ATS 10-325

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-Artesia
RECEIVED
APR 23 2010
NMOCD ARTESIA

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMLC070341

6. If Indian, Allottee or Tribe Name:

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

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

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

8. Lease Name and Well No.: PLU ROSS RANCH 19 FEDERAL 1H

2. Name of Operator: CHESAPEAKE AGENT FOR BOPCO — Contact: LINDA GOOD — E-Mail: linda good@chk com

9. API Well No.: 30-015-37800

3a. Address: P.O. BOX 18496, OKLAHOMA CITY, OK 73154-0496

3b. Phone No. (include area code): Ph: 405-935-4275

10. Field and Pool, or Exploratory: WILDCAT BONE SPRING

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

At surface: SESE 100FSL ~~400~~ 475FEL

At proposed prod. zone: NENE ~~330~~ 350FNL 400FEL

11. Sec., T., R., M., or Blk. and Survey or Area: Sec 19 T25S R30E Mer NMP

14. Distance in miles and direction from nearest town or post office*: 24.5 MILES ESE OF MALAGA, NEW MEXICO

12. County or Parish: EDDY

13. State: 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: 641.58

17. Spacing Unit dedicated to this well: 160.00

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

19. Proposed Depth: ~~12673~~ MD 12802 RGH 4/14/10; ~~7996~~ TVD 8115

20. BLM/BIA Bond No. on file: NM2634

21. Elevations (Show whether DF, KB, RT, GL, etc.): 3180 GL

22. Approximate date work will start

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	Name (Printed/Typed)	Date
(Electronic Submission)	LINDA GOOD Ph: 405-935-4275	03/01/2010

Title: SR. REGULATORY COMPLIANCE SPEC

Approved by (Signature)	Name (Printed/Typed)	Date
/s/ Don Peterson		APR 21 2010
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)

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Electronic Submission #82062 verified by the BLM Well Information System
For CHESAPEAKE AGENT FOR BOPCO, sent to the Carlsbad

CARLSBAD CONTROLLED WATER BASIN

Approval Subject to General Requirements & Special Stipulations Attached

Witness Surface & Intermediate Casing

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

Additional Operator Remarks:

CHESAPEAKE OPERATING, INC. (ACTING AS AGENT FOR BOPCO), RESPECTFULLY REQUESTS PERMISSION TO DRILL A WELL TO 12,673? TO TEST THE BONE SPRING FORMATION. IF PRODUCTIVE, CASING WILL BE RUN AND THE WELL COMPLETED. IF DRY, THE WELL WILL BE PLUGGED AND ABANDONED AS PER BLM AND NEW MEXICO OIL CONSERVATION DIVISION REQUIREMENTS.

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

ATTACHED ARE THE EXHIBIT A-1 TO A-4 SURVEY PLATS. EXHIBIT B 1 MILE RADIUS PLAT, EXHIBIT C PRODUCTION FACILITY, EXHIBIT D LATSHAW RIG #6 LAYOUT. EXHIBIT F-1 TO F-2 BOP & CHOKE MANIFOLD AND EXHIBIT G DIRECTIONAL DRILL PLAN.

EXHIBIT E ARCHAEOLOGICAL SURVEY WILL BE DELIVERED TO THE BLM WHEN COMPLETED

CHESAPEAKE OPERATING, INC. HAS AN AGREEMENT WITH THE SURFACE OWNER.

~~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 631342)

Approved as Agent only

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised October 15, 2009

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-37806		Wildcat; Bone Spring

Property Code	Property Name	Well Number
38141	PLU ROSS RANCH "19" FEDERAL	1H

OGRID No.	Operator Name	Elevation
147179	CHESAPEAKE OPERATING CO.	3182'

Surface Location

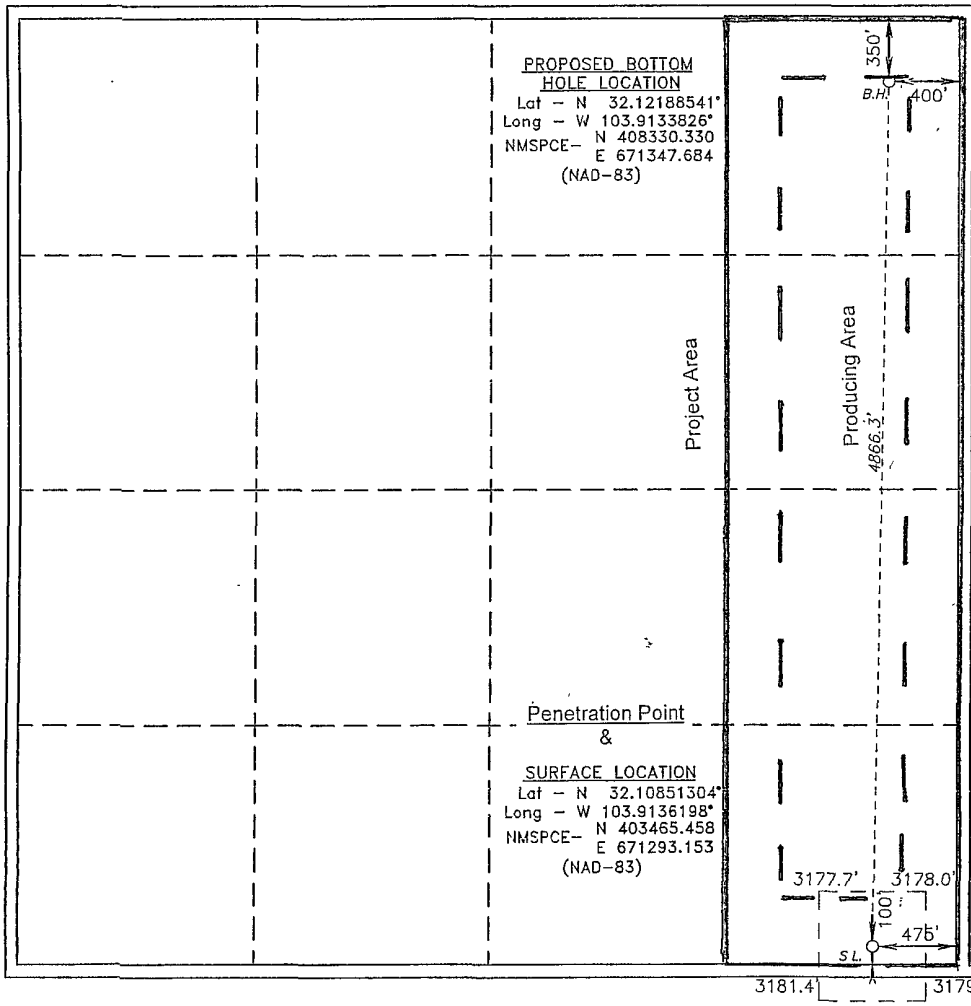
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	19	25 S	30 E		100	SOUTH	475	EAST	EDDY

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
A	19	25 S	30 E		350	NORTH	400	EAST	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



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 3/23/2010 Date

Bryan Arrant
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 supervison, and that the same is true and correct to the best of my belief.

MARCH 24, 2010
Date Surveyed

Signature & Seal of Professional Surveyor

NEW MEXICO 7977 REGISTERED PROFESSIONAL SURVEYOR

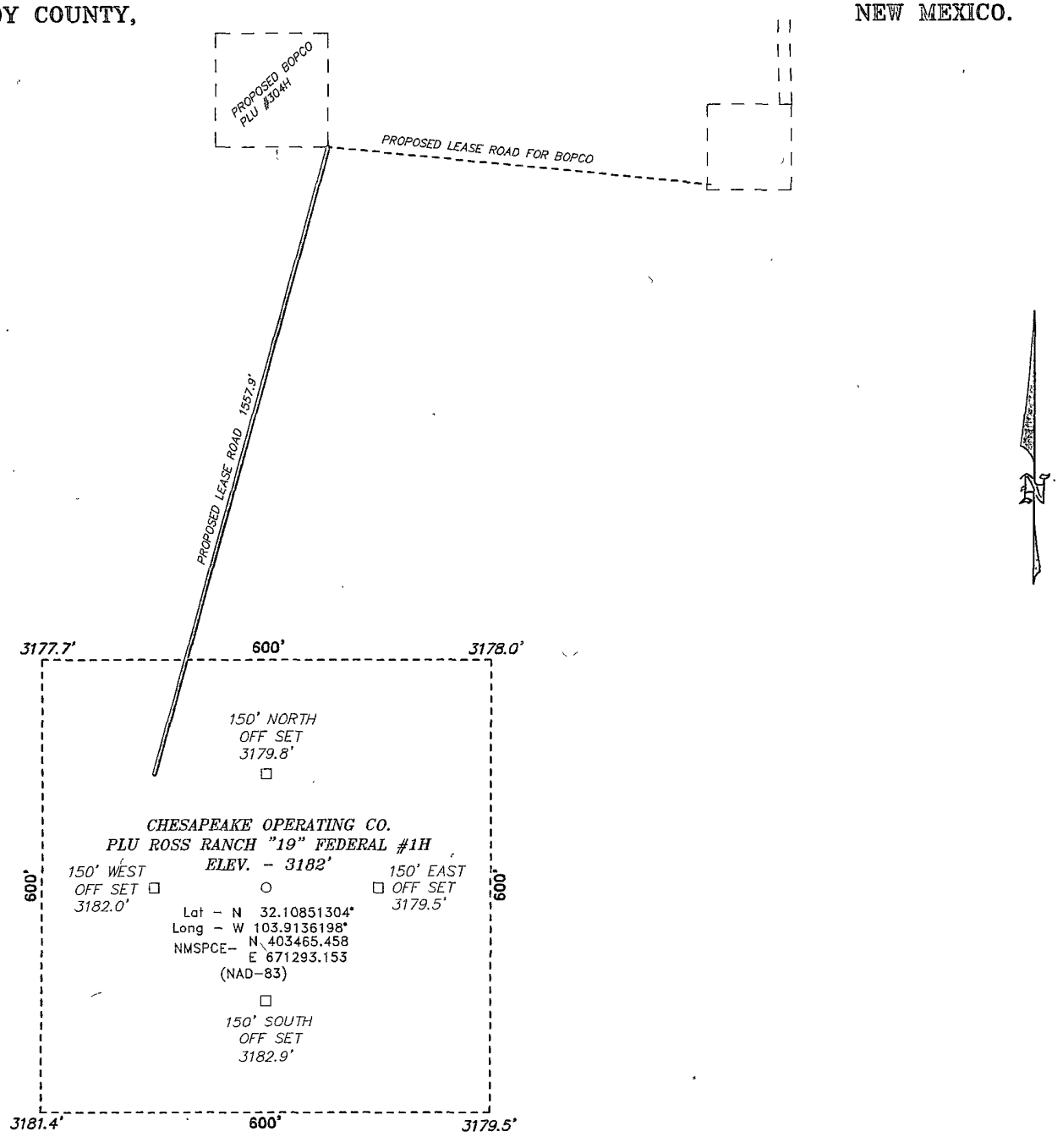
Certificate No. Gary L. Jones 7977

BASIN SURVEYS

Revised
EXHIBIT A-1

SECTION 19, TOWNSHIP 25 SOUTH, RANGE 30 EAST, N.M.P.M.,

EDDY COUNTY, **NEW MEXICO.**



Directions to Location:

FROM THE JUNCTION OF TWIN WELLS AND McDONALD, GO SOUTHWEST 2.0 MILES TO LEASE ROAD, ON LEASE ROAD GO SOUTHWEST 4.8 MILES TO LEASE ROAD, ON LEASE ROAD GO SOUTH 0.7 MILES TO PROPOSED LEASE ROAD FOR THE JRU 304H, FOLLOW PROPOSED LEASE ROAD GO PROPOSED BOPCO WELL AND PROPOSED LEASE ROAD.

CHESAPEAKE OPERATING CO.

