

AT5-12-622

OCD-HOBBS

HOBBS OCD

SEP 21 2012

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

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of Work ☒ DRILL ☐ REENTER		5 Lease Serial No NMNM 127894	
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. 215099		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 39458 Diamondtail 23 Federal No. 8	
3b Phone No (include area code) 432-571-7800		9 API Well No. 30-025-40783	
4 Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 330 FNL & 600 FEL At proposed prod Zone 330 FSL & 375 FEL Horizontal Bone Spring test		10 Field and Pool, or Exploratory 1704K Diamondtail; Bone Spring K2	
14 Distance in miles and direction from nearest town or post office*		11 Sec, T R M or Blk and Survey or Area 23-23S-32E	
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line if any) 330'		12 County or Parish Lea	
16 No of acres in lease 640		13 State NM	
17 Spacing Unit dedicated to this well E2E2 160 acres			
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft < 100'		20 BLM/BIA Bond No on File COB000011	
19 Proposed Depth MD 14179 TVD 9675			
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3718' GR		22 Approximate date work will start* 06.15.12	
		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 | 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 04.16.12
Title Manager Operations Administration		
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.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

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

SEP 26 2012

Drilling Plan
Diamondtail 23 Federal 8
 Cimarex Energy Co.
 Unit A, 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 & 600 FEL
 BHL 330 FSL & 375 FEL
- 2 **Elevation above sea level:** 3718 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 14179 TVD 9675 0

6 **Estimated tops of geological markers:**

Rustler	1220
T. Salt	1520
Castille	3590
B. Salt	4680
Delaware	5000
Basal Brushy Canyon	8550
Bone Spring	8855
Avalon Shale	9275

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 1245' 1340	8.4 - 8.6	28	NC	FW
1245' to 4900'	10.0	30-32	NC	Brine water
4900' to 14179'	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 9389'. Drill 8¾" lateral through the curve to TD @ 14179 MD, 9675 TVD. Run 5½" 17# P-110 LTC from 0-14179' and cement to 3600' TOC.

Drilling Plan
Diamondtail 23 Federal 8
 Cimarex Energy Co.
 Unit A, Section 23
 T23S-R32E; Lea County, NM

9 Casing & Cementing Program:

See COA

String	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	17 1/2"	0' to 1245'	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" or 8 3/4"	0' to 14179'	New 5 1/2"	17#	LTC	P-110

10 Cementing:

Surface

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

Tail: 200SKS Permium 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# Gilsonte 12.9ppg 1.92yield 120% Excess

Tail: 235SKS Permium 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: 1325SKS Versacem H + 0.5% Halad(R)-344 + 0.4% CFR-3 + 1# Salt + 0.2% HR-601 14.5ppg 1.22 yield 25% Excess Cement volumes will be adjusted depending on hole size.

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 1245' 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 14179' 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. tested to 3000 psi 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 4900.' 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 tested to 3000 psi.

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.

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

Drilling Plan
Diamondtail 23 Federal 8
Cimarex Energy Co.
Unit A, 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
- 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 **138°**

