lease Road 20' Wide

Existing Pipelines

PROPOSED ACCESS ROAD 20' X ±424' ±0.19 Acres

PROPOSED ARCHEOLOGICAL AREA ±5.99 Acres

175'
165'
165'
125'
300'
600'
330'
600'

BLM

Sec. 4

Sec. 3

Pierce Canyon 4-25-30 USA No. 1H Well FNL=150' FEL=660'

PROPOSED PAD ±2.27 Acres

NAD 27 NEW MEXICO EAST ZONE

SCALE
200' 0 100' 200'

FOR THE EXCLUSIVE USE OF CHESAPEAKE OPERATING, INC.
I, WM. J. Daniel III, Registered Professional Land Surveyor, do hereby state this plat is true and correct to the best of my knowledge.

WM. J. Daniel III
Registration No. 15078

FENSTERMAKER
135 Regency Sq. Lafayette, LA 70508
Ph. 337-237-2200 Fax. 337-232-3299
www.fenstermaker.com

CHESAPEAKE OPERATING, INC.

PROPOSED PAD & ACCESS ROAD
PLU PIERCE CANYON 4-25-30 USA NO. 1 WELL
SEC. 33, T24S-R30E & SEC. 4, T25S-R30E
EDDY COUNTY, NEW MEXICO

DRAWN BY: BMO.	REVISIONS		
PROJ. MGR.: DBM	No. 1	DATE: 08/20/2012	REVISED BY: BMO
DATE: MAY 09, 2012	No.	DATE:	REVISED BY:
FILENAME: T:\2012\2124896\DWG\Pierce Canyon 4-25-30 USA 1 SUP revised.dwg			

EXHIBIT A2

ONSHORE ORDER NO. 1
Chesapeake Agent for BOPCO
PLU Pierce Canyon 4 25 30 USA 1H
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE
OPERATOR CERTIFICATION

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 27th day of August, 2011

Name: Toby Reid
Toby Reid - Field Superintendent

Address: 1616 W Bender Blvd Hobbs, NM 88240

Telephone: 575-725-8497

E-mail: toby.reid@chk.com

OHSORE OIL & GAS ODER 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	SUB-SEA	KBTVD	MD
Rustler	2349	668	
Top of Salt	1905	1112	
Base of Salt	-562	3579	
Lamar	-769	3786	
Bell Canyon	-787	3804	
Cherry Canyon	-1646	4663	
Brushy Canyon	-3262	6279	
Bone Spring	-4609	7626	
Lateral TD	-5919	8936	13791

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
Water	Rustler	668
Oil/Gas	Brushy Canyon	6279
Oil/Gas	Bone Spring	7626

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

3. BOP EQUIPMENT

Will have a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified below. Surface casing and Intermediate Casing shoes will be tested to 10.5 ppg equivalent after drilling out 10' of new formation.

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

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

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

B. Frequency
1. All tests shall 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
(d) at least once every 30 days while drilling

C. Frequency
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 the rated working pressure.
7. A record of all pressures will be made on a pressure-recording chart.

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 Requency
1. The accumulator is to be tested each time the BO'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:

System Operating Pressure	Precharge Pressure
1500 psi	750 psi
2000 psi	1000 psi
3000 psi	1000 psi

3. Closing times for the annular preventer should be less than 20 seconds and for the ram-type preventers less than 10 seconds.
4. System recharge time should not exceed 10 minutes.

D. Test Procedure

1. Shut accumulator pumps off and record accumulator pressure.
2. In sequence, close the annular and one set of properly sized pipe rams, and open the HCR valve
3. Record time to close or open each element and the remaining accumulator pressure after each operation.
4. Record the remaining accumulator pressure at the end of the test sequence. Per the previous requirement, this pressure should not be less than the following pressures:

System Operating Pressure	Remaining Pressure After Test
1500 psi	950 psi
2000 psi	1200 psi
3000 psi	1200 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.

3. CASING PROGRAM

a. The proposed casing program will be as follows:

See COA

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	~~775~~ 900	17-1/2"	13-3/8"	48 #	H-40	STC	New
Shallow Intermediate	0'	~~3,700~~ 3615	11"	8-5/8"	32 #	J-55	LTC	New
Production	0'	13,791'	7-7/8"	5-1/2"	17.0 #	P-110	LTC	New

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

c. Casing Safety Factors

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension
Surface	1.36	2.2	2.43
Shallow Intermediate	2.13	1.58	2.08
Production	1.41	1.84	1.93

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
Burst Design			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg (packer at KOP) P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
Collapse Design			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
Tension Design			
100k lb overpull	X	X	X

5. **CEMENTING PROGRAM**

Slurry	Type	Top	Bottom	Weight	Yield	%Excess	Sacks
Surface				(ppg)	(sx/cu ft)	Open Hole	
Lead	C + 4% Gel	0'	675'	13.7	1.65	250	892
Tail	C	675'	~~775~~ 900	14.8	1.33	250	213
Intermediate							
Lead	TXI + 5% Salt	0'	3,200'	12	1.99	250	1270
Tail	50C/50Poz +5% Salt	3,200'	~~3,700'~~ 3845	14.2	1.37	250	336
Production							
Lead	35/65Poz H +8% Gel	3,200'	8,426'	12.4	2.21	75	689
Tail	50/50Poz H +2% Gel	8,426'	13,791'	14.5	1.31	75	1246

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. The production casing will be cemented in a single stage
4. Production casing will have one centralizer on every other joint from TD to KOP (horizontal type) and from KOP to intermediate casing (bowspring type).

