ATS-11-958

OCD-ARTESIA

Form 3160-3
(August 2007)

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No.
NMLC069513A

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No.
NMNM071016X

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

8. Lease Name and Well No.
PLU Phantom Banks 3-26-30 USA 1H [39063]

2 Name of Operator CHESAPEAKE OPER. AGENT FOR BOPCO ATTN: LINDA GOOD [147179]

9. API Well No.
30-015-39932

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

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

10 Field and Pool, or Exploratory
WILDCAT; BONE SPRING [96403]

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 300 FSL & 1980 FEL, SWSE
At proposed prod. zone 350 FNL 1980 FEL, NWNE

11 Sec., T. R. M or Blk. and Survey or Area
SEC 3, TWP 26S, RGE 30E

14. Distance in miles and direction from nearest town or post office*
APPROXIMATELY 29.6 MILES SE FROM LOVING, 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	17 Spacing Unit dedicated to this well
1980' from State Section 2	1240 ACRES	160 ACRES
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	**20 BLM/BIA Bond No. on file**
2560' from PLU Phantom Banks 1 Federal 1H	12,816' MD / 8314' TVD 9800' PHD	ESB000159
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3163' GL	02/15/2013	45 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must 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 must 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 BLM.

Revised

25. Signature	Name *(Printed/Typed)*	Date
Linda Good	Linda Good	11/16/2011

Title
Sr. Regulatory Compliance Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson		FEB - 1 2012
Title FIELD MANAGER	**Office** CARLSBAD FIELD OFFICE	

Application approval 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.
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.

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

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FEB 06 2012
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SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

ONSHORE ORDER NO. 1
Chesapeake Agent for BOPCO
PLU Phantom Banks 3 26 30 USA 1H
SL: 300' FSL & 1980' FEL
BL: 350' FNL & 1980' FEL
Section 3-26S-30E
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE
OPERATOR CERTIFICATION

Lease No. NMLC069513A

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 24th day of August, 2011

Name: Toby Reid
Toby Reid - Field Representative

Address: 2010 Rankin Highway, Midland, TX 79701

Telephone: 575-725-8497

E-mail: toby.reid@chk.com

RECEIVED
FEB 06 2012
NMOCD ARTESIA

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 July 16, 2010

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-39932	96403	WILDCAT; BONE SPRING

Property Code	Property Name	Well Number
39063	PLU PHANTOM BANKS 3 26 30 USA	1H

OGRID No.	Operator Name	Elevation
147179	CHESAPEAKE OPERATING CO.	3163'

Surface Location

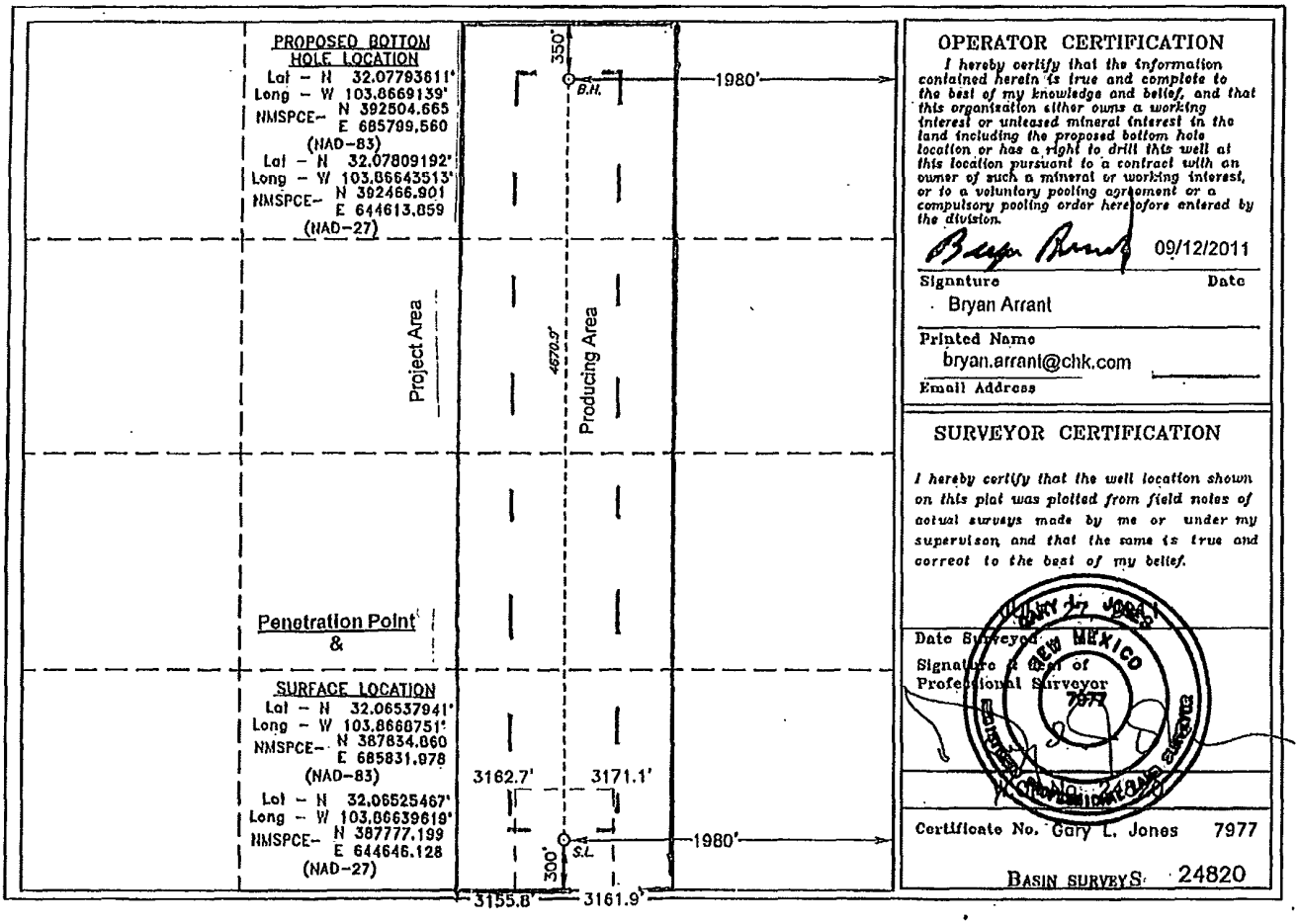
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	3	26 S	30 E		300	SOUTH	1980	EAST	EDDY

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
O	3	26 S	30 E		350	NORTH	1980	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.

09/12/2011
Signature Date

Bryan Arrant
Printed Name

bryan.arrant@chk.com
Email Address

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.

Date Surveyed
Signature & Seal of Professional Surveyor
NEW MEXICO 7977

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 24820

EXHIBIT A-1

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

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

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease, which would entitle the applicant to conduct operations thereon.

1. FORMATION TOPS

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA	KBTVD	MD
Rustler	1,820	1,359	1,359
Salt	975	2,204	2,204
Base of Salt	-343	3,522	3,522
Lamar	-533	3,712	3,712
Bell Canyon	-580	3,759	3,759
Cherry Canyon	-1,473	4,616	4,616
Brushy Canyon	-2,768	5,947	5,947
First Bone Spring Lime	-4,385	7,564	7,564
Lateral TD	-4,595	8314	12,816
First Bone Spring Sand	-4840	8559	8559
Second Bone Spring Sand	-5476	9195	9195
Third Bone Spring Carbonate	-5941	9660	9660
Pilot TD	-6081	9800	9800

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

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

Substance	Formation	Depth
Water	Rustler	1,359
Oil/Gas	Deleware	4,616
Oil/Gas	Bone Spring	7,564

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, but this system will be tested to 3000 psi working pressure and 3000 psi working pressure for the annular preventer; therefore, no shoe tests will be conducted.

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

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

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

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

C. Frequency
1. In some drilling operations, the pressures to be used for low and high pressure testing of preventers and casing may be different from those given below due to governmental regulations or approved local practices.
2. If an individual component does not test a t 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 unless otherwise stated (see above).
6. The "high pressure" test for the annular preventer will be conducted at 70" of the rated working pressure unless otherwise stated (see above).
7. A record of all pressures will be made on a pressure-recording chart.

II. Accumulator Performance Test

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

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

C. Minimum Requirements

1. The accumulator should be of sufficient volume to supply 1.5 times the volume to close and hold all BOP equipment in sequence, without recharging and the pump turned off, and have remaining pressures of 200 psi above the precharge pressure.
2. Minimum precharge pressures for the various accumulator systems per manufacturers recommended specifications are as follows:

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

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

D. Test Procedure

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

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

5. Turn the accumulator pumps on and record the recharge time. This time should not exceed 10 minutes.
6. Open annular and ram-type preventers. Close HCR valve.
7. Place all 4-way control valves in full open or full closed position. Do not leave in neutral position.

3. CASING PROGRAM

a. The proposed casing program will be as follows:

See COA

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	1,450'	17-1/2"	13-3/8"	48 #	H-40	STC	New
Intermediate	0'	3700 ~~3,740'~~	11"	8-5/8"	32 #	J-55	LTC	New
Production	0'	12,816'	7-7/8"	5-1/2"	20 #	L-80	LTC	New

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

c. Casing Safety Factors

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension
Surface	1.43	1.16	2
Intermediate	1.83	1.41	2.41
Production	1.22	2.26	1.71

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

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

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

5. CEMENTING PROGRAM

Slurry	Type	Top	Btm	Wt	Yld	%Exc	Sx
Surface				(ppg)	(sx/cu ft)	Open Hole	
Single Slurry	C + $% Gel	0'	1,450'	13.5	1.73	150	1443
Shallow Int							
Lead	TXI +5% Salt	0'	3,240'	12	1.8	150	1009
Tail	50C/50Poz +5% Salt	3,240'	3,740'	14.2	1.37	150	243
Production							
Slurry 1 Lead	35/65Poz H +8% Gel	4,550'	8,000'	12.4	2.09	75	501
Slurry 1 Tail	50H/50Poz	8,000'	12,816'	14.5	1.24	75	1187
Slurry 2 Lead	35/65Poz H +8% Gel	3,240'	4,300'	12.4	2.19	200	173
Slurry 2 Tail	50H/50Poz	4,300'	4,550'	14.8	1.33	200	98

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. The production casing will be cemented in two stages with the DV tool place at: 4,550'
4. Production casing will have one centralizer on every other joint from TD to KOP (horizontal type) and from KOP to intermediate casing (bowspring type).

Pilot Hole Plugging Plan:

Slurry	Type	Top	Btm	Wt	Yld	%Exc	Sx
Plug				(ppg)	(sx/cu ft)	Open Hole	
Single Slurry	H+8%C-37+2% Salt	7,850'	9,800'	17.5	0.96	40	940

9700 - 7850 = 1950'

Pilot Hole will be plugged off from TD to just above KOP using Smith cement through whipstock.
Tubing will be run as tail pipe on bottom of whipstock and cemented in place.
See attached documents for details.

6. MUD PROGRAM

From	To				
Depth		Type	Weight	F. Vis	FL
0'	1,450'	Spud Mud	8.4 - 8.7	32 - 34	NC - NC
1,450'	3,740'	Brine	9.8 - 10.1	28 - 29	NC - NC
3,740'	7,873'	Cut Brine	8.4 - 9	28 - 30	NC - NC
7,873'	8,628'	Cut Brine	8.4 - 9	28 - 30	NC - NC
9,118'	9,800'	Cut Brine	8.4 - 9	28 - 30	NC - NC
8,628'	12,816'	Cut Brine	8.4 - 9	28 - 30	NC - NC

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

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

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

7. TESTING, LOGGING, AND CORING

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

a Drill stem tests are not planned.
b. The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mudlog	Mudlog	Int Csg to TD	Drill out Int Csg	Suttles
OH	Dual Induction	Curve to Int Csg	After Curve	TBD
LWD	GR/Neutron	Int Csg to Surface	While Drilling	TBD
LWD	MWD/Gamma	Curve/Lateral	While Drilling	TBD
OH	Triple Combo/DLL/Spectral GR	Pilot TD to 7,500	After Pilot TD	TBD

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

8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

a. No abnormal pressures or temperatures are expected. Estimated BHP is: 4586 psi (pilot)
b. Hydrogen sulfide gas is not anticipated.

