

HOBBS OCD

SEP 20 2012

Form 3160-3
(April 2004)OCD Hobbs **RECEIVED**FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work ☒ DRILL ☐ REENTER1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator

Cimarex Energy Co.

3a. Address

600 N. Marienfeld St., Ste. 600; Midland, TX 79701

3b. Phone No. (include area code)

432-571-7800

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

At Surface

330 FNL & 1955 FWL

At proposed prod Zone

330 FSL & 2310 FWL Unit C Horizontal Bone Spring test

14. Distance in miles and direction from nearest town or post office*

5. Lease Serial No

NMNM127894

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No

8. Lease Name and Well No

Diamondtail 23 Federal No. 4 139458

9. API Well No

30-025- 40770

10. Field and Pool, or Exploratory

Diamondtail; Bone Spring

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

23-23S-32E

12. County or Parish

Lea

13. State

NM

15. Distance from proposed*

location to nearest
property or lease line, ft.
(Also to nearest drig. unit line if
any)

330'

16. No of acres in lease

640

17. Spacing Unit dedicated to this well

E2W2

160 acres

18. Distance from proposed location*

to nearest well, drilling, completed,
applied for, on this lease, ft

150' from #3

19. Proposed Depth

MD 14103'

TVD 9675'

20. BLM/BIA Bond No. on File

NM-2575

21. Elevations (Show whether DF, KDB, RT, GL, etc.)

3713' GR

22. Approximate date work will start*

12.01.12

23. Estimated duration

30-35 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

2. A Drilling Plan

3. A Surface Use Plan (if the location is on National Forest System Lands, the
SUPO shall be filed with the appropriate Forest Service Office).4. Bond to cover the operations unless covered by an existing bond on file (see
Item 20 above).

5. Operator Certification

6. Such other site specific information and/or plans as may be required by the
authorized officer

25. Signature

Name (Printed/Typed)

Date

Terri Stathem

06.28.12

Title

Regulatory

Approved By (Signature)

/s/ Don Peterson

Name (Printed/Typed)

/s/ Don Peterson

Date

SEP 18 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.

* (Instructions on page 2)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

SEP 25 2012

Drilling Plan
Diamondtail 23 Federal 4
 Cimarex Energy Co.
 Unit C, Section 23
 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 330 FNL & 1955 FWL
 BHL 330 FSL & 2310 FWL
- 2 **Elevation above sea level:** 3713' 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:** MD 14103' TVD 9675'

6 **Estimated tops of geological markers:**

Rustler	1200
T. Salt	1520
Castille	3590
B. Salt	4680
Delaware	4980
Basal Brushy Canyon	8470
Bone Spring	8750
Avalon Shale	9430

7 **Possible mineral bearing formations:**

Bone Spring	Oil
Avalon Shale	Oil

8 **Proposed Mud Circulating System:**

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 1225' 1325'	8.4 - 8.6	28	NC	FW
1225' to 4900'	10.0	30-32	NC	Brine water
4900' to 14103'	8.4	30-32	NC	2% KCL

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" hole to 9198'. Drill 8¾" lateral through the curve to TD @ 14103' MD, 9675' TVD. Run 5½" 17# P-110 LTC from 0-14103' and cement.

Drilling Plan
Diamondtail 23 Federal 4
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9 Casing & Cementing Program:

See COA

String	Hole Size	Depth	1315	Casing OD	Weight	Collar	Grade
Surface	17 1/2"	0'	to 1225'	New 13 3/8"	48#	STC	H-40
Intermediate	12 1/4"	0'	to 4900'	New 9 5/8"	40#	LTC	J-55
Production	7 7/8"	0'	to 14103'	New 5 1/2"	17#	LTC	P-110

10 Cementing:

Surface

Lead: 810SKS Premium Plus + 2% CaCl 4% gel 13.5ppg 1.75yield 115% Excess

Tail: 200SKS Premium Plus + 2% CaCl 14.8ppg 1.34 yield 10% Excess

TOC Surface Centralizers per Onshorder 2.III.B.1.f

Intermediate

Lead: 1555SKS HLPP + 5% Salt + 5# Gilsontite 12.9ppg 1.92yield 120% Excess

Tail: 235SKS Premium Plus + 1% CaCl 14.8ppg 1.34 yield 0% Excess

TOC Surface

Production

Lead: 835SKS Econocem H + 0.5/10% HR-601 0.5/10% Halad-322 11.9ppg 2.48 yield 53% Excess

Tail: 1385SKS Versacem H + 0.5% Halad(R)-344 + 0.4% CFR-3 + 1# Salt + 0.2% HR-601 14.5ppg 1.22 yield 25% Excess

TOC 3600' 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 475' according to the State Engineer. Fresh water zones will be protected by setting 13 3/8" casing at 1225' and cementing to surface and 9 5/8" casing at 4900 and cementing to surface. Hydrocarbon zones will be protected by setting 5 1/2" casing at 14103' and cementing to 3600'.

<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 13 3/8" 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.

Before drilling out of the surface pipe BOP's will be tested to 250 psi low and 3000 psi high by an independent service company. Hydril will be tested to 250 psi low and 1500 psi high. Before drilling out of the intermediate pipe BOP's will be tested by an independent service company to 250 psi low and 5000 psi high. Hydril will be tested to 250 psi low and 2500 psi high.

Cimarex Energy Co. of Colorado (operator) requests a variance if Cactus 115 (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

Drilling Plan
Diamondtail 23 Federal 4
Cimarex Energy Co.
Unit C, Section 23
T23S-R32E; Lea County, NM

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

- A. Mud logging program: 2 man unit from 4900 to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR - *surface to TD via email 7/24/12*
- 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 **4350 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.