Pilot Hole Plugging Plan: No Pilot hole

6. MUD PROGRAM

From	To	Type	Weight	F. Vis	Filtrate
0'	~~775'~~ 900	Spud Mud	8.4 - 8.7	32 - 34	NC - NC
~~775'~~	~~3,700'~~	Brine	9.5 - 10.1	28 - 29	NC - NC
~~3,700'~~ 3845	8,426'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC
8,426'	9,173'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC
9,173'	13,791'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC

A closed system will by 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

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.

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 be as follows:

TYPE	Logs	Interval	Timing	Vendor
OH	Triple Combo	Curve TD to Int Csg	After Curve	TBD
Mudlog	2 man	Int Csg to TD	Int Csg Drill Out	Nomac
	See COA			
LWD	MWD Gamma	Curve and Lateral	While Drilling	Phoenix

c. Core samples are not planned.
d. A Directional Survey will be run.

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

a. No abnormal pressures or temperatures are expected. Estimated BHP is: 3936 psi
b. Hydrogen sulfide gas is not anticipated.

Permian District

Poker Lake
PLU Pierce Canyon 4-25-30 USA 1H
Well #1

Wellbore #1

Plan: Plat

Standard Planning Report

23 August, 2012

EXHIBIT G

Chesapeake Operating
Planning Report

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well Well #1
Company:	Permian District	**TVD Reference:**	WELL @ 0.00ft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	WELL @ 0.00ft (Original Well Elev)
Site:	PLU Pierce Canyon 4-25-30 USA 1H	**North Reference:**	Grid
Well:	Well #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plat		

Project Poker Lake, Eddy County, NM

Map System:	US State Plane 1983	**System Datum:**	Ground Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site PLU Pierce Canyon 4-25-30 USA 1H

Site Position:		**Northing:**	424,631.00 usft	**Latitude:**	32.166575
From:	Map	**Easting:**	681,741.00 usft	**Longitude:**	-103.879581
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.24 °

Well Well #1

Well Position	**+N/-S**	0.00 ft	**Northing:**	424,631.00 usft	**Latitude:**	32.166575
	+E/-W	0.00 ft	**Easting:**	681,741.00 usft	**Longitude:**	-103.879581
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	0.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	6/15/2012	7.59	60.08	48,491

Design Plat

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	179.83

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,426.31	0.00	0.00	8,426.31	0.00	0.00	0.00	0.00	0.00	0.00	
9,172.97	89.60	179.83	8,903.76	-474.13	1.40	12.00	12.00	0.00	179.83	
13,790.99	89.60	179.83	8,936.00	-5,092.01	15.00	0.00	0.00	0.00	0.00	PC 4-25-30 1H- BH

Chesapeake Operating

Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	WELL @ 0.00ft (Original Well Elev)
Project:	Poker Lake	MD Reference:	WELL @ 0.00ft (Original Well Elev)
Site:	PLU Pierce Canyon 4-25-30 USA 1H	North Reference:	Grid
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plat		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well Well #1
Company:	Permian District	**TVD Reference:**	WELL @ 0.00ft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	WELL @ 0.00ft (Original Well Elev)
Site:	PLU Pierce Canyon 4-25-30 USA 1H	**North Reference:**	Grid
Well:	Well #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plat		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,426.31	0.00	0.00	8,426.31	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	8.84	179.83	8,499.71	-5.68	0.02	5.68	12.00	12.00	0.00
8,600.00	20.84	179.83	8,596.19	-31.25	0.09	31.25	12.00	12.00	0.00
8,700.00	32.84	179.83	8,685.26	-76.32	0.22	76.32	12.00	12.00	0.00
8,800.00	44.84	179.83	8,763.00	-138.92	0.41	138.92	12.00	12.00	0.00
8,900.00	56.84	179.83	8,826.03	-216.32	0.64	216.32	12.00	12.00	0.00
9,000.00	68.84	179.83	8,871.59	-305.14	0.90	305.14	12.00	12.00	0.00
9,100.00	80.84	179.83	8,897.69	-401.48	1.18	401.48	12.00	12.00	0.00
9,172.97	89.60	179.83	8,903.76	-474.13	1.40	474.13	12.00	12.00	0.00
9,200.00	89.60	179.83	8,903.95	-501.16	1.48	501.16	0.00	0.00	0.00
9,300.00	89.60	179.83	8,904.65	-601.15	1.77	601.15	0.00	0.00	0.00
9,400.00	89.60	179.83	8,905.35	-701.15	2.07	701.15	0.00	0.00	0.00
9,500.00	89.60	179.83	8,906.04	-801.15	2.36	801.15	0.00	0.00	0.00
9,600.00	89.60	179.83	8,906.74	-901.14	2.65	901.15	0.00	0.00	0.00
9,700.00	89.60	179.83	8,907.44	-1,001.14	2.95	1,001.15	0.00	0.00	0.00
9,800.00	89.60	179.83	8,908.14	-1,101.14	3.24	1,101.14	0.00	0.00	0.00
9,900.00	89.60	179.83	8,908.84	-1,201.14	3.54	1,201.14	0.00	0.00	0.00
10,000.00	89.60	179.83	8,909.53	-1,301.13	3.83	1,301.14	0.00	0.00	0.00
10,100.00	89.60	179.83	8,910.23	-1,401.13	4.13	1,401.14	0.00	0.00	0.00
10,200.00	89.60	179.83	8,910.93	-1,501.13	4.42	1,501.13	0.00	0.00	0.00
10,300.00	89.60	179.83	8,911.63	-1,601.12	4.72	1,601.13	0.00	0.00	0.00
10,400.00	89.60	179.83	8,912.33	-1,701.12	5.01	1,701.13	0.00	0.00	0.00
10,500.00	89.60	179.83	8,913.02	-1,801.12	5.31	1,801.13	0.00	0.00	0.00