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. 8

Slot: No. 8 SHL
Well: No. 8
Wellbore: No. 8 PWB



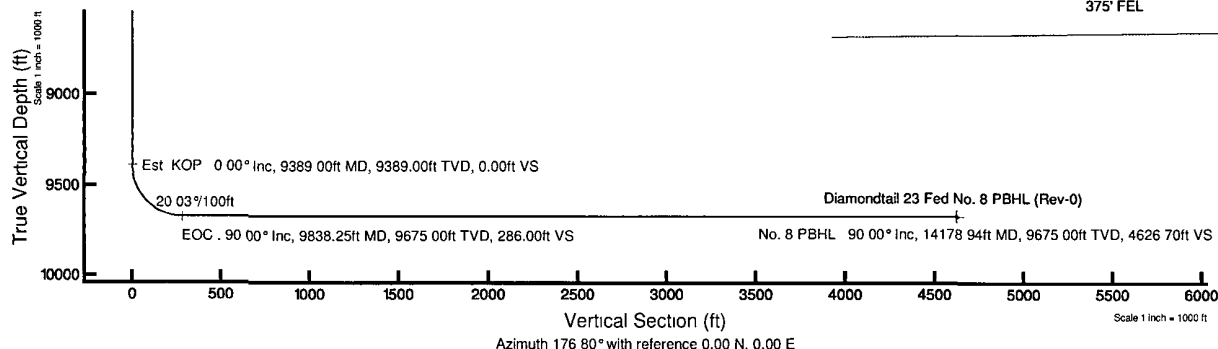
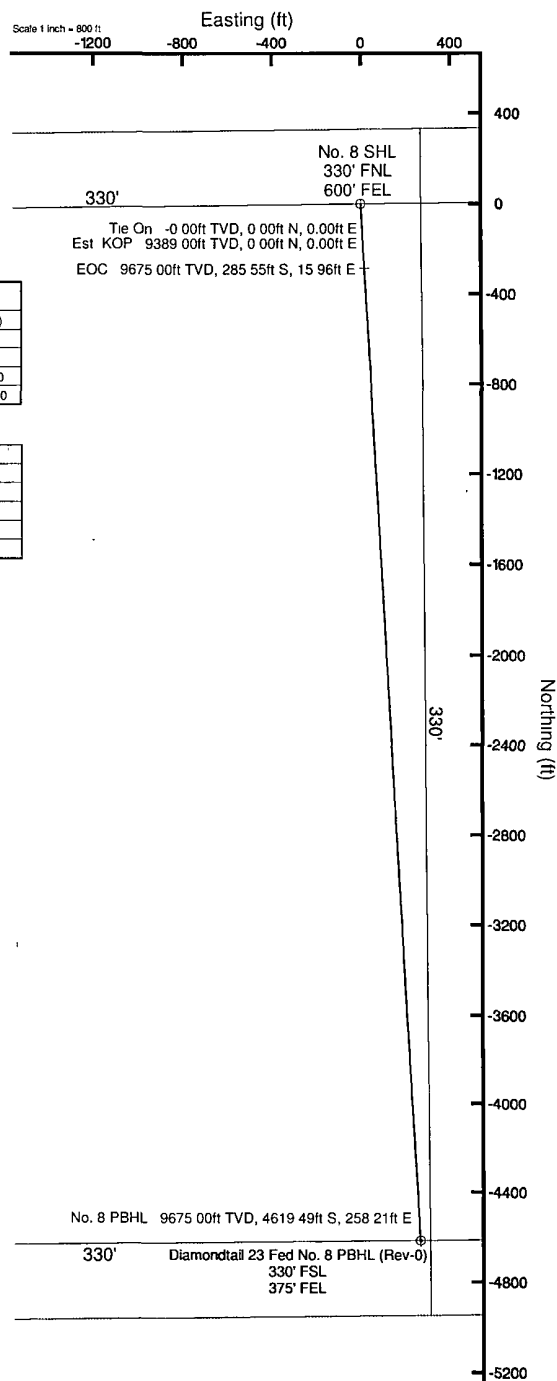
Well Profile Data							
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	0.00	0.000	176.801	0.00	0.00	0.00	0.00
Est KOP	9389.00	0.000	176.801	9389.00	0.00	0.00	0.00
EOC	9838.25	90.000	176.801	9675.00	-285.55	15.96	286.00
No. 8 PBHL	14178.94	90.000	176.801	9675.00	-4619.49	258.21	4626.70

Plot reference wellpath is Rev A 0	
True vertical depths are referenced to Rig on No. 8 SHL (RT)	Gnd System NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 8 SHL (RT)	North Reference: Gnd north
Rig on No. 8 SHL (RT) to Mean Sea Level: 3718 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot No. 8 SHL): -3718 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: harkol on 3/29/2012



BGGM (1945.0 to 2013.0) Dip: 60.19° Field: 48576.9 nT
Magnetic North is 7.61 degrees East of True North (at 3/29/2012)
Gnd North is 0.37 degrees East of True North
To correct azimuth from True to Gnd subtract 0.37 degrees
To correct azimuth from Magnetic to Gnd add 7.23 degrees

For example: if the Magnetic North Azimuth = 90 degs, then the Gnd North Azimuth = 90 + 7.23 = 97.23





Planned Wellpath Report

Rev-A.0
Page n of nn



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 8 SHL
Area	Lea County, NM	Well	No. 8
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No. 8 PWB
Facility	Diamondtail 23 Federal No. 8		

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	Harrkol
Scale	0.999962	Report Generated	3/29/2012 at 10:38:47 AM
Convergence at slot	0.37° East	Database/Source file	WA Midland/No_8_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	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W
Facility Reference Pt			755935.70	472329.00	32°17'47.744"N	103°38'19.740"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. 8 SHL (RT) to Facility Vertical Datum	0.00ft
Horizontal Reference Pt	Slot	Rig on No. 8 SHL (RT) to Mean Sea Level	3718.00ft
Vertical Reference Pt	Rig on No. 8 SHL (RT)	Rig on No. 8 SHL (RT) to Mud Line at Slot (No. 8 SHL)	0.00ft
MD Reference Pt	Rig on No. 8 SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	176.80°



Planned Wellpath Report

Rev-A.0
Page n of nn



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 8 SHL
Area	Lea County, NM	Well	No. 8
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No. 8 PWB
Facility	Diamondtail 23 Federal No. 8		

