

11-649

Hobbs
OCD-ARTESIA

HOBBS OCD

APR 19 2012

RECEIVED

Form 3160-3
(April 2004)

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of Work ☒ DRILL ☐ REENTER		5 Lease Serial No NMNM-126065
1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6 If Indian, Allottee or Tribe Name
2 Name of Operator Cimarex Energy Co. of Colorado		7 If Unit or CA Agreement, Name and No.
3a Address 600 N. Marienfeld St., Ste. 600; Midland, TX 79701		8. Lease Name and Well No Red Tank 4 Federal No. 1 <39179>
3b Phone No. (include area code) 432-571-7800		9. API Well No. 30-015-025-40534
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 480 FNL & 760 FWL At proposed prod Zone 330 FSL & 660 FWL Horizontal Bone Spring test		10 Field and Pool, or Exploratory Bone Spring Wildcat <97933>
14 Distance in miles and direction from nearest town or post office*		11 Sec., T R. M. or Blk. and Survey or Area 4-23S-32E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line if any) 480'		12 County or Parish Eddy Lea
16 No of acres in lease 677.94 acres		13 State NM
17 Spacing Unit dedicated to this well W2W2 159.48 acres		
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 4986'		
19. Proposed Depth Pilot Hole 12400 MD 14982 TVD 10650		20 BLM/BIA Bond No. on File NM-2575
21 Elevations (Show whether DF, KDB, RT, GL, etc) 3586' GR		22 Approximate date work will start* 07.01.11
		23 Estimated duration 25-30 days

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 | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2. A Drilling Plan | 5. Operator Certification |
| 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) | 6. Such other site specific information and/or plans as may be required by the authorized officer |

25. Signature Zeno Farris	Name (Printed/Typed) Zeno Farris	Date 06.06.11
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Title
Manager Operations Administration

Approved By (Signature) /s/ Don Peterson	Name (Printed/Typed)	Date APR 17 2012
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Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE
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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
APR 24 2012

Title 18 U.S.S. 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

*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

APR 25 2012

Application to Drill
Red Tank 4 Federal No. 1
 Cimarex Energy Co. of Colorado
 Lot 4, Section 4
 T23S-R32E; Lea County, NM

In response to questions asked under Section II B of Bulletin NTL-6, the following information is provided for your consideration:

- 1 Location: SHL 480 FNL & 760 FWL
 BHL 330 FSL & 660 FWL

- 2 Elevation above sea level: 3586 GR

- 3 Geologic name of surface formation: Quaternary Alluvium Deposits

- 4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.

- 5 Proposed drilling depth: Pilot Hole 12400 MD 14982 TVD 10650

- 6 Estimated tops of geological markers:

Rustler	1125	Upper Bone Spring Shale	9100
T. Salt	1440	FBSS	9800
B. Salt	4400	SBSS	10400
Delaware	4760	TBSC	10950
Cherry Canyon	5755	TBSS	11700
Basal Brushy Canyon	8400	Wolfcamp	12000
Bone Spring	8680		

- 7 Possible mineral bearing formation:

Delaware	Oil
Bone Spring	Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1185' 1050'	8.4 - 8.6	28	NC	FW
1185' to 4500' 4600'	10.0	30-32	NC	Brine water
4500' to 14982'	8.4 - 9.5	30-32	NC	FW, brine

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

Proposed drilling Plan

Drill 8¾" pilot hole to 12400. and log. 1700' cement Plug f/10700 t/12400' Pump 670 sks HalCem -H 0.5% CFR-3 0.1% HR-60116.5 ppg yield 1.06 0% Excess, Must tag cement prior to setting the whipstock for KOP. Set whipstock and kick off 8¾" lateral @ 10364 and drill to TD @ 14982 MD, 10650 TVD. Run 5½" 17# P-110 LTC from 0-14982 and cement.

Application to Drill
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9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
<i>See COA</i> Surface	17½"	0' to 1050' 1185'	New 13⅝"	54.5#	STC	J-55
Intermediate	12¼"	0' to 4600' 4500'	New 9⅝"	40#	LTC	J-55
Production	8¾"	0' to 14982'	New 5½"	17#	LTC	P-110

10 Cementing:

Surface

Lead: 545SKS Halcem C + 4% Bentomite + 2% CaCl 13.5ppg 1.75yield 100% Excess
 Tail: 420SKS Halcem C + 2% CaCl 14.2ppg 1.34 yield 50% Excess
TOC Surface Centralizers per Onshorder 2.III.B.1.f

Intermediate

Lead: 1515SKS EconoCem + 5% salt + 5 lbm gilsonite 14.6ppg 1.54yield 70% Exces
 Tail: 200SKS HalCem + 1% CaCl 14.8ppg 1.34 yield 25% Excess
TOC Surface

Production

Lead: 1035SKS EconoCem - H + 0.2 % HR-601 2.44 11.9ppg 2.44 yield 50% Excess
 Tail: 1260SKS Versacem - H + 0.5% Halad(R)-344 + 0.4% CFR-3 + 1 lbm/sk salt + 0.1% HR-601 14.5ppg 1.22 yield 25% Excess
TOC ~~3500'~~ 4300' Centralizers every 3rd joint in lateral to provide adequate cement coverage every 100' unless lateral doglegs require greater spacing between centralizers.

Depth to ground water is 375 according to the State Engineer. Fresh water zones will be protected by setting 13⅝" casing at ~~1185'~~ and cementing to surface. Hydrocarbon zones will be protected by setting 9⅝" casing at 4500 and cementing to surface, and by setting 5½" casing at 14982 and cementing to 4300.

<u>Collapse Factor</u>	<u>Burst Factor</u>	<u>Tension Factor</u>
1.125	1.125	1.6

11 Pressure control Equipment:

Exhibit "E". A 13⅝" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 6000.' A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor. Mud gas separator will be available if drilling in H2S areas.

BOP unit will be hydraulically operated. BOP will be nipped up and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling. From the base of the surface pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system.

The BOP will be tested to 5000 psi by an independent service company.