Chesapeake Operating
Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	WELL @ 0.00ft (Original Well Elev)
Project:	Poker Lake	MD Reference:	WELL @ 0.00ft (Original Well Elev)
Site:	PLU Pierce Canyon 4-25-30 USA 1H	North Reference:	Grid
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plat		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,600.00	89.60	179.83	8,913.72	-1,901.12	5.60	1,901.12	0.00	0.00	0.00
10,700.00	89.60	179.83	8,914.42	-2,001.11	5.89	2,001.12	0.00	0.00	0.00
10,800.00	89.60	179.83	8,915.12	-2,101.11	6.19	2,101.12	0.00	0.00	0.00
10,900.00	89.60	179.83	8,915.82	-2,201.11	6.48	2,201.12	0.00	0.00	0.00
11,000.00	89.60	179.83	8,916.52	-2,301.10	6.78	2,301.11	0.00	0.00	0.00
11,100.00	89.60	179.83	8,917.21	-2,401.10	7.07	2,401.11	0.00	0.00	0.00
11,200.00	89.60	179.83	8,917.91	-2,501.10	7.37	2,501.11	0.00	0.00	0.00
11,300.00	89.60	179.83	8,918.61	-2,601.09	7.66	2,601.11	0.00	0.00	0.00
11,400.00	89.60	179.83	8,919.31	-2,701.09	7.96	2,701.10	0.00	0.00	0.00
11,500.00	89.60	179.83	8,920.01	-2,801.09	8.25	2,801.10	0.00	0.00	0.00
11,600.00	89.60	179.83	8,920.70	-2,901.09	8.55	2,901.10	0.00	0.00	0.00
11,700.00	89.60	179.83	8,921.40	-3,001.08	8.84	3,001.10	0.00	0.00	0.00
11,800.00	89.60	179.83	8,922.10	-3,101.08	9.14	3,101.09	0.00	0.00	0.00
11,900.00	89.60	179.83	8,922.80	-3,201.08	9.43	3,201.09	0.00	0.00	0.00
12,000.00	89.60	179.83	8,923.50	-3,301.07	9.72	3,301.09	0.00	0.00	0.00
12,100.00	89.60	179.83	8,924.19	-3,401.07	10.02	3,401.09	0.00	0.00	0.00
12,200.00	89.60	179.83	8,924.89	-3,501.07	10.31	3,501.08	0.00	0.00	0.00
12,300.00	89.60	179.83	8,925.59	-3,601.07	10.61	3,601.08	0.00	0.00	0.00
12,400.00	89.60	179.83	8,926.29	-3,701.06	10.90	3,701.08	0.00	0.00	0.00
12,500.00	89.60	179.83	8,926.99	-3,801.06	11.20	3,801.08	0.00	0.00	0.00
12,600.00	89.60	179.83	8,927.69	-3,901.06	11.49	3,901.07	0.00	0.00	0.00
12,700.00	89.60	179.83	8,928.38	-4,001.05	11.79	4,001.07	0.00	0.00	0.00
12,800.00	89.60	179.83	8,929.08	-4,101.05	12.08	4,101.07	0.00	0.00	0.00
12,900.00	89.60	179.83	8,929.78	-4,201.05	12.38	4,201.07	0.00	0.00	0.00
13,000.00	89.60	179.83	8,930.48	-4,301.05	12.67	4,301.06	0.00	0.00	0.00
13,100.00	89.60	179.83	8,931.18	-4,401.04	12.96	4,401.06	0.00	0.00	0.00
13,200.00	89.60	179.83	8,931.87	-4,501.04	13.26	4,501.06	0.00	0.00	0.00
13,300.00	89.60	179.83	8,932.57	-4,601.04	13.55	4,601.06	0.00	0.00	0.00
13,400.00	89.60	179.83	8,933.27	-4,701.03	13.85	4,701.06	0.00	0.00	0.00
13,500.00	89.60	179.83	8,933.97	-4,801.03	14.14	4,801.05	0.00	0.00	0.00
13,600.00	89.60	179.83	8,934.67	-4,901.03	14.44	4,901.05	0.00	0.00	0.00
13,700.00	89.60	179.83	8,935.36	-5,001.03	14.73	5,001.05	0.00	0.00	0.00
13,790.99	89.60	179.83	8,936.00	-5,092.01	15.00	5,092.03	0.00	0.00	0.00