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	176.801	0.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Tie On
100.00†	0.000	176.801	100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
200.00†	0.000	176.801	200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
300.00†	0.000	176.801	300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
400.00†	0.000	176.801	400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
500.00†	0.000	176.801	500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
600.00†	0.000	176.801	600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
700.00†	0.000	176.801	700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
800.00†	0.000	176.801	800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
900.00†	0.000	176.801	900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1000.00†	0.000	176.801	1000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1100.00†	0.000	176.801	1100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1200.00†	0.000	176.801	1200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1220.00†	0.000	176.801	1220.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Rustler
1300.00†	0.000	176.801	1300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1400.00†	0.000	176.801	1400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1500.00†	0.000	176.801	1500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1520.00†	0.000	176.801	1520.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Salt
1600.00†	0.000	176.801	1600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1700.00†	0.000	176.801	1700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1800.00†	0.000	176.801	1800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
1900.00†	0.000	176.801	1900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2000.00†	0.000	176.801	2000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2100.00†	0.000	176.801	2100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2200.00†	0.000	176.801	2200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2300.00†	0.000	176.801	2300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2400.00†	0.000	176.801	2400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2500.00†	0.000	176.801	2500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2600.00†	0.000	176.801	2600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2700.00†	0.000	176.801	2700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2800.00†	0.000	176.801	2800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
2900.00†	0.000	176.801	2900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3000.00†	0.000	176.801	3000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3100.00†	0.000	176.801	3100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3200.00†	0.000	176.801	3200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3300.00†	0.000	176.801	3300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3400.00†	0.000	176.801	3400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3500.00†	0.000	176.801	3500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3590.00†	0.000	176.801	3590.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Castille
3600.00†	0.000	176.801	3600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3700.00†	0.000	176.801	3700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3800.00†	0.000	176.801	3800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
3900.00†	0.000	176.801	3900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4000.00†	0.000	176.801	4000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4100.00†	0.000	176.801	4100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	



Planned Wellpath Report

Rev-A.0
Page n of nn



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 8 SHL
Area	Lea County, NM	Well	No. 8
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No. 8 PWB
Facility	Diamondtail 23 Federal No. 8		

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	176.801	4200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4300.00†	0.000	176.801	4300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4400.00†	0.000	176.801	4400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4500.00†	0.000	176.801	4500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4600.00†	0.000	176.801	4600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4680.00†	0.000	176.801	4680.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Base Salt
4700.00†	0.000	176.801	4700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4800.00†	0.000	176.801	4800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
4900.00†	0.000	176.801	4900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5000.00†	0.000	176.801	5000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Delaware
5100.00†	0.000	176.801	5100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5200.00†	0.000	176.801	5200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5300.00†	0.000	176.801	5300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5400.00†	0.000	176.801	5400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5500.00†	0.000	176.801	5500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5600.00†	0.000	176.801	5600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5700.00†	0.000	176.801	5700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5800.00†	0.000	176.801	5800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
5900.00†	0.000	176.801	5900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6000.00†	0.000	176.801	6000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6100.00†	0.000	176.801	6100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6200.00†	0.000	176.801	6200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6300.00†	0.000	176.801	6300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6400.00†	0.000	176.801	6400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6500.00†	0.000	176.801	6500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6600.00†	0.000	176.801	6600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6700.00†	0.000	176.801	6700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6800.00†	0.000	176.801	6800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
6900.00†	0.000	176.801	6900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7000.00†	0.000	176.801	7000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7100.00†	0.000	176.801	7100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7200.00†	0.000	176.801	7200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7300.00†	0.000	176.801	7300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7400.00†	0.000	176.801	7400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7500.00†	0.000	176.801	7500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7600.00†	0.000	176.801	7600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7700.00†	0.000	176.801	7700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7800.00†	0.000	176.801	7800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
7900.00†	0.000	176.801	7900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8000.00†	0.000	176.801	8000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8100.00†	0.000	176.801	8100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8200.00†	0.000	176.801	8200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8300.00†	0.000	176.801	8300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8400.00†	0.000	176.801	8400.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8500.00†	0.000	176.801	8500.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	



Planned Wellpath Report

Rev-A.0
Page n of nn



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 8 SHL
Area	Lea County, NM	Well	No. 8
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No. 8 PWB
Facility	Diamondtail 23 Federal No. 8		