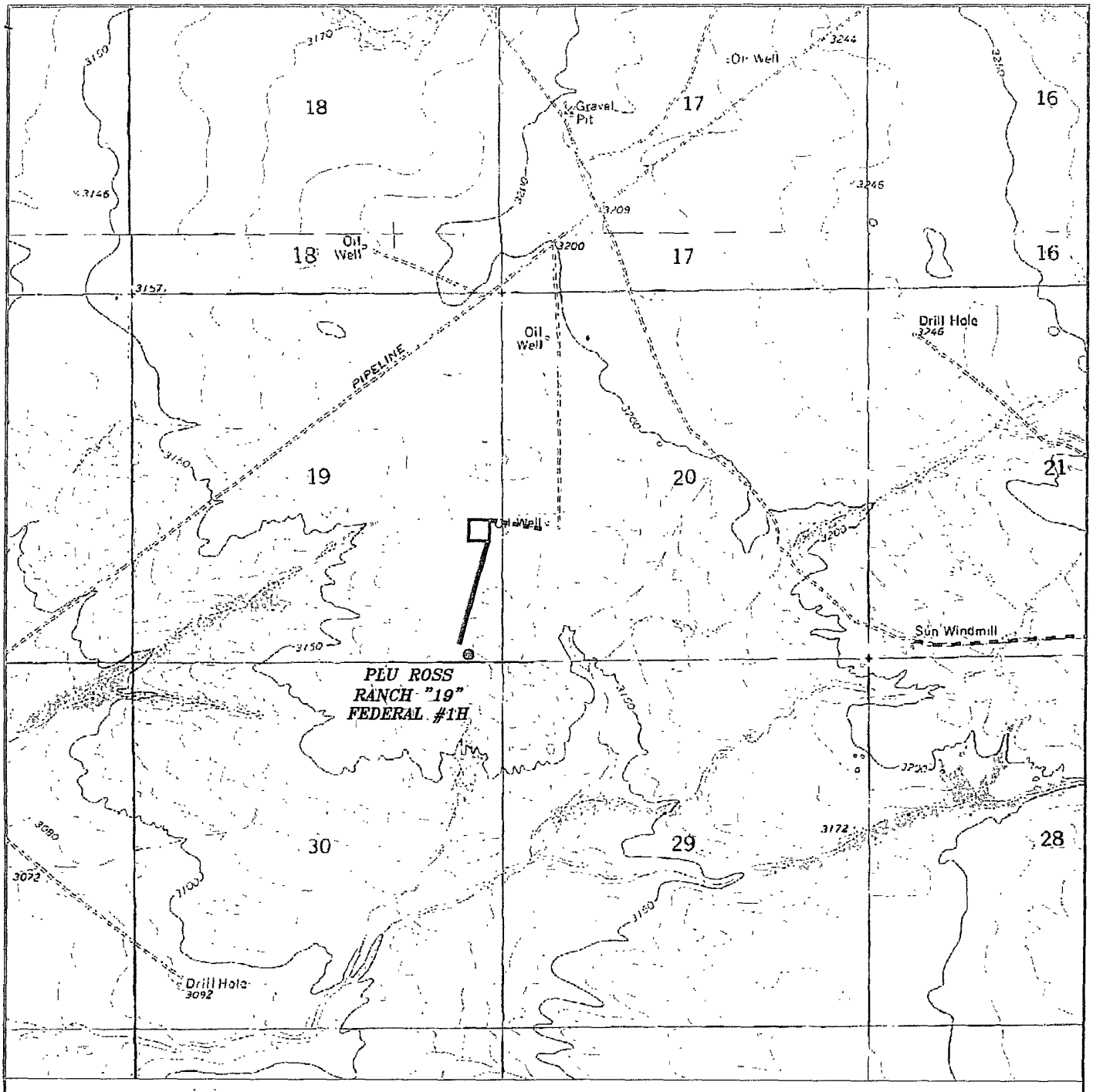
REF: PLU ROSS RANCH "19" FEDERAL #1H / WELL PAD TOPO

THE PLU ROSS RANCH "19" FEDERAL #1H LOCATED 100' FROM THE SOUTH LINE AND 475' FROM THE EAST LINE OF SECTION 19, TOWNSHIP 25 SOUTH, RANGE 30 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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

W.O. Number: 22489	Drawn By: J. SMALL		
Date: 03-23-2010	Disk: JMS 22489	Survey Date: 03-22-2010	Sheet 1 of 1 Sheets

Revised EXHIBIT A-2



PLU ROSS RANCH "19" FEDERAL #1H
Located 100' FSL and 475' FEL
Section 19, Township 25 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

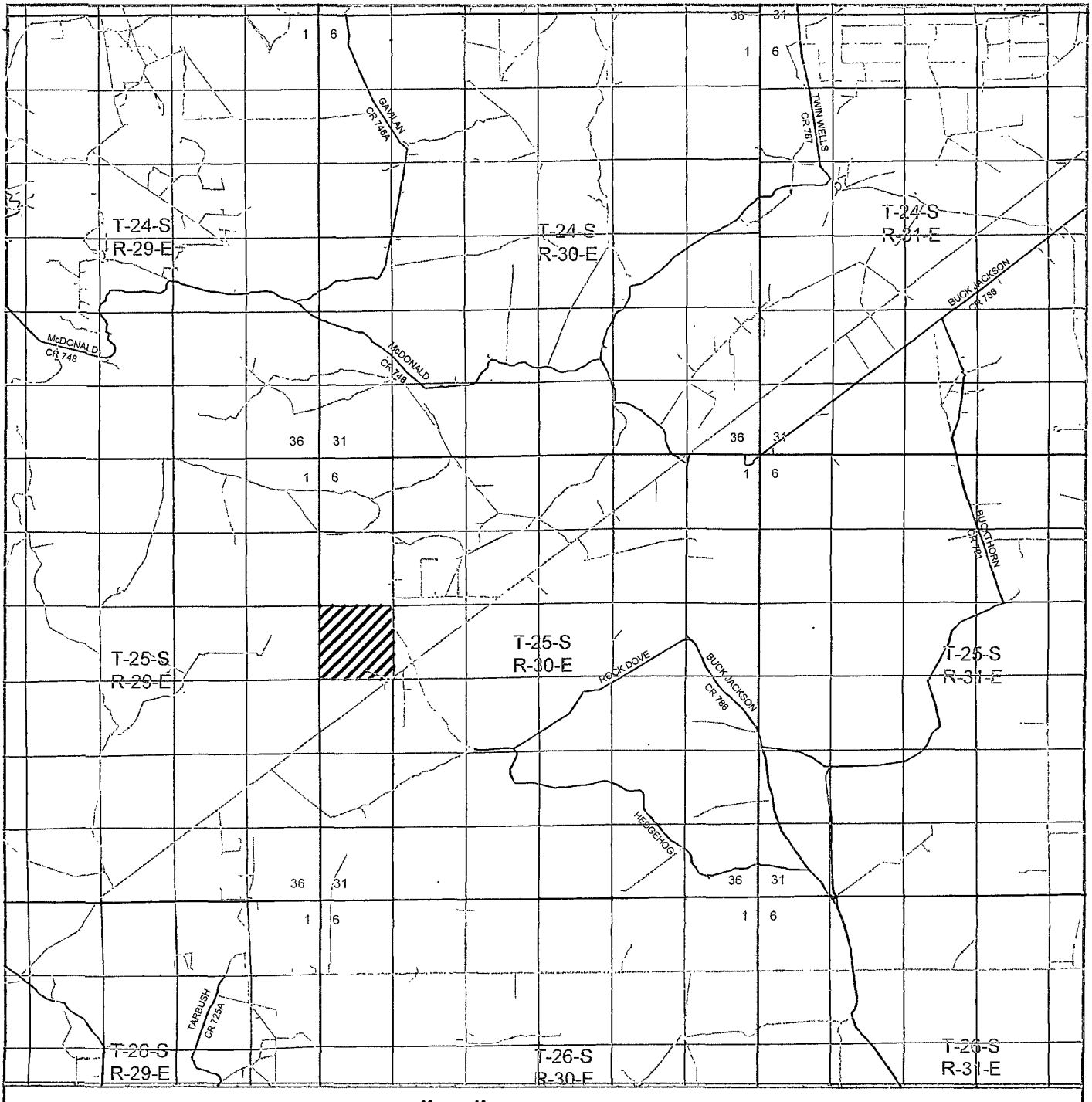
Basin Surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number:	JMS 22489
Survey Date:	03-22-2010
Scale:	1" = 2000'
Date:	03-23-2010

N

CHESAPEAKE OPERATING CO.

Revised
EXHIBIT A-3



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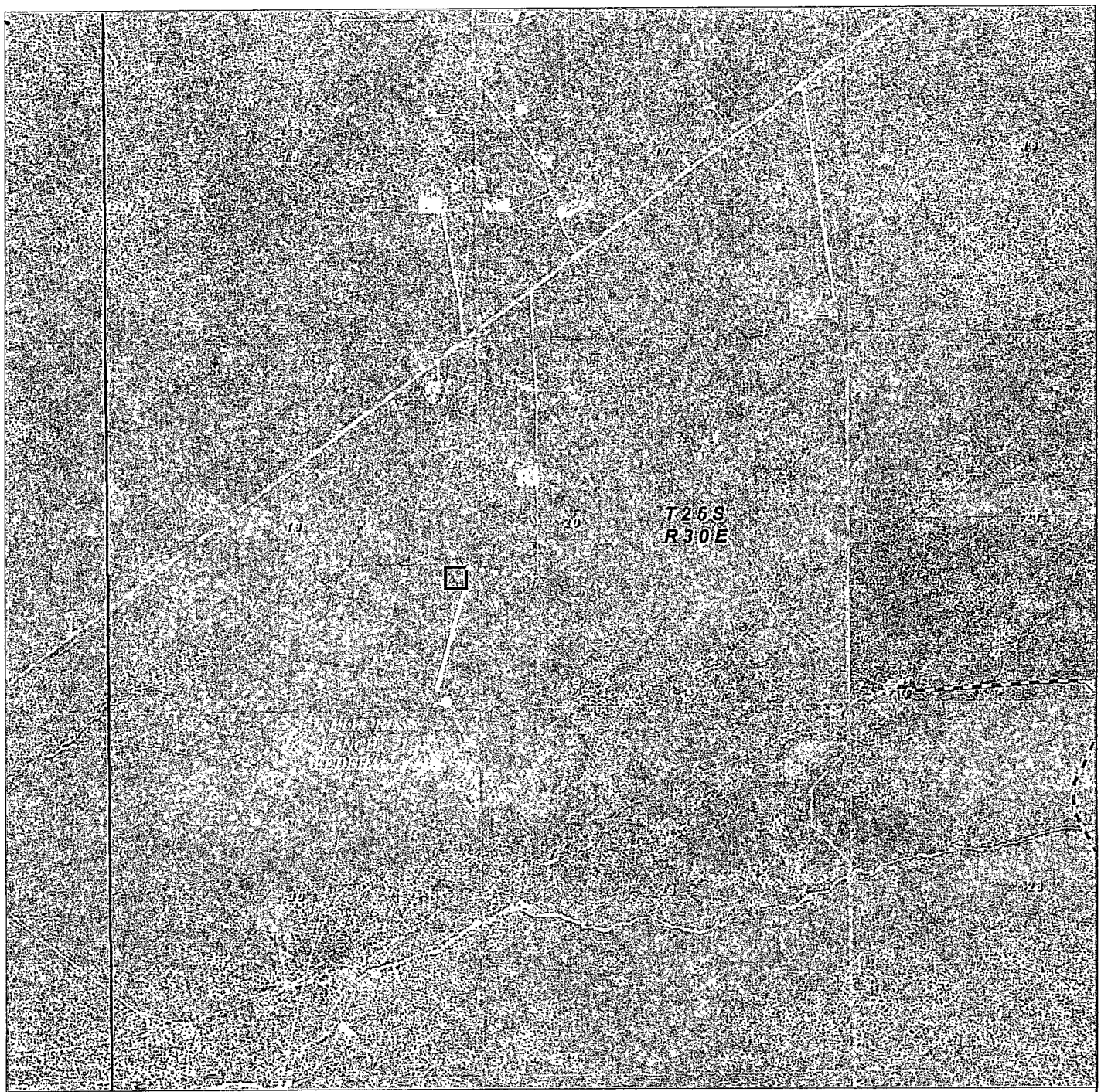
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number:	JMS 22489
Survey Date:	03-22-2010
Scale:	1" = 2 Miles
Date:	03-23-2010

N

CHESAPEAKE OPERATING CO.

Revised
EXHIBIT A-4



PLU ROSS RANCH "19" FEDERAL #1H
Located 100' FSL and 475' FEL
Section 19, Township 25 South, Range 30 East,
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basinsurveys.com

W.O. Number: JMS 22489

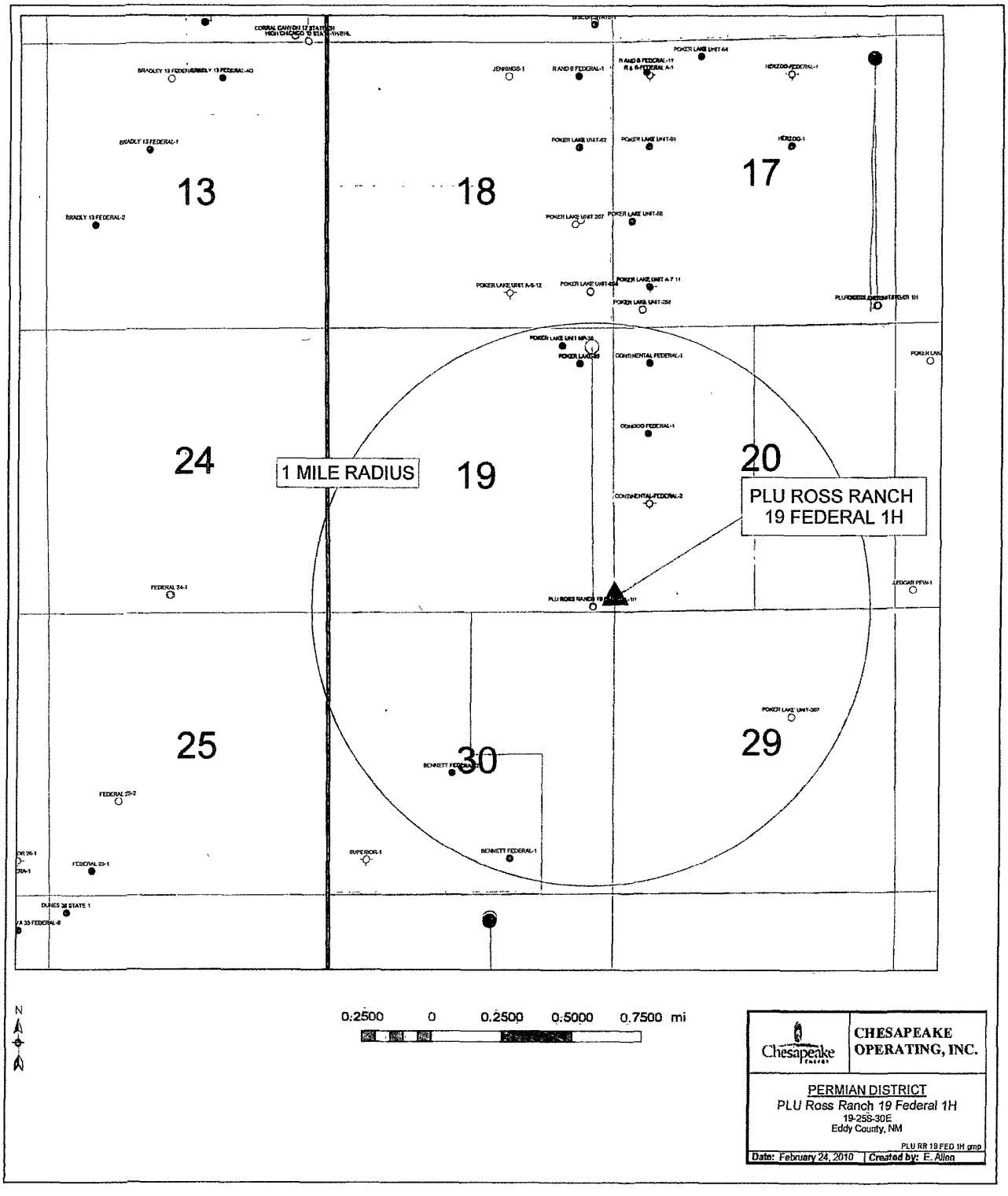
Scale: 1" = 2000'

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

N

CHESAPEAKE OPERATING CO.