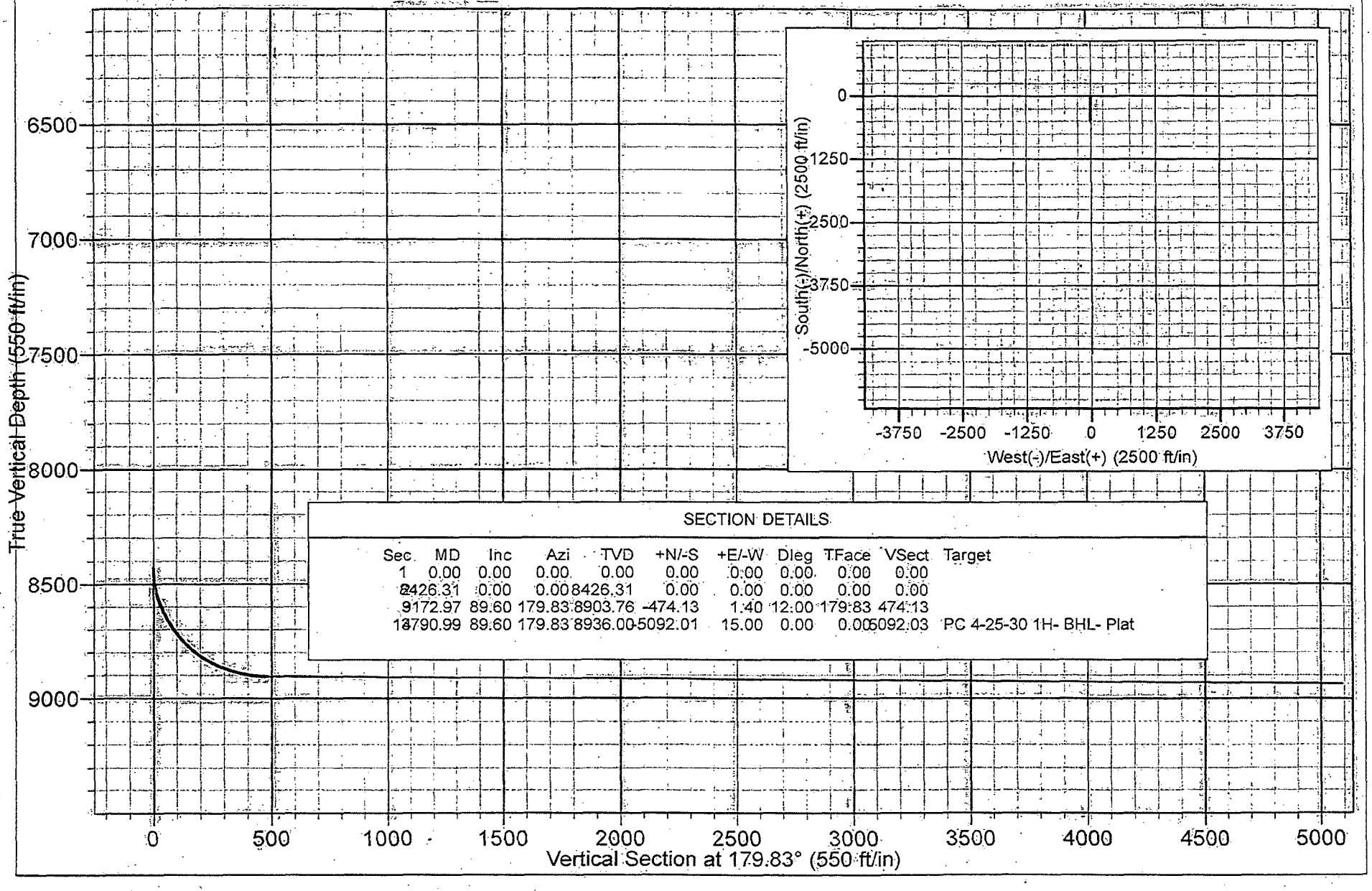
Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PC 4-25-30 1H- SHL - plan misses target center by 195.11ft at 8800.00ft MD (8763.00 TVD, -138.92 N, 0.41 E) - Point	0.00	0.00	8,900.00	0.00	0.00	424,631.00	681,741.00	32.166575	-103.879581
PC 4-25-30 1H- BHL - plan hits target center - Point	0.00	0.00	8,936.00	-5,092.01	15.00	419,539.00	681,756.00	32.152578	-103.879602

Project: Poker Lake
Site: PLU Pierce Canyon 4-25-30 USA 1H
Well: Well #1
Wellbore: Wellbore #1
Design: Plat

PROJECT DETAILS: Poker Lake

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	8426.31	0.00	0.00	8426.31	0.00	0.00	0.00	0.00	0.00	
3	9172.97	89.60	179.83	8903.76	-474.13	1.40	12.00	179.83	474.13	
4	18790.99	89.60	179.83	8936.00	-5092.01	15.00	0.00	0.00	5092.03	PC 4-25-30 1H- BHL- Plat

Chesapeake ENERGY

Drilling Engineer: Chris Gray
Superintendent: Daniel Gipson
Geologist: Jakob Wartman

Well Name:	PLU Pierce Cayon 4-25-30 USA 1H
Target:	
County, State:	Eddy, NM
Surface Location:	150' FNL 660' FEL, Section 4, Township 25S, Range 30E
BH Location:	100' FSL 660' FEL, Section 4, Township 25S, Range 30E

SHL Latitude:	32.166575	SHL North:	424631
SHL Longitude:	-103.878582	SHL East:	681741
BHL Latitude:	32.152578	BHL North:	419539
BHL Longitude:	-103.879601	BHL East:	681756
Coordinates:	NAD83	Coordinates:	NME