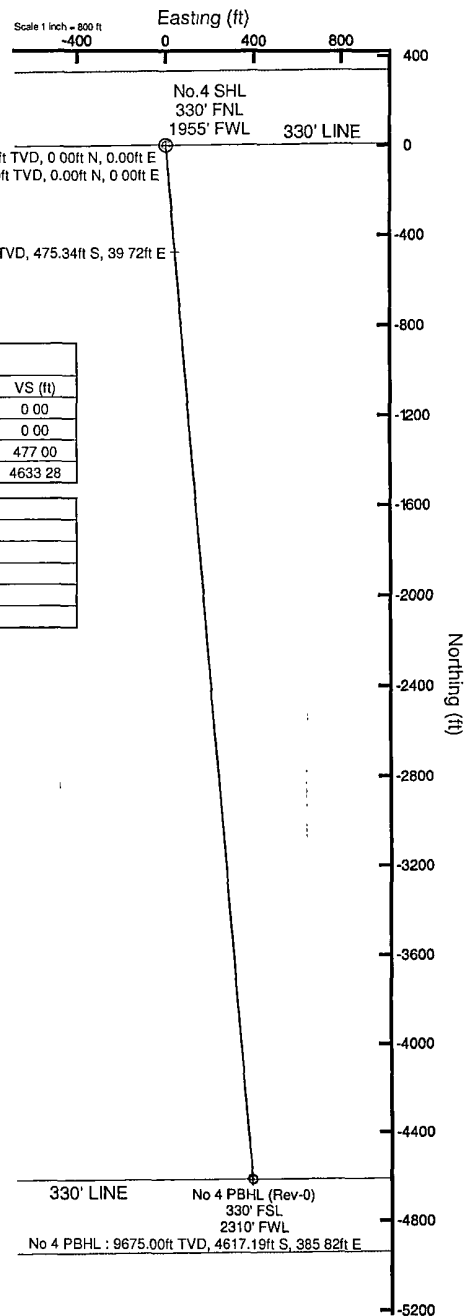
The proposed well will be tested and potentialized as **an oil well.**



Cimarex Energy Co.

Location: Lea County, NM
Field: (Diamondtail) Sec 23, T23S, R32E
Facility: Diamondtail 23 Federal No.4

Slot: No 4 SHL
Well: No 4
Wellbore: No.4 PWB

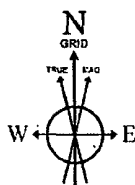


Well Profile Data

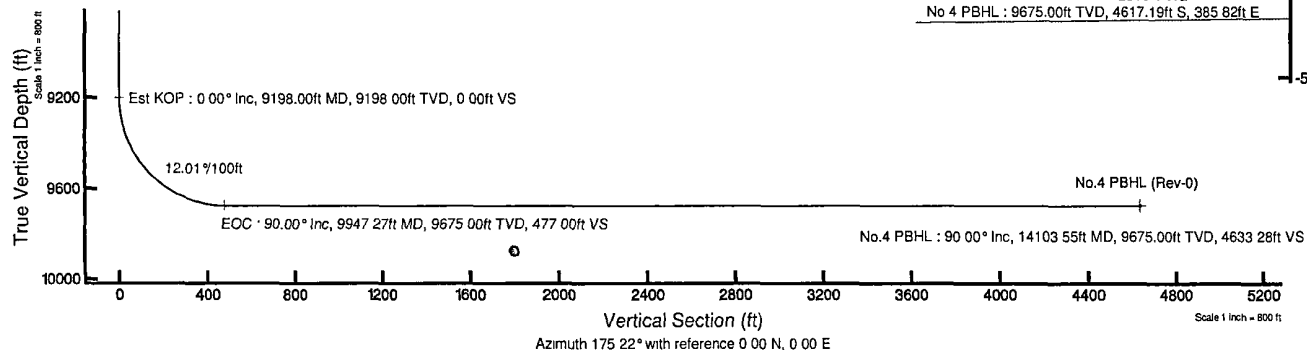
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	175.223	0.00	0.00	0.00	0.00	0.00
Est KOP	9198.00	0.000	175.223	9198.00	0.00	0.00	0.00	0.00
EOC	9947.27	90.000	175.223	9675.00	-475.34	39.72	12.01	477.00
No 4 PBHL	14103.55	90.000	175.223	9675.00	-4617.19	385.82	0.00	4633.28

Plot reference wellpath is Rev-A 0

True vertical depths are referenced to Rig on No 4 SHL (RT)	Gnd System NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No 4 SHL (RT)	North Reference Grid north
Rig on No 4 SHL (RT) to Mean Sea Level 3713 feet	Scale True distance
Mean Sea Level to Mud line (At Slot No 4 SHL) -3713 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by gentibry on 4/12/2012



BGGM (1945 0 to 2013 0) Dip 60 18° Field 48571.1 nT
Magnetic North is 7.61 degrees East of True North (at 4/12/2012)
Grid North is 0.37 degrees East of True North
To correct azimuth from True to Grid subtract 0.37 degrees
To correct azimuth from Magnetic to Grid add 7.24 degrees
For example If the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.24 = 97.24





Planned Wellpath Report

Rev-A.0
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No.4 SHL
Area	Lea County, NM	Well	No.4
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No.4 PWB
Facility	Diamondtail 23 Federal No.4		

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	Gentbry
Scale	0.999961	Report Generated	4/12/2012 at 2:12:23 PM
Convergence at slot	0.37° East	Database/Source file	WA Midland/No.4_PWB.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	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W
Facility Reference Pt			753217.20	472298.70	32°17'47.617"N	103°38'51.414"W
Field Reference Pt			753067.10	472297.00	32°17'47.610"N	103°38'53.162"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on No.4 SHL (RT) to Facility Vertical Datum	0.00ft
Horizontal Reference Pt	Slot	Rig on No.4 SHL (RT) to Mean Sea Level	3713.00ft
Vertical Reference Pt	Rig on No.4 SHL (RT)	Rig on No.4 SHL (RT) to Mud Line at Slot (No.4 SHL)	0.00ft
MD Reference Pt	Rig on No.4 SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	175.22°



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
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Area	Lea County, NM	Well	No.4
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No.4 PWB
Facility	Diamondtail 23 Federal No.4		