Cimarex Energy Co. of Colorado (operator) requests a variance if Cactus 101 (rig name) is used to drill this well to use a co-flex line between the BOP and choke manifold.

Manufacturer: Midwest Hose & Specialty

Serial Number: 59473

Length: 35' Size: 4-1/16" Ends flanges/clamps

WP rating: 10,000 psi Anchors required by manufacturer – Yes/No Yes

Application to Drill
Red Tank 4 Federal No. 1
Cimarex Energy Co. of Colorado
Lot 4, Section 4
T23S-R32E; Lea County, NM

12 Testing, Logging and Coring Program: *See COA*

- A. Mud logging program: 2 man unit from 4500' to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
- C. No DSTs or cores are planned at this time.

13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H₂S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H₂S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H₂S Safety package on all wells, attached is an "H₂S Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP **3000 psi** Estimated BHT **130°**

14 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.

Drilling expected to take 30-35 days

If production casing is run an additional 30 days will be required to complete and construct surface facilities.

15 Other Facets of Operations:

After running casing, cased hole gamma ray neutron collar logs will be run from total depth over possible pay intervals.

Bone Spring pay will be perforated and stimulated.

The proposed well will be tested and potentialized as **an oil well.**

Red Tank 4 Federal No. 1

Cimarex Energy Co. of Colorado

Lot 4, Section 4

T23S-R32E; Lea County, NM

- 1 All Company and Contract personnel admitted on location must be trained by a qualified H₂S safety instructor to the following:
 - A. Characteristics of H₂S
 - B. Physical effects and hazards
 - C. Proper use of safety equipment and life support systems.
 - D. Principle and operation of H₂S detectors, warning system and briefing areas.
 - E. Evacuation procedure, routes and first aid.
 - F. Proper use of 30 minute pressure demand air pack.
- 2 H₂S Detection and Alarm Systems:
 - A. H₂S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.
- 3 Windsock and/or wind streamers:
 - A. Windsock at mudpit area should be high enough to be visible.
 - B. Windsock at briefing area should be high enough to be visible.
- 4 Condition Flags and Signs:
 - A. Warning sign on access road to location.
 - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H₂S present in dangerous concentration). Only emergency personnel admitted to location.
- 5 Well control equipment:
 - A. See exhibit "E"
- 6 Communication:
 - A. While working under masks chalkboards will be used for communication.
 - B. Hand signals will be used where chalk board is inappropriate.
 - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
- 7 Drillstem Testing:

No DSTs or cores are planned at this time.
- 8 Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 9 If H₂S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavengers if necessary.



Cimarex Energy Co.

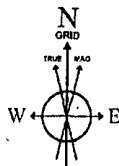
Location: Lea County, NM
Field: (Red Tank 4)
Facility: Red Tank 4 Fed No. 1H

Slot: No. 1H SHL
Well: No. 1H
Wellbore: No. 1H PBHL



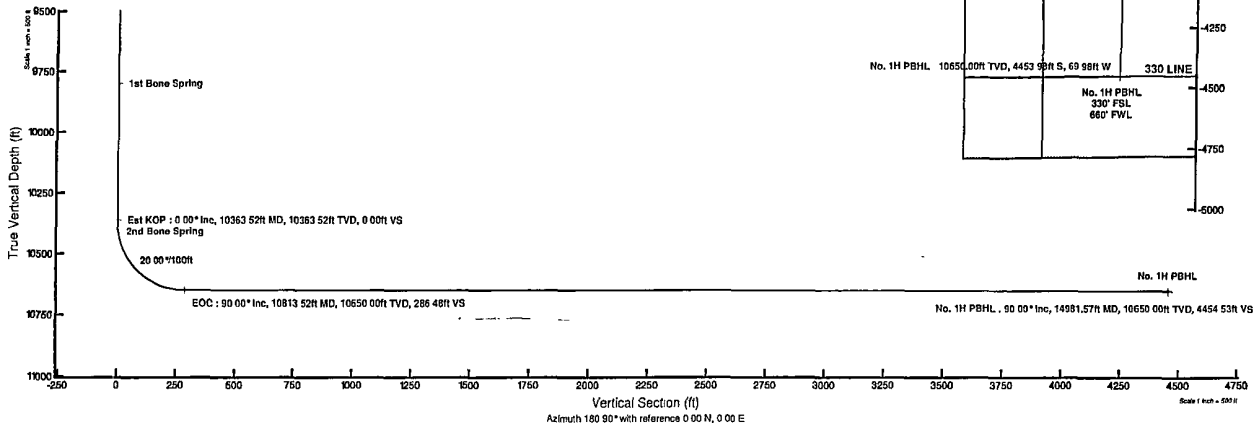
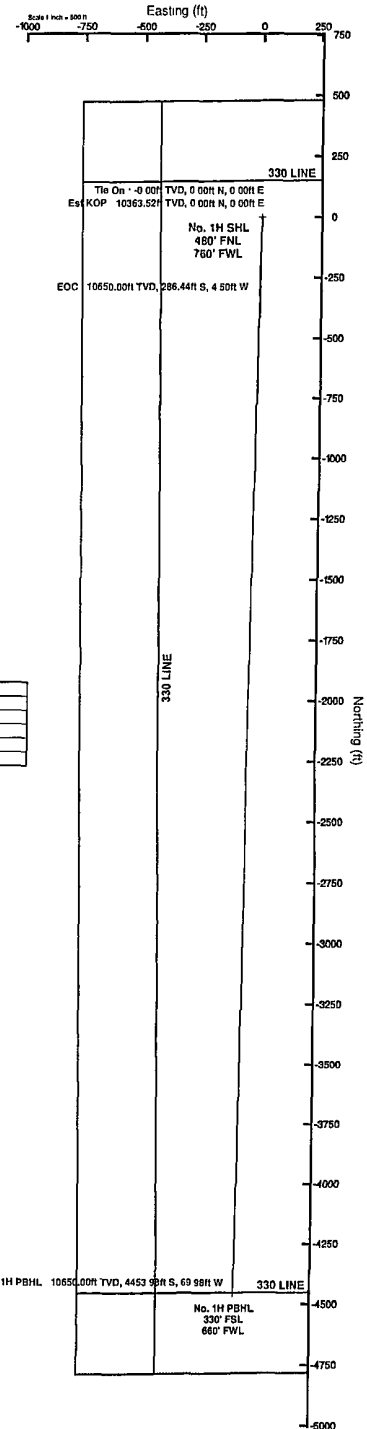
Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	180.900	0.00	0.00	0.00	0.00	0.00
Est KOP	10363.52	0.000	180.900	10363.52	0.00	0.00	0.00	0.00
EOC	10813.52	90.000	180.900	10650.00	-286.44	-4.50	20.00	286.48
No. 1H PBHL	14981.57	90.000	180.900	10650.00	-4453.98	-69.98	0.00	4454.53