Drilling Rig:	Trinidad 110
Directional:	Phoenix
Drilling Mud:	Nova
Cement:	Schlumberger
Wellhead:	Sunbelt
Property Number:	
AFE Number:	

KB Elevation: 3,317' KB: 17'
Ground Elevation: 3,300'

Conductor
OD: 20" Hole Size: 30"
Wt: Setting Depth: 120'

Surface Casing
OD: 13 3/8"
Wt: 48.#
Grd: H-40 Hole Size: 17 1/2"
Con: STC Setting Depth: ~~270~~

See COA

Intermediate
OD: 8 5/8"
Wt: 32.#
Grd: J-55 Hole Size: 11"
Con: LTC Setting Depth: ~~3,786~~

See COA

Hole Size: 7 7/8"

668'	Rustler
3,579'	Base of Halite
3,786'	Lamar
3,804'	Bell Canyon
4,663'	Cherry Canyon
6,279'	Brushy Canyon
7,626'	Bone Spring

Hole Size: 7 7/8"

Hole Size: 7 7/8"

Production Casing
OD: 5 1/2"
Wt: 17.#
Grd: P-110
Con: LTC
Setting Depth: 13,791'

Wellhead Equipment

A Section	13-3/8" x 13-5/8" 5K SOW
B Section	13-5/8" x 11" 5K
C Section	11" 5K X 7-1/16" 10K w/10k gate valve
D Section	N/A
Required BOP Stack	11" 5K- Double, Annular, Rot Head w/orbit valve

Mud

Depth	Type	Weight	F. Vis.	FL
0' - 775'	Spud Mud	8.4 - 8.7	32 - 34	NC - NC
775' - 3,700'	Brine	9.5 - 10.1	28 - 29	NC - NC
3,700' - 8,426'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC
8,426' - 9,173'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC
9,173' - 13,791'	FW/Cut Brine	8.3 - 9.5	28 - 29	NC - NC

Cement

Slurry	Top	Btm	Wt	Yld	%Exc	Bbl	Sx
Surface							
Lead	0'	675'	13.7	1.65	250	202	892
Tail	675'	775'	14.8	1.33	250	50	213
Intermediate							
Lead	0'	3,200'	12.0	1.99	250	450	1270
Tail	3,200'	3,700'	14.2	1.37	250	82	336
Production							
Lead	3,200'	8,426'	12.4	2.21	75	271	689
Tail	8,426'	13,791'	14.5	1.31	75	291	1246

Directional Plan

Target Line:	8900' @ 0° VS w/89.6 deg inclination
Target Window:	20' above, 20' below, 50' left, 50' right

	MD	INC	AZM	TVD	VS	DLS
KOP	8,426'	0.00	0.00	8,426'	0'	0.00
EOB	9,173'	89.60	179.83	8,904'	474'	12.00
TD	13,791'	89.60	179.83	8,936'	5,092'	0.00

Hardlines: Lateral- 330' from parallel lease lines.
Vertical- Actual Lease Lines

Notes: Please note SHL and BHL distance from lease lines

LOGS

Type	Logs	Interval	Vendor
OH	Triple Combo	Curve TD to Int Csg	TBD
Mudlog	2 man	Int Csg to TD	Nomac
LWD	MWD Gamma	Curve and Lateral	Phoenix

Chesapeake Minimum BOPE Requirements

Wellname: PLU Pierce Cayon 4-25-30 USA 1H
Operation: Intermediate and Production Hole Sections

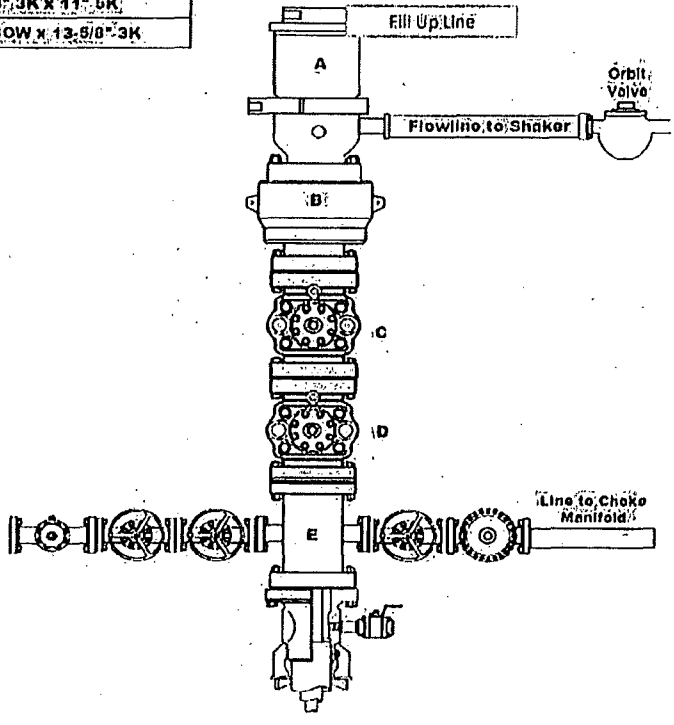
BLOWOUT PREVENTOR SCHEMATIC
CHESAPEAKE OPERATING INC
Permian District-Minimum Requirements