WELLPATH DATA (152 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	175.223	0.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Tie On
100.00†	0.000	175.223	100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
200.00†	0.000	175.223	200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
300.00†	0.000	175.223	300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
400.00†	0.000	175.223	400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
500.00†	0.000	175.223	500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
600.00†	0.000	175.223	600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
700.00†	0.000	175.223	700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
800.00†	0.000	175.223	800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
900.00†	0.000	175.223	900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1000.00†	0.000	175.223	1000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1100.00†	0.000	175.223	1100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1200.00†	0.000	175.223	1200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1220.00†	0.000	175.223	1220.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Rustler
1300.00†	0.000	175.223	1300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1400.00†	0.000	175.223	1400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1500.00†	0.000	175.223	1500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1520.00†	0.000	175.223	1520.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Salt
1600.00†	0.000	175.223	1600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1700.00†	0.000	175.223	1700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1800.00†	0.000	175.223	1800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
1900.00†	0.000	175.223	1900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2000.00†	0.000	175.223	2000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2100.00†	0.000	175.223	2100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2200.00†	0.000	175.223	2200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2300.00†	0.000	175.223	2300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2400.00†	0.000	175.223	2400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2500.00†	0.000	175.223	2500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2600.00†	0.000	175.223	2600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2700.00†	0.000	175.223	2700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2800.00†	0.000	175.223	2800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
2900.00†	0.000	175.223	2900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3000.00†	0.000	175.223	3000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3100.00†	0.000	175.223	3100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3200.00†	0.000	175.223	3200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3300.00†	0.000	175.223	3300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3400.00†	0.000	175.223	3400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3500.00†	0.000	175.223	3500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3590.00†	0.000	175.223	3590.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Castille
3600.00†	0.000	175.223	3600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3700.00†	0.000	175.223	3700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3800.00†	0.000	175.223	3800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
3900.00†	0.000	175.223	3900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4000.00†	0.000	175.223	4000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4100.00†	0.000	175.223	4100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	



Planned Wellpath Report

Rev-A.0
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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No.4 SHL
Area	Lea County, NM	Well	No.4
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No.4 PWB
Facility	Diamondtail 23 Federal No.4		

WELLPATH DATA (152 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
4200.00†	0.000	175.223	4200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4300.00†	0.000	175.223	4300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4400.00†	0.000	175.223	4400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4500.00†	0.000	175.223	4500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4600.00†	0.000	175.223	4600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4680.00†	0.000	175.223	4680.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Base Salt
4700.00†	0.000	175.223	4700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4800.00†	0.000	175.223	4800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
4900.00†	0.000	175.223	4900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5000.00†	0.000	175.223	5000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Delaware
5100.00†	0.000	175.223	5100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5200.00†	0.000	175.223	5200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5300.00†	0.000	175.223	5300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5400.00†	0.000	175.223	5400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5500.00†	0.000	175.223	5500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5600.00†	0.000	175.223	5600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5700.00†	0.000	175.223	5700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5800.00†	0.000	175.223	5800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
5900.00†	0.000	175.223	5900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6000.00†	0.000	175.223	6000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6100.00†	0.000	175.223	6100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6200.00†	0.000	175.223	6200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6300.00†	0.000	175.223	6300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6400.00†	0.000	175.223	6400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6500.00†	0.000	175.223	6500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6600.00†	0.000	175.223	6600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6700.00†	0.000	175.223	6700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6800.00†	0.000	175.223	6800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
6900.00†	0.000	175.223	6900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7000.00†	0.000	175.223	7000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7100.00†	0.000	175.223	7100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7200.00†	0.000	175.223	7200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7300.00†	0.000	175.223	7300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7400.00†	0.000	175.223	7400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7500.00†	0.000	175.223	7500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7600.00†	0.000	175.223	7600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7700.00†	0.000	175.223	7700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7800.00†	0.000	175.223	7800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
7900.00†	0.000	175.223	7900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8000.00†	0.000	175.223	8000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8100.00†	0.000	175.223	8100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8200.00†	0.000	175.223	8200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8300.00†	0.000	175.223	8300.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8400.00†	0.000	175.223	8400.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8500.00†	0.000	175.223	8500.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	



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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No.4 SHL
Area	Lea County, NM	Well	No.4
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No.4 PWB
Facility	Diamondtail 23 Federal No.4		