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	176.801	8550.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Basal Brushy Canyon
8600.00†	0.000	176.801	8600.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8700.00†	0.000	176.801	8700.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8800.00†	0.000	176.801	8800.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
8855.00†	0.000	176.801	8855.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Bone Spring
8900.00†	0.000	176.801	8900.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
9000.00†	0.000	176.801	9000.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
9100.00†	0.000	176.801	9100.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
9200.00†	0.000	176.801	9200.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
9275.00†	0.000	176.801	9275.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Avalon Shale
9300.00†	0.000	176.801	9300.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	
9389.00†	0.000	176.801	9389.00	0.00	0.00	0.00	755935.70	472329.00	32°17'47.744"N	103°38'19.740"W	0.00	Est. KOP
9400.00†	2.204	176.801	9400.00	0.21	-0.21	0.01	755935.71	472328.79	32°17'47.742"N	103°38'19.740"W	20.03	
9500.00†	22.237	176.801	9497.23	21.27	-21.24	1.19	755936.89	472307.76	32°17'47.534"N	103°38'19.728"W	20.03	
9600.00†	42.271	176.801	9581.37	74.37	-74.25	4.15	755939.85	472254.75	32°17'47.009"N	103°38'19.698"W	20.03	
9700.00†	62.304	176.801	9642.23	153.07	-152.83	8.54	755944.24	472176.17	32°17'46.231"N	103°38'19.652"W	20.03	
9800.00†	82.338	176.801	9672.45	247.87	-247.48	13.83	755949.53	472081.53	32°17'45.294"N	103°38'19.598"W	20.03	
9838.25	90.000	176.801	9675.00	286.00	-285.55	15.96	755951.66	472043.46	32°17'44.917"N	103°38'19.576"W	20.03	EOC
9900.00†	90.000	176.801	9675.00	347.75	-347.21	19.41	755955.11	471981.80	32°17'44.307"N	103°38'19.540"W	0.00	
10000.00†	90.000	176.801	9675.00	447.75	-447.05	24.99	755960.69	471881.96	32°17'43.319"N	103°38'19.483"W	0.00	
10100.00†	90.000	176.801	9675.00	547.75	-546.90	30.57	755966.27	471782.12	32°17'42.331"N	103°38'19.425"W	0.00	
10200.00†	90.000	176.801	9675.00	647.75	-646.74	36.15	755971.85	471682.28	32°17'41.342"N	103°38'19.368"W	0.00	
10300.00†	90.000	176.801	9675.00	747.75	-746.59	41.73	755977.43	471582.44	32°17'40.354"N	103°38'19.310"W	0.00	
10400.00†	90.000	176.801	9675.00	847.75	-846.43	47.31	755983.01	471482.60	32°17'39.366"N	103°38'19.253"W	0.00	
10500.00†	90.000	176.801	9675.00	947.75	-946.28	52.89	755988.59	471382.76	32°17'38.377"N	103°38'19.196"W	0.00	
10600.00†	90.000	176.801	9675.00	1047.75	-1046.12	58.47	755994.17	471282.92	32°17'37.389"N	103°38'19.138"W	0.00	
10700.00†	90.000	176.801	9675.00	1147.75	-1145.96	64.05	755999.75	471183.08	32°17'36.401"N	103°38'19.081"W	0.00	
10800.00†	90.000	176.801	9675.00	1247.75	-1245.81	69.64	756005.33	471083.24	32°17'35.412"N	103°38'19.023"W	0.00	
10900.00†	90.000	176.801	9675.00	1347.75	-1345.65	75.22	756010.91	470983.40	32°17'34.424"N	103°38'18.966"W	0.00	
11000.00†	90.000	176.801	9675.00	1447.75	-1445.50	80.80	756016.49	470883.56	32°17'33.436"N	103°38'18.908"W	0.00	
11100.00†	90.000	176.801	9675.00	1547.75	-1545.34	86.38	756022.07	470783.72	32°17'32.448"N	103°38'18.851"W	0.00	
11200.00†	90.000	176.801	9675.00	1647.75	-1645.18	91.96	756027.66	470683.88	32°17'31.459"N	103°38'18.793"W	0.00	
11300.00†	90.000	176.801	9675.00	1747.75	-1745.03	97.54	756033.24	470584.04	32°17'30.471"N	103°38'18.736"W	0.00	
11400.00†	90.000	176.801	9675.00	1847.75	-1844.87	103.12	756038.82	470484.20	32°17'29.483"N	103°38'18.678"W	0.00	
11500.00†	90.000	176.801	9675.00	1947.75	-1944.72	108.70	756044.40	470384.36	32°17'28.494"N	103°38'18.621"W	0.00	
11600.00†	90.000	176.801	9675.00	2047.75	-2044.56	114.28	756049.98	470284.52	32°17'27.506"N	103°38'18.563"W	0.00	
11700.00†	90.000	176.801	9675.00	2147.75	-2144.40	119.86	756055.56	470184.68	32°17'26.518"N	103°38'18.506"W	0.00	
11800.00†	90.000	176.801	9675.00	2247.75	-2244.25	125.44	756061.14	470084.84	32°17'25.529"N	103°38'18.448"W	0.00	
11900.00†	90.000	176.801	9675.00	2347.75	-2344.09	131.03	756066.72	469985.00	32°17'24.541"N	103°38'18.391"W	0.00	
12000.00†	90.000	176.801	9675.00	2447.75	-2443.94	136.61	756072.30	469885.16	32°17'23.553"N	103°38'18.333"W	0.00	
12100.00†	90.000	176.801	9675.00	2547.75	-2543.78	142.19	756077.88	469785.32	32°17'22.565"N	103°38'18.276"W	0.00	
12200.00†	90.000	176.801	9675.00	2647.75	-2643.63	147.77	756083.46	469685.48	32°17'21.576"N	103°38'18.218"W	0.00	
12300.00†	90.000	176.801	9675.00	2747.75	-2743.47	153.35	756089.04	469585.64	32°17'20.588"N	103°38'18.161"W	0.00	
12400.00†	90.000	176.801	9675.00	2847.75	-2843.31	158.93	756094.62	469485.80	32°17'19.600"N	103°38'18.103"W	0.00	
12500.00†	90.000	176.801	9675.00	2947.75	-2943.16	164.51	756100.20	469385.96	32°17'18.611"N	103°38'18.046"W	0.00	