FIELD : Avalon

OPERATION: Intermediate and Production Hole Sections

	SIZE	PRESSURE	DESCRIPTION
A		600	Rotating Head
B	13 5/8"	5,000	Annular
C	13 5/8"	5,000	Pipe Ram
D	13 5/8"	5,000	Blind Ram
E	13 5/8"	5,000	Mud Cross
F			
DSA		As required for each hole size	
C-Sec			
B-Sec		13-5/8" 3K x 11" 5K	
A-Sec		13-3/8" SOW x 13-5/8" 3K	

Test Notes:
- Pressure test to rating of BOP or wellhead every 21 days.
- Function test on trips
- H2S service trim required



Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	5,000	Check Valve
2"	5,000	Gate Valve
2"	5,000	Gate Valve

Choke Line

SIZE	PRESSURE	DESCRIPTION
3"	5,000	Gate Valve
3"	5,000	HCR Valve
3"	5,000	Steel Line Only

EXHIBIT P1

Chesapeake Minimum BOPE Requirements

Wellname: PLU Pierce Cayon 4-25-30 USA 1H

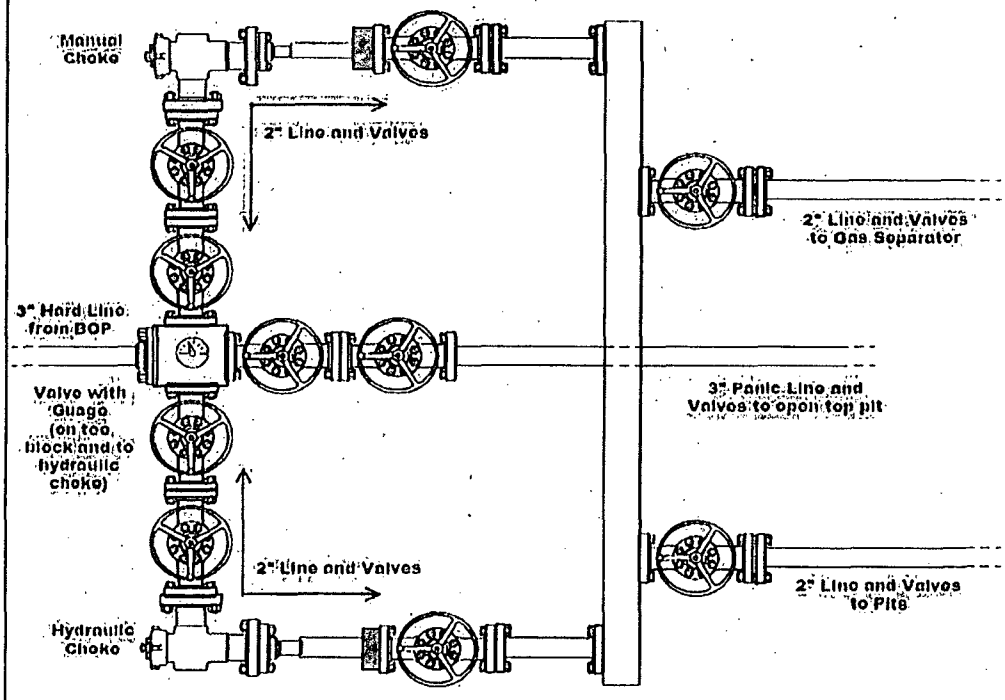
Operation: Intermediate and Production Hole Sections

CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING INC

Permian District

Avalon Minimum Requirements



Choke Manifold

SIZE	PRESSURE	DESCRIPTION
2" or 3"	5,000	Gate Valves
3"x15'		Gas Separator
8"		Gas Separator vent line (anchored)

EXHIBIT F2

Chesapeake Operating, Inc.'s Closed Loop System
PLU BIG SINKS 4 25 31 USA 1H
Unit A, Sec.4, T-25-S R-31-E
Eddy Co., NM
API # TBD

Chesapeake Operating, Inc. (COI) is to use a closed loop system with roll-off steel pits for the maintenance of the drilling mud fluids and drill cuttings. COI will maintain all solids and liquids within the closed loop system in a safe manner in order to protect public health and the environment.

Operations & Maintenance:

During each tour, the rig's drilling crew will inspect and monitor the drilling fluids contained within the steel pits and visually monitor any spill which may occur. Should a spill, release, or leak occur; the NMOCD District II office in Artesia (575-748-1283) will be notified. Please note that notifications may be made earlier to the district office should a greater release occur per NMOCD's rules.

Closure:

During and after drilling operations, drilling fluids and cuttings will be hauled to Controlled Recovery, Inc. Permit # NM-01-0006.