Chesapeake ENERGY

Drilling Engineer:	Chris Gray
Superintendent:	Cecil Luttrull
Geologist:	Carl Standley

Well Name:	**PLU Phantom Banks 3-26-30 USA 1H**
Target:	Upper Avalon
County, State:	Eddy, NM
Surface Location:	300' FSL 1980' FEL, Section 3, Township 26S, Range 30 E
BH Location:	350' FNL 1980' FEL, Section 3 Township 26S, Range 30 E

SHL Latitude:	32.065379	**SHL North:**	387835
SHL Longitude:	-103.866875	**SHL East:**	685832
BHL Latitude:	32.07793611	**BHL North:**	392505
BHL Longitude:	-103 8669139	**BHL East:**	685800
Coordinates:	NAD 83	**Coordinates:**	NMSPCE

Drilling Rig:	Patterson 62
Directional-Surface:	Ryan
Directional-Curve:	TBD
Directional-Lateral:	TBD
Drilling Mud:	TBD
Cement:	TBD
Wellhead:	Sunbelt
Property Number:	640121
AFE Number:	157210

KB Elevation: 3,188' **KB:** 25'
Ground Elevation: 3,163'

Conductor 60'
OD: **20** Hole Size: **17 1/2"**
Wt:

See COA

Surface Casing 1,450'
OD: **13 3/8"** Hole Size: **11"**
Wt: **48.#**
Grd. **H-40**
Con **STC**

3700

Shallow Int Casing 3,740'
OD: **8 5/8"** Hole Size **7 7/8"**
Wt: **32.#**
Grd. **J-55**
Con **LTC**

1,359'	Rustler
2,204'	Top of Salt
3,522'	Base of Salt
3,712'	Lamar
3,759'	Bell Canyon
DV tool Depth 4,550'	
4,616'	Cherry Canyon
5,947'	Brushy Canyon
7,564'	Bone Spring
7,868'	Avalon

Hole Size: **7 7/8"**
Hole Size. 7 7/8"
Whip
Hole Size: **7 7/8"**
12,816'
Production Casing
OD: **5 1/2"**
Wt: **20.#**
Grd: **L-80**
Con: **LTC**
Pilot TD: 9,800'

Wellhead Equipment	
A Section	13-3/8" x 11" 5K SOW
B Section	11" 5K X 11" 5K
C Section	11" 5K X 7-1/16" 10K
D Section	N/A
Required BOP Stack	11" 5K- Double, Annular, Rot Head, W/Orbit Valve

Mud				
Depth	**Type**	**Weight**	**F. Vis**	**FL**
0' - 1,450'	Spud Mud	8.4 - 8 7	32 - 34	NC - NC
1,450' - 3,740'	Brine	9 8 - 10.1	28 - 29	NC - NC
3,740' - 7,873'	Cut Brine	8 4 - 9	28 - 30	NC - NC
7,873' - 9,800'	Cut Brine	8.4 - 9.5	28 - 30	NC - NC
7,873' - 8,628'	Cut Brine	8 4 - 9	28 - 30	NC - NC
8,628' - 12,816'	Cut Brine	8 4 - 9	28 - 30	NC - NC

Cement							
Slurry	**Top**	**Btm**	**Wt**	**Yld**	**%Exc**	**Bbl**	**Sx**
Surface							
Single Slurry	0'	1,450'	13.5	1 73	150	445	1443
Shallow Int							
Lead	0'	3,240'	12.0	1 8	150	323	1009
Tail	3,240'	3,740'	14.2	1.37	150	59	243
Production							
1st Lead	4,550'	8,000'	12.4	2 09	75	186	501
1st Tail	8,000'	12,816'	14.5	1 24	75	262	1187
2nd Lead	3,240'	4,300'	12.4	2.19	200	68	173
2nd Tail	4,300'	4,550'	14.8	1.33	200	23	98

LOGS	**Type**	**Logs**	**Interval**	**Vendor**
	Mudlog	Mudlog	Int Csg to TD	Suttles
	OH	Dual Induction	Curve to Int Csg	TBD
	LWD	GR/Neutron	Int Csg to Surface	TBD
	LWD	MWD/Gamma	Curve/Lateral	TBD
	OH	Triple Combo/DLL/Spectral GR	Pilot TD to 7,500	TBD

Directional Plan						
Target Line:	8355' @ 0' VS w/ 0.5 deg updip					
Target Window:	20' Below & 20' Above					
	MD	**INC**	**AZM**	**TVD**	**VS**	**DLS**
KOP	7,873'	0.00	0.00	7,873'	0'	0.00
EOB	8,628'	90.50	359.60	8,350'	482'	12.00
TD	12,816'	90.50	359 60	8,314'	4,670'	0.00
Hardlines:	Lateral- 330' from all lease lines. Vertical- Actual Lease Lines					
Notes:	Please note SHL and BHL distance from lease lines					

Permian District

Poker Lake
PLU Phantom Banks 3-26-30 USA 1H
Well #1

Wellbore #1

Plan: Design #1

Standard Planning Report

08 September, 2011

EXHIBIT G

Chesapeake Operating
Planning Report

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well Well #1
Company:	Permian District	**TVD Reference:**	RKB @ 3188.0usft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	RKB @ 3188.0usft (Original Well Elev)
Site:	PLU Phantom Banks 3-26-30 USA 1H	**North Reference:**	Grid
Well:	Well #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project Poker Lake, Eddy County, NM

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

Site PLU Phantom Banks 3-26-30 USA 1H

Site Position:		**Northing:**	387,834.86 usft	**Latitude:**	32.0653794100
From:	Lat/Long	**Easting:**	685,831.98 usft	**Longitude:**	-103.8668751000
Position Uncertainty:	0.0 usft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.2476602 °

Well Well #1

Well Position	**+N/-S**	0.0 usft	**Northing:**	387,834.86 usft	**Latitude:**	32.0653794100
	+E/-W	0.0 usft	**Easting:**	685,831.98 usft	**Longitude:**	-103.8668751000
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,163.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/6/2011	7.6700449	60.0060084	48,481

Design Design #1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.60

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.0000000	
7,873.3	0.00	0.00	7,873.3	0.0	0.0	0.00	0.00	0.00	0.0000000	
8,627.5	90.50	359.60	8,350.8	481.6	-3.3	12.00	12.00	0.00	359.6021190	
12,815.9	90.50	359.60	8,314.2	4,669.8	-32.4	0.00	0.00	0.00	0.0000000	BHL #1

Chesapeake Operating
Planning Report

Database:	Drilling Database	**Local Co-ordinate Reference:**	Well Well #1
Company:	Permian District	**TVD Reference:**	RKB @ 3188.0usft (Original Well Elev)
Project:	Poker Lake	**MD Reference:**	RKB @ 3188.0usft (Original Well Elev)
Site:	PLU Phantom Banks 3-26-30 USA 1H	**North Reference:**	Grid
Well:	Well #1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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 Well #1
Company:	Permian District	TVD Reference:	RKB @ 3188.0usft (Original Well Elev)
Project:	Poker Lake	MD Reference:	RKB @ 3188.0usft (Original Well Elev)
Site:	PLU Phantom Banks 3-26-30 USA 1H	North Reference:	Grid
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,873.3	0.00	0.00	7,873.3	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	3.20	359.60	7,900.0	0.7	0.0	0.7	12.00	12.00	0.00
8,000.0	15.20	359.60	7,998.5	16.7	-0.1	16.7	12.00	12.00	0.00
8,100.0	27.20	359.60	8,091.6	52.8	-0.4	52.8	12.00	12.00	0.00
8,200.0	39.20	359.60	8,175.1	107.5	-0.7	107.5	12.00	12.00	0.00
8,300.0	51.20	359.60	8,245.4	178.3	-1.2	178.3	12.00	12.00	0.00
8,400.0	63.20	359.60	8,299.5	262.2	-1.8	262.2	12.00	12.00	0.00
8,500.0	75.20	359.60	8,335.0	355.5	-2.5	355.5	12.00	12.00	0.00
8,600.0	87.20	359.60	8,350.2	454.1	-3.2	454.1	12.00	12.00	0.00
8,627.5	90.50	359.60	8,350.8	481.6	-3.3	481.6	12.00	12.00	0.00
8,700.0	90.50	359.60	8,350.1	554.1	-3.8	554.1	0.00	0.00	0.00
8,800.0	90.50	359.60	8,349.3	654.1	-4.5	654.1	0.00	0.00	0.00
8,900.0	90.50	359.60	8,348.4	754.1	-5.2	754.1	0.00	0.00	0.00
9,000.0	90.50	359.60	8,347.5	854.1	-5.9	854.1	0.00	0.00	0.00
9,100.0	90.50	359.60	8,346.7	954.1	-6.6	954.1	0.00	0.00	0.00
9,200.0	90.50	359.60	8,345.8	1,054.1	-7.3	1,054.1	0.00	0.00	0.00
9,300.0	90.50	359.60	8,344.9	1,154.1	-8.0	1,154.1	0.00	0.00	0.00
9,400.0	90.50	359.60	8,344.0	1,254.1	-8.7	1,254.1	0.00	0.00	0.00
9,500.0	90.50	359.60	8,343.2	1,354.1	-9.4	1,354.1	0.00	0.00	0.00
9,600.0	90.50	359.60	8,342.3	1,454.1	-10.1	1,454.1	0.00	0.00	0.00
9,700.0	90.50	359.60	8,341.4	1,554.1	-10.8	1,554.1	0.00	0.00	0.00
9,800.0	90.50	359.60	8,340.5	1,654.0	-11.5	1,654.1	0.00	0.00	0.00
9,900.0	90.50	359.60	8,339.7	1,754.0	-12.2	1,754.1	0.00	0.00	0.00
10,000.0	90.50	359.60	8,338.8	1,854.0	-12.9	1,854.1	0.00	0.00	0.00
10,100.0	90.50	359.60	8,337.9	1,954.0	-13.6	1,954.1	0.00	0.00	0.00
10,200.0	90.50	359.60	8,337.1	2,054.0	-14.3	2,054.1	0.00	0.00	0.00
10,300.0	90.50	359.60	8,336.2	2,154.0	-15.0	2,154.1	0.00	0.00	0.00
10,400.0	90.50	359.60	8,335.3	2,254.0	-15.7	2,254.1	0.00	0.00	0.00
10,500.0	90.50	359.60	8,334.4	2,354.0	-16.3	2,354.1	0.00	0.00	0.00

Chesapeake Operating
Planning Report

Database:	Drilling Database	Local Co-ordinate Reference:	Well Well #1
Company:	Permian District	TVD Reference:	RKB @ 3188.0usft (Original Well Elev)
Project:	Poker Lake	MD Reference:	RKB @ 3188.0usft (Original Well Elev)
Site:	PLU Phantom Banks 3-26-30 USA 1H	North Reference:	Grid
Well:	Well #1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,600.0	90.50	359.60	8,333.6	2,454.0	-17.0	2,454.1	0.00	0.00	0.00
10,700.0	90.50	359.60	8,332.7	2,554.0	-17.7	2,554.1	0.00	0.00	0.00
10,800.0	90.50	359.60	8,331.8	2,654.0	-18.4	2,654.0	0.00	0.00	0.00
10,900.0	90.50	359.60	8,330.9	2,754.0	-19.1	2,754.0	0.00	0.00	0.00
11,000.0	90.50	359.60	8,330.1	2,854.0	-19.8	2,854.0	0.00	0.00	0.00
11,100.0	90.50	359.60	8,329.2	2,954.0	-20.5	2,954.0	0.00	0.00	0.00
11,200.0	90.50	359.60	8,328.3	3,054.0	-21.2	3,054.0	0.00	0.00	0.00
11,300.0	90.50	359.60	8,327.5	3,154.0	-21.9	3,154.0	0.00	0.00	0.00
11,400.0	90.50	359.60	8,326.6	3,253.9	-22.6	3,254.0	0.00	0.00	0.00
11,500.0	90.50	359.60	8,325.7	3,353.9	-23.3	3,354.0	0.00	0.00	0.00
11,600.0	90.50	359.60	8,324.8	3,453.9	-24.0	3,454.0	0.00	0.00	0.00
11,700.0	90.50	359.60	8,324.0	3,553.9	-24.7	3,554.0	0.00	0.00	0.00
11,800.0	90.50	359.60	8,323.1	3,653.9	-25.4	3,654.0	0.00	0.00	0.00
11,900.0	90.50	359.60	8,322.2	3,753.9	-26.1	3,754.0	0.00	0.00	0.00
12,000.0	90.50	359.60	8,321.4	3,853.9	-26.8	3,854.0	0.00	0.00	0.00
12,100.0	90.50	359.60	8,320.5	3,953.9	-27.5	3,954.0	0.00	0.00	0.00
12,200.0	90.50	359.60	8,319.6	4,053.9	-28.2	4,054.0	0.00	0.00	0.00
12,300.0	90.50	359.60	8,318.7	4,153.9	-28.8	4,154.0	0.00	0.00	0.00
12,400.0	90.50	359.60	8,317.9	4,253.9	-29.5	4,254.0	0.00	0.00	0.00
12,500.0	90.50	359.60	8,317.0	4,353.9	-30.2	4,354.0	0.00	0.00	0.00
12,600.0	90.50	359.60	8,316.1	4,453.9	-30.9	4,454.0	0.00	0.00	0.00
12,700.0	90.50	359.60	8,315.2	4,553.9	-31.6	4,554.0	0.00	0.00	0.00
12,800.0	90.50	359.60	8,314.4	4,653.9	-32.3	4,654.0	0.00	0.00	0.00
12,815.9	90.50	359.60	8,314.2	4,669.8	-32.4	4,669.9	0.00	0.00	0.00