WELLPATH DATA (152 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
8550.00†	0.000	175.223	8550.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Basal Brushy Canyon
8600.00†	0.000	175.223	8600.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8700.00†	0.000	175.223	8700.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8800.00†	0.000	175.223	8800.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
8855.00†	-0.000	175.223	8855.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Bone Spring
8900.00†	0.000	175.223	8900.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
9000.00†	0.000	175.223	9000.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
9100.00†	0.000	175.223	9100.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	
9198.00	0.000	175.223	9198.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	0.00	Est KOP
9200.00†	0.240	175.223	9200.00	0.00	0.00	0.00	753217.20	472298.70	32°17'47.617"N	103°38'51.414"W	12.01	
9275.34†	9.290	175.223	9275.00	6.26	-6.23	0.52	753217.72	472292.47	32°17'47.556"N	103°38'51.408"W	12.01	Avalon Shale
9300.00†	12.252	175.223	9299.22	10.86	-10.83	0.90	753218.10	472287.87	32°17'47.510"N	103°38'51.404"W	12.01	
9400.00†	24.264	175.223	9394.02	42.14	-41.99	3.51	753220.71	472256.71	32°17'47.202"N	103°38'51.376"W	12.01	
9500.00†	36.275	175.223	9480.22	92.45	-92.13	7.70	753224.90	472206.57	32°17'46.705"N	103°38'51.331"W	12.01	
9600.00†	48.287	175.223	9554.07	159.60	-159.05	13.29	753230.49	472139.66	32°17'46.043"N	103°38'51.271"W	12.01	
9700.00†	60.299	175.223	9612.33	240.66	-239.82	20.04	753237.24	472058.89	32°17'45.243"N	103°38'51.198"W	12.01	
9800.00†	72.310	175.223	9652.45	332.06	-330.91	27.65	753244.85	471967.81	32°17'44.341"N	103°38'51.116"W	12.01	
9900.00†	84.322	175.223	9672.66	429.81	-428.31	35.79	753252.99	471870.40	32°17'43.377"N	103°38'51.029"W	12.01	
9947.27	90.000	175.223	9675.00	477.00	-475.34	39.72	753256.92	471823.38	32°17'42.911"N	103°38'50.986"W	12.01	EOC
10000.00†	90.000	175.223	9675.00	529.73	-527.89	44.11	753261.31	471770.83	32°17'42.391"N	103°38'50.939"W	0.00	
10100.00†	90.000	175.223	9675.00	629.73	-627.54	52.44	753269.64	471671.18	32°17'41.404"N	103°38'50.849"W	0.00	
10200.00†	90.000	175.223	9675.00	729.73	-727.20	60.77	753277.96	471571.53	32°17'40.418"N	103°38'50.760"W	0.00	
10300.00†	90.000	175.223	9675.00	829.73	-826.85	69.09	753286.29	471471.89	32°17'39.431"N	103°38'50.670"W	0.00	
10400.00†	90.000	175.223	9675.00	929.73	-926.50	77.42	753294.62	471372.24	32°17'38.445"N	103°38'50.581"W	0.00	
10500.00†	90.000	175.223	9675.00	1029.73	-1026.15	85.75	753302.94	471272.59	32°17'37.458"N	103°38'50.491"W	0.00	
10600.00†	90.000	175.223	9675.00	1129.73	-1125.81	94.07	753311.27	471172.94	32°17'36.472"N	103°38'50.402"W	0.00	
10700.00†	90.000	175.223	9675.00	1229.73	-1225.46	102.40	753319.60	471073.29	32°17'35.485"N	103°38'50.312"W	0.00	
10800.00†	90.000	175.223	9675.00	1329.73	-1325.11	110.73	753327.92	470973.64	32°17'34.498"N	103°38'50.222"W	0.00	
10900.00†	90.000	175.223	9675.00	1429.73	-1424.76	119.05	753336.25	470873.99	32°17'33.512"N	103°38'50.133"W	0.00	
11000.00†	90.000	175.223	9675.00	1529.73	-1524.42	127.38	753344.58	470774.35	32°17'32.525"N	103°38'50.043"W	0.00	
11100.00†	90.000	175.223	9675.00	1629.73	-1624.07	135.71	753352.90	470674.70	32°17'31.539"N	103°38'49.954"W	0.00	
11200.00†	90.000	175.223	9675.00	1729.73	-1723.72	144.04	753361.23	470575.05	32°17'30.552"N	103°38'49.864"W	0.00	
11300.00†	90.000	175.223	9675.00	1829.73	-1823.38	152.36	753369.56	470475.40	32°17'29.566"N	103°38'49.774"W	0.00	
11400.00†	90.000	175.223	9675.00	1929.73	-1923.03	160.69	753377.88	470375.75	32°17'28.579"N	103°38'49.685"W	0.00	
11500.00†	90.000	175.223	9675.00	2029.73	-2022.68	169.02	753386.21	470276.10	32°17'27.592"N	103°38'49.595"W	0.00	
11600.00†	90.000	175.223	9675.00	2129.73	-2122.33	177.34	753394.54	470176.45	32°17'26.606"N	103°38'49.506"W	0.00	
11700.00†	90.000	175.223	9675.00	2229.73	-2221.99	185.67	753402.86	470076.81	32°17'25.619"N	103°38'49.416"W	0.00	
11800.00†	90.000	175.223	9675.00	2329.73	-2321.64	194.00	753411.19	469977.16	32°17'24.633"N	103°38'49.327"W	0.00	
11900.00†	90.000	175.223	9675.00	2429.73	-2421.29	202.32	753419.52	469877.51	32°17'23.646"N	103°38'49.237"W	0.00	
12000.00†	90.000	175.223	9675.00	2529.73	-2520.94	210.65	753427.84	469777.86	32°17'22.660"N	103°38'49.147"W	0.00	
12100.00†	90.000	175.223	9675.00	2629.73	-2620.60	218.98	753436.17	469678.21	32°17'21.673"N	103°38'49.058"W	0.00	
12200.00†	90.000	175.223	9675.00	2729.73	-2720.25	227.31	753444.50	469578.56	32°17'20.686"N	103°38'48.968"W	0.00	
12300.00†	90.000	175.223	9675.00	2829.73	-2819.90	235.63	753452.82	469478.91	32°17'19.700"N	103°38'48.879"W	0.00	
12400.00†	90.000	175.223	9675.00	2929.73	-2919.56	243.96	753461.15	469379.27	32°17'18.713"N	103°38'48.789"W	0.00	
12500.00†	90.000	175.223	9675.00	3029.73	-3019.21	252.29	753469.48	469279.62	32°17'17.727"N	103°38'48.700"W	0.00	



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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No.4 SHL
Area	Lea County, NM	Well	No.4
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No.4 PWB
Facility	Diamondtail 23 Federal No.4		