BGGM (1945.0 to 2012.0) Dip 60.28° Field 48718.7 nT
Magnetic North is 7.71 degrees East of True North (at 4/28/2011)
Grid North is 0.35 degrees East of True North
To correct azimuth from True to Grid subtract 0.35 degrees
To correct azimuth from Magnetic to Grid add 7.36 degrees
For example if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.36 = 97.36

Plot reference wellpath is Prelim 1	
True vertical depths are referenced to Rig on No. 1H SHL (RT)	Grid System NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 1H SHL (RT)	North Reference Grid north
Rig on No. 1H SHL (RT) to Mean Sea Level 3586 feet	Scale True distance
Mean Sea Level to Mud line (At Slot No. 1H SHL) -3586 feet	Depth are in feet
Coordinates are in feet referenced to Slot	Created by calphak on 4/23/2011



SR & A

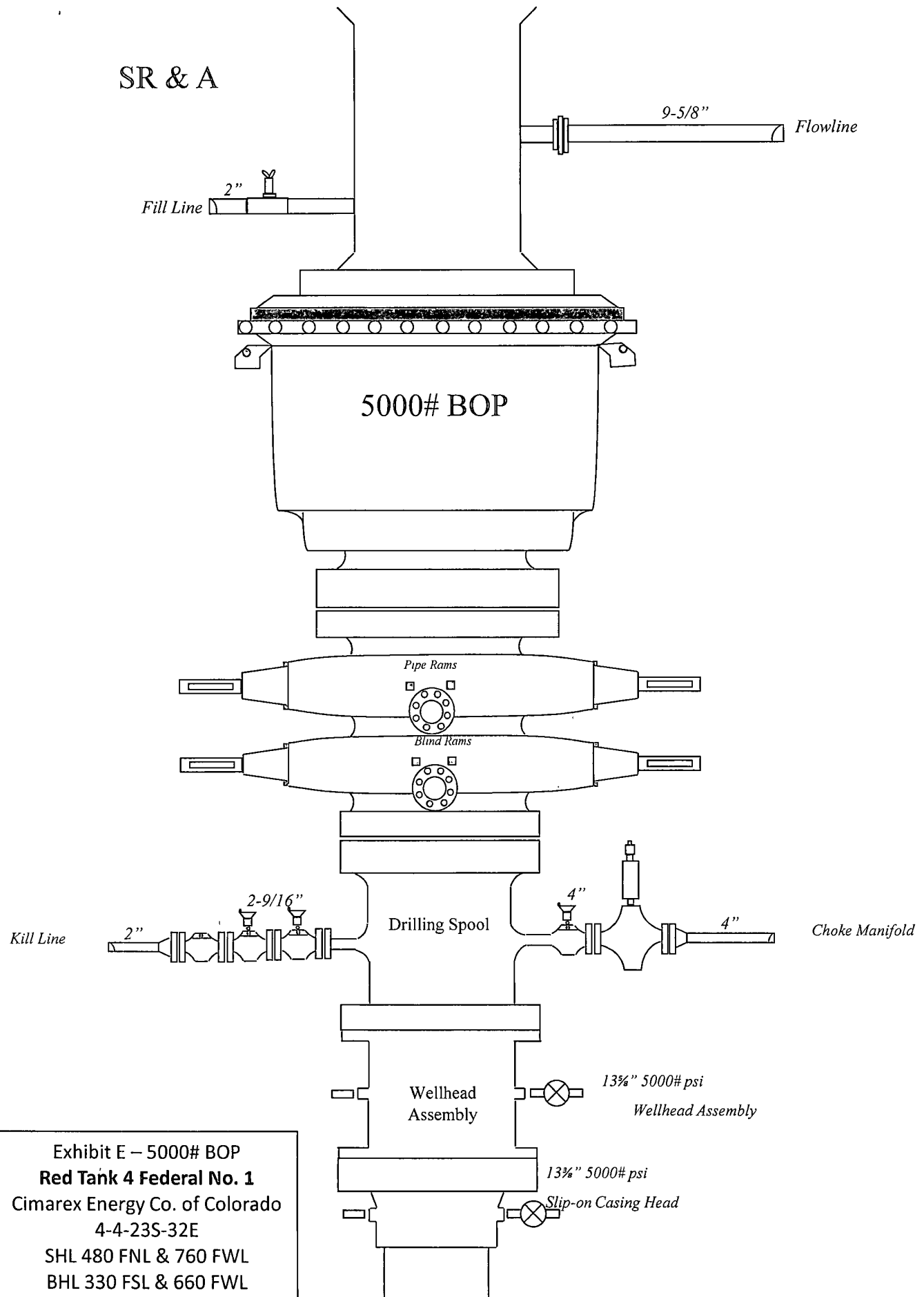


Exhibit E – 5000# BOP

Red Tank 4 Federal No. 1

Cimarex Energy Co. of Colorado

4-4-23S-32E