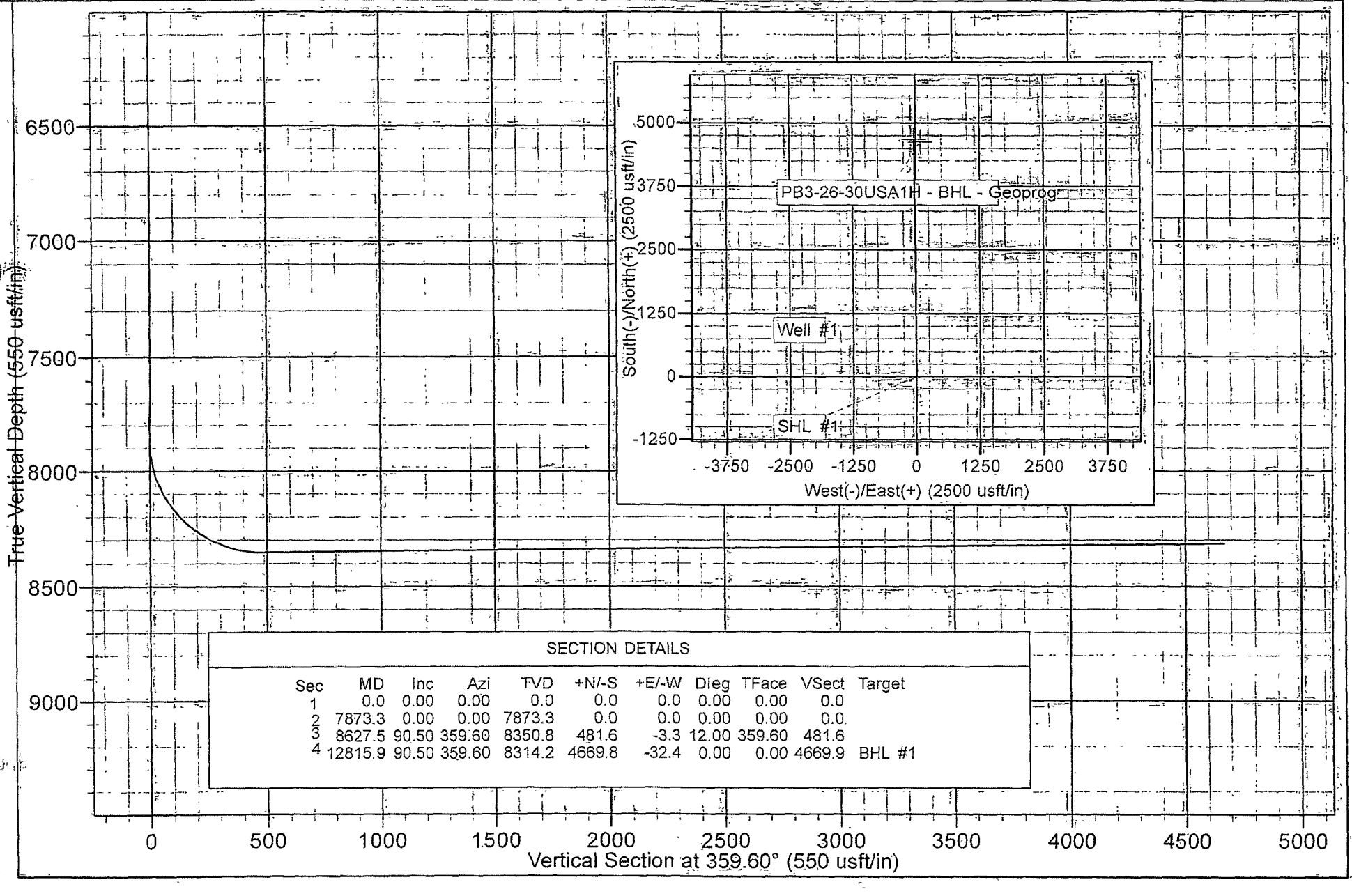
Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL #1 - plan hits target center - Point	0.00	0.00	8,314.2	4,669.8	-32.4	392,504.66	685,799.56	32.0782165433	-103.8669146239
SHL #1 - plan misses target center by 200.7usft at 8250.6usft MD (8212.6 TVD, 141.5 N, -1.0 E) - Point	0.00	0.00	8,355.0	0.0	0.0	387,834.86	685,831.97	32.0653794162	-103.8668751362

Project: Poker Lake
Site: PLU Phantom Banks 3-26-30 USA 1H
Well: Well #1
Wellbore: Wellbore #1
Design: Design #1

PROJECT DETAILS: Poker Lake

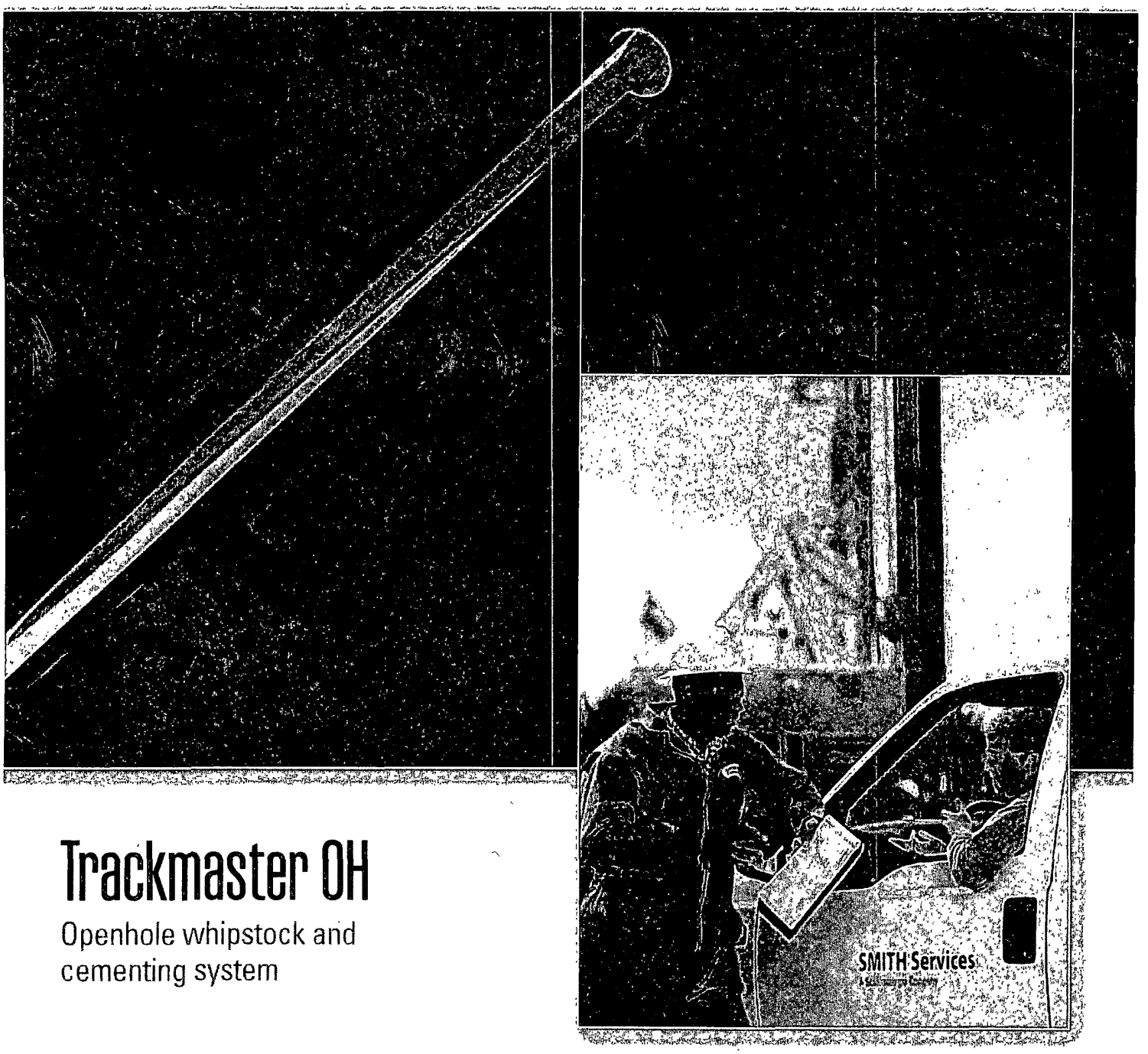
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone



SECTION DETAILS

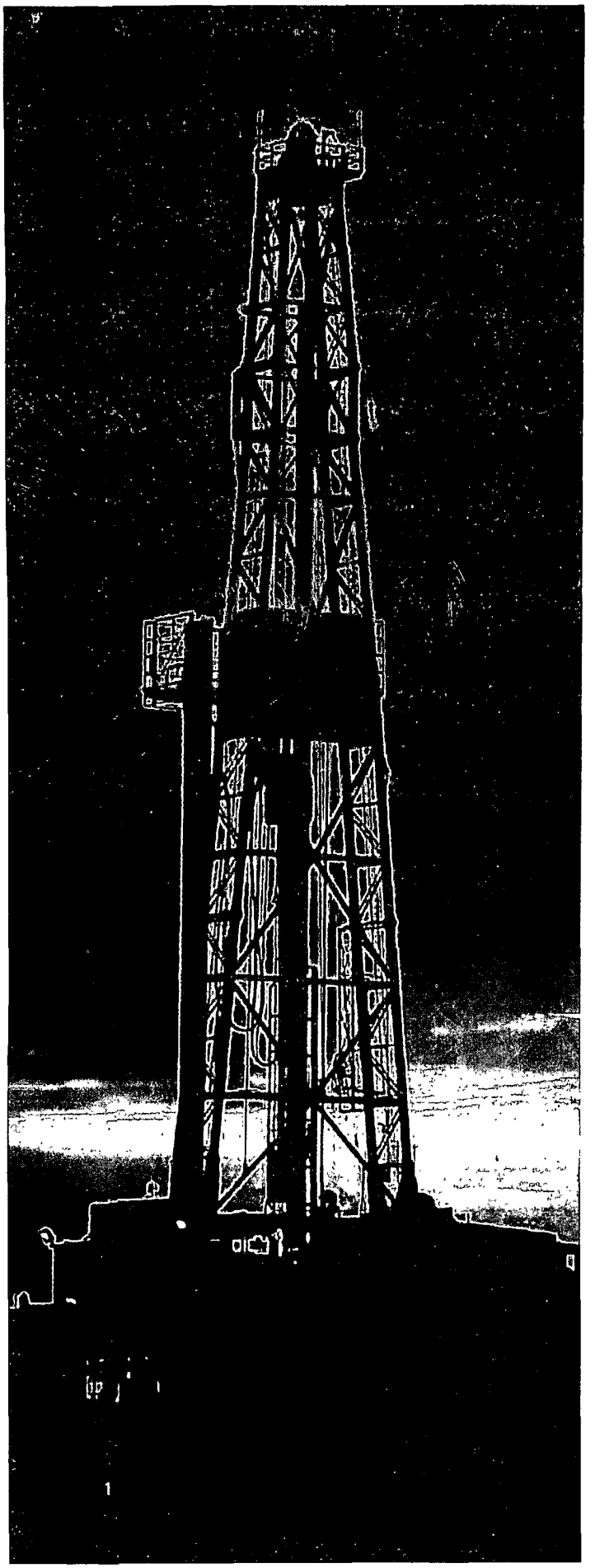
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	7873.3	0.00	0.00	7873.3	0.0	0.0	0.00	0.00	0.0	
3	8627.5	90.50	359.60	8350.8	481.6	-3.3	12.00	359.60	481.6	
4	12815.9	90.50	359.60	8314.2	4669.8	-32.4	0.00	0.00	4669.9	BHL #1