Revised
EXHIBIT A-5


13
18
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1 MILE RADIUS
PLU ROSS RANCH
19 FEDERAL 1H
N
0.2500 0 0.2500 0.5000 0.7500 mi
Chesapeake
CHESAPEAKE
OPERATING, INC.
PERMIAN DISTRICT
PLU Ross Ranch 19 Federal 1H
19-25S-30E
Eddy County, NM
PLU RR 19 FED 1H.gmp
Date: February 24, 2010
Created by: E. Allen

EXHIBIT B

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
Base of Salt	-405'	3,605'
Bell Canyon	-449'	3,649'
Brushy Canyon	-2,880'	6,080'
Lower Brushy Canyon	-3,954'	7,154'
Bone Spring Lime	-4,203'	7,403'
Total Depth:	**12,829' MD**	

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

not listed

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:

4/16/10

Substance	Formation	Depth
Oil/Gas	Bell Canyon	3,649'
Oil/Gas	Bone Spring	7,633'

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; this system will be tested to 5000 psi working pressure and 3500 psi working pressure for the annular preventer.

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-2.

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

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

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

D. Test Duration
1. In each case, the individual components should be monitored for leaks for **10 minutes,** with no observable pressure decline, once the test pressure as been applied.

II. Accumulator Performance Test

A. Scope

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

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

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

2. Minimum precharge pressures for the various accumulator systems per **manufacturers recommended specifications** are as follows:
3.

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

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

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

D. Test Procedure
1. Shut accumulator pumps off and record accumulator pressure.

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

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

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

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

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

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

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

4. CASING PROGRAM

a. The proposed casing program will be as follows:

Purpose	Interval	Hole Size	Casing Size	Weight	Grade	Thread	Condition
Surface	Surface – 700'	17-1/2"	13-3/8"	48.0#	H-40	STC	New
Intermediate	Surface – 3630'	11"	8-5/8"	32.0#	J-55	LTC	New
Production	Surface – 12,802'	7-7/8"	5-1/2"	20.0#	L-80	LTC	New

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

See COA

c. Casing Safety Factors:

13-3/8" Surface Casing: SFb = 1.7, SFc = 1.66 and SFt = 2.49
8-5/8" Intermediate Casing: SFb = 1.8, SFc = 2.51 and SFt = 1.98
5-1/2" Production Casing: SFb = 1.30, SFc = 2.39 and SFt = 1.37

d. The cementing program will be as follows:

5. Cementing Program

Interval	Type	Weight	Amount	Yield	Top Of Cement	Excess
Surface	Single Slurry	13.5 ppg	760 sks	1.73	Surface	150%
Intermediate	Lead:	10.2 ppg	700 sks	2.32	Surface	150%
	Tail:	14.2 ppg	440 sks	1.37		100%
Production 1st Stage	Lead	12.0 ppg	146 sks	1.83	4,100 DV Tool	40%
	Tail	13.2 ppg	788 sks	1.74		
Production 2nd Stage	Lead:	10.2 ppg	114 sks	2.17	3,100	200%
	Tail:	14.2 ppg	100 sks	1.33		

See COA

Final cement volumes will be determined by caliper.
Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.

Pilot Hole Plugging Plan:

No pilot hole planned

6. MUD PROGRAM

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

Interval	Mud Type	Mud Weight	Viscosity	Fluid Loss
0' – 700'	FW/Gel	8.4 – 8.7	32-34	NC
700' – 3,630'	Brine	9.9 – 10.1	28-30	NC
3,630' – 7,600'	FW/Cut Brine	8.4 – 8.5	28-29	NC
7,600'-TD	FW/Cut Brine	8.8-9.5	34-38	10-25

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

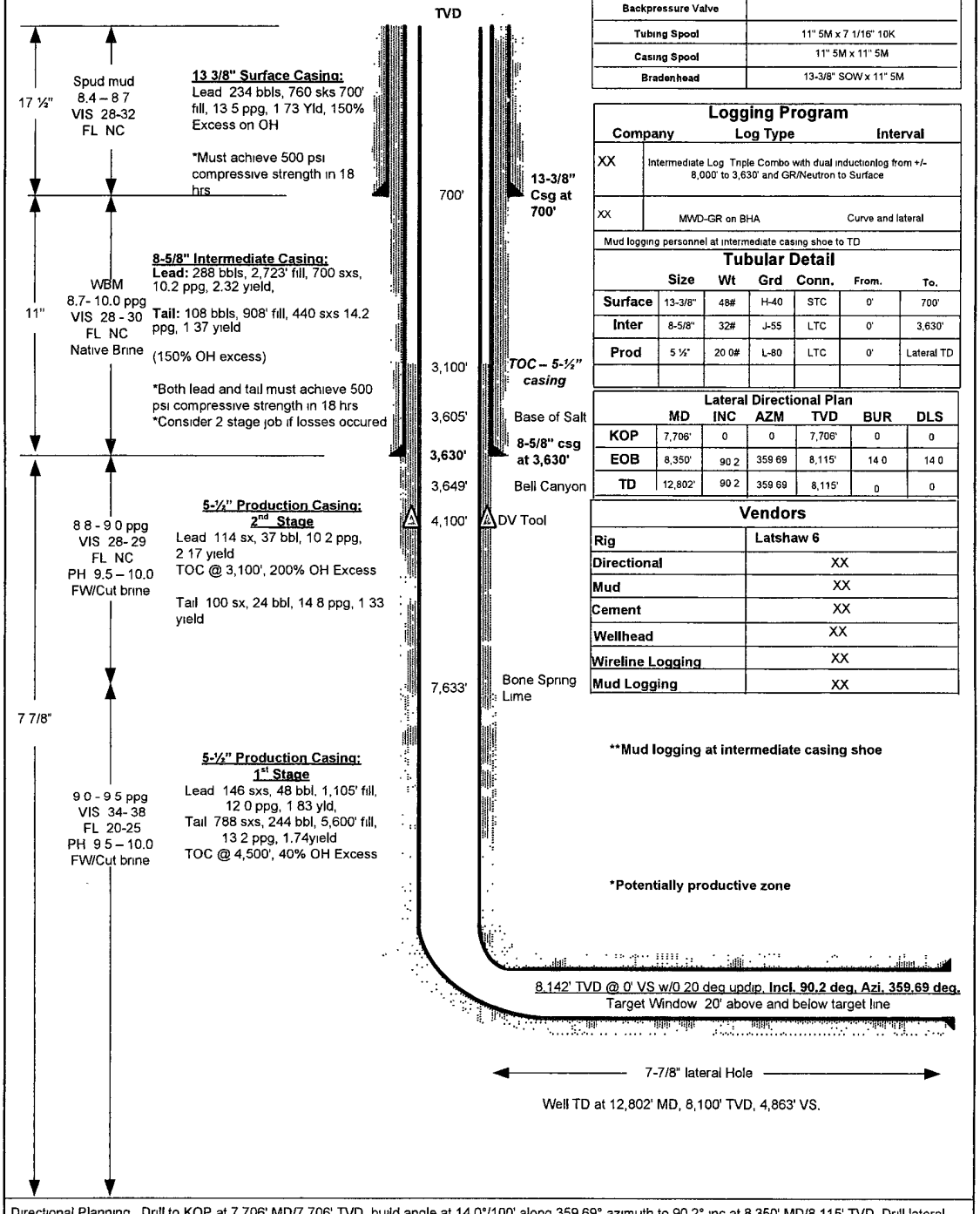
7. TESTING, LOGGING AND CORING
The anticipated type and amount of testing, logging and coring are as follows:

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

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE
   a. The estimated bottom hole pressure is 3700 psi.
   b. No abnormal pressures or temperatures are anticipated.

Chesapeake Operating Inc	Proposed Drilling Program

Well : **PLU Ross Ranch 19 Fed #1H**
Field : **Delaware Basin North**
County : **Eddy** **State : NM**
Surf Locat : **Section 19-25S-30E, 100' FSL & 400' FEL Lat: 32.108353 Long: -103.912838**
BH Locat : **Section 19-25S-30E, 350' FNL & 400' FEL Lat: 32.121720 Long: -103.912922**
KB Elev : **3,200'** **Grd Elev : 3,180'**



Wellhead Equipment

Tree Connection	
Backpressure Valve	
Tubing Spool	11" 5M x 7 1/16" 10K
Casing Spool	11" 5M x 11" 5M
Bradenhead	13-3/8" SOW x 11" 5M

Logging Program

Company	Log Type	Interval
XX	Intermediate Log Triple Combo with dual inductionlog from +/- 8,000' to 3,630' and GR/Neutron to Surface	
XX	MWD-GR on BHA	Curve and lateral

Mud logging personnel at intermediate casing shoe to TD

Tubular Detail

	Size	Wt	Grd	Conn.	From.	To.
Surface	13-3/8"	48#	H-40	STC	0'	700'
Inter	8-5/8"	32#	J-55	LTC	0'	3,630'
Prod	5 ½"	20.0#	L-80	LTC	0'	Lateral TD

Lateral Directional Plan

	MD	INC	AZM	TVD	BUR	DLS
KOP	7,706'	0	0	7,706'	0	0
EOB	8,350'	90.2	359.69	8,115'	14.0	14.0
TD	12,802'	90.2	359.69	8,115'	0	0

Vendors

Rig	Latshaw 6
Directional	XX
Mud	XX
Cement	XX
Wellhead	XX
Wireline Logging	XX
Mud Logging	XX

**Mud logging at intermediate casing shoe

*Potentially productive zone

Directional Planning Drill to KOP at 7,706' MD/7,706' TVD, build angle at 14.0°/100' along 359.69° azimuth to 90.2° inc at 8,350' MD/8,115' TVD. Drill lateral section to TD at 12,802' MD, 8,100' TVD, 4,863' VS.