WELLPATH DATA (152 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
12600.00†	90.000	175.223	9675.00	3129.73	-3118.86	260.61	753477.80	469179.97	32°17'16.740"N	103°38'48.610"W	0.00	
12700.00†	90.000	175.223	9675.00	3229.73	-3218.51	268.94	753486.13	469080.32	32°17'15.754"N	103°38'48.520"W	0.00	
12800.00†	90.000	175.223	9675.00	3329.73	-3318.17	277.27	753494.46	468980.67	32°17'14.767"N	103°38'48.431"W	0.00	
12900.00†	90.000	175.223	9675.00	3429.73	-3417.82	285.60	753502.78	468881.02	32°17'13.780"N	103°38'48.341"W	0.00	
13000.00†	90.000	175.223	9675.00	3529.73	-3517.47	293.92	753511.11	468781.37	32°17'12.794"N	103°38'48.252"W	0.00	
13100.00†	90.000	175.223	9675.00	3629.73	-3617.12	302.25	753519.44	468681.73	32°17'11.807"N	103°38'48.162"W	0.00	
13200.00†	90.000	175.223	9675.00	3729.73	-3716.78	310.58	753527.76	468582.08	32°17'10.821"N	103°38'48.073"W	0.00	
13300.00†	90.000	175.223	9675.00	3829.73	-3816.43	318.90	753536.09	468482.43	32°17'09.834"N	103°38'47.983"W	0.00	
13400.00†	90.000	175.223	9675.00	3929.73	-3916.08	327.23	753544.42	468382.78	32°17'08.848"N	103°38'47.894"W	0.00	
13500.00†	90.000	175.223	9675.00	4029.73	-4015.73	335.56	753552.74	468283.13	32°17'07.861"N	103°38'47.804"W	0.00	
13600.00†	90.000	175.223	9675.00	4129.73	-4115.39	343.88	753561.07	468183.48	32°17'06.874"N	103°38'47.714"W	0.00	
13700.00†	90.000	175.223	9675.00	4229.73	-4215.04	352.21	753569.40	468083.83	32°17'05.888"N	103°38'47.625"W	0.00	
13800.00†	90.000	175.223	9675.00	4329.73	-4314.69	360.54	753577.72	467984.19	32°17'04.901"N	103°38'47.535"W	0.00	
13900.00†	90.000	175.223	9675.00	4429.73	-4414.35	368.87	753586.05	467884.54	32°17'03.915"N	103°38'47.446"W	0.00	
14000.00†	90.000	175.223	9675.00	4529.73	-4514.00	377.19	753594.38	467784.89	32°17'02.928"N	103°38'47.356"W	0.00	
14100.00†	90.000	175.223	9675.00	4629.73	-4613.65	385.52	753602.70	467685.24	32°17'01.941"N	103°38'47.267"W	0.00	
14103.55	90.000	175.223	9675.00†	4633.28	-4617.19	385.82	753603.00	467681.70	32°17'01.906"N	103°38'47.263"W	0.00	No.4 PBHL

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) No.4 PBHL (Rev-0)	14103.55	9675.00	-4617.19	385.82	753603.00	467681.70	32°17'01.906"N	103°38'47.263"W	point

SURVEY PROGRAM - Ref Wellbore: No.4 PWB Ref Wellpath: Rev-A.0				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	14103.55	NaviTrak (Standard)		No.4 PWB

SR & A

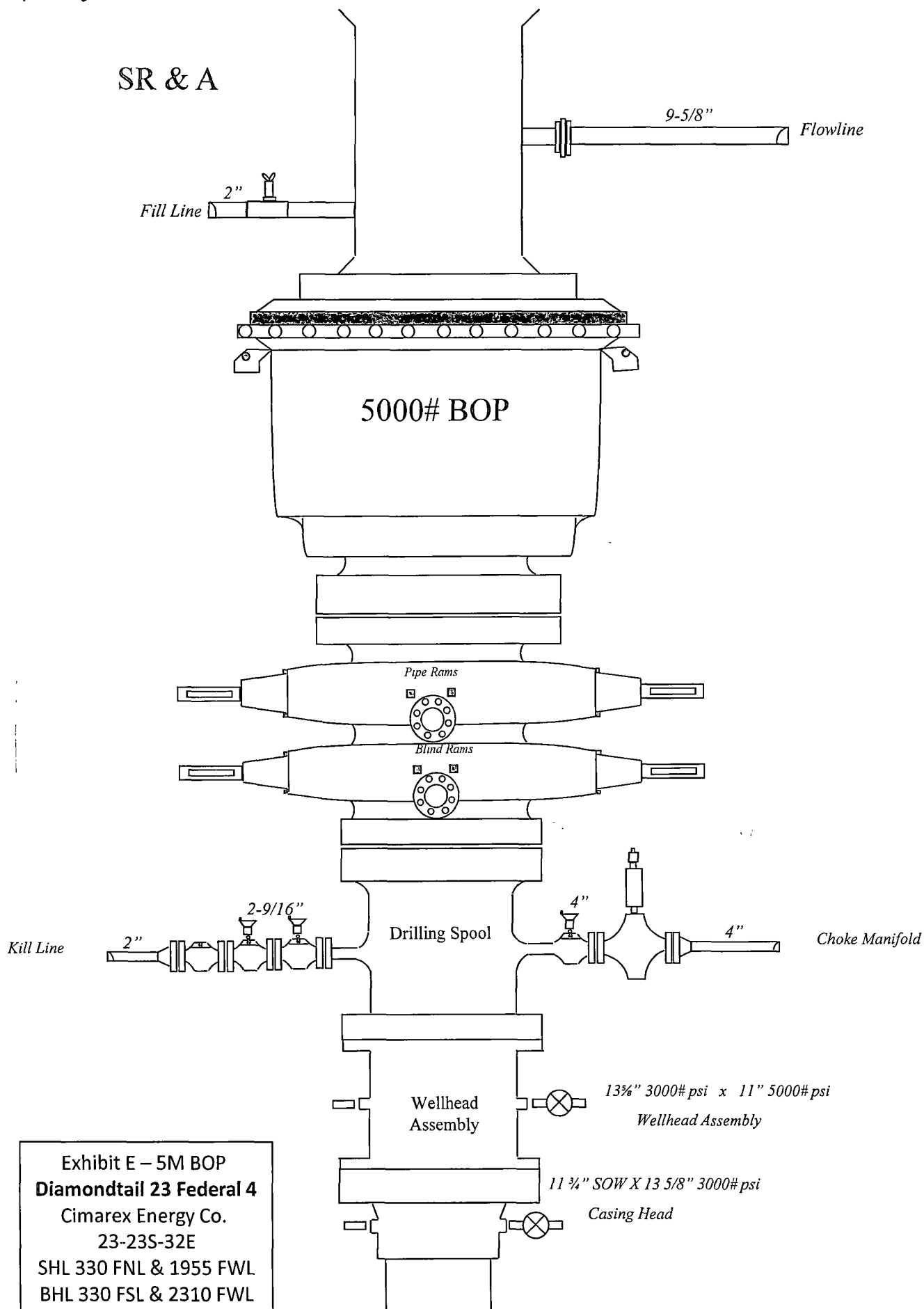


Exhibit E – 5M BOP
Diamondtail 23 Federal 4
Cimarex Energy Co.
23-23S-32E
SHL 330 FNL & 1955 FWL
BHL 330 FSL & 2310 FWL
Lea County, NM