SMITH Services
A Schlumberger Company



Trackmaster OH

Openhole whipstock and cementing system

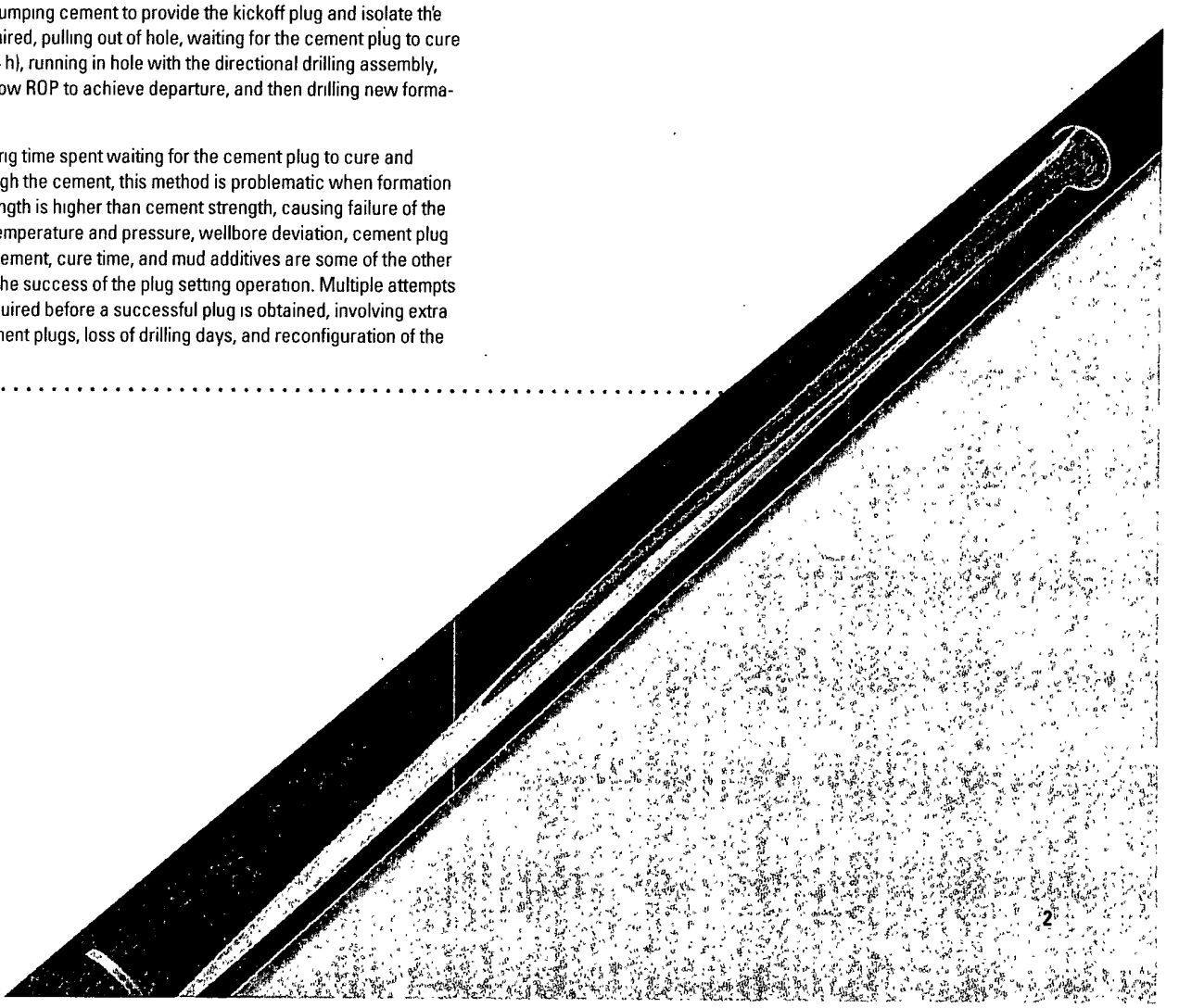


Trackmaster OH openhole whipstock and cementing system delivers faster, higher-quality sidetracks, matching specific technologies to borehole properties and your objectives in order to achieve high success rates. The system provides a precise kickoff point, together with isolation of the pilot hole if required. Setting the whipstock and the cementing operation are accomplished in a single trip.

Unreliability of cement plug sidetracking

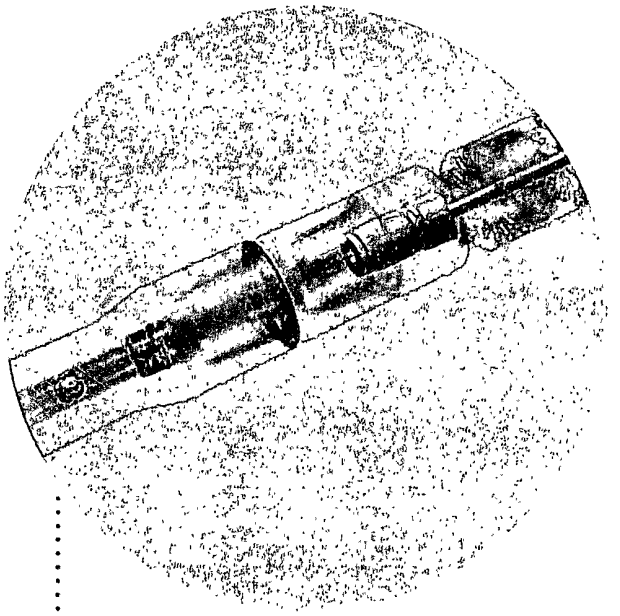
Traditional cement plug sidetracking involves running in hole with open-ended drillpipe, pumping cement to provide the kickoff plug and isolate the lower zone if required, pulling out of hole, waiting for the cement plug to cure (approximately 24 h), running in hole with the directional drilling assembly, time-drilling at a low ROP to achieve departure, and then drilling new formation.

In addition to the rig time spent waiting for the cement plug to cure and then drilling through the cement, this method is problematic when formation compressive strength is higher than cement strength, causing failure of the plug. Downhole temperature and pressure, wellbore deviation, cement plug depth, quality of cement, cure time, and mud additives are some of the other factors affecting the success of the plug setting operation. Multiple attempts are frequently required before a successful plug is obtained, involving extra trip time, new cement plugs, loss of drilling days, and reconfiguration of the drilling trajectory.



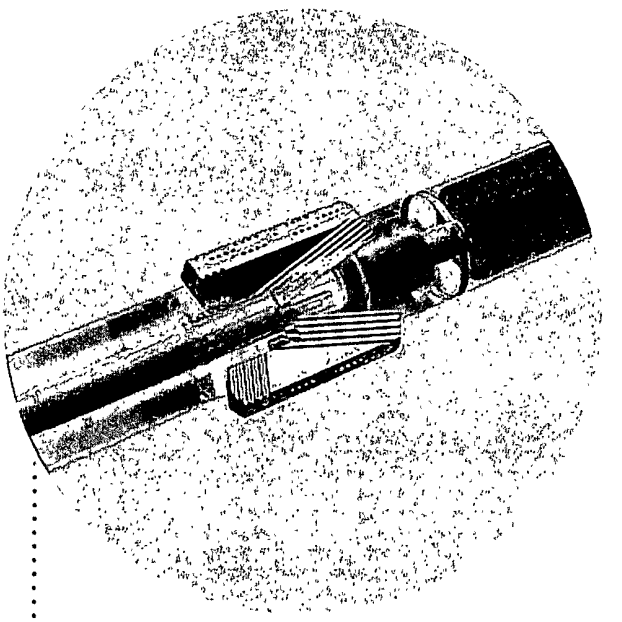
Burst Barrel

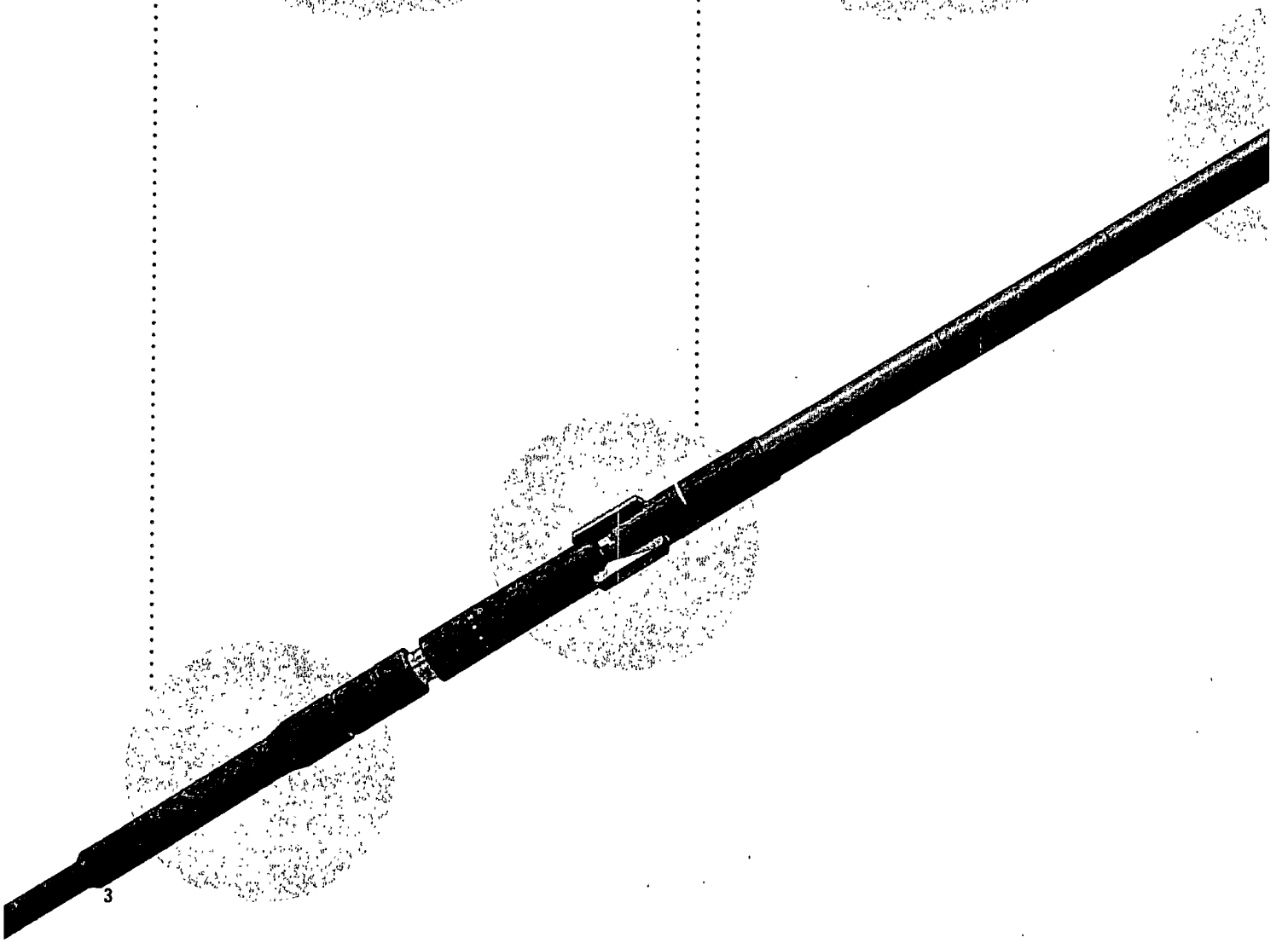
After hydraulically setting the anchor, pressure is increased to shear a piston in the burst barrel sub, allowing communication with the annulus.



Anchor

Hydraulically set expandable anchor enables kickoff at a specific depth, and allows immediate sidetracking without cement cure wait time. Triaxial steel firmly grips the borehole wall.