Planned Wellpath Report

Rev-A.0
Page n of nn



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 8 SHL
Area	Lea County, NM	Well	No. 8
Field	(Diamondtail) Sec 23, T23S, R32E	Wellbore	No. 8 PWB
Facility	Diamondtail 23 Federal No. 8		

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	176.801	9675.00	3047.75	-3043.00	170.09	756105.78	469286.12	32°17'17.623"N	103°38'17.989"W	0.00	
12700.00†	90.000	176.801	9675.00	3147.75	-3142.85	175.67	756111.37	469186.28	32°17'16.635"N	103°38'17.931"W	0.00	
12800.00†	90.000	176.801	9675.00	3247.75	-3242.69	181.25	756116.95	469086.44	32°17'15.646"N	103°38'17.874"W	0.00	
12900.00†	90.000	176.801	9675.00	3347.75	-3342.53	186.83	756122.53	468986.60	32°17'14.658"N	103°38'17.816"W	0.00	
13000.00†	90.000	176.801	9675.00	3447.75	-3442.38	192.41	756128.11	468886.76	32°17'13.670"N	103°38'17.759"W	0.00	
13100.00†	90.000	176.801	9675.00	3547.75	-3542.22	198.00	756133.69	468786.92	32°17'12.682"N	103°38'17.701"W	0.00	
13200.00†	90.000	176.801	9675.00	3647.75	-3642.07	203.58	756139.27	468687.08	32°17'11.693"N	103°38'17.644"W	0.00	
13300.00†	90.000	176.801	9675.00	3747.75	-3741.91	209.16	756144.85	468587.24	32°17'10.705"N	103°38'17.586"W	0.00	
13400.00†	90.000	176.801	9675.00	3847.75	-3841.76	214.74	756150.43	468487.40	32°17'09.717"N	103°38'17.529"W	0.00	
13500.00†	90.000	176.801	9675.00	3947.75	-3941.60	220.32	756156.01	468387.56	32°17'08.728"N	103°38'17.471"W	0.00	
13600.00†	90.000	176.801	9675.00	4047.75	-4041.44	225.90	756161.59	468287.72	32°17'07.740"N	103°38'17.414"W	0.00	
13700.00†	90.000	176.801	9675.00	4147.75	-4141.29	231.48	756167.17	468187.88	32°17'06.752"N	103°38'17.356"W	0.00	
13800.00†	90.000	176.801	9675.00	4247.75	-4241.13	237.06	756172.75	468088.04	32°17'05.763"N	103°38'17.299"W	0.00	
13900.00†	90.000	176.801	9675.00	4347.75	-4340.98	242.64	756178.33	467988.20	32°17'04.775"N	103°38'17.241"W	0.00	
14000.00†	90.000	176.801	9675.00	4447.75	-4440.82	248.22	756183.91	467888.36	32°17'03.787"N	103°38'17.184"W	0.00	
14100.00†	90.000	176.801	9675.00	4547.75	-4540.66	253.80	756189.49	467788.52	32°17'02.799"N	103°38'17.126"W	0.00	
14178.94	90.000	176.801	9675.00	4626.70	-4619.49	258.21	756193.90	467709.70	32°17'02.018"N	103°38'17.081"W	0.00	No 8 PBHL

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
1) Diamondtail 23 Fed No. 8 PBHL (Rev-0)	14178.94	9675.00	-4619.49	258.21	756193.90	467709.70	32°17'02.018"N	103°38'17.081"W	point

SURVEY PROGRAM - Ref Wellbore: No. 8 PWB Ref Wellpath: Rev-A.0				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	14178.94	NaviTrak (Standard)		No. 8 PWB