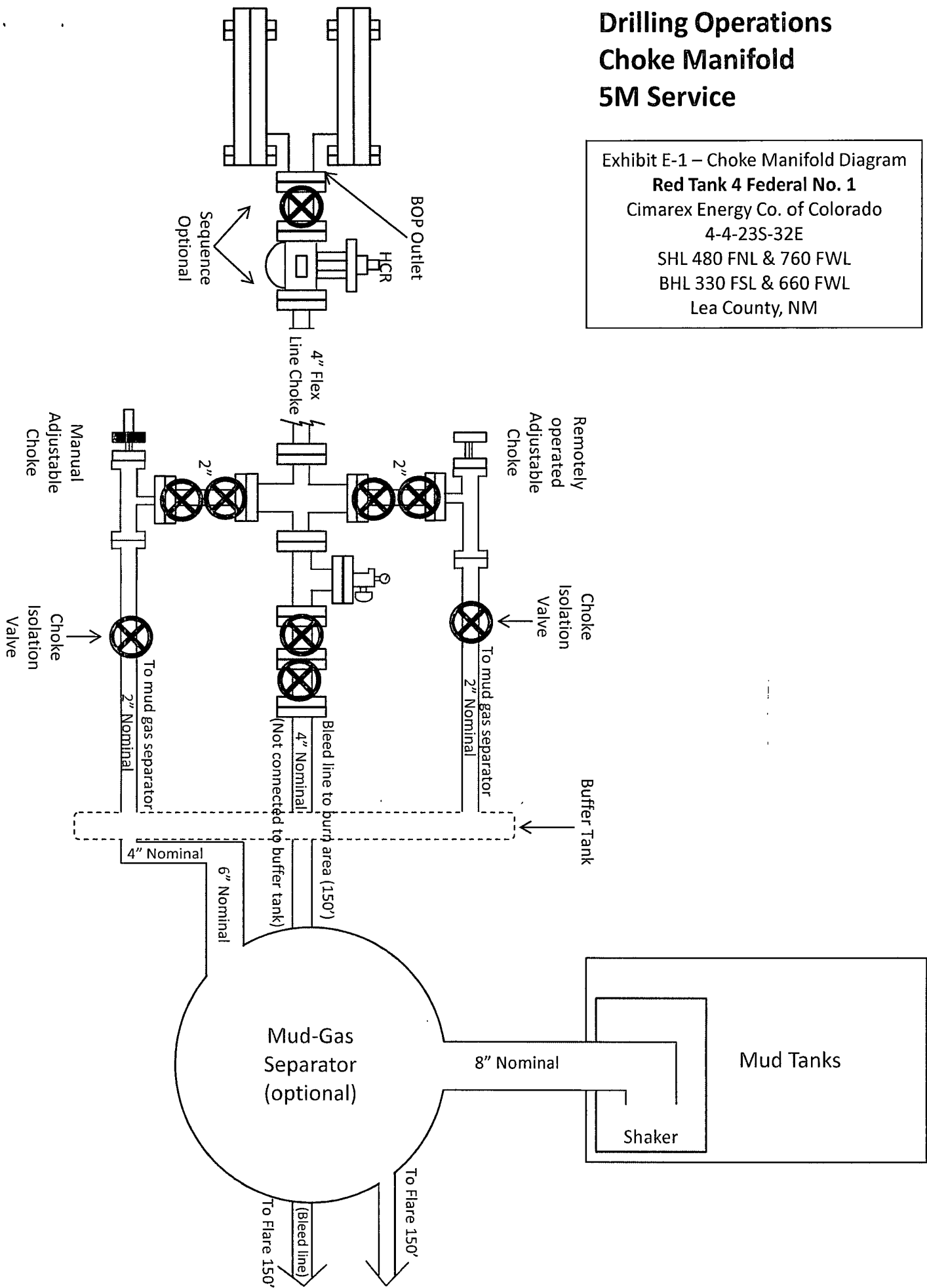
SHL 480 FNL & 760 FWL

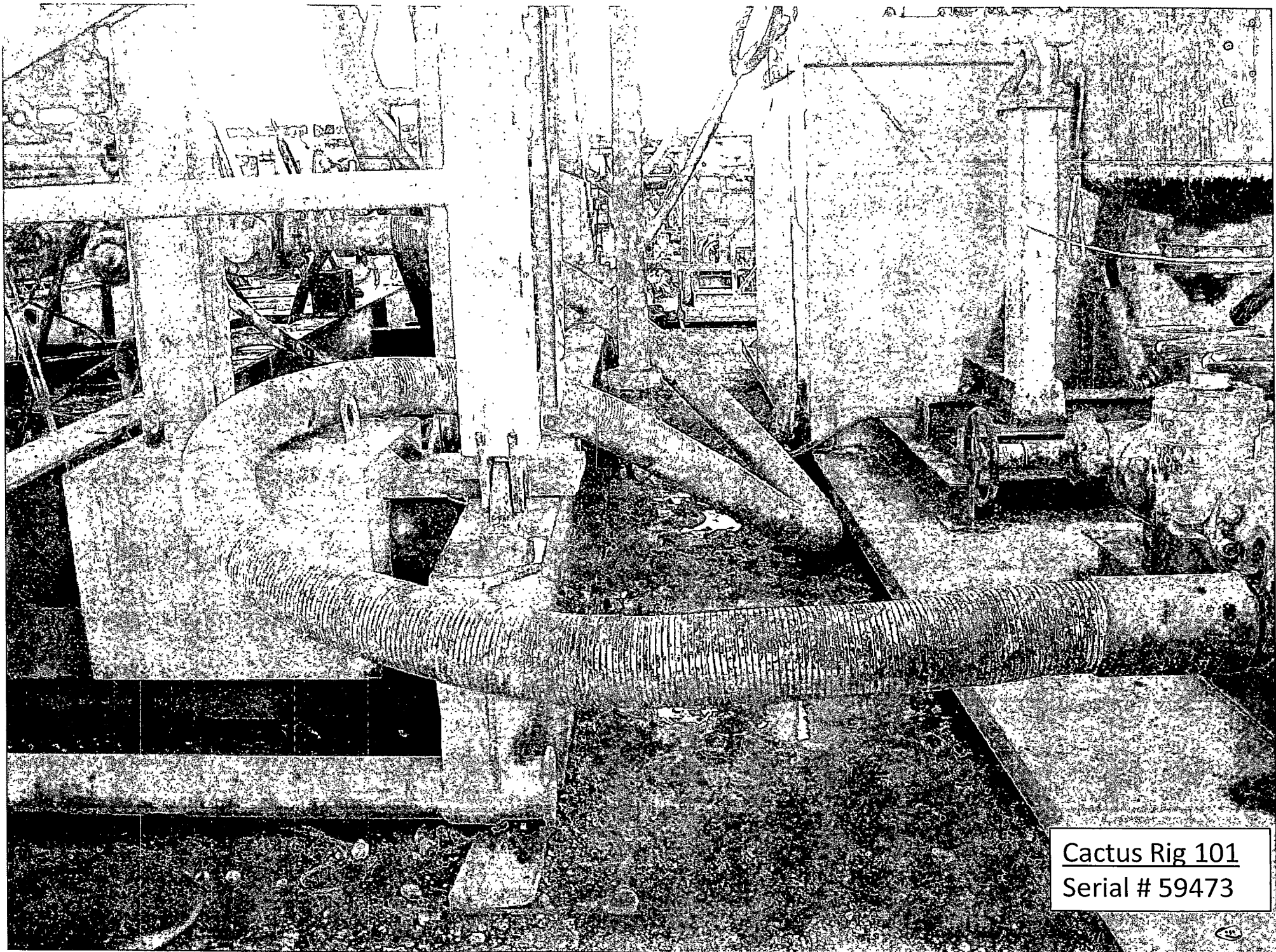
BHL 330 FSL & 660 FWL

Lea County, NM

Drilling Operations
Choke Manifold
5M Service

Exhibit E-1 – Choke Manifold Diagram
Red Tank 4 Federal No. 1
Cimarex Energy Co. of Colorado
4-4-23S-32E
SHL 480 FNL & 760 FWL
BHL 330 FSL & 660 FWL
Lea County, NM





Cactus Rig 101
Serial # 59473

M I D W E S T
HOSE AND SPECIALTY INC.

INTERNAL HYDROSTATIC TEST REPORT			
Customer: CACTUS		P.O. Number: Rig#101 Asset#M5358	
HOSE SPECIFICATIONS			
Type: CHOKER LINE		Length: 35'	
I.D. 4" INCHES		O.D. 8" INCHES	
WORKING PRESSURE 10,000 PSI	TEST PRESSURE 15,000 PSI		BURST PRESSURE PSI
COUPLINGS			
Type of End Fitting 4 1/16 10K FLANGE			
Type of Coupling: SWEDGED		MANUFACTURED BY MIDWEST HOSE & SPECIALTY	
PROCEDURE			
<i>Hose assembly pressure tested with water at ambient temperature.</i>			
TIME HELD AT TEST PRESSURE 15 MIN.		ACTUAL BURST PRESSURE: 0 PSI	
COMMENTS: s/n#59473 Asset#M5358 Hose is covered with stainless steel armour cover and wrapped with fire resistant vermiculite coated fiberglass insulation rated for 1500 degrees complete with lifting eyes			
Date: 5/19/2010	Tested By: BOBBY FINK		Approved: MENDI JACKSON



Midwest Hose
& Specialty, Inc.

Specification Sheet Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium components. The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermiculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

Working Pressure:	5,000 or 10,000 psi working pressure
Test Pressure:	10,000 or 15,000 psi test pressure
Reinforcement:	Multiple steel cables
Cover:	Stainless Steel Armor
Inner Tube:	Petroleum resistant, Abrasion resistant
End Fitting:	API flanges, API male threads, threaded or butt weld hammer unions, unbolt and other special connections
Maximum Length:	110 Feet
ID:	2-1/2", 3", 3-1/2", 4"
Operating Temperature:	-22 deg F to +180 deg F (-30 deg C to +82 deg C)