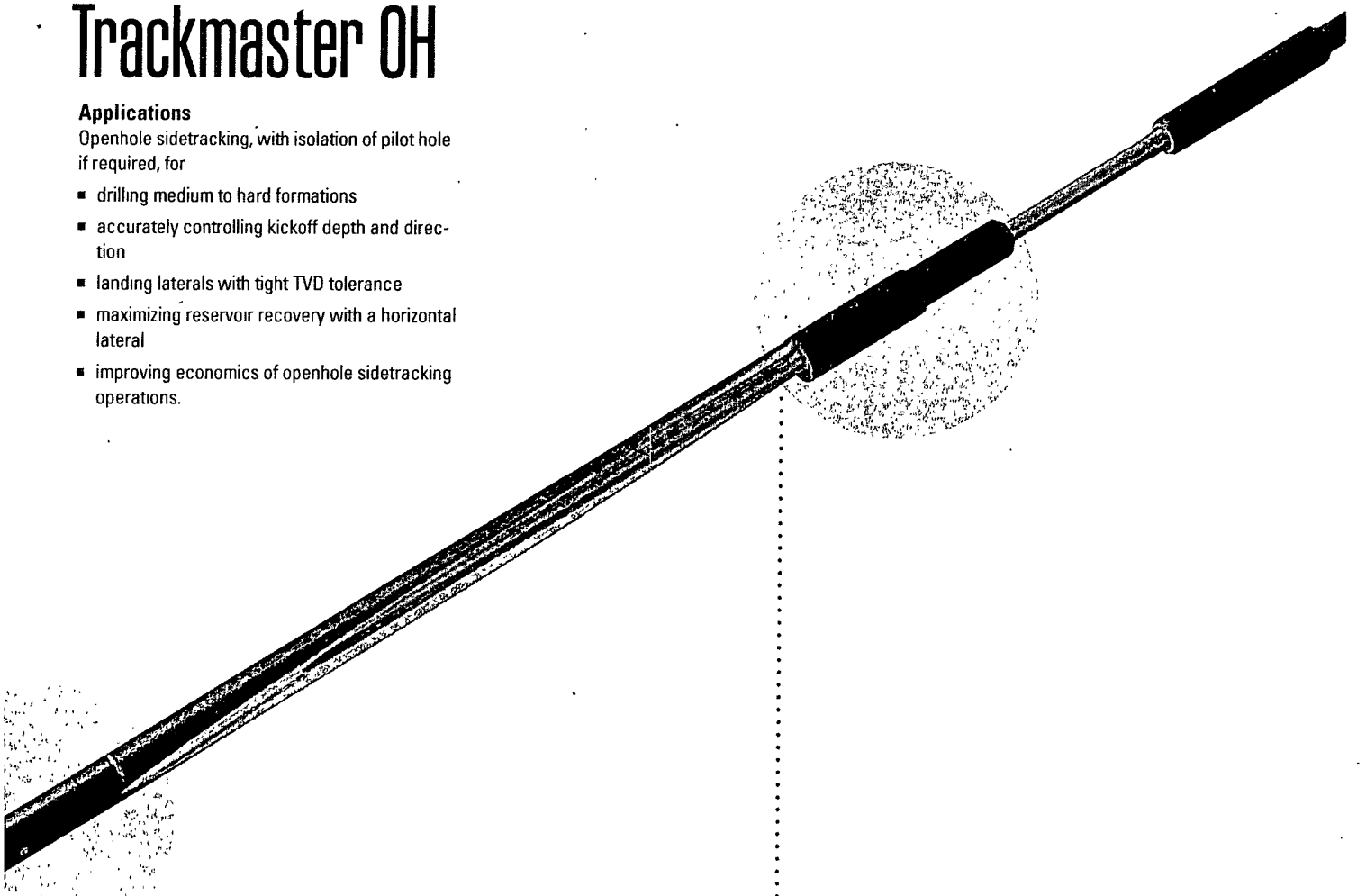


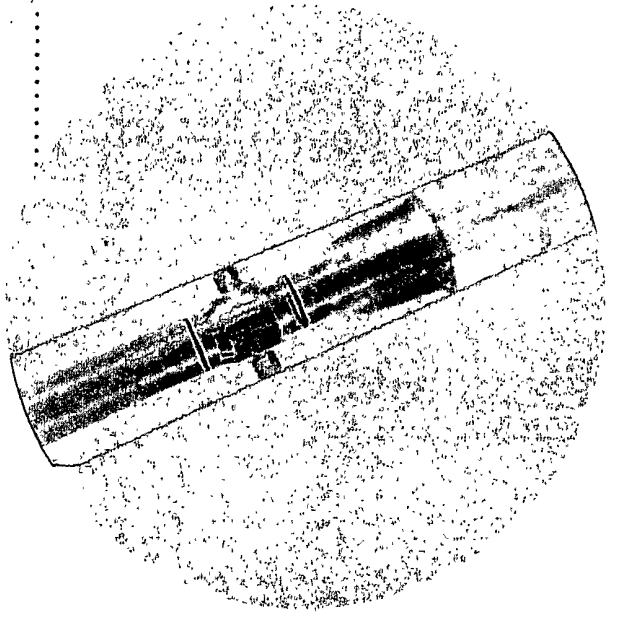
Trackmaster OH

Applications

Openhole sidetracking, with isolation of pilot hole if required, for

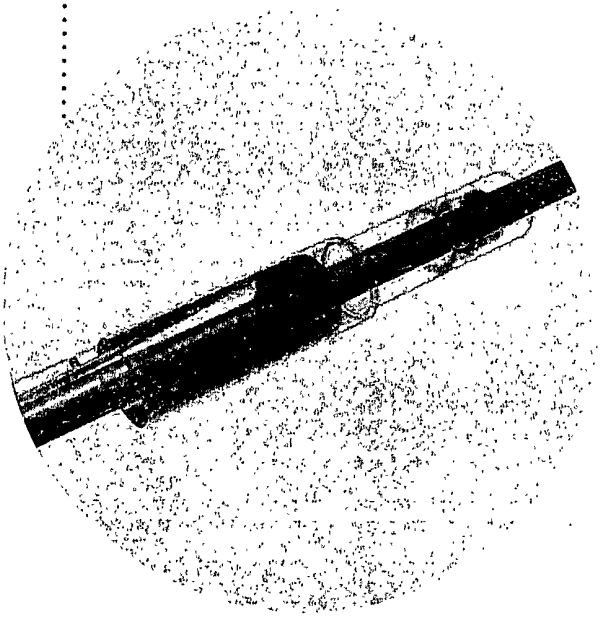
- drilling medium to hard formations
- accurately controlling kickoff depth and direction
- landing laterals with tight TVD tolerance
- maximizing reservoir recovery with a horizontal lateral
- improving economics of openhole sidetracking operations.





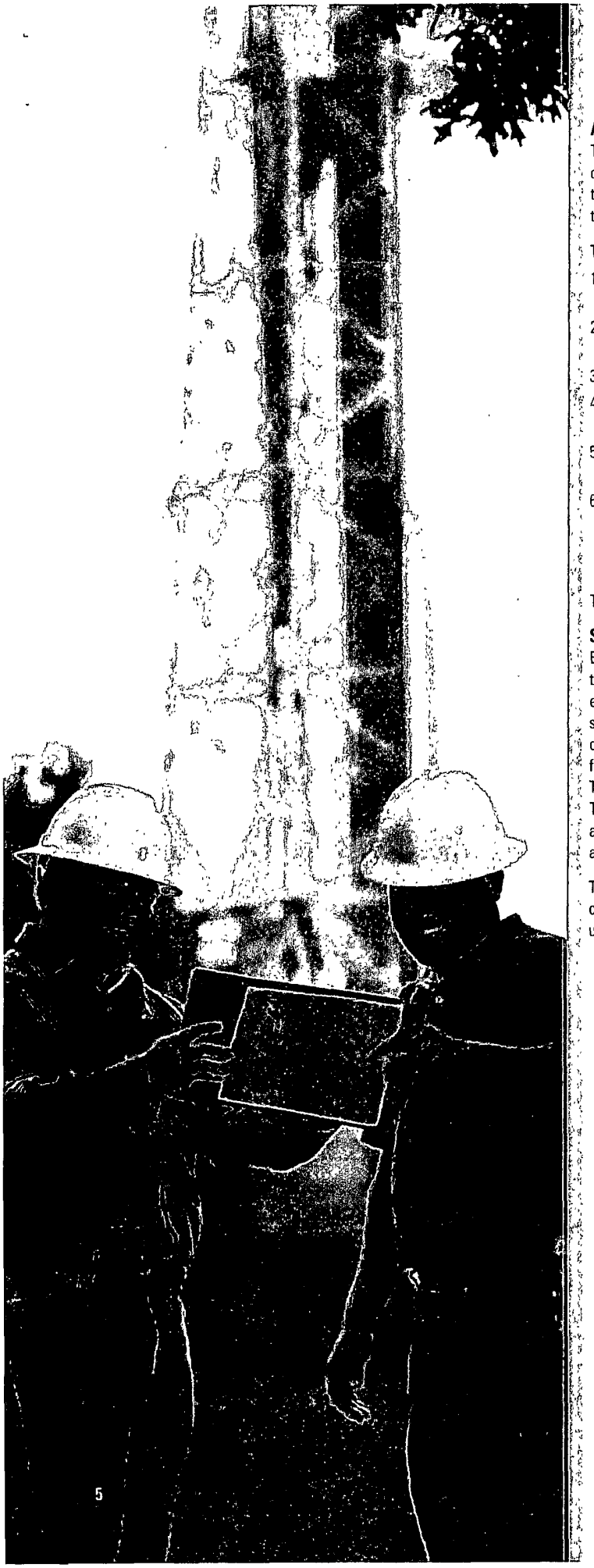
Sealing Area and Shear Bolt

Through bore incorporates stinger assembly and forms the conduit for pumping cement. A second, or lower, shear screw engages windows in the extension nipple that align with jetted ports on the landing collar. When the whipstock is set hydraulically, the jets are blanked off. When set mechanically, the ports are run open to allow communication with the annulus.



Spline and Shear Bolt

Running tool has a flat shoulder so that weight can be applied while running in the hole. Internal splines engage with the spline mandrel, transmitting torque through the whipstock for orientation and rotation as required.



Accuracy and success with Trackmaster OH system

The Trackmaster OH* openhole whipstock system circumvents all the obstacles encountered with conventional cement plug sidetracking. It facilitates initiation of a lateral while allowing cementing of the lower zones. At the same time it increases operational reliability, and saves time.

The process involves:

1. running in hole with the whipstock and expandable anchor at about 2 min/stand
2. orienting the whip and hydraulically setting the anchor at an optimal depth; anchor firmly grips the borehole wall
3. rupturing the burst barrel, establishing communication with the annulus
4. shearing off by setting weight, with two positive indicators—weight and movement—that the pins have sheared and the tool has set
5. pumping cement through the whipstock, unseating the stinger, and pulling out of hole
6. running in with the directional drilling BHA without delay, establishing the desired borehole trajectory, and drilling ahead. Deflection is provided by the 3° ramp. Compared with using a cement plug as a deflector, the ramp design lowers bending stresses in the drilling assembly.

The probability of successfully sidetracking on the first attempt is very high.

Savings in time and materials

By providing a positive means of controlling the kickoff depth and orientation with a steel ramp, the Trackmaster OH openhole whipstock system eliminates the uncertainty of kicking off with a cement plug, making expensive repeat attempts unnecessary. A clean, smooth transition is created for directional and horizontal applications. With no packer, running in hole is faster, and the large tool ID enables cement to be pumped at a higher rate. The system avoids rig time wasted waiting for the cement plug to cure. These factors, combined with a reduced interval for time-drilling, result in a significant saving of rig time. As an added benefit, the anchor slip design allows flow around the anchor, avoiding bullheading cement.

The expandable anchor technology has consistently proven to be a reliable choice for openhole sidetracking. Both PDC and roller cone bits have been used to successfully sidetrack and drill ahead.

Features

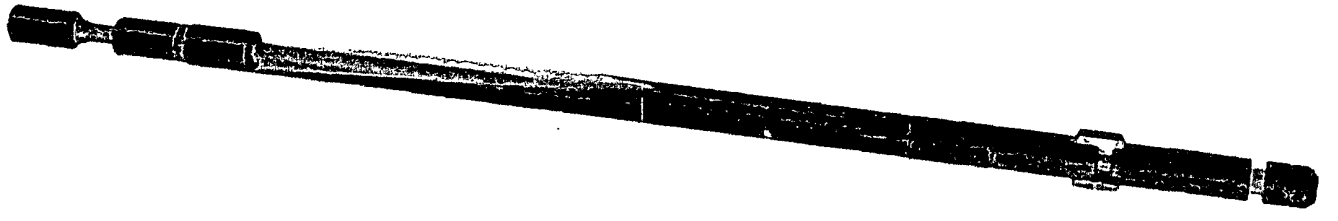
- Accurate control of kickoff depth and direction with special fine-grain alloy steel whip deflector
- Lower bending stresses with 3° ramp
- Higher rate of pumping cement enabled by large ID
- Faster running in speed with no packer to damage
- Hydraulically set expandable anchor with triaxial steel slips for
  - spanning multiple hole sizes
  - optimum placement at specific depths
  - immediate sidetracking—no waiting for cement to cure
- Torque transmission through running tool–whip interface and spline
- Flow around anchor and protection from bullheading cement, with anchor slip design

Benefits

- Maximizes probability of successful sidetrack on first attempt
- Saves rig time with faster run in hole speed and cement pump rate
- Eliminates wait for cement to cure before sidetracking
- Reduces interval required for time-drilling

Trackmaster OH System Specifications

Tool size/Casing OD	Maximum OD of whipstock assembly	Whipstock OD	Average size of hole opening
(in)	(in)	(in)	(in)
7	5.750	5 375	6 12 - 6.75
9-5/8	8.000	7 530	8 50 - 8 75
13-3/8	11 875	11.380	12.25 - 12 38