SR & A

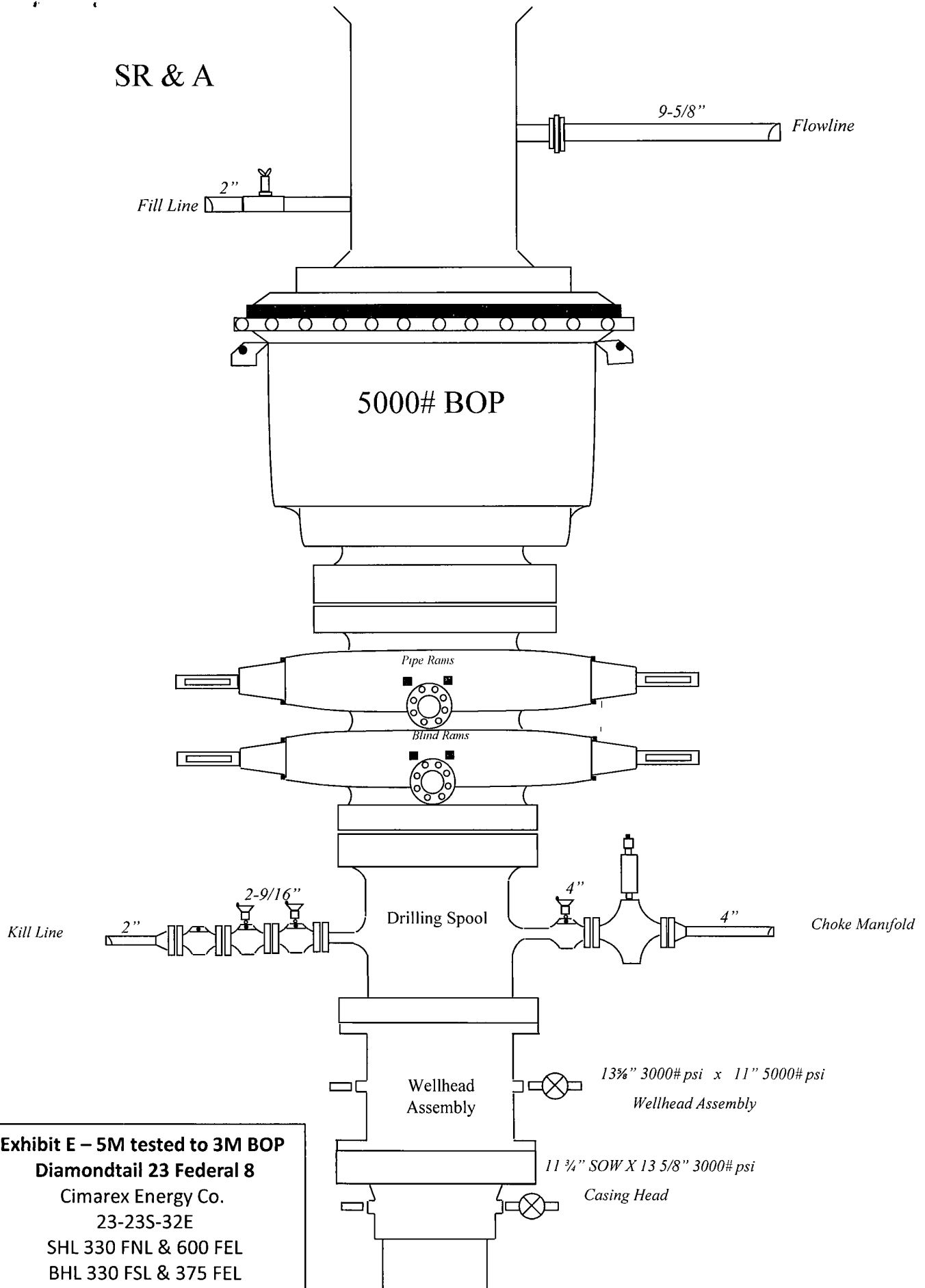


Exhibit E – 5M tested to 3M BOP
Diamondtail 23 Federal 8

Cimarex Energy Co.
23-23S-32E
SHL 330 FNL & 600 FEL
BHL 330 FSL & 375 FEL
Lea County, NM

Drilling Operations
Choke Manifold
5M Tested to 3M Service

Exhibit E-1 – Choke Manifold

Diagram

Diamondtail 23 Federal 8

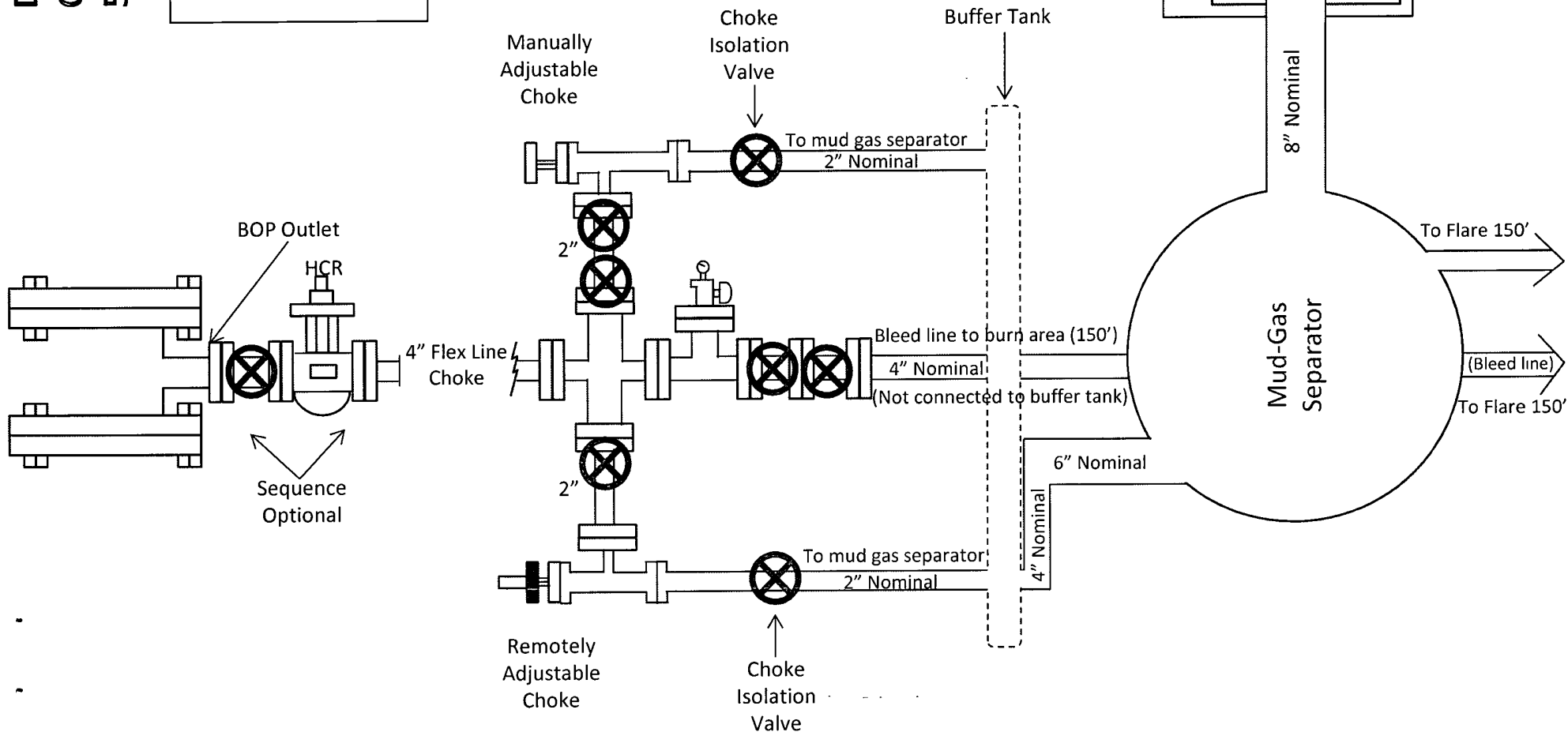
Cimarex Energy Co.