The alternative disposal facility will be Sundance Disposal. Permit # NM-01-0003

EXHIBIT D

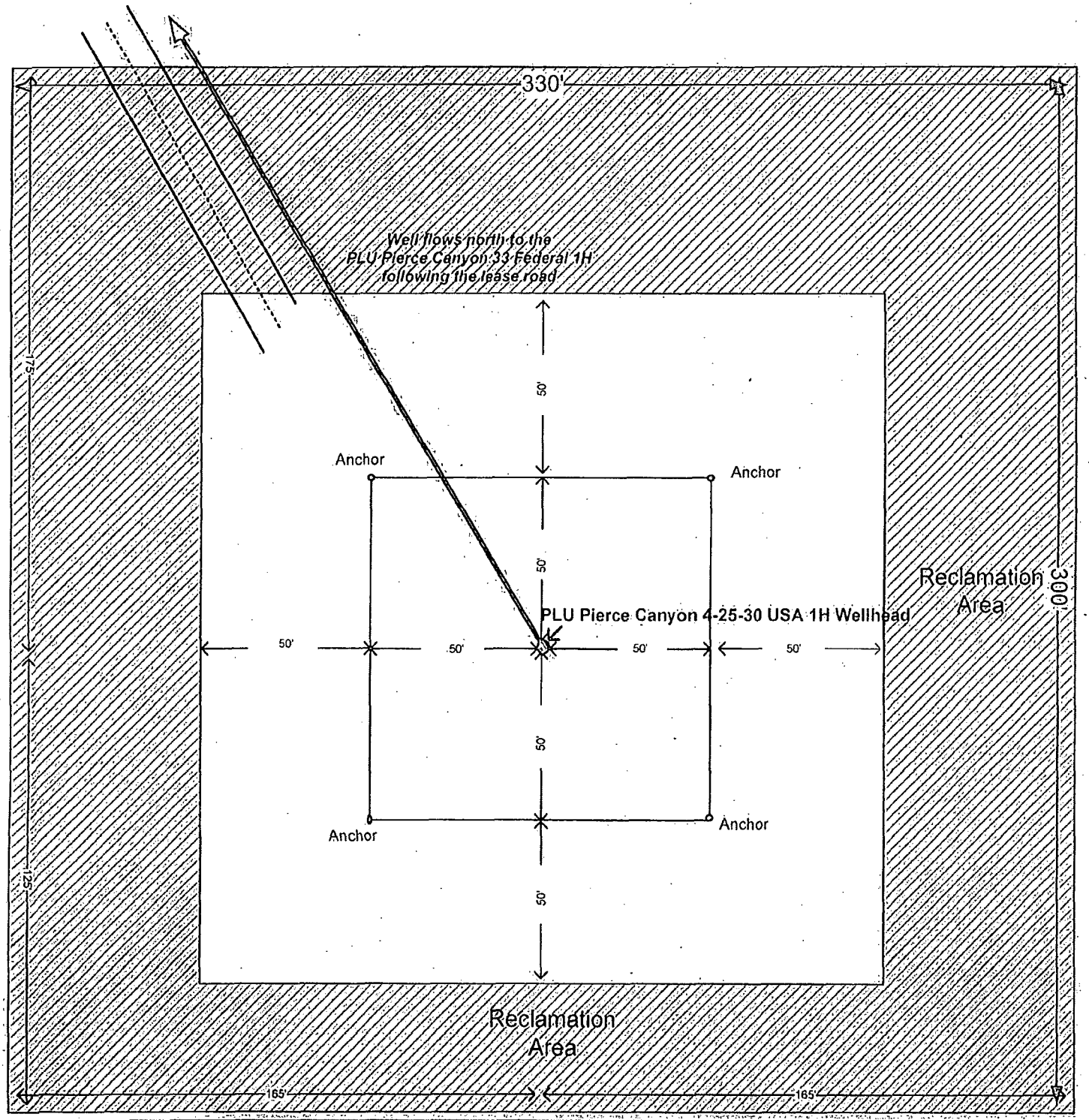
Trinidad

PLU Pierce Canyon 4-25-30 USA 1H

Chesapeake Energy

PLU Pierce Canyon 4-25-30 USA 1H

Property Number: 645564 Pad Site Number: 919990
Section 4 – T25S – R30E 150' FNL & 660' FEL
NAD 27 Lat.: 32.1665 – Long.: 103.8791
Eddy County, New Mexico



Drawing not to scale	This lease is subject to Chesapeake's Site Security Plan located at 6100 N. Western Oklahoma City, OK 73118	Prepared by: Donny Lowry Date: 6/15/2012

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CHESAPKEAKE OPERATING
LEASE NO.:	LC061616A
WELL NAME & NO.:	1H-PLU PIERCE CANYON 4 25 30 USA
SURFACE HOLE FOOTAGE:	150'/N. & 660'/E.
BOTTOM HOLE FOOTAGE	100'/S. & 660'/E.
LOCATION:	Section 21, T. 25 S., R30 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 4 inches in depth. The topsoil will be used for interim and final reclamation.

There is no measurable soil on this well pad to stockpile. No topsoil stockpile is required.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

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

F. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) 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.

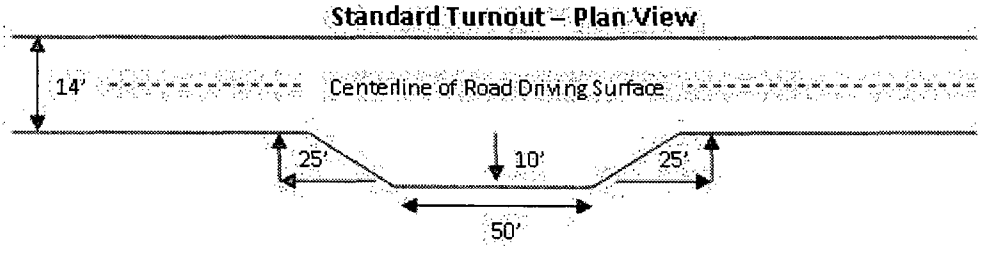
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