Cactus 101

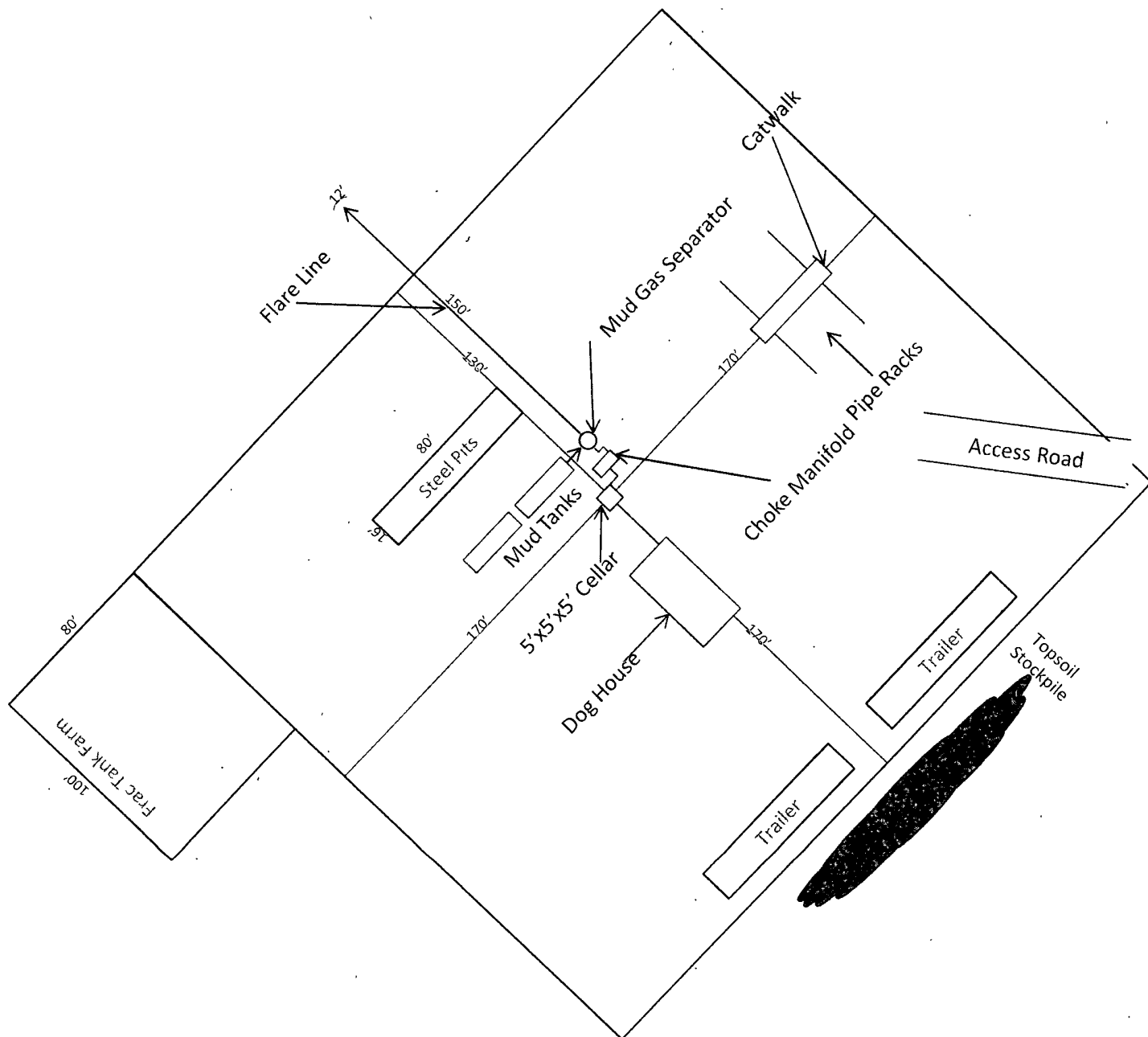


Exhibit D – Rig Diagram
Red Tank 4 Federal No. 1
 Cimarex Energy Co. of Colorado
 4-4-23S-32E
 SHL 480 FNL & 760 FWL
 BHL 330 FSL & 660 FWL
 Lea County, NM



Planned Wellpath Report

Prelim_1

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Red Tank 4)	Wellbore	No. 1H PBHL
Facility	Red Tank 4 Fed No. 1H		

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Calhphik
Scale	0.999955	Report Generated	4/29/2011 at 3:22:32 PM
Convergence at slot	0.35° East	Database/Source file	WA Midland/No. 1H_PBHL.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W
Facility Reference Pt			741353.40	487861.70	32°20'22.347"N	103°41'08.534"W
Field Reference Pt			741353.40	487861.70	32°20'22.347"N	103°41'08.534"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H SHL (RT) to GL	0.00ft
Horizontal Reference Pt	Slot	Rig on No. 1H SHL (RT) to Mean Sea Level	3586.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RT)	Rig on No. 1H SHL (RT) to Mud Line at Slot (No. 1H SHL)	0.00ft
MD Reference Pt	Rig on No. 1H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	180.90°



Planned Wellpath Report

Prelim_1

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Red Tank 4)	Wellbore	No. 1H PBHL
Facility	Red Tank 4 Fed No. 1H		

WELLPATH DATA (155 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	180.900	0.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	Tie On
100.00†	0.000	180.900	100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
200.00†	0.000	180.900	200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
300.00†	0.000	180.900	300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
400.00†	0.000	180.900	400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
500.00†	0.000	180.900	500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
600.00†	0.000	180.900	600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
700.00†	0.000	180.900	700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
800.00†	0.000	180.900	800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
900.00†	0.000	180.900	900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1000.00†	0.000	180.900	1000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1100.00†	0.000	180.900	1100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1200.00†	0.000	180.900	1200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1300.00†	0.000	180.900	1300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1400.00†	0.000	180.900	1400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1500.00†	0.000	180.900	1500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1600.00†	0.000	180.900	1600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1700.00†	0.000	180.900	1700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1800.00†	0.000	180.900	1800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
1900.00†	0.000	180.900	1900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2000.00†	0.000	180.900	2000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2100.00†	0.000	180.900	2100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2200.00†	0.000	180.900	2200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2300.00†	0.000	180.900	2300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2400.00†	0.000	180.900	2400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2500.00†	0.000	180.900	2500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2600.00†	0.000	180.900	2600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2700.00†	0.000	180.900	2700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2800.00†	0.000	180.900	2800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
2900.00†	0.000	180.900	2900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3000.00†	0.000	180.900	3000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3100.00†	0.000	180.900	3100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3200.00†	0.000	180.900	3200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3300.00†	0.000	180.900	3300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3400.00†	0.000	180.900	3400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3500.00†	0.000	180.900	3500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3600.00†	0.000	180.900	3600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3700.00†	0.000	180.900	3700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3800.00†	0.000	180.900	3800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
3900.00†	0.000	180.900	3900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4000.00†	0.000	180.900	4000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4100.00†	0.000	180.900	4100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4200.00†	0.000	180.900	4200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4300.00†	0.000	180.900	4300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4400.00†	0.000	180.900	4400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Red Tank 4)	Wellbore	No. 1H PBHL
Facility	Red Tank 4 Fed No. 1H		