Drawn by	Date	AFE No	Property No	Drilling Engineer	Drilling Superintendent	Geologist
YA	Rev #0 2/14/10	152415	631342	Yemi Ajijolaiya	Cecil Luttrull	Robert Martin

Permian District

Poker Lake
PLU Ross Ranch 19 Federal 1H
PLU Ross Ranch 19 Federal 1H
PLU Ross Ranch 19 Fed 1H

Plan: PLU Ross Ranch 19 Fed 1H_Design #1

Standard Planning Report

24 February, 2010

EXHIBIT G

Chesapeake Operating

Planning Report

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well PLU Ross Ranch 19 Federal 1H
Company:	Permian District	**TVD Reference:**	WELL @ 0.0ft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	WELL @ 0.0ft (Original Well Elev)
Site:	PLU Ross Ranch 19 Federal 1H	**North Reference:**	True
Well:	PLU Ross Ranch 19 Federal 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	PLU Ross Ranch 19 Fed 1H		
Design:	PLU Ross Ranch 19 Fed 1H Design #1		

Project Poker Lake, Eddy County, NM

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site PLU Ross Ranch 19 Federal 1H

Site Position:		**Northing:**	403,396.54 ft	**Latitude:**	32° 6' 30.07080000 N
From:	Lat/Long	**Easting:**	630,199.57 ft	**Longitude:**	103° 54' 46.21680000 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	0.000 in	**Grid Convergence:**	0.22 °

Well PLU Ross Ranch 19 Federal 1H

Well Position	**+N/-S**	0.0 ft	**Northing:**	403,396.54 ft	**Latitude:**	32° 6' 30.07080000 N
	+E/-W	0.0 ft	**Easting:**	630,199.57 ft	**Longitude:**	103° 54' 46.21680000 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	0.0 ft

Wellbore PLU Ross Ranch 19 Fed 1H

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/15/2010	7.88	60.07	48,698

Design PLU Ross Ranch 19 Fed 1H Design #1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	359.69

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
7,705.9	0.00	0.00	7,705.9	0.0	0.0	0.00	0.00	0.00	0.00	
8,350.2	90.20	359.69	8,115.1	410.7	-2.2	14.00	14.00	0.00	359.69	
12,802.1	90.20	359.69	8,099.6	4,862.5	-26.0	0.00	0.00	0.00	0.00	PLU Ross Ranch 19 I

Chesapeake Operating

Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well PLU Ross Ranch 19 Federal 1H
Company:	Permian District	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Project:	Poker Lake	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	PLU Ross Ranch 19 Federal 1H	North Reference:	True
Well:	PLU Ross Ranch 19 Federal 1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	PLU Ross Ranch 19 Fed 1H		
Design:	PLU Ross Ranch 19 Fed 1H Design #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
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
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well PLU Ross Ranch 19 Federal 1H
Company:	Permian District	**TVD Reference:**	WELL @ 0.0ft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	WELL @ 0.0ft (Original Well Elev)
Site:	PLU Ross Ranch 19 Federal 1H	**North Reference:**	True
Well:	PLU Ross Ranch 19 Federal 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	PLU Ross Ranch 19 Fed 1H		
Design:	PLU Ross Ranch 19 Fed 1H Design #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)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,705.9	0.00	0.00	7,705.9	0.0	0.0	0.0	0.00	0.00	0.00
7,725.0	2.68	359.69	7,725.0	0.4	0.0	0.4	14.00	14.00	0.00
7,750.0	6.18	359.69	7,749.9	2.4	0.0	2.4	14.00	14.00	0.00
7,775.0	9.68	359.69	7,774.7	5.8	0.0	5.8	14.00	14.00	0.00
7,800.0	13.18	359.69	7,799.2	10.8	-0.1	10.8	14.00	14.00	0.00
7,825.0	16.68	359.69	7,823.3	17.2	-0.1	17.2	14.00	14.00	0.00
7,850.0	20.18	359.69	7,847.0	25.1	-0.1	25.1	14.00	14.00	0.00
7,875.0	23.68	359.69	7,870.2	34.4	-0.2	34.4	14.00	14.00	0.00
7,900.0	27.18	359.69	7,892.8	45.2	-0.2	45.2	14.00	14.00	0.00
7,925.0	30.68	359.69	7,914.7	57.3	-0.3	57.3	14.00	14.00	0.00
7,950.0	34.18	359.69	7,935.8	70.7	-0.4	70.7	14.00	14.00	0.00
7,975.0	37.68	359.69	7,956.0	85.3	-0.5	85.3	14.00	14.00	0.00
8,000.0	41.18	359.69	7,975.3	101.2	-0.5	101.2	14.00	14.00	0.00
8,025.0	44.68	359.69	7,993.6	118.2	-0.6	118.2	14.00	14.00	0.00
8,050.0	48.18	359.69	8,010.9	136.3	-0.7	136.3	14.00	14.00	0.00
8,075.0	51.68	359.69	8,027.0	155.5	-0.8	155.5	14.00	14.00	0.00
8,100.0	55.18	359.69	8,041.8	175.5	-0.9	175.5	14.00	14.00	0.00
8,125.0	58.68	359.69	8,055.5	196.5	-1.1	196.5	14.00	14.00	0.00
8,150.0	62.18	359.69	8,067.8	218.2	-1.2	218.2	14.00	14.00	0.00
8,175.0	65.68	359.69	8,078.8	240.7	-1.3	240.7	14.00	14.00	0.00
8,200.0	69.18	359.69	8,088.4	263.8	-1.4	263.8	14.00	14.00	0.00
8,225.0	72.68	359.69	8,096.6	287.4	-1.5	287.4	14.00	14.00	0.00
8,250.0	76.18	359.69	8,103.3	311.5	-1.7	311.5	14.00	14.00	0.00
8,275.0	79.68	359.69	8,108.5	335.9	-1.8	335.9	14.00	14.00	0.00
8,300.0	83.18	359.69	8,112.2	360.6	-1.9	360.6	14.00	14.00	0.00
8,325.0	86.68	359.69	8,114.5	385.5	-2.1	385.5	14.00	14.00	0.00
8,350.2	90.20	359.69	8,115.1	410.7	-2.2	410.7	14.00	14.00	0.00
8,400.0	90.20	359.69	8,115.0	460.5	-2.5	460.5	0.00	0.00	0.00
8,500.0	90.20	359.69	8,114.6	560.5	-3.0	560.5	0.00	0.00	0.00
8,600.0	90.20	359.69	8,114.3	660.5	-3.5	660.5	0.00	0.00	0.00

Chesapeake Operating

Planning Report

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well PLU Ross Ranch 19 Federal 1H
Company:	Permian District	**TVD Reference:**	WELL @ 0.0ft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	WELL @ 0.0ft (Original Well Elev)
Site:	PLU Ross Ranch 19 Federal 1H	**North Reference:**	True
Well:	PLU Ross Ranch 19 Federal 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	PLU Ross Ranch 19 Fed 1H		
Design:	PLU Ross Ranch 19 Fed 1H Design #1		

Planned Survey

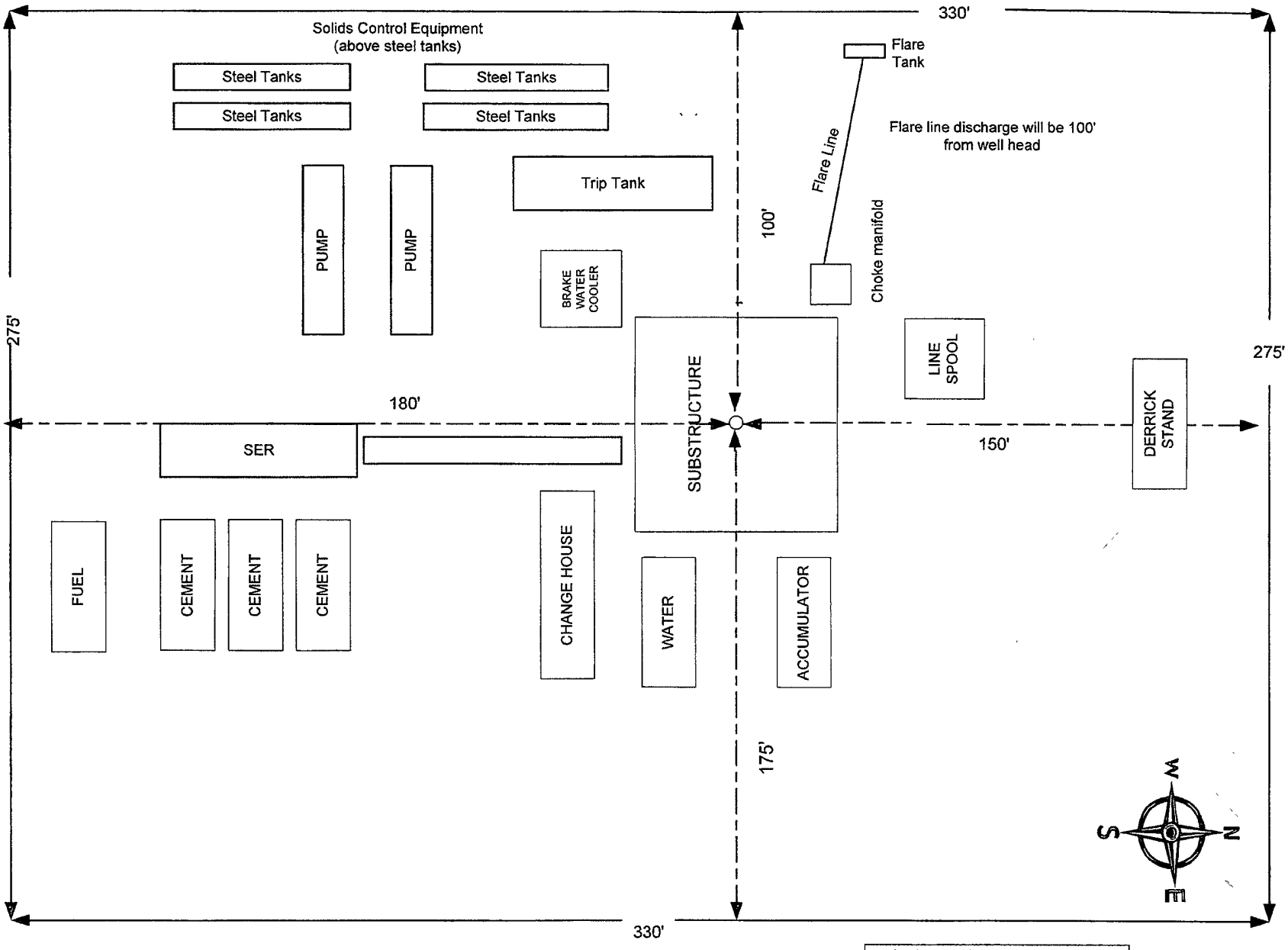
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,700.0	90.20	359.69	8,113.9	760 5	-4.1	760.5	0.00	0.00	0.00
8,800.0	90.20	359 69	8,113.6	860.5	-4.6	860.5	0 00	0.00	0 00
8,900.0	90.20	359.69	8,113 2	960.5	-5.1	960.5	0.00	0.00	0.00
9,000.0	90.20	359.69	8,112.9	1,060.5	-5.7	1,060.5	0.00	0.00	0.00
9,100.0	90.20	359.69	8,112 5	1,160.5	-6.2	1,160.5	0.00	0.00	0.00
9,200.0	90.20	359.69	8,112 2	1,260.5	-6 7	1,260.5	0.00	0 00	0.00
9,300.0	90.20	359.69	8,111 8	1,360 5	-7 3	1,360.5	0.00	0.00	0.00
9,400.0	90.20	359.69	8,111.5	1,460.5	-7.8	1,460.5	0.00	0.00	0 00
9,500.0	90.20	359.69	8,111.1	1,560 5	-8 3	1,560.5	0.00	0.00	0.00
9,600.0	90.20	359.69	8,110.8	1,660 5	-8.9	1,660.5	0 00	0.00	0.00
9,700.0	90.20	359.69	8,110 4	1,760 5	-9 4	1,760.5	0 00	0.00	0.00
9,800.0	90.20	359.69	8,110.1	1,860.5	-10.0	1,860.5	0.00	0 00	0.00
9,900.0	90.20	359.69	8,109.7	1,960.5	-10.5	1,960.5	0.00	0.00	0.00
10,000.0	90.20	359.69	8,109.4	2,060.5	-11.0	2,060.5	0.00	0.00	0.00
10,100.0	90.20	359.69	8,109.0	2,160 5	-11.6	2,160.5	0.00	0.00	0.00
10,200.0	90.20	359.69	8,108.7	2,260.5	-12.1	2,260.5	0.00	0.00	0.00
10,300.0	90.20	359.69	8,108.3	2,360 5	-12 6	2,360 5	0.00	0.00	0.00
10,400.0	90.20	359 69	8,108.0	2,460.5	-13 2	2,460.5	0 00	0 00	0 00
10,500 0	90.20	359.69	8,107.6	2,560.5	-13.7	2,560.5	0.00	0.00	0 00
10,600.0	90.20	359.69	8,107.3	2,660.5	-14.2	2,660.5	0.00	0.00	0.00
10,700.0	90.20	359.69	8,106.9	2,760.5	-14.8	2,760.5	0.00	0.00	0.00
10,800.0	90.20	359 69	8,106.6	2,860 5	-15 3	2,860.5	0.00	0.00	0.00
10,900.0	90.20	359.69	8,106.2	2,960 5	-15.8	2,960.5	0.00	0.00	0.00
11,000.0	90 20	359.69	8,105.9	3,060 5	-16.4	3,060 5	0.00	0.00	0.00
11,100.0	90.20	359.69	8,105.5	3,160.4	-16.9	3,160.5	0.00	0 00	0.00
11,200.0	90.20	359.69	8,105.2	3,260 4	-17 4	3,260.5	0.00	0.00	0.00
11,300.0	90.20	359.69	8,104.8	3,360.4	-18.0	3,360.5	0.00	0.00	0.00
11,400.0	90.20	359.69	8,104.5	3,460.4	-18 5	3,460 5	0.00	0.00	0.00
11,500.0	90.20	359 69	8,104.1	3,560.4	-19 0	3,560.5	0.00	0.00	0 00
11,600.0	90.20	359 69	8,103 8	3,660.4	-19 6	3,660.5	0.00	0.00	0.00
11,700.0	90.20	359 69	8,103.4	3,760.4	-20.1	3,760.5	0.00	0.00	0.00
11,800.0	90.20	359.69	8,103.1	3,860.4	-20 6	3,860.5	0.00	0.00	0 00
11,900.0	90.20	359 69	8,102.7	3,960.4	-21.2	3,960.5	0.00	0 00	0.00
12,000.0	90.20	359.69	8,102 4	4,060 4	-21.7	4,060.5	0 00	0.00	0.00
12,100 0	90.20	359 69	8,102 1	4,160.4	-22.3	4,160.5	0.00	0 00	0.00
12,200.0	90.20	359.69	8,101.7	4,260.4	-22 8	4,260 5	0.00	0.00	0.00
12,300.0	90.20	359.69	8,101 4	4,360 4	-23.3	4,360 5	0.00	0.00	0.00
12,400.0	90.20	359.69	8,101 0	4,460.4	-23 9	4,460 5	0.00	0.00	0.00
12,500.0	90.20	359.69	8,100.7	4,560.4	-24 4	4,560.5	0.00	0 00	0.00
12,600.0	90 20	359.69	8,100 3	4,660.4	-24 9	4,660.5	0.00	0 00	0.00
12,700.0	90.20	359 69	8,100.0	4,760.4	-25 5	4,760.5	0.00	0.00	0.00
12,802.1	90.20	359.69	8,099 6	4,862.5	-26.0	4,862.6	0 00	0.00	0 00

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PLU Ross Ranch 19 Fe - plan hits target center - Point	0.00	0.00	8,099.6	4,862.5	-26.0	408,258.93	630,154 59	32° 7' 18.19200000 N	3° 54' 46.51920000 W

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well PLU Ross Ranch 19 Federal 1H
Company:	Permian District	**TVD Reference:**	WELL @ 0.0ft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	WELL @ 0.0ft (Original Well Elev)
Site:	PLU Ross Ranch 19 Federal 1H	**North Reference:**	True
Well:	PLU Ross Ranch 19 Federal 1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	PLU Ross Ranch 19 Fed 1H		
Design:	PLU Ross Ranch 19 Fed 1H Design #1		

Prevailing Winds from the North in Winter and from the South in Summer.