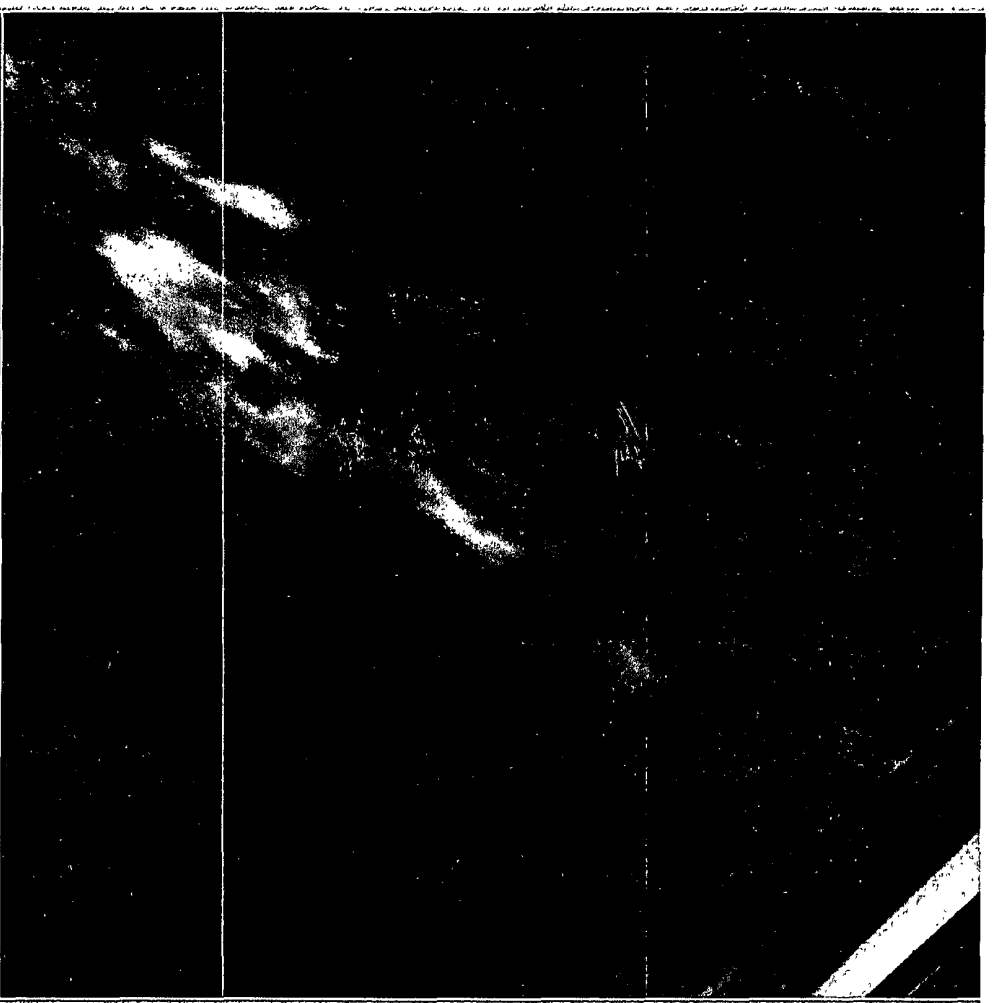


Expandable Anchor Specifications

Size	Body diameter	Maximum expanded diameter	Average size of hole opening
(in)	(in)	(in)	(in)
7 x 9-5/8	5.76	9.217	6.125 - 7.875
9-5/8 x 13-3/8	8.19	13 165	8 5 - 8 75
13-3/8 x 20	11 94	19 085	12.25

Trackmaster OH

Trackmaster OH open-hole whipstock and cementing system delivers faster, higher-quality sidetracks, matching specific technologies to borehole properties and your objectives in order to achieve high success rates.



www.smith.com/trackmaster

SMITH Services
A Schlumberger Company

CASE STUDY

SMITH Services
A Schlumberger Company

Trackmaster Cementing Whipstock Reduces Rig Time for Sidetracking on Land-Based US Wells

Enables kickoff at optimum depth and with known deflection using a mechanical platform; saves time and maximizes probability of successful sidetracking on the first attempt

CHALLENGE
To minimize rig time associated with kicking off a directional well/sidetracking.

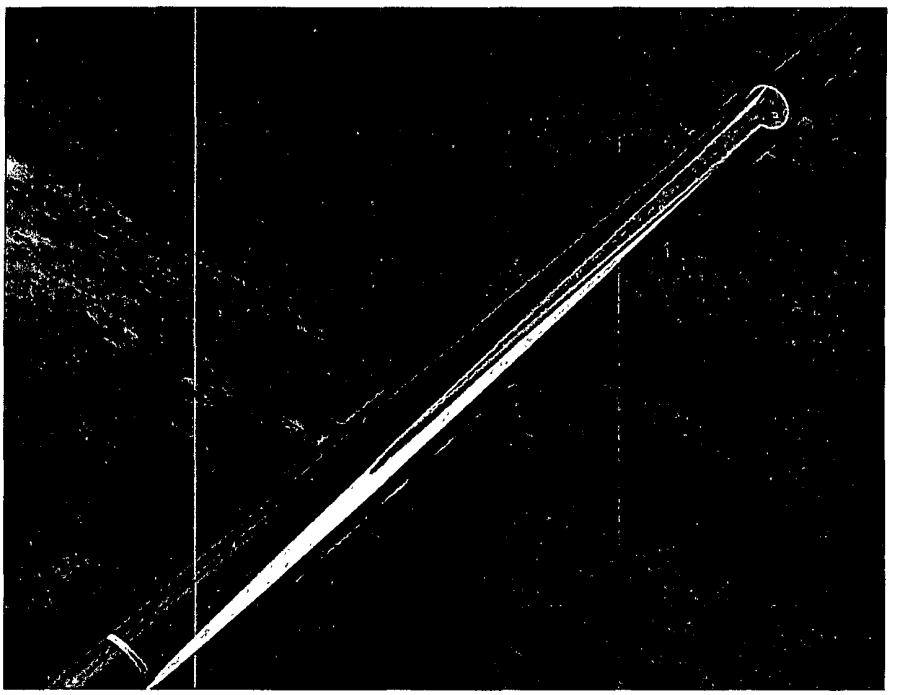
SOLUTION
Run a Trackmaster* cementing whipstock wellbore departure system, avoiding the need to wait for the cement to harden and eliminating the non-productive drilling time. Maximize the probability of a successful sidetrack on the first attempt as well as isolate the pilot hole in the same trip.

RESULTS
Saved up to 24 hours of kickoff time on over 30 land wells in multiple US basins.

Traditional sidetracking with cement plug can be slow and problematic

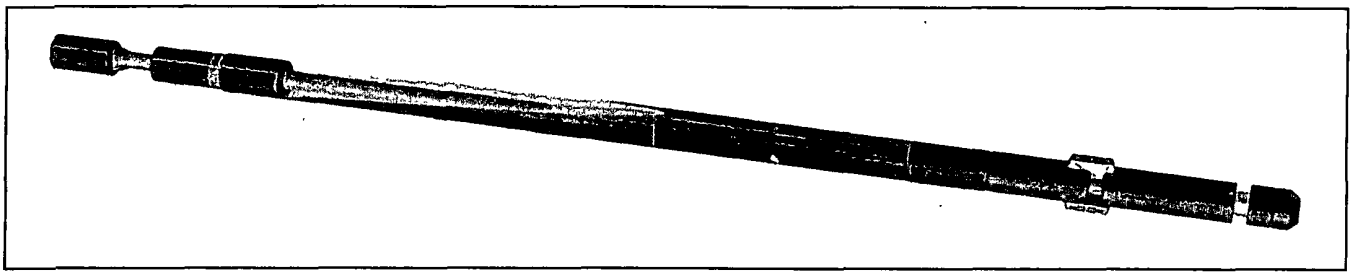
Traditional cement plug sidetracking involves running in hole with drillpipe, pumping the kickoff cement plug, pulling out of hole, waiting on cement (approximately 24 hours), running in hole with the directional drilling assembly, time drilling to achieve departure, and then drilling new formation.

In addition to the rig time spent waiting for the cement to cure and then drilling through the cement, this method is problematic when formation compressive strength is higher than cement strength, causing failure of the plug. Temperature issues, mud additives and wet formations contaminating the cement are other obstacles to a successful plug, leading to expensive re-attempts.



Cementing Whipstock System

CASE STUDY: Cementing Whipstock System



Cementing Whipstock System

Trackmaster cementing whipstock facilitates a successful sidetrack, with improved efficiency and placement

The Trackmaster cementing whipstock circumvents all the obstacles encountered with conventional cement plug sidetracking. The process involves

- Running in hole with the whipstock and expandable anchor
- Orienting the whipstock and hydraulically setting the anchor
- Rupturing the burst barrel and shearing off the running tool
- Pumping cement and pulling out of hole
- Running in with the directional drilling BHA without delay, establishing the desired borehole trajectory and continuing to drill ahead. Deflection is provided by the simple three degree ramp design of the whipstock. This enables a lower bend motor to be used if sidetracking with a downhole motor, compared to drilling off a cement plug.

The probability of successfully sidetracking on the first attempt is very high.

No waiting for cement to harden or time drilling through cement

Over 30 jobs have been successfully completed in multiple US basins. The expandable anchor technology has proven to be a reliable choice for openhole sidetracking. Since there was no need to wait for the cement to cure or time drill, rig time was saved by utilizing the cementing whipstock. Both PDC and roller cone bits were used to successfully sidetrack and drill ahead.

Additional benefits

As an added benefit, the anchor slip design allows flow around the anchor, which helps to establish a good cement seal and avoid bullheading cement.

BLOWOUT PREVENTER SCHEMATIC

CHESAPEAKE OPERATING INC

WELL : Permian District
FIELD : Avalon
RIG :
COUNTY : STATE :
OPERATION : Intermediate and Production Hole Sections REVISION : : / /

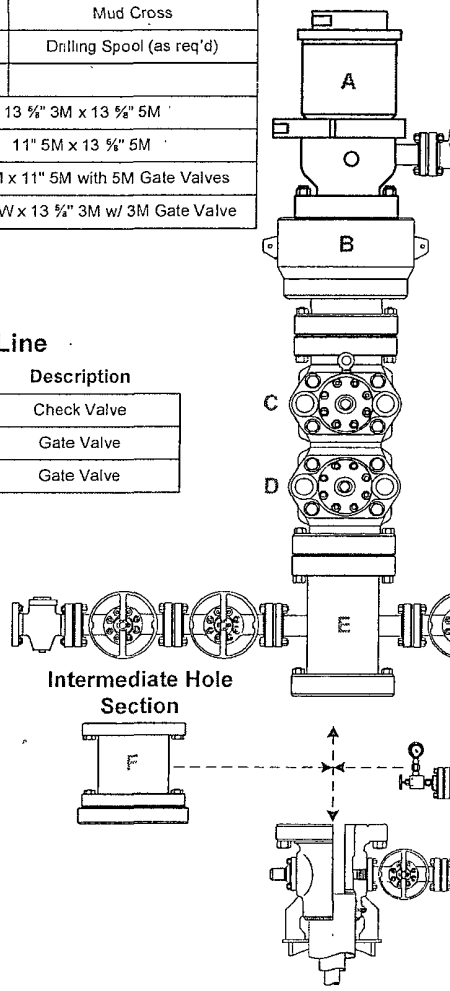
Component Descriptions

	Size	Pressure	Description
A	13 ⅝"	LP	Rotating Head w/ Orbit Valve
B	13 ⅝"	5,000 psi	Annular
C	13 ⅝"	5,000 psi	Pipe Ram
D	13 ⅝"	5,000 psi	Blind Ram
E	13 ⅝"	5,000 psi	Mud Cross
F	13 ⅝"	5,000 psi	Drilling Spool (as req'd)
G			
DSA (Int)	13 ⅝" 3M x 13 ⅝" 5M		
DSA (Prod)	11" 5M x 13 ⅝" 5M		
B Sec	13 ⅝" 3M x 11" 5M with 5M Gate Valves		
A Sec	13 ⅝" SOW x 13 ⅝" 3M w/ 3M Gate Valve		

Exception	Reference

Trip Tank Required Yes [X] No [ ]

5k psi BOPE to be tested and used as a 3k psi BOPE



Intermediate Hole Section

Production Hole Section

Kill Line

ID	Pressure	Description
2 1/16"	5,000 psi	Check Valve
2 1/16"	5,000 psi	Gate Valve
2 1/16"	5,000 psi	Gate Valve

Choke Line

ID	Pressure	Description
3 1/16"	5,000 psi	Gate Valve
3 1/16"	5,000 psi	HCR Valve
3 1/16"	5,000 psi	Steel