Drilling Operations Choke Manifold 5M Service

Exhibit E-1 – Choke Manifold Diagram

Diamondtail 23 Federal 4

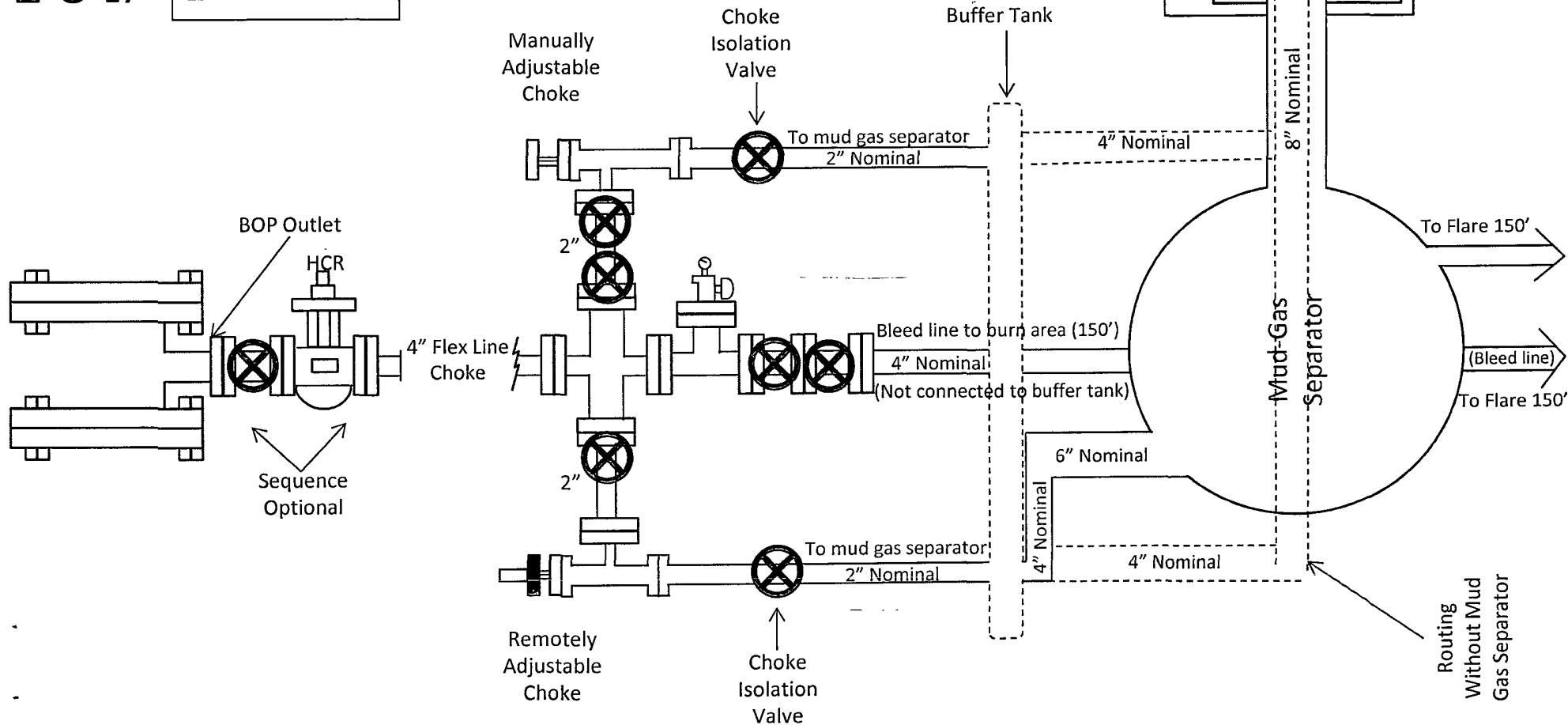
Cimarex Energy Co.