Not to scale

LATSHAW #6

Exhibit D

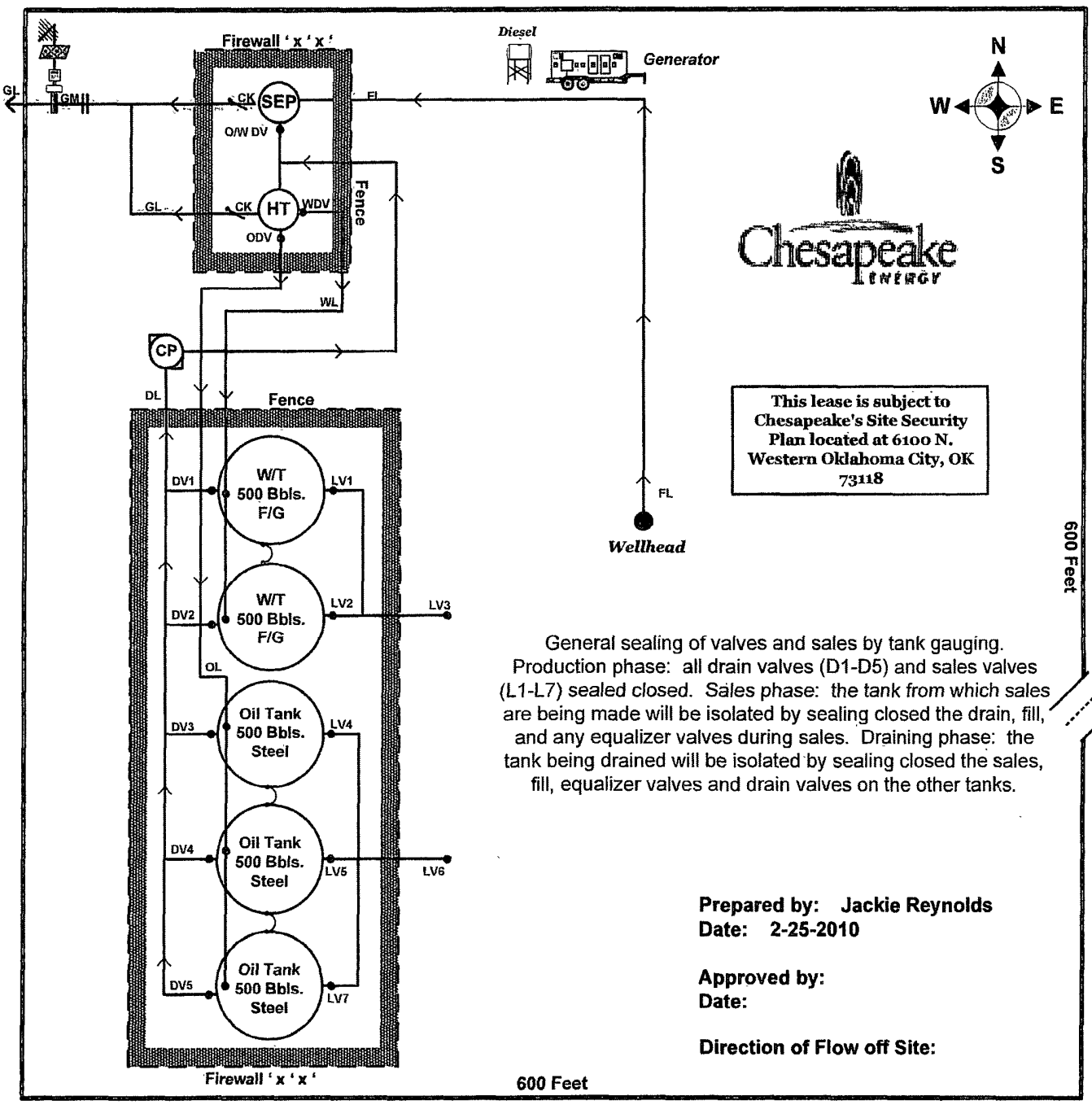
CHESAPEAKE OPERATING, INC.

PLU Ross Ranch 19 Federal #1H

Lat.: N 32.10851338" – Long.: W 103.9133776"

S09/T25S/R30E - 100' FSL & 400' FEL

Eddy Co., New Mexico



General sealing of valves and sales by tank gauging. Production phase: all drain valves (D1-D5) and sales valves (L1-L7) 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.

Prepared by: Jackie Reynolds
Date: 2-25-2010

Approved by:
Date:

Direction of Flow off Site:

EXHIBIT C

BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

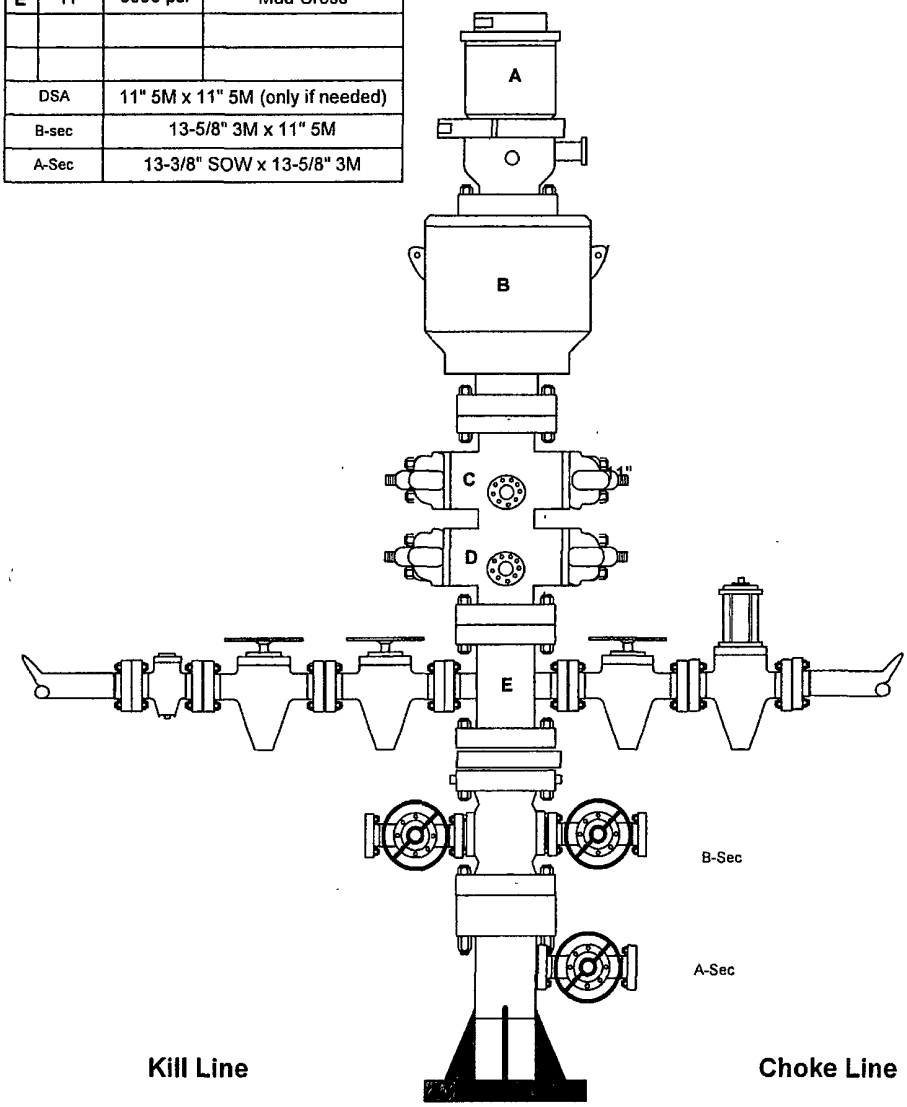
WELL : PLU Poss Ranch 19 Federal 1H

RIG : Latshaw 6

COUNTY : Eddy **STATE:** New Mexico

OPERATION: Drill out below 13-3/8" Casing to TD

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



Kill Line

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

Choke Line

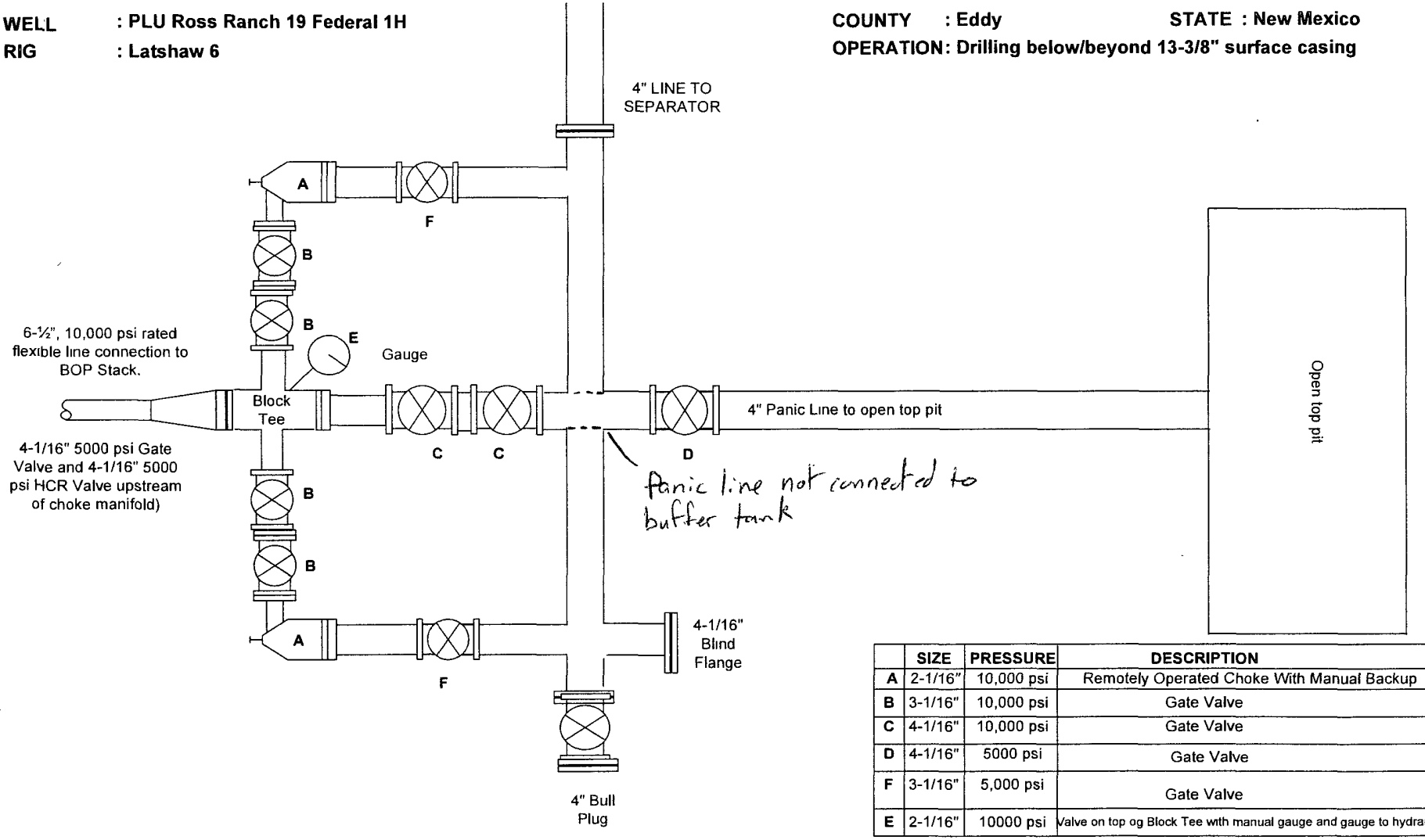
SIZE	PRESSURE	DESCRIPTION
4"	5000 psi	Gate Valve
4"	5000 psi	HCR Valve

EXHIBIT F-1

SCHEMATIC OF CHOKE MANIFOLD SHOWING CLOSED LOOP SYSTEM

WELL : PLU Ross Ranch 19 Federal 1H
RIG : Latshaw 6

COUNTY : Eddy **STATE : New Mexico**
OPERATION: Drilling below/beyond 13-3/8" surface casing