Testing Requirements

Item	Pressure	Frequency
Rotating Head	250 psi	Once prior to DO shoe
Annular	250 / 3,500 psi	Every 21 Days
Rams	250 / 5,000 psi	Every 21 Days
Choke Manifold	250 / 5,000 psi	Every 21 Days

- Function test on trips
- H_2S service trim required

Approved by	Date
DEM	
VP	
B&C	

Revised EXHIBIT F-1

CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING INC

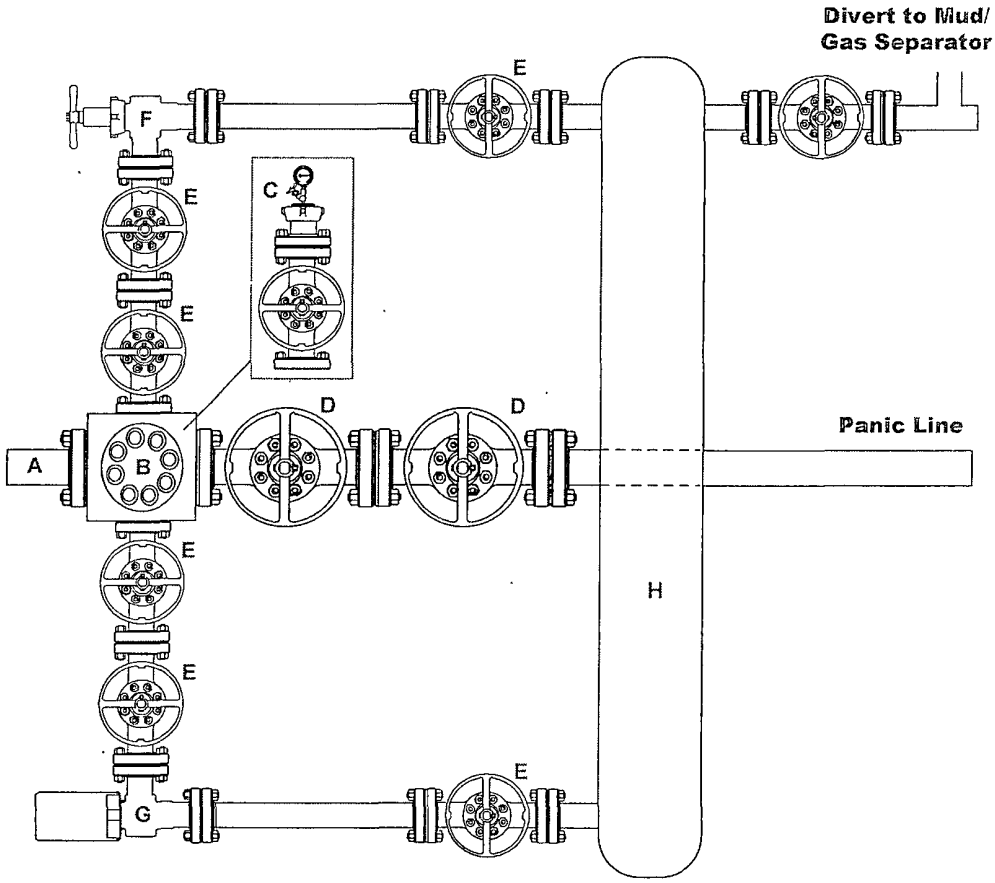
WELL : Permian District
FIELD : Avalon
RIG :
COUNTY :
STATE :
OPERATION :
REVISION : / /

Component Descriptions

	Size	Pressure	Description
A	3 1/16"	5,000 psi	Steel
B	3 1/16" x 2 1/16"	5,000 psi	Block T
C	2 1/16"	5,000 psi	Top Valve
D	3 1/16"	5,000 psi	Gate Valve
E	2 1/16"	5,000 psi	Gate Valve
F	2 1/16"	5,000 psi	Manual Choke
G	2 1/16"	5,000 psi	Hydraulic Choke
H	8" minimum		Buffer Chamber

Exception	Reference

5k psi BOPE to be tested and used as a 3k psi BOPE



Approved by	Date
DEM	
VP	
B&C	

Revised EXHIBIT F-2

PLU Phantom Banks 3-26-30 USA 1H

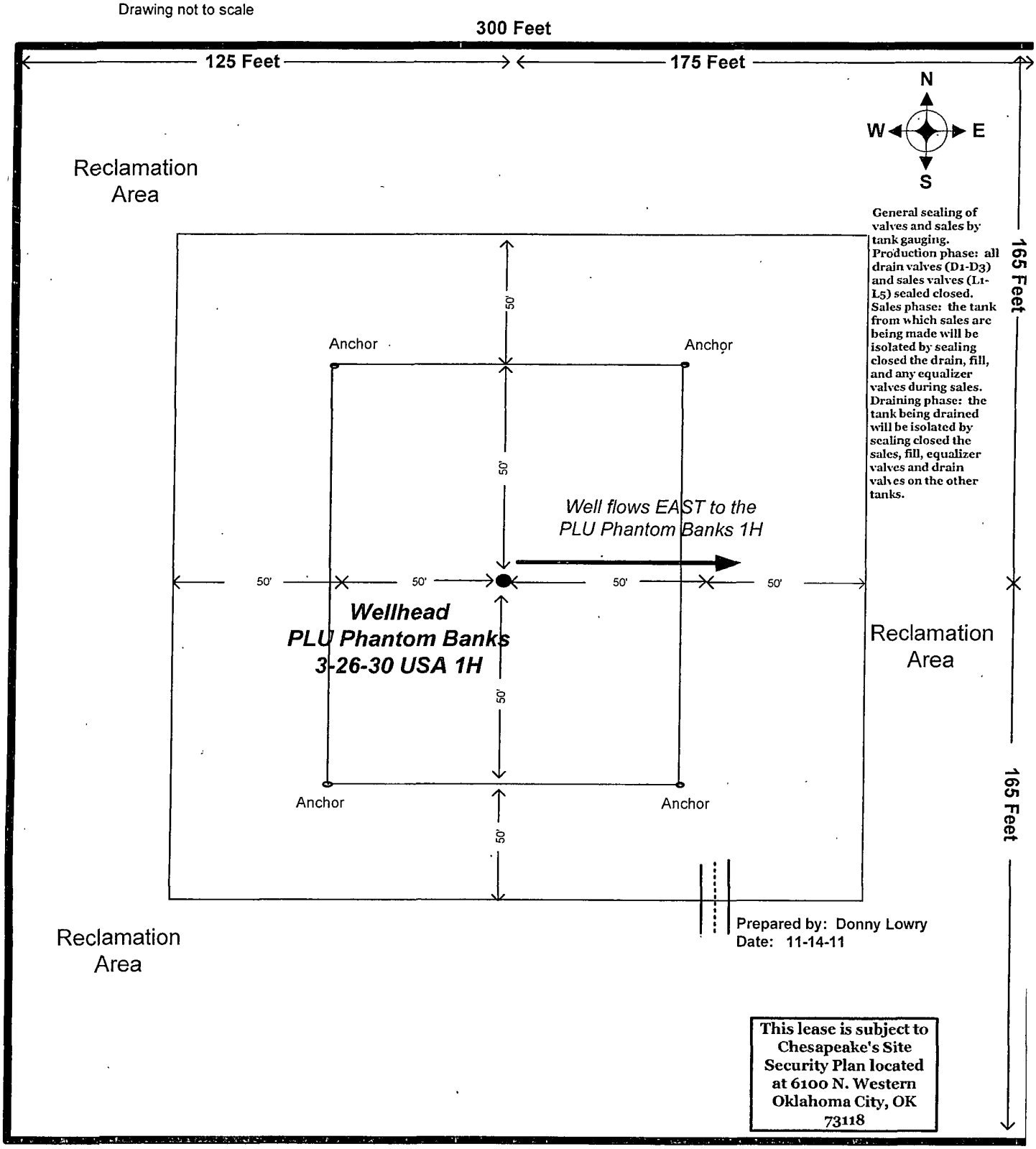
Property # 640121

Section 3 – T26S – R30E 300 FSL & 1980 FEL of Section

Lat.: 32.064676 – Long.: -103.866511

Eddy County, New Mexico

Drawing not to scale



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

Revised EXHIBIT C-1

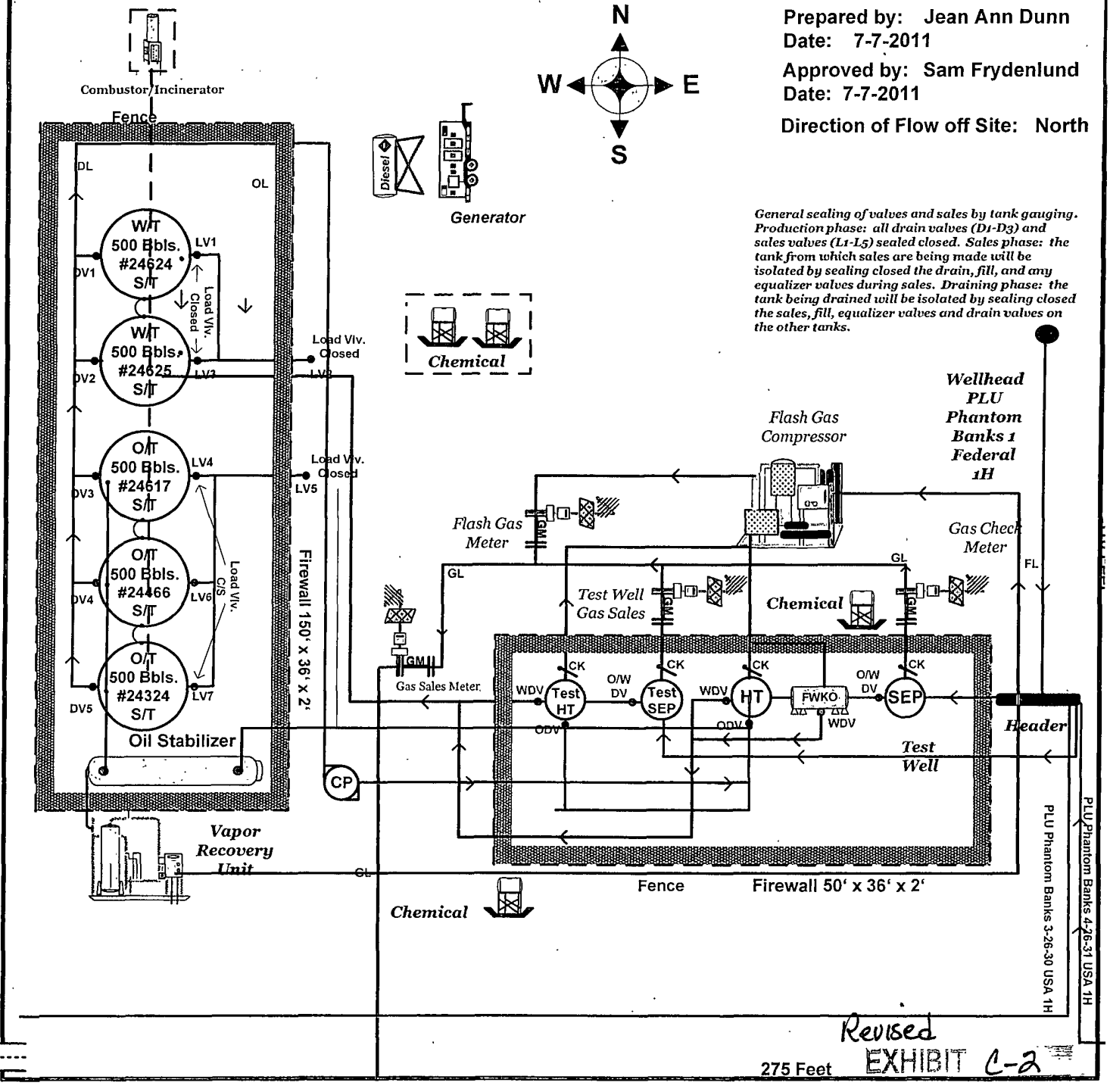
CHESAPEAKE OPERATING, INC.

Chesapeake ENERGY

PLU Phantom Banks 1 Federal 1H
Property # 623057
NW NE Section 1 – T26S – R30E
350 FSL & 2290 FEL
Lat.: 32.035615– Long.: -103.50081
Eddy County, New Mexico

All equipment shown here will be on location but subject to changes in positioning.