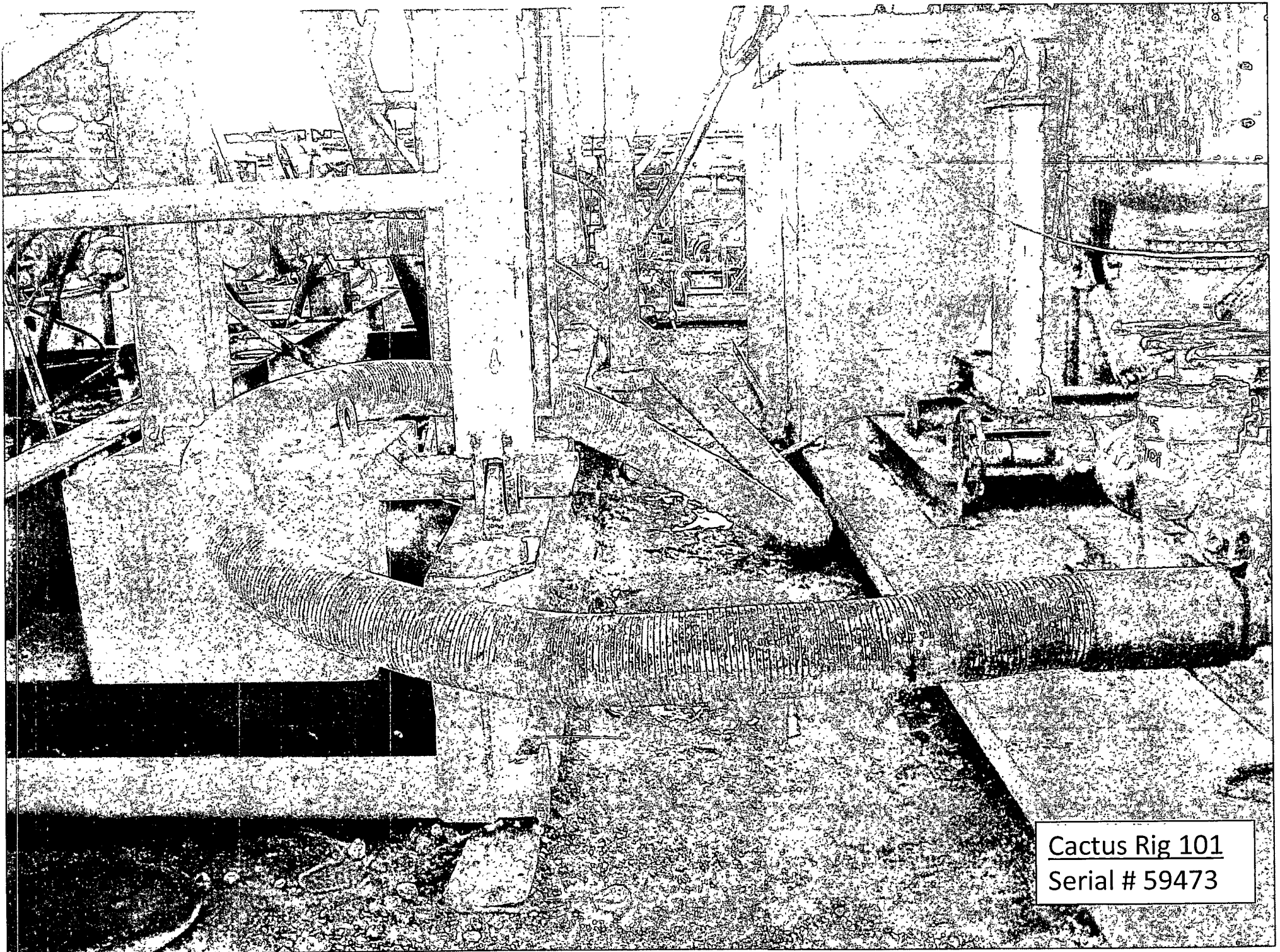
23-23S-32E

SHL 330 FNL & 1955 FWL

BHL 330 FSL & 2310 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: CHOKE 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		
<u>Hose assembly pressure tested with water at ambient temperature.</u>		
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)

Cimarex Energy Co. of Colorado – Closed-Loop System Design Plan

Equipment List

- Primary Shakers
- Mud Cleaner – hydro-cyclones
- 1 or 2 Centrifuges (depending on well depth)
- De-watering system with pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing (may not be necessary for shallower wells)
- Drying Augur
- Sump Drying Augur
- Sump
- Cuttings Boxes
- Reserve Fluids Tank Farm
- Wire Mesh Trash Enclosure (spent motor oils kept in separate containers and later sent to approved landfill)

Operation and Maintenance

The Cimarex Zero Discharge system is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This ensures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

These closed loop operations can be monitored by our service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

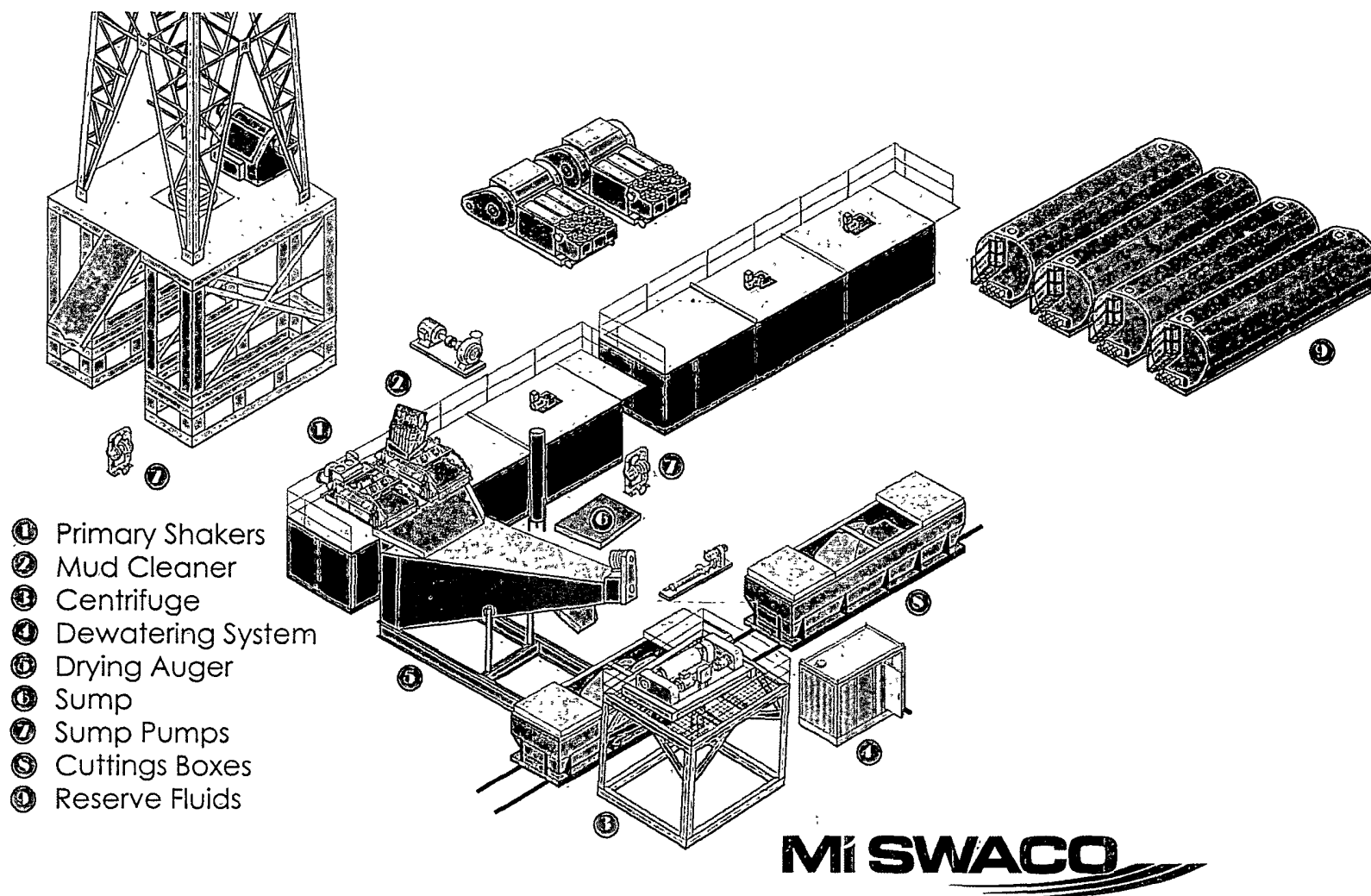
Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and tested for all regulated toxic materials. If found they are removed and disposed of per regulatory requirements.