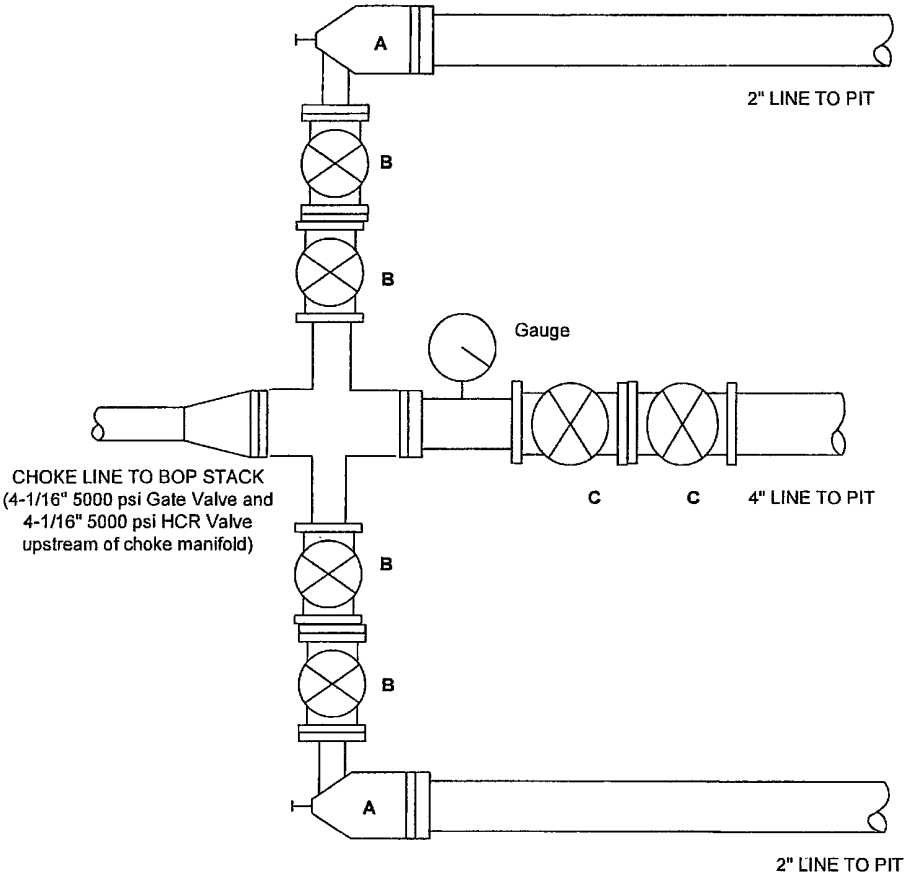
	SIZE	PRESSURE	DESCRIPTION
A	2-1/16"	10,000 psi	Remotely Operated Choke With Manual Backup
B	3-1/16"	10,000 psi	Gate Valve
C	4-1/16"	10,000 psi	Gate Valve
D	4-1/16"	5000 psi	Gate Valve
F	3-1/16"	5,000 psi	Gate Valve
E	2-1/16"	10000 psi	Valve on top og Block Tee with manual gauge and gauge to hydraulic choke

CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING, INC.

WELL : **PLU Ross Ranch 19 Federal 1H**
RIG : **Latshaw 6**
COUNTY : **Eddy** **STATE** : **New Mexico**
OPERATION: Drilling below/beyond 13-3/8" surface casing

A 6-½" OD FLEXIBLE STEEL LINE RATED TO 10,000 PSI WOULD CONNECT BETWEEN THE BOP STACK AND CHOKE MANIFOLD.



	SIZE	PRESSURE	DESCRIPTION
A	2-1/16"	5000 psi	Remotely Operated Choke With Manual Backup
B	2-1/16"	5000 psi	Gate Valve
C	4-1/16"	5000 psi	Gate Valve

EXHIBIT F-2

H_2S Contingency Plan

PLU Ross Ranch 19 Federal 1H

Section 19, 25S, 30E,

Eddy County, New Mexico

March 2010

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- B. Instructions

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I. H_2S CONTINGENCY PLAN SECTION

Scope

This contingency plan establishes guidelines for all company employees and contract employees whose work activities may involve exposure to Hydrogen Sulfide gas (H_2S).

Objective

1. Prevent any and all accidents, and prevent the uncontrolled release of H_2S into the atmosphere.
2. Provide proper evacuation procedures to cope with emergencies.
3. Provide immediate and adequate medical attention should an injury occur.

Discussion of Plan

This plan is necessary to get everyone prepared for H_2S incident while drilling the well as the formations are capable of producing H_2S and has been reported in the area. Hence, monitoring of H_2S and readiness will be started at surface and continue to TD.

Implementation: This plan, with all details, is to be fully implemented before spudding the well.

Emergency Response Procedure: This section outlines the conditions and denotes steps to be taken in the event of an emergency.

Emergency Equipment and Procedure: This section outlines the safety and emergency equipment that will be required for the drilling of this well.

Training Provisions: This section outlines the training provisions that must be adhered to prior to drilling.

Emergency Call Lists: Included are the telephone numbers of all persons that would need to be contacted should an emergency exists.

Briefing: This section deals with the briefing of all people involved in the drilling operation.

Public Safety: Public Safety Personnel will be made aware of the drilling of this well.

CheckLists: Status Check Lists and Procedural Check Lists have been included to insure adherence to the plan.

General Information: A general information section has been included to supply support information.

II. EMERGENCY PROCEDURES SECTION

Emergency Procedures

I. In the event of any evidence of H_2S level above 10 ppm, take the following steps immediately:

- A. Secure breathing apparatus.
- B. Order non-essential personnel out of the danger zone.
- C. Take steps to determine if the H_2S level can be corrected or suppressed, and if so, proceed with normal operations.

II. If uncontrollable conditions occur, proceed with the following:

- A. Take steps to protect and/or remove any public downwind of the rig including partial evacuation or isolation. Notify necessary public safety personnel and the NMOCD of the situation.
- B. Remove all personnel to the Safe Briefing Area.
- C. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.
- D. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety procedures.

III. Responsibility

- A. The Company Approved Supervisor shall be responsible for the total implementation of the plan.
- B. The Company Approved Supervisor shall be in complete command during any emergency.
- C. The Company Approved Supervisor shall designate a back up Supervisor in the event that he/she is not available.

Emergency Procedure Implementation

I. Drilling or Tripping

A. All Personnel

1. When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
2. Check status of other personnel (buddy system).
3. Secure breathing apparatus.
4. Await orders from Supervisor.

B. Drilling Foreman

1. Report to the upwind Safe Briefing Area.
2. Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
3. Determine the concentration of H2S.
4. Assess the situation and take appropriate control measures.

C. Tool Pusher

1. Report to the upwind Safe Briefing Area.
2. Don Breathing Apparatus and return to the point of release with the Drilling Foreman or Driller (buddy system).
3. Determine the concentration of H2S.
4. Assess the situation and take appropriate control measures.

D. Driller

1. Don escape unit.
2. Check monitor for point of release.
3. Report to the Safe Briefing Area.
4. Check the status of other personnel (in a rescue attempt, always use the buddy system).
5. Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
6. Assume the responsibility of the Drilling Foreman and Tool Pusher until they arrive, in the event of their absence.

E. Derrick Man

1. Remain in the Safe Briefing Area until otherwise instructed by Supervisor.

F. Mud Engineer

1. Report to Safe Briefing Area.
2. When instructed, begin check of mud for pH level and H2S level.

G. Safety Personnel

1. Don appropriate breathing apparatus.
2. Check status of all personnel

3. Await instructions from Drilling Foreman or Tool Pusher.

II. Taking a Kick

A. All personnel report to Safe Briefing Area.
B. Follow standard BOP procedures.

III. Open Hole Logging

A. All unnecessary personnel should leave the rig floor.
B. Drilling Foreman and Safety personnel should monitor the conditions and make necessary safety equipment recommendations.

IV. Running Casing or Plugging

A. Follow "Drilling or Tripping" procedures.
B. Assure that all personnel have access to protective equipment.

Simulated Blowout Control Drills

All drills will be initiated by activating alarm devices (air horn). One long blast, on air horn, for ACTUAL and SIMULATED Blowout Control Drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill 1	Bottom Drilling
Drill 2	Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire pit drill assignment. The times must be recorded on the IADC Driller's Log as "Blowout Control Drill".

Drill No.:_____
Reaction Time to Shut-In:_____minutes,_____seconds.
Total Time to Complete Assignment:_____minutes,_____seconds.

I. Drill Overviews

A. Drill No. 1--Bottom Drilling

1. Sound the alarm immediately.
2. Stop the rotary and hoist kelly joint above the rotary table.
3. Stop the circulatory pump.
4. Close drill pipe rams.
5. Record casing and drill pipe shut-in pressures and pit volume increases.

B. Drill No. 2--Tripping Drill Pipe

1. Sound the alarm immediately.
2. Position the upper tool joint just above the rotary table and set slips.
3. Install a full opening valve or inside blowout preventor tool in order to close the drill pipe.
4. Close the drill pipe rams.
5. Record the shut-in annular pressure.

II. Crew Assignments

A. Drill No. 1--Bottom Drilling

1. Driller
   a. Stop the rotary and hoist kelly joint above the rotary table.
   b. Stop the circulatory pump.
   c. Check flow.
   d. If flowing, sound the alarm immediately.
   e. Record the shut-in drill pipe pressure.
   f. Record all data reported by the crew.
   g. Determine the mud weight increase needed or other courses of action.

2. Derrickman
   a. Open choke line valve at BOP.
   b. Signal Floor Man #1 at accumulator that choke line is open.
   c. Close choke and upstream valve after pipe tams have been closed.
   d. Read the shut-in annular pressure and report readings to Driller.

3. Floor Man #1
   a. Close the pipe trams after receiving the signal from the Derrickman.
   b. Report to Driller for further instructions.

4. Floor Man #2
   a. Notify the Tool Pusher and Operator Representative of the H_2S alarms.
   b. Check for open fires and, if safe to do so, extinguish them.
   c. Stop all welding operations.
   d. Turn-off all non-explosion proof lights and instruments.
   e. Report to Driller for further instructions.

5. Tool Pusher
   a. Report to the rig floor.
   b. Have a meeting with all crews.
   c. Compile and summarize all information.
   d. Calculate the proper kill weight.
   e. Ensure that proper well procedures are put into action.

6. Operator Representative
   a. Notify the Drilling Superintendent.
   b. Determine if an emergency exists and if so, activate the contingency plan.

B. Drill No.2--Tripping Pipe

1. Driller

   a. Sound the alarm immediately when mud volume increase has been detected.
   b. Position the upper tool joint just above the rotary table and set slips.
   c. Install a full opening valve or inside blowout preventor tool to close the drill pipe.
   d. Check flow.
   e. Record all data reported by the crew.
   f. Determine the course of action.

2. Derrickman

   a. Come down out of derrick.
   b. Notify Tool Pusher and Operator Representative
   c. Check for open fires and, if safe to do so, extinguish them.
   d. Stop all welding operations.
   e. Report to Driller for further instructions.

3. Floor Man #1

   a. Pick up full opening valve or inside blowout preventors and stab into tool joint above rotary table (with Floor Man #2).
   b. Tighten valve with back-up tongs.
   c. Close pipe rams after signal from Floor Man #2.
   d. Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.
   e. Report to Driller for further instructions.

4. Floor Man #2

   a. Pick-up full opening valve or inside blowout preventors and stab into tool joint above rotary table (with Floor Man #1).
   b. Position back-up tongs on drill pipe.
   c. Open choke line valve at BOP.
   d. Signal Floor Man #1 at accumulator that choke line is open.
   e. Close choke and upstream valve after pipe rams have been closed.
   f. Check for leaks on BOP stack and choke manifold.
   g. Read annular pressure.
   h. Report readings to the Driller.

5. Tool Pusher

   a. Report to rig floor.
   b. Have a meeting with all crews.
   c. Compile and summarize all information.
   d. Calculate proper kill weight.
   e. See that proper well kill procedures are put into action.

6. Operator Representative

   a. Notify Drilling Superintendent.
   b. Determine if an emergency exists, and if so, activate the contingency plans.

III. IGNITION PROCEDURES SECTION

Responsibility

The decision to ignite the well is the responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. In the event the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

Instructions for Igniting the Well

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and attach a safety rope. One man must monitor the atmosphere for explosive gases with the Explosimeter, while the Drilling Foreman is responsible for igniting the well.
2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.
3. Ignite from upwind and do not approach any closer than is warranted.
4. Select the ignition site best suited for protection and which offers an easy escape route.
5. Before igniting, check for the presence of combustible gases.
6. After igniting, continue emergency actions and procedures as before.
7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

NOTE: After the well is ignited, burning Hydrogen Sulfide will convert to Sulfur Dioxide, which is also highly toxic. Do not assume the area is safe after the well is ignited.