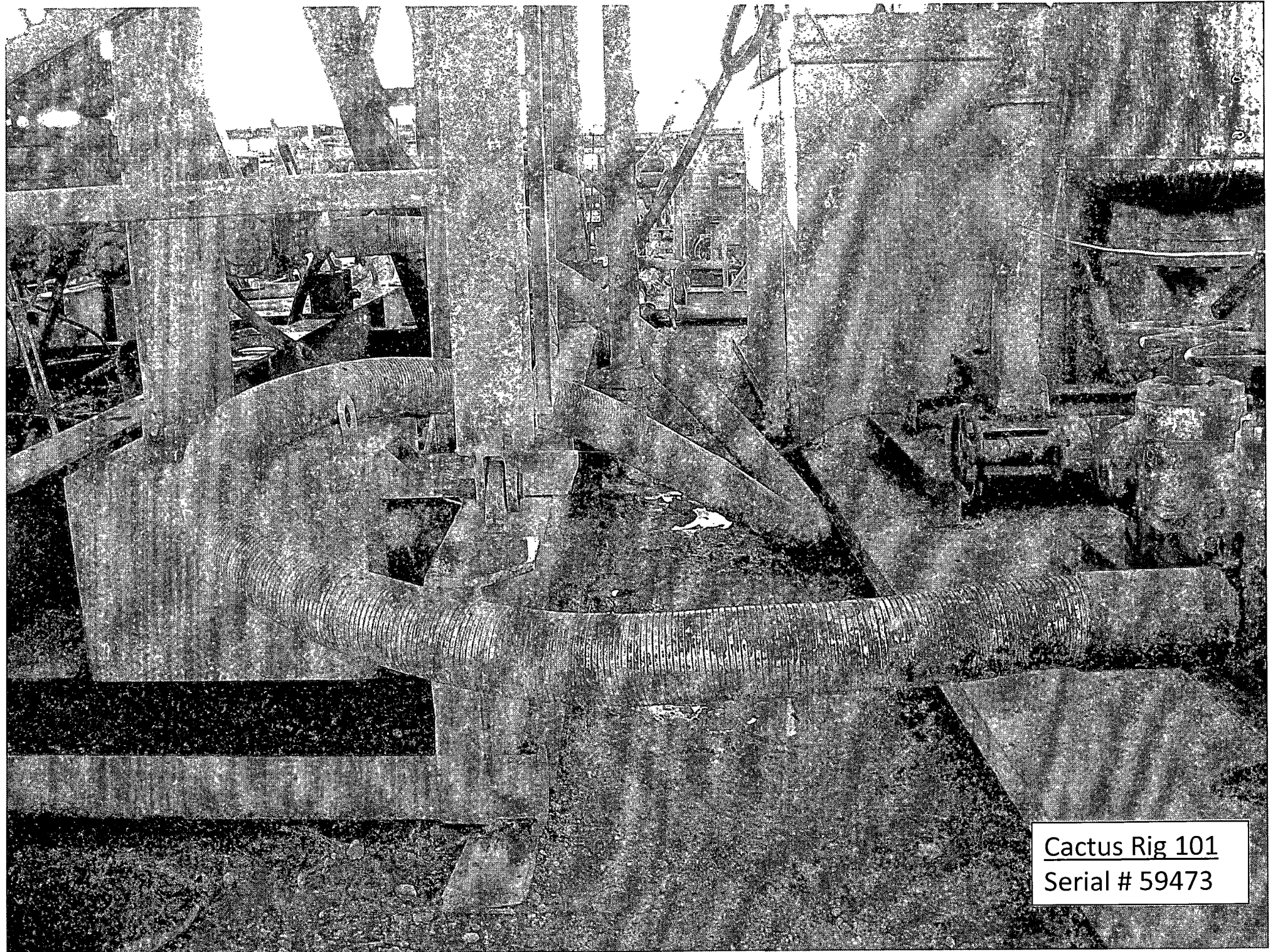
23-23S-32E

SHL 330 FNL & 600 FEL

BHL 330 FSL & 375 FEL

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			
<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



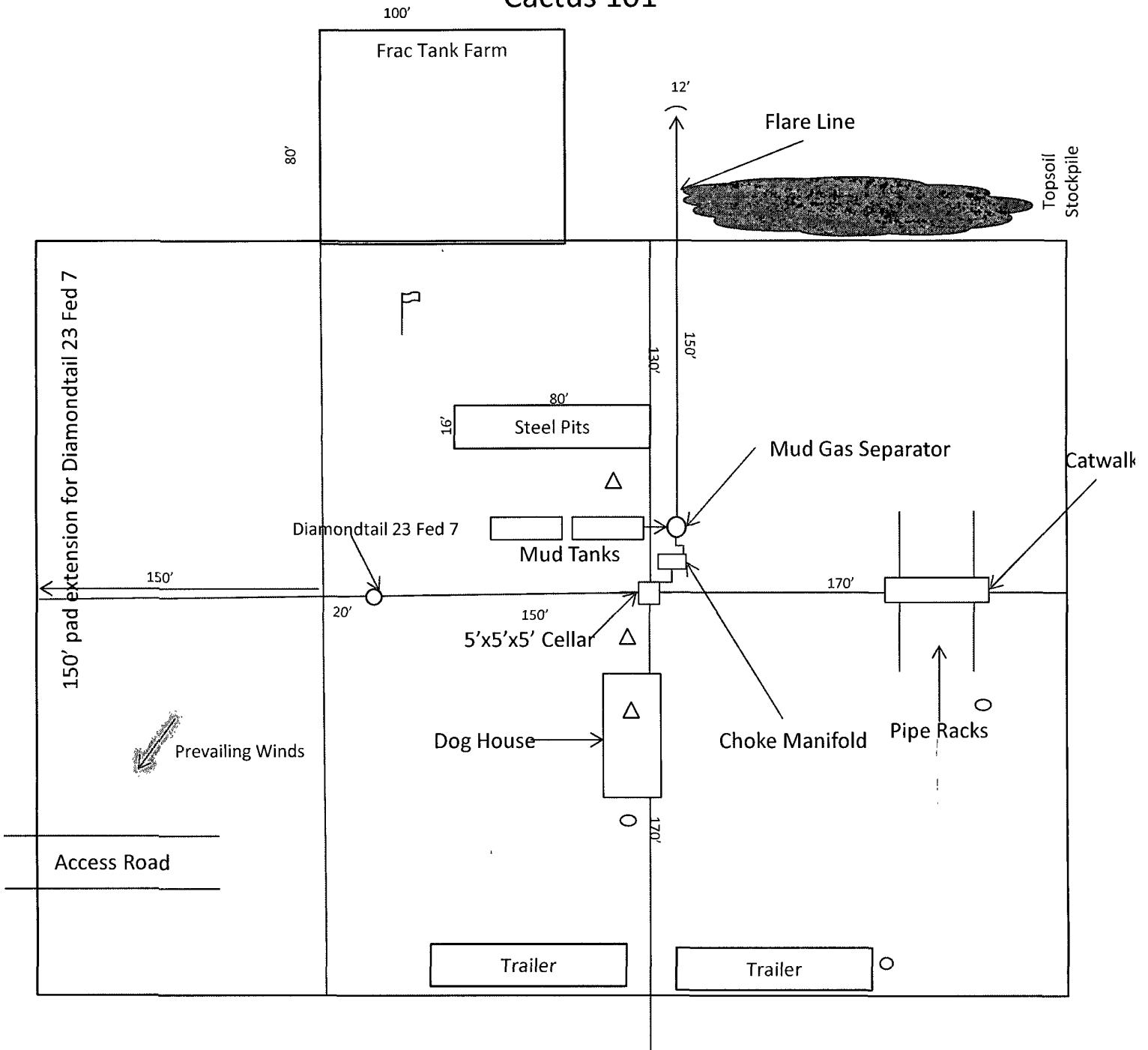
Midwest Hose
& Specialty, Inc.

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



-  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 8
 Cimarex Energy Co.
 23-23S-32E
 SHL 330 FNL & 600 FEL
 BHL 330 FSL & 375 FEL
 Lea County, NM

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