WELLPATH DATA (155 stations) † = interpolated/extrapolated station												
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4500.00†	0.000	180.900	4500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4600.00†	0.000	180.900	4600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4700.00†	0.000	180.900	4700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4800.00†	0.000	180.900	4800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
4900.00†	0.000	180.900	4900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5000.00†	0.000	180.900	5000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5100.00†	0.000	180.900	5100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5200.00†	0.000	180.900	5200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5300.00†	0.000	180.900	5300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5400.00†	0.000	180.900	5400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5500.00†	0.000	180.900	5500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5600.00†	0.000	180.900	5600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5700.00†	0.000	180.900	5700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5800.00†	0.000	180.900	5800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
5900.00†	0.000	180.900	5900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6000.00†	0.000	180.900	6000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6100.00†	0.000	180.900	6100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6200.00†	0.000	180.900	6200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6300.00†	0.000	180.900	6300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6400.00†	0.000	180.900	6400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6500.00†	0.000	180.900	6500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6600.00†	0.000	180.900	6600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6700.00†	0.000	180.900	6700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6800.00†	0.000	180.900	6800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
6900.00†	0.000	180.900	6900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7000.00†	0.000	180.900	7000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7100.00†	0.000	180.900	7100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7200.00†	0.000	180.900	7200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7300.00†	0.000	180.900	7300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7400.00†	0.000	180.900	7400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7500.00†	0.000	180.900	7500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7600.00†	0.000	180.900	7600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7700.00†	0.000	180.900	7700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7800.00†	0.000	180.900	7800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
7900.00†	0.000	180.900	7900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8000.00†	0.000	180.900	8000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8100.00†	0.000	180.900	8100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8200.00†	0.000	180.900	8200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8300.00†	0.000	180.900	8300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8400.00†	0.000	180.900	8400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8500.00†	0.000	180.900	8500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8600.00†	0.000	180.900	8600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8680.00†	0.000	180.900	8680.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	Bone Spring
8700.00†	0.000	180.900	8700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
8800.00†	0.000	180.900	8800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Red Tank 4)	Wellbore	No. 1H PBHL
Facility	Red Tank 4 Fed No. 1H		

WELLPATH DATA (155 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8900.00†	0.000	180.900	8900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9000.00†	0.000	180.900	9000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9100.00†	0.000	180.900	9100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9200.00†	0.000	180.900	9200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9300.00†	0.000	180.900	9300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9400.00†	0.000	180.900	9400.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9500.00†	0.000	180.900	9500.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9600.00†	0.000	180.900	9600.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9700.00†	0.000	180.900	9700.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
9800.00†	0.000	180.900	9800.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	1st Bone Spring
9900.00†	0.000	180.900	9900.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
10000.00†	0.000	180.900	10000.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
10100.00†	0.000	180.900	10100.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
10200.00†	0.000	180.900	10200.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
10300.00†	0.000	180.900	10300.00	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	
10363.52	0.000	180.900	10363.52	0.00	0.00	0.00	741353.40	487861.70	32°20'22.347"N	103°41'08.534"W	0.00	Est KOP
10400.00†	7.296	180.900	10399.90	2.32	-2.32	-0.04	741353.36	487859.38	32°20'22.324"N	103°41'08.534"W	20.00	
10400.10†	7.316	180.900	10400.00	2.33	-2.33	-0.04	741353.36	487859.37	32°20'22.324"N	103°41'08.534"W	20.00	2nd Bone Spring
10500.00†	27.296	180.900	10494.90	31.90	-31.90	-0.50	741352.90	487829.81	32°20'22.032"N	103°41'08.542"W	20.00	
10600.00†	47.296	180.900	10574.04	92.19	-92.17	-1.45	741351.95	487769.53	32°20'21.435"N	103°41'08.557"W	20.00	
10700.00†	67.296	180.900	10627.80	175.91	-175.88	-2.76	741350.64	487685.82	32°20'20.607"N	103°41'08.578"W	20.00	
10800.00†	87.296	180.900	10649.68	272.96	-272.93	-4.29	741349.11	487588.78	32°20'19.647"N	103°41'08.603"W	20.00	
10813.52	90.000	180.900	10650.00	286.48	-286.44	-4.50	741348.90	487575.27	32°20'19.513"N	103°41'08.606"W	20.00	EOC
10900.00†	90.000	180.900	10650.00	372.96	-372.91	-5.86	741347.54	487488.80	32°20'18.658"N	103°41'08.628"W	0.00	
11000.00†	90.000	180.900	10650.00	472.96	-472.90	-7.43	741345.97	487388.82	32°20'17.668"N	103°41'08.654"W	0.00	
11100.00†	90.000	180.900	10650.00	572.96	-572.89	-9.00	741344.40	487288.84	32°20'16.679"N	103°41'08.679"W	0.00	
11200.00†	90.000	180.900	10650.00	672.96	-672.88	-10.57	741342.83	487188.86	32°20'15.690"N	103°41'08.704"W	0.00	
11300.00†	90.000	180.900	10650.00	772.96	-772.86	-12.14	741341.26	487088.87	32°20'14.701"N	103°41'08.730"W	0.00	
11400.00†	90.000	180.900	10650.00	872.96	-872.85	-13.71	741339.69	486988.89	32°20'13.711"N	103°41'08.755"W	0.00	
11500.00†	90.000	180.900	10650.00	972.96	-972.84	-15.29	741338.11	486888.91	32°20'12.722"N	103°41'08.781"W	0.00	
11600.00†	90.000	180.900	10650.00	1072.96	-1072.83	-16.86	741336.54	486788.92	32°20'11.733"N	103°41'08.806"W	0.00	
11700.00†	90.000	180.900	10650.00	1172.96	-1172.81	-18.43	741334.97	486688.94	32°20'10.744"N	103°41'08.831"W	0.00	
11800.00†	90.000	180.900	10650.00	1272.96	-1272.80	-20.00	741333.40	486588.96	32°20'09.754"N	103°41'08.857"W	0.00	
11900.00†	90.000	180.900	10650.00	1372.96	-1372.79	-21.57	741331.83	486488.98	32°20'08.765"N	103°41'08.882"W	0.00	
12000.00†	90.000	180.900	10650.00	1472.96	-1472.78	-23.14	741330.26	486388.99	32°20'07.776"N	103°41'08.907"W	0.00	
12100.00†	90.000	180.900	10650.00	1572.96	-1572.76	-24.71	741328.69	486289.01	32°20'06.787"N	103°41'08.933"W	0.00	
12200.00†	90.000	180.900	10650.00	1672.96	-1672.75	-26.28	741327.12	486189.03	32°20'05.797"N	103°41'08.958"W	0.00	
12300.00†	90.000	180.900	10650.00	1772.96	-1772.74	-27.85	741325.55	486089.04	32°20'04.808"N	103°41'08.983"W	0.00	
12400.00†	90.000	180.900	10650.00	1872.96	-1872.73	-29.43	741323.98	485989.06	32°20'03.819"N	103°41'09.009"W	0.00	
12500.00†	90.000	180.900	10650.00	1972.96	-1972.72	-31.00	741322.41	485889.08	32°20'02.829"N	103°41'09.034"W	0.00	
12600.00†	90.000	180.900	10650.00	2072.96	-2072.70	-32.57	741320.83	485789.09	32°20'01.840"N	103°41'09.059"W	0.00	
12700.00†	90.000	180.900	10650.00	2172.96	-2172.69	-34.14	741319.26	485689.11	32°20'00.851"N	103°41'09.085"W	0.00	
12800.00†	90.000	180.900	10650.00	2272.96	-2272.68	-35.71	741317.69	485589.13	32°19'59.862"N	103°41'09.110"W	0.00	
12900.00†	90.000	180.900	10650.00	2372.96	-2372.67	-37.28	741316.12	485489.15	32°19'58.872"N	103°41'09.135"W	0.00	
13000.00†	90.000	180.900	10650.00	2472.96	-2472.65	-38.85	741314.55	485389.16	32°19'57.883"N	103°41'09.161"W	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Red Tank 4)	Wellbore	No. 1H PBHL
Facility	Red Tank 4 Fed No. 1H		