IV. TRAINING PROGRAM SECTION

Training Requirements

When working in an area where Hydrogen Sulfide gas (H_2S) might be encountered, definite training requirements must be carried out. The Company Supervisor will insure that all personnel, at the well site, have had adequate training in the following:

1. Hazards and characteristics of H_2S.
2. Physical effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. H_2S detection.
5. Emergency rescue.
6. Resuscitators.
7. First aid and artificial resuscitation.
8. The effects of H_2S on metals.
9. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains H2S, and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

V. EMERGENCY EQUIPMENT SECTION

Emergency Equipment Requirements

I. Signs

A. Located at the location entrance with the following information:

(Lease)
CAUTION-POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

II. * Fresh air breathing equipment

A. Air line units for all rig personnel on location.
B. Cascade system with hose lines to rig floor and one to the derrick man and other operation areas. Spare cascade (trailer) on location

III. Wind socks or wind streamers

A. Two 10" windsocks located at strategic locations at a height visible from the rig floor.
B. Wind streamers (if preferred) to be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

IV. Hydrogen Sulfide detector and alarms.

A. 1-four channel H_2S monitor with alarms.
B. 4 sensors located at floor, bell nipple, shale shaker, and pits
* C. Hand operated detectors with tubes.
* D. H_2S monitor tester.

V. Condition sign and flags

A. One each of green, yellow, and red condition flags to be displayed to denote conditions:
GREEN--Normal Conditions
YELLOW--Potential Danger
RED--Danger, H2S Present
B. The condition flag shall be posted at the location entrance.

VI. * Auxiliary rescue equipment

A. Stretcher
B. Two 100' lengths of 5/8" nylon rope.

VII. * Mud inspection devices

A. Garrett Gas Train or Hach Tester for inspection of Hydrogen Sulfide concentration in the mud system.

VIII. Fire extinguishers

A. Adequate fire extinguishers shall be located at strategic locations.

IX. Blowout prevention equipment

A. The well shall have hydraulic BOP equipment for the anticipated BHP.
B. Equipment must be tested upon installation.

X. * Combustible gas detectors

A. There shall be one combustible gas detector on location at all times.

XI. BOP testing

A. BOP, Choke Line and Kill Line will be tested as specified by operator. The discharge point for the flare line will be located a minimum of 150 feet away from the wellbore and any existing production facilities, securely anchored, and positioned downwind from the prevailing winds.

XII. Audio system

A. Radio communication shall be available at the rig.
B. Radio communication shall be available at the rig floor or trailer.
C. Radio communication shall be available on vehicles.

XIII. Special control equipment

A. Hydraulic BOP equipment with remote control on ground.
B. Rotating head at surface casing point.

XIV. Evacuation Plan

A. Evacuation routes should be established prior to spudding each well.
B. Should be discussed with all rig personnel.

XV. Designated Areas

A. Parking and visitor area.

1. All vehicles are to be parked at a pre-determined safe distance from the wellhead.
2. Designated smoking area.

B. Safe Briefing Area

1. Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.
2. Personal protective equipment should be stored in both protection centers or if a moveable trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both protection centers should be accessible.

- *Additional equipment will be available at Callaway Safety Midland, Texas.
- Additional personnel hydrogen sulfide monitors on location for all hands.
- Automatic flare igniter installed on rig

VI. CHECK LIST SECTION

Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance. _____
2. Two (2) wind socks (in required locations). _____
3. Wind streamers (if required). _____
4. 30 minute pressure demand air packs on location for all rig personnel and mud loggers. _____
5. Air packs, inspected and ready for use. _____
6. Spare bottles for each air pack (if required). _____
7. Cascade system and hose line hook up. _____
8. Cascade system for refilling air bottles. _____
9. Choke manifold hooked-up and tested. (Before drilling out surface casing.) _____
10. Remote Hydraulic BOP control (hooked-up and tested before drilling out surface casing.) _____
11. BOP Preventer tested (before drilling out surface casing.) _____
12. Mud engineer on location with equipment to test mud for Hydrogen Sulfide. _____
13. Safe Briefing Areas set-up. _____
14. Condition sign and flags on location and ready. _____
15. Hydrogen Sulfide detection system hooked-up. _____
16. Hydrogen Sulfide alarm system hooked-up. _____
17. Stretcher on location at Safe Briefing Area. _____
18. 1-100' length of 5/8" nylon rope on location. _____
19. 1-20 # or 30# ABC fire extinguisher in safety trailer in addition to those on rig. _____

20. Combustible gas detector on location and tested. _____

21. All rig crews and supervisors trained (as required). _____

22. Access restricted for unauthorized personnel. _____

23. Drills on H_2S and well control procedures. _____

24. All outside service contractors advised of potential Hydrogen Sulfide on the well. _____

25. NO SMOKING sign posted. _____

26. Hand operated H_2S detector with tubes on location. _____

27. 25mm flare gun with flares. _____

28. Automatic Flare igniter installed on rig _____

Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to insure that it has not been tampered with.
3. Check pressure on supply air bottles to see that they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that the demand regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you get air.
2. Blowout preventer skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all work/escape units for operation: demand regulator, escape bottle air volumes, supply bottle of air volume.
5. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.
6. Check pressure on breathing equipment air bottles to make sure they are charged to full volume.
7. Check breathing equipment air bottles to make sure all demand regulators are working. This requires that the bottles be opened and the mask assembly be put on tight enough so that when you inhale, you get air
8. Confirm pressure on all supply air bottles.
9. Perform breathing equipment drills with on-site personnel.
10. Check the following supplies for availability:
    a. Stretcher
    b. Safety belts and ropes
    c. Emergency telephone lists
    d. Spare air bottles
    e. Spare oxygen bottles (if resuscitator required)
    f. Hand operated H2S detectors and tubes
11. Test the Explosimeter to verify batteries are good.

VII. BRIEFING PROCEDURES SECTION

Briefing Procedures

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

Pre-Spud Meeting

Date: Prior to spudding the well.
Attendance: Drilling Supervisor
Drilling Engineer
Drilling Foreman
Rig Pushers
Rig Driller
Mud Engineer
All Safety Personnel
Service Companies
Purpose: Review and discuss the well program, step-by-step, to insure complete understanding of assignments and responsibilities.

VIII. EVACUATION PLAN SECTION

General Plan

The direct lines of action prepared by CALLAWAY SAFETY EQUIPMENT CO., INC. to protect the public form hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foreman, Tool Pusher, Driller) determine Hydrogen Sulfide gas cannot be limited to the well location, and the public will be involved, he will activate the evacuation plan. Escape routes are noted on the Area Map.
2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company approved safety personnel that have been trained in the use of Hydrogen Sulfide detection equipment and self-contained breathing equipment will be utilized.
4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.
   NOTE: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.
5. After the discharge of gas has been controlled, "Company" safety personnel will determine when the area is safe for re-entry.

See Emergency Reaction Plan

Emergency Assistance Telephone List

PUBLIC SAFETY:	*911 or*
Eddy Co. Sheriff	(575) 887-7551
Eddy Co. Emergency Management	(575) 628-5451
Fire Department (Carlsbad)	(505) 981-2447
Ambulatory Service (Hobbs)	(575) 492-5000

Prior to starting project – Verify 911

Life Flight:	
Arrow Care-Lubbock	(806) 744-5055
Southwest Air-Med E Vac.	(800) 242-6199
Location Elev. 3697'	
Lat: 32.629311° N	
Long: 104.565829° W	
New Mexico D.O.T.	(575) 827-5100
Bureau of Land Management, Carlsbad	(575) 234-5972
U. S. Dept. of Labor	(575) 248-5302
New Mexico OCD, Carlsbad	(505) 476-3440
New Mexico OCD/After Hours	(575) 370-7106

Chesapeake

Hobbs Office	Office	(575) 391-1462
Drilling Superintendent		
Cecil Luttrull	Office	(432) 687-2992
	Cell	(432) 631-3414
Jimmy Anderson	Office	(432) 586-8920
	Cell	(432) 631-9650
Drilling Engineer		
Yemi Ajijolaiya	Office	(405) 935-6802
	Cell	(405) 625-5468
Company Trailer	Office	(432) 687-2992

Drilling Company Latshaw Drilling 918-355-4380 (office)

Latshaw Rig 6	Rig	(281) 436-6455
Latshaw Rig Trailer	Cell	(432) 556-8559
David Ezell, Tool Pusher	Cell	(432) 693-6575
Tommy Lindsey, Tool Pusher	Cell	(432) 213-6621
Carl Lightner, Superintendent	Cell	432-556-4008
	Home	432-368-2041
Trent Latshaw, President	Cell	918-671-8612
Sonny Marsalia, Operations Manager	Cell	719-480-3517

Callaway Safety Equipment

Odessa	**Office (432) 561-5049**
Hobbs	**Office (877) 422-6345**

Affected Public Notification List
(within a 24' radius of exposure at 100ppm)

Certain geologic zones will be encountered during drilling that may possibly contain hazardous quantities of H_2S. Therefore, the plan is to carefully monitor hazards associated with H_2S as previously mentioned in this document.

Should these conditions change prior to starting the project; the residents within the affected radius will be notified via a hand delivered written notice describing the activities, potential hazards, conditions of evacuation, evacuation drill siren alarms, and other precautionary measures.

Evacuee Description:

Residents and/or

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:

All evacuees will migrate lateral to the wind direction.

Chesapeake will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local fire and emergency medical service as necessary.

IX. MAPS AND PLATS SECTION

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Form C-102
Revised October 15, 2009

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		Wildcat; Bone Spring

Property Code	Property Name	Well Number
	PLU ROSS RANCH "19" FEDERAL	1H

OGRID No.	Operator Name	Elevation
147179	CHESAPEAKE OPERATING CO.	3181'

Surface Location

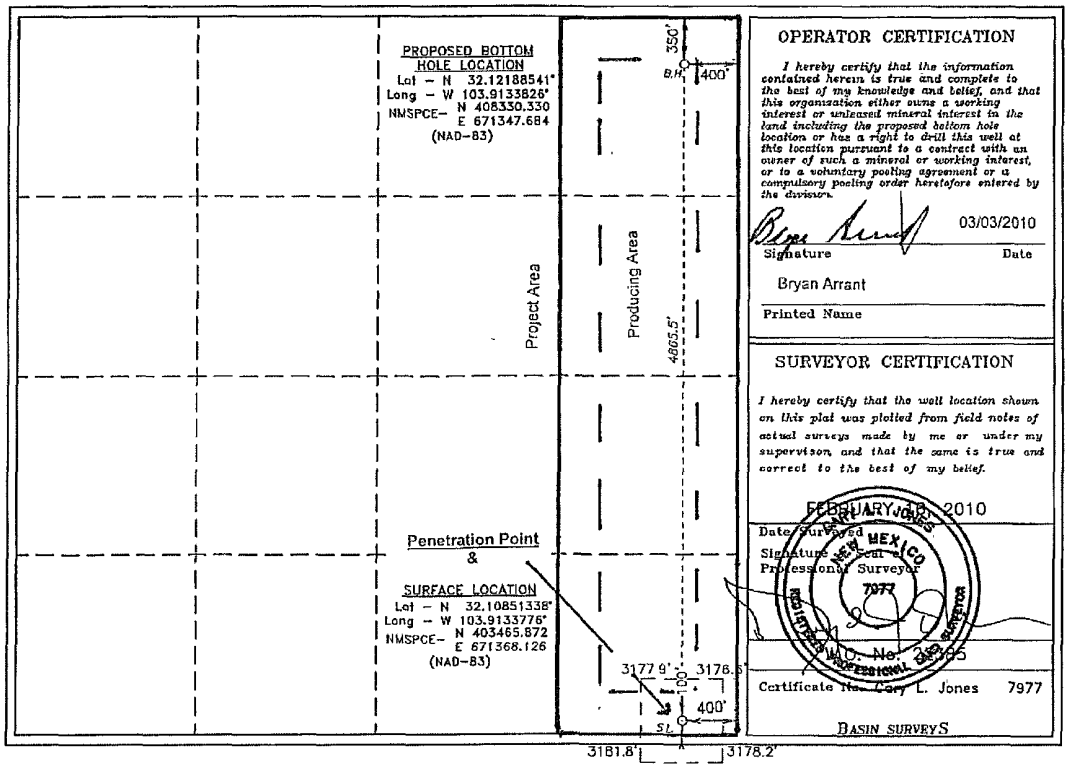
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	19	25 S	30 E		100	SOUTH	400	EAST	EDDY

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
A	19	25 S	30 E		350	NORTH	400	EAST	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



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 03/03/2010 Date

Bryan Arrant
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 supervison, and that the same is true and correct to the best of my belief.

FEBRUARY 10, 2010
Date Surveyed
Signature & Seal of Professional Surveyor
Certificate No. Gary L. Jones 7977

BASIN SURVEYS

X. GENERAL INOFRMATION SECTION

Toxic Effects of Hydrogen Sulfide Poisoning

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 20 ppm, which is .002% by volume. Hydrogen Sulfide is heavier than air (specific gravity-1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is between five and six times more toxic than Carbon Monoxide. Toxicity data for Hydrogen Sulfide and various other gases are compared below in Table I. Physical effects at various Hydrogen Sulfide levels are shown in Table II.