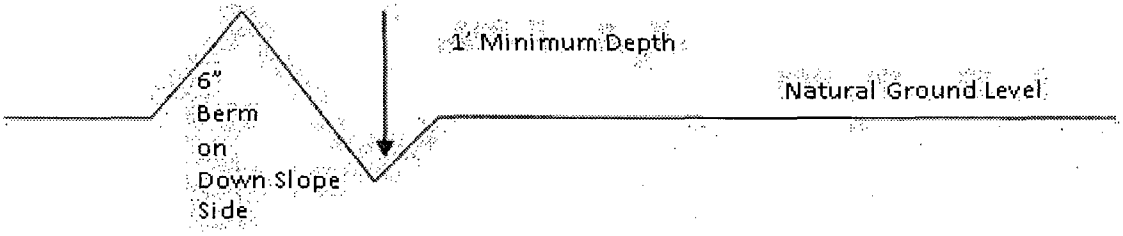
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ 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

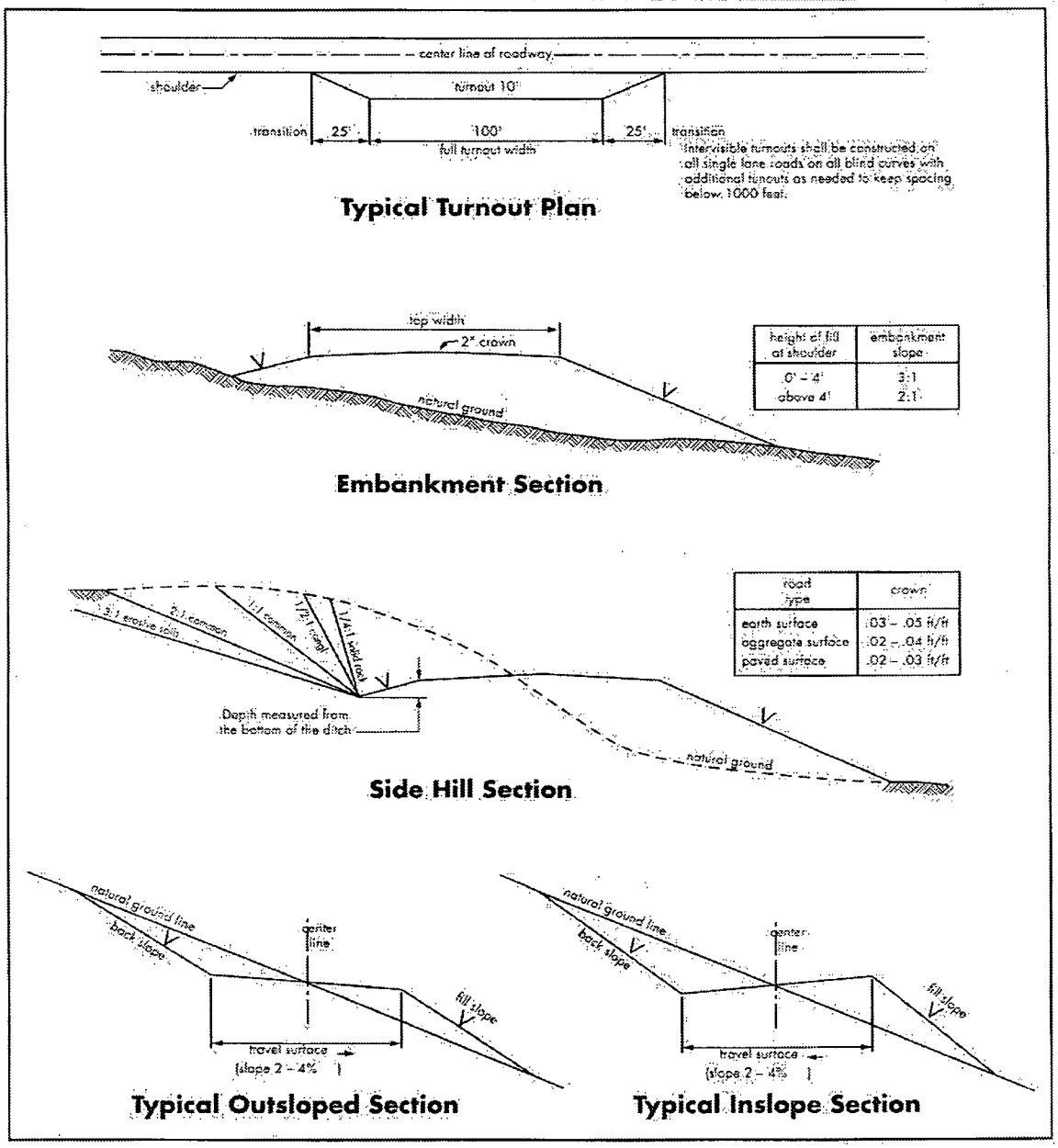
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#).

Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

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

Medium cave/karst
Possible water flows in the Castile, Salado, Delaware and Bone Springs Groups
Possible lost circulation in the Delaware and Bone Spring formations

1. The **13-3/8** inch surface casing shall be set at **approximately 900 feet (below the Magenta Dolomite member of the Rustler Anhydrite and above the salt)** 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 surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is: **(Set casing in the Lamar at approximately 3845')**

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

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

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

3. The minimum required fill of cement behind the **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.

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 5000 (5M) psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

   a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

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

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

d. 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.**

e. 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.

E. WASTE MATERIAL AND FLUIDS

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

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

CRW 021413

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 (not applied for in APD)

C. ELECTRIC LINES (not applied for in APD)

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture for LPC Sand/Shinnery 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:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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