WELLPATH DATA (155 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
13100.00†	90.000	180.900	10650.00	2572.96	-2572.64	-40.42	741312.98	485289.18	32°19'56.894"N	103°41'09.186"W	0.00	
13200.00†	90.000	180.900	10650.00	2672.96	-2672.63	-41.99	741311.41	485189.20	32°19'55.905"N	103°41'09.212"W	0.00	
13300.00†	90.000	180.900	10650.00	2772.96	-2772.62	-43.56	741309.84	485089.21	32°19'54.915"N	103°41'09.237"W	0.00	
13400.00†	90.000	180.900	10650.00	2872.96	-2872.60	-45.14	741308.27	484989.23	32°19'53.926"N	103°41'09.262"W	0.00	
13500.00†	90.000	180.900	10650.00	2972.96	-2972.59	-46.71	741306.70	484889.25	32°19'52.937"N	103°41'09.288"W	0.00	
13600.00†	90.000	180.900	10650.00	3072.96	-3072.58	-48.28	741305.12	484789.27	32°19'51.948"N	103°41'09.313"W	0.00	
13700.00†	90.000	180.900	10650.00	3172.96	-3172.57	-49.85	741303.55	484689.28	32°19'50.958"N	103°41'09.338"W	0.00	
13800.00†	90.000	180.900	10650.00	3272.96	-3272.55	-51.42	741301.98	484589.30	32°19'49.969"N	103°41'09.364"W	0.00	
13900.00†	90.000	180.900	10650.00	3372.96	-3372.54	-52.99	741300.41	484489.32	32°19'48.980"N	103°41'09.389"W	0.00	
14000.00†	90.000	180.900	10650.00	3472.96	-3472.53	-54.56	741298.84	484389.33	32°19'47.991"N	103°41'09.414"W	0.00	
14100.00†	90.000	180.900	10650.00	3572.96	-3572.52	-56.13	741297.27	484289.35	32°19'47.001"N	103°41'09.440"W	0.00	
14200.00†	90.000	180.900	10650.00	3672.96	-3672.51	-57.70	741295.70	484189.37	32°19'46.012"N	103°41'09.465"W	0.00	
14300.00†	90.000	180.900	10650.00	3772.96	-3772.49	-59.28	741294.13	484089.38	32°19'45.023"N	103°41'09.490"W	0.00	
14400.00†	90.000	180.900	10650.00	3872.96	-3872.48	-60.85	741292.56	483989.40	32°19'44.033"N	103°41'09.516"W	0.00	
14500.00†	90.000	180.900	10650.00	3972.96	-3972.47	-62.42	741290.99	483889.42	32°19'43.044"N	103°41'09.541"W	0.00	
14600.00†	90.000	180.900	10650.00	4072.96	-4072.46	-63.99	741289.41	483789.44	32°19'42.055"N	103°41'09.566"W	0.00	
14700.00†	90.000	180.900	10650.00	4172.96	-4172.44	-65.56	741287.84	483689.45	32°19'41.066"N	103°41'09.592"W	0.00	
14800.00†	90.000	180.900	10650.00	4272.96	-4272.43	-67.13	741286.27	483589.47	32°19'40.076"N	103°41'09.617"W	0.00	
14900.00†	90.000	180.900	10650.00	4372.96	-4372.42	-68.70	741284.70	483489.49	32°19'39.087"N	103°41'09.643"W	0.00	
14981.57	90.000	180.900	10650.00 ¹	4454.53	-4453.98	-69.98	741283.42	483407.93	32°19'38.280"N	103°41'09.663"W	0.00	No. 1H PBHL

HOLE & CASING SECTIONS - Ref Wellbore: No. 1H PBHL Ref Wellpath: Prelim_1

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
17.5in Open Hole	0.00	1185.00	1185.00	0.00	1185.00	0.00	0.00	0.00	0.00
13.375in Casing	0.00	1185.00	1185.00	0.00	1185.00	0.00	0.00	0.00	0.00
12.25in Open Hole	1185.00	4500.00	3315.00	1185.00	4500.00	0.00	0.00	0.00	0.00
9.625in Casing	0.00	4500.00	4500.00	0.00	4500.00	0.00	0.00	0.00	0.00
8.75in Open Hole	4500.00	14891.57	10391.57	4500.00	10650.00	0.00	0.00	-4363.99	-68.57
5.5in Casing	0.00	14891.57	14891.57	0.00	10650.00	0.00	0.00	-4363.99	-68.57



Planned Wellpath Report

Prelim_1
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Red Tank 4)	Wellbore	No. 1H PBHL
Facility	Red Tank 4 Fed No. 1H		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No. 1H PBHL	14981.57	10650.00	-4453.98	-69.98	741283.42	483407.93	32°19'38.280"N	103°41'09.663"W	point

SURVEY PROGRAM - Ref Wellbore: No. 1H PBHL Ref Wellpath: Prelim_1				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	14981.57	NaviTrak (Standard)		No. 1H PBHL