Table I
Toxicity of Various Gases

Common Name	Chemical Formula	Specific Gravity	Threshold Limit (A)	Hazardous Limit (B)	Lethal Concentration C)
Hydrogen Cyanide	HCN	0.94	10 ppm	150 ppm/hr	300 ppm
Hydrogen Sulfide	H2S	1.18	10 ppm (D) 20 ppm (E)	250 ppm/hr	600 ppm
Sulfur Dioxide	SO2	2.21	5 ppm		1000 ppm
Chlorine	CL2	2.45	1 ppm	4 ppm/hr	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/hr	1000 ppm
Carbon Dioxide	CO2	1.52	5000 ppm	5%	10%
Methane	CH4	0.55	90,000 ppm	(9%)	Combustible above 5% in air

A. Threshold Limit--Concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.
B. Hazardous Limit--Concentration that may cause death.
C. Lethal Concentration--Concentration that will cause death with short-term exposure.
D. Threshold Limit--10 ppm, 1972 ACGIH (American Conference of Governmental industrial Hygienists)

Table II

Physical Effects of Hydrogen Sulfide

Percent %	ppm	Physical Effects
0.001	10	Obvious and unpleasant odor.
0.002	20	Safe for 8 hrs. exposure
0.01	100	Kills smell in 3 to 5 minutes; may sting eyes and throat.
0.02	200	Kills smell shortly; stings eyes and throat.
0.03	300	IDLH (Immediately Dangerous to Life & Health) Level
0.05	500	Dizziness; breathing ceases in a few minutes
0.07	700	Unconscious quickly; death will result if not rescued.
0.10	1000	Unconscious at once; followed by death within minutes.

*Caution: Hydrogen Sulfide is a colorless and transparent gas and is highly flammable. It is heavier than air and may accumulate in low places.

Rescue-First Aid for Hydrogen Sulfide Poisoning

Do Not Panic!!!

Remain Calm--THINK

1. Hold your breath (Do not inhale; stop breathing.) and go to Briefing area.

2. Put on breathing apparatus.

3. Remove victim(s) to fresh air as quickly as possible. (Go upwind from the source or at right angles to the wind; NOT downwind.)

4. Briefly apply chest pressure--arm lift method of artificial respiration to clear the victim's lungs and to avoid inhaling any toxic gas directly from the victim's lungs

5. Provide for prompt transportation to the hospital, and continue giving artificial respiration if needed.

6. Hospital(s) or medical facilities need to be informed, beforehand, of the possibility of H2S gas poisoning, no matter how remote the possibility.

7. Notify emergency room personnel that the victim(s) have been exposed to H2S gas.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration, as well as first aid for eyes and skin contact with liquid H2S. Everyone needs to master these necessary skills.

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

1. EXISTING ROADS/LEASE ROADS

   a. The proposed lease road 2214.1' in length and 14' in travel way width with a maximum disturbance area of 30' will be used, and in accordance with guidelines set forth in the BLM Onshore Orders. No turnouts are expected.
   b. Existing county and lease roads will be used to enter proposed access road.
   c. Location, access, and vicinity plats attached hereto. See Exhibits A-1 to A-5.

   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 junction of Twin Wells and McDonald, go Southwest 2.0 miles to lease road, on road, on lease road go Southwest 4.8 miles to lease road, on lease road go South 0.7 miles to proposed lease road.

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

3. LOCATION OF PRODUCTION FACILITIES
   It is anticipated that production facilities will be located on the well pad and oil to be sold at the wellhead and/or tank battery. This well will be connected to Southern Unions 12" pipeline located about 1.5 – 2 miles to the east of this well. – See Exhibit C

4. 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.

5. CONSTRUCTION MATERIALS

No construction materials will be used from Section 19-25S-30E. All material (i.e. shale) will be acquired from private or commercial sources.

6. 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.

7. ANCILLARY FACILITIES

None

8. WELLSITE LAYOUT

The proposed site layout plat is attached showing the Latshaw Rig #6 orientation and equipment location. See Exhibit D.

9. PLANS FOR RECLAMATION OF THE SURFACE

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

Backfilling leveling, and contouring are planned as soon as the drilling rig and steel tanks are removed. Wastes and spoils materials will be disposed 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 workover rig is removed.

Interim Reclamation: downsize the footprint of disturbance by reclaiming portions of the well pad not needed for production operations. The portions of the cleared well pad not needed for operational and safety purposes will be recontoured back to natural surroundings as much as possible. Caliche material will be used either to recontour or will be used to repair roads within the lease. Topsoil material will be spread out over reclaimed area and the site will be seeded with an approved BLM grass mix. In order to inspect and operate the well or complete work over operations, it may be necessary to drive, park, and operate on restored, interim vegetation as long as the damage is repaired or reclaimed after work is complete. In most cases the

well pad is pulled in to within 30 feet of the well anchors unless layout won't allow or a safety issues is in place.

Final Reclamation Procedure: Upon final abandonment of the well, caliche material from the well pad and access road will be removed and utilized to recontour to a final contour that blends with the surrounding topography as much as possible. Any caliche material not used will be utilized to repair roads within the lease. Topsoil will be distributed over the reclamation area and cross ripped to control erosion, the side will be seeded with an approved BLM mixture.

11. SURFACE & MINERAL OWNERSHIP
United States of America
Department of Interior
Bureau of Land Management

GRAZING LESSEE
Byron Paschal
P.O. Box 992
Pecos, TX 79772

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

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

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

13. OPERATOR'S REPRESENTATIVES

Drilling and Completion Operations

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Sr. Regulatory Compliance Specialist
Linda Good
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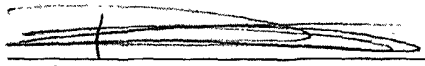
405-849-4275 (Fax)
linda.good@chk.com

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Executed this 25th day of February, 2010

Name: 
Bud Cravey, Sr. Field Representative

Address: 2010 Rankin Highway, Midland, TX 79701

Telephone: 432-238-7293

E-mail: bud.cravey@chk.com

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	BOPCO LLP (CHESAPEAKE as Agent)
LEASE NO.:	NMLC070341
WELL NAME & NO.:	1H-PLU ROSS RANCH 19 FEDERAL
SURFACE HOLE FOOTAGE:	0100' FSL & 0475' FEL
BOTTOM HOLE FOOTAGE	0350' FNL & 0400' FEL
LOCATION:	Section 19, T. 25 S., R 30 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**
- V-door northwest
- Commercial Well Determination

☐ **Construction**
- Notification
- V-Door Direction
- Topsoil
- Closed Loop System
- Federal Mineral Material Pits
- Well Pads
- Roads

☐ **Road Section Diagram**
☒ **Drilling**
- Medium cave/karst
- H2S – Onshore Order 6 requirements
- Logging requirements

☐ **Production (Post Drilling)**
- Well Structures & Facilities
- Pipelines
- Electric Lines

☒ **Interim Reclamation**
☒ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

V-door: northwest

Commercial Well Determination

A commercial well determination will need to be submitted after production has been established for at least six months.

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) 234-5972 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. V-DOOR DIRECTION: northwest

C. 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 6 inches in depth. The topsoil will be used for interim and final reclamation.

D. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

E. FEDERAL MINERAL MATERIALS PIT

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

F. 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.

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

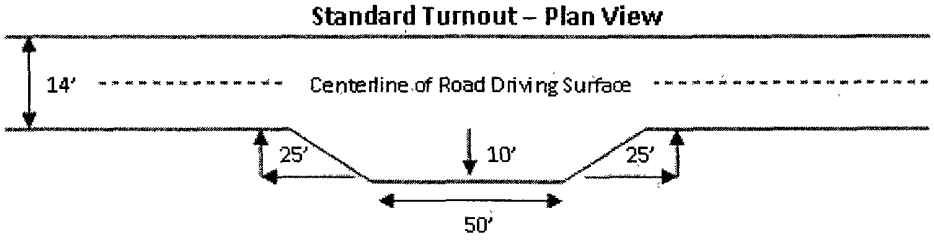
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

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

Ditching

Ditching shall be required on both sides of the road.

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

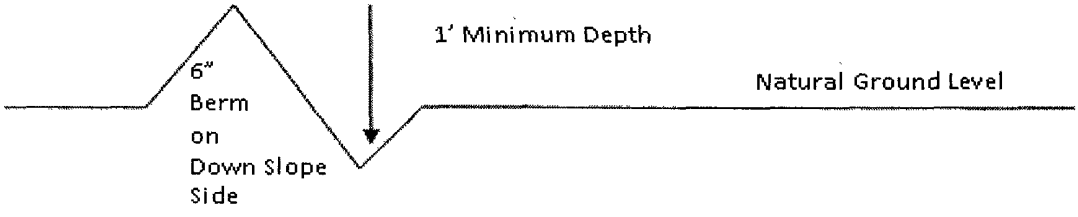


Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

400 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.

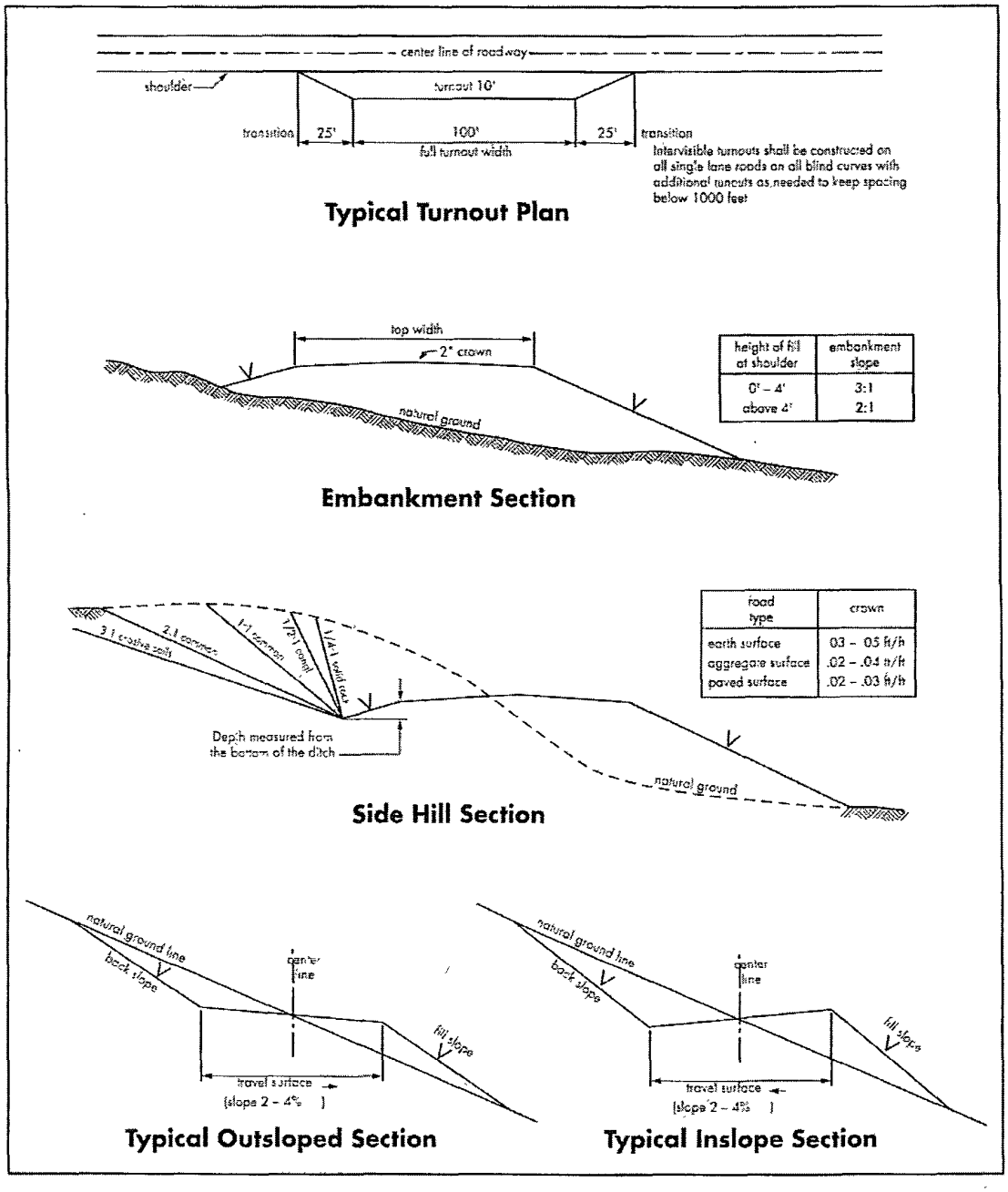
A gate shall be constructed and fastened securely to H-braces.

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. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the **Delaware** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values 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 is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the CAL/GR/N well log run from TD to surface will 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 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.

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 for all casing strings. 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 lost circulation in the Delaware Mountain and Bone Spring Groups

1. The **13-3/8** inch surface casing shall be set at approximately **700** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If the salt is encountered at a shallower depth, the casing must be set 25 feet above the top of the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

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

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

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

Formation below the 13-3/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

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

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Casing to be set in the Lamar Limestone. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Formation below the 8-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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 minimum of one every other joint.

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

   a. First stage to DV tool, cement shall:

   ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. **May require additional cement as the excess calculates to 8%.**

   b. Second stage above DV tool, cement shall:

   ☒ 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.**

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

    a. Casing cut-off and BOP installation will not be initiated until the cement has had a minimum of 8 hours setup time for a water basin. The casing shall remain stationary and under pressure for at least eight hours after the operator places the cement. In the potash area, the minimum time is 12 hours and the casing shall remain stationary and under pressure during this time period. Casing shall be under pressure if the operator uses some acceptable means of holding pressure or if the operator employs one or more float valves to hold the cement in place. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.

    b. The tests shall be done by an independent service company using a test plug.

    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.

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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

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

Seed Mixture 1, for Loamy Sites

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

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

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

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

*Pounds of pure live seed:

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