Closure Plan

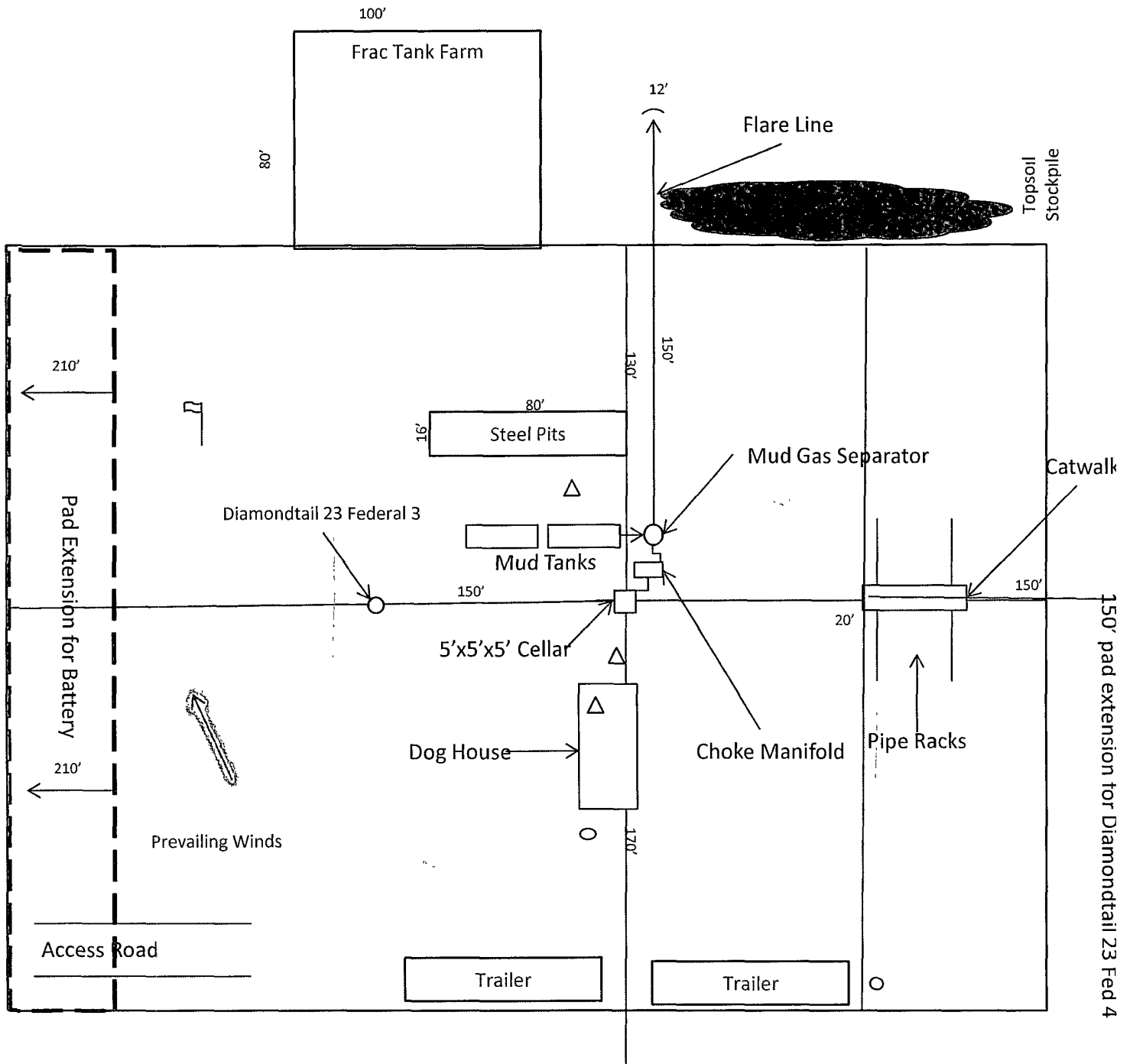
During drilling operations, all liquids, drilling fluids, and cuttings will be hauled off via CRI (Controlled Recovery Incorporated, Permit R-9166).



Closed Loop with Drying Auger and Dewatering System



Cactus 101



-  Wind Direction Indicators (wind sock or streamers)
-  H2S Monitors (alarms at bell nipple and shale shaker)
-  Briefing Areas

Exhibit D – Rig Diagram
Diamondtail 23 Federal 4
 Cimarex Energy Co.
 23-23S-32E
 SHL 330 FNL & 1955 FWL
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 Lea County, NM

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