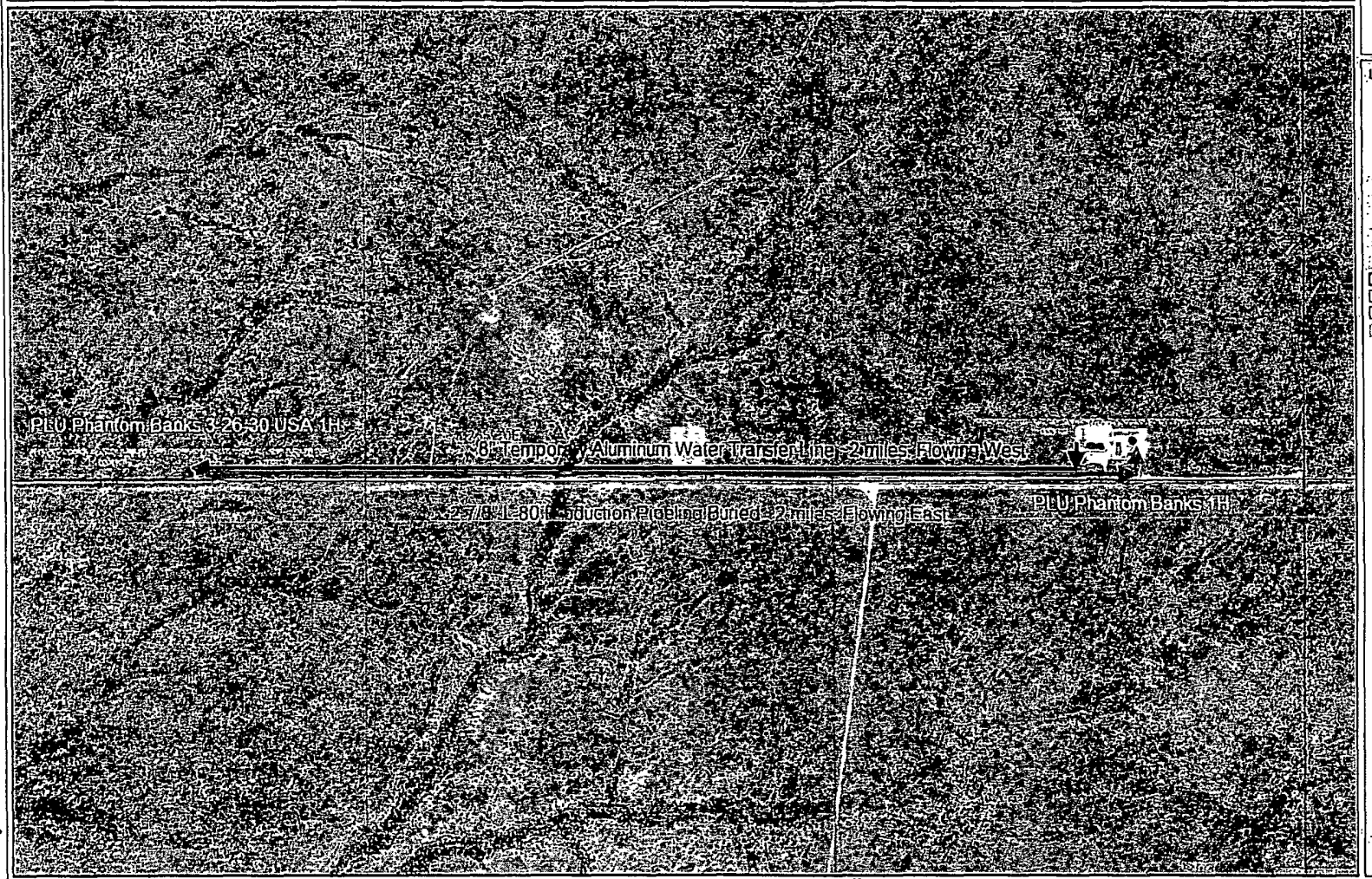
This lease is subject to Chesapeake's Site Security Plan located at 6100 N. Western Oklahoma City, OK 73118



Revised

EXHIBIT C-2

PLU Phantom Banks 3-26-30 USA 1H Pipeline Map



Chesapeake ENERGY

Legend

- WELL
  - OPERATED WELL
  - NON-OPERATED WELL
- COMPRESSOR STATION
- GAS VALVE - CRW
- GAS VALVE - OKC
- METER - CRW
- METER - OKC
- CHK Pipeline
- RIG
- OWNERSHIP
- PROSPECT
- ABSTRACT
- TOWNSHIP
- SECTION

1:14,948

0.5 0 0.24 0.5 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Revised

EXHIBIT C-3

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Chesapeake Operating, Inc.
LEASE NO.:	NMLC069513A
WELL NAME & NO.:	PLU Phantom Banks 3 26 30 USA 1H
SURFACE HOLE FOOTAGE:	300' FSL & 1980' FEL
BOTTOM HOLE FOOTAGE	350' FNL & 1980' FEL
LOCATION:	Section 3, T. 26 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.

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)

Proposed Buried Pipeline NOT Approved with this APD:
The operator must submit a sundry notice with a survey plat of the buried pipeline route from the well to the tank battery. The operator is not permitted to disturb any land for the buried pipeline under this APD and COA.

Temporary Freshwater Pipelines (Fracturing Operations):

Maintain a copy of your APD and your approved route diagram on location. BLM personnel may request to see a copy of your permit during construction to ensure compliance with all conditions of approval.

Holder agrees to comply with the following conditions of approval to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.

2. Standard Conditions of Approval:

- Temporary pipelines must be removed within 30-45 days from this route unless granted in writing by the authorized officer.
- Temporary pipelines flowing from the frac pond to the target well(s) will be laid along existing roadways and within the disturbed area of buried pipelines.
- Areas impacted (disturbed greater than vegetation compaction) by your project will require full reclamation.
- Pipelines will be empty before disassembly. Flow water back to the pond whenever possible.
- Do not restrict traffic on existing roads. Place ramps where needed.
- Pipe will be placed not more than 2 feet off the edge of existing lease roads and within buried pipeline corridors.
- All pumps will be placed on existing disturbance (pads, roads, etc.).

3. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer.

Livestock Watering Requirement:
Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will not be impeded by the proposed road or pipeline. The operator shall correct any damage that may occur to the water pipeline due to the action of the pipeline construction, road construction, etc.

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) 234-6235 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

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

F. ON LEASE ACCESS ROADS

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

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

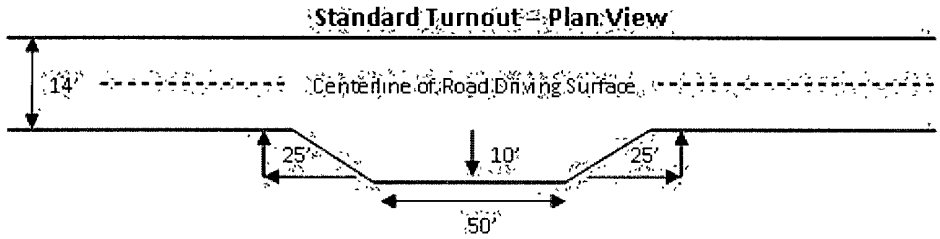
Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

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

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

Ditching
Ditching shall be required on both sides of the road.

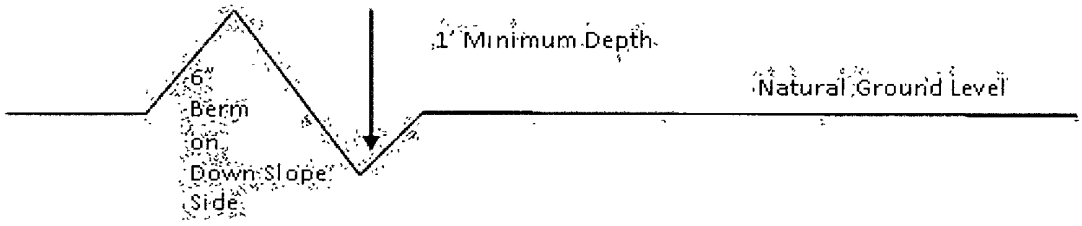
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattleguards

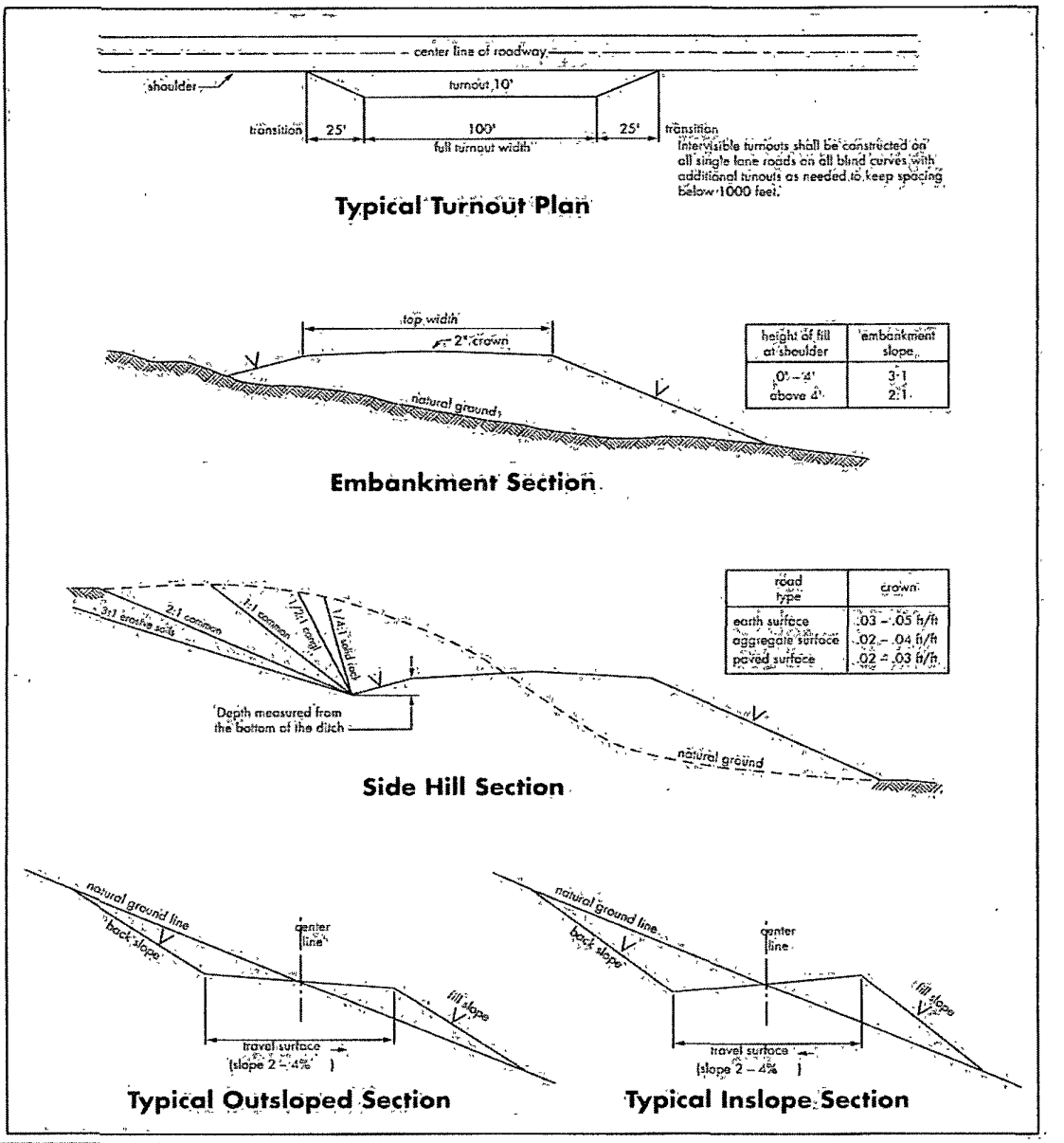
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

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.

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

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

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

B. CASING

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

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

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

1. The operator proposed to set the **13-3/8** inch surface casing at **approximately 1450 feet** and cement to surface. **It is recommended that a well site geologist pick the top of the Rustler formation, due to the unpredictability of the Rustler in this solution trough. The top of the Rustler ranges from 764'-1260' in offset wells. If the salt is encountered set the casing 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.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is: **(ensure casing is set in the Lamar formation at approximately 3700')**

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

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

The pilot hole plugging procedure is approved as written.

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

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

    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. Operator should have plans as to how they will achieve circulation on the next stage.

    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 **3000 (3M)** psi. **Operator installing a 5M and testing as a 3M.**

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

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

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

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

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

d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

CRW 013012

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

No buried production pipelines approved with this APD.

IX. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

Seed Mixture 3, for Shallow Sites

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

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

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

Species	lb/acre
Plains Bristlegrass (*Setaria magrostachya*)	1.0
Green Spangletop (*Leptochloa dubia*)	2.0
Side oats Grama (*Bouteloua curtipendula)*	5.0

*Pounds of pure live seed:

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