

ATS-11-136
FA-11-298

OCD-ARTESIA

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. SHL NM-19423, BHL NM-94076
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 <162683>		7. If Unit or CA Agreement, Name and No. Pending
3a. Address 600 N. Marienfeld St., Ste. 600; Midland, TX 79701		8. Lease Name and Well No. <34072> Pintail 23 Federal Com No. 8 H
3b. Phone No. (include area code) 432-571-7800		9. API Well No. 30-015- 38657
4. Location of Well (Report location clearly and in accordance with any State requirements) At Surface 250 FSL & 800 FWL (M) At proposed prod. Zone 330 FNL & 400 FWL UNORTHODOX LOCATION Horizontal Bone Spring Test		10. Field and Pool, or Exploratory Bone Spring Wildcat <96403>
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area 23 21-25S-26E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any) 250		12. County or Parish Eddy
16. No of acres in lease NM19423 2560 acres NM-97076 360 acres		13. State NM
17. Spacing Unit dedicated to this well W2W2 160 acres		
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A		
19. Proposed Depth MD 12317, TVD 7702		20. BLM/BIA Bond No. on File NM-2575
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3254' GR		22. Approximate date work will start* 02.15.11
		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 12.15.10
Title Manager Operations Administration		
Approved By (Signature) /S/ JEANETTE MARTINEZ	Name (Printed/Typed) /S/ JEANETTE MARTINEZ	Date MAR 09 2011
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.

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)

OCD CONDITION OF APPROVAL for Drilling:
Intent to drill ONLY --- CANNOT produce until the Non-Standard Location has been approved by OCD Santa Fe office.

Carlsbad Controlled Water Basin

KC 04/04/11

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL FOR TWO YEARS

Application to Drill
Pintail 23 Federal Com No. 8
Cimarex Energy Co. of Colorado
Unit M, Section 23
T25S-R26E, Eddy 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 250 FSL & 800 FWL
BHL 330 FNL & 400 FWL
2. Elevation above sea level: 3254' 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 12317, TVD 7725

6. Estimated tops of geological markers:

Rustler	NA/Spotty		
Top Salt	988'	Bone Spring "A" Shale	5559'
Base Salt	1622'	Bone Spring "C" Shale	5810'
Delaware	1817'	1st Bone Spring Ss	6333'
Cherry Canyon	2792'	2nd Bone Spring Ss	6891'
Brushy Canyon	3802'	2nd BS Ss Lower	7625'
Brushy Canyon Lower	5075'	3rd Bone Spr Carb "C"	7790'
Bone Spring	5338'		

7. Possible mineral bearing formations:

Bone Spring	Oil
Delaware	Oil

8. Proposed drilling Plan

Drill 8 $\frac{3}{4}$ " hole to KOP @ 7439 and then drill lateral to TD @ 12317 MD, 7725 TVD. Run 5 $\frac{1}{2}$ " ^{Casing} liner from 7264-TD and cement. 0

Application to Drill
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9. Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 450'	8.4-8.6	28-32	NC	FW spud mud. Add FW to control weight & viscosity and paper to prevent seepage.
450' to 1,792'	10.0	28-29	NC	Saturated Brine. Sweep as needed to clean hole.
1,792' to 12,317'	9.0	28-29	NC	Cut brine. Sweep as needed to clean hole.

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.

10. Casing Program:

	Hole Size	Depth	Casing OD	Weight	Collar	Grade
Surface	17½"	0' to 450'	New 13½"	48#	STC	H-40
Intermediate	12½"	0' to 1792'	New 9½"	36#	LTC	J-55
Production	8½"	0' to 12317'	New 5½"	17#	LTC	P-110

11. Cementing Program:

Surface Casing	Lead: 200 SKS Halcem C + 4% Bentomite + 2% CaCl 13.5ppg 1.75yield 100% Excess Tail: 185 SKS Halcem C + 2% CaCl 14.2ppg 1.34 yield 50% Excess TOC Surface
Intermediate	Lead: 470 SKS EconoCem + 5% salt + 5 lbm gilsonite 14.6ppg 1.54yield 70% Excess Tail: 195 SKS HalCem + 1% CaCl 14.8ppg 1.34 yield 25% Excess TOC Surface
Production	Lead: 1010 SKS EconoCem - H + 0.2 % HR-601 2.44 11.9ppg 2.44 yield 50% Excess Tail: 1425 SKS 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 Surface

According to the State Engineer, depth to groundwater is 30.' Fresh water zones will be protected by setting 9½" casing at 450 and cementing to surface. Hydrocarbon zones will be protected by setting 9½" casing at 1792 and 5½" at 12317 and cementing to surface.

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

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12. Pressure control Equipment:

Exhibit "E". A 13 $\frac{3}{4}$ " 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 215.' 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.

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.

BOPs 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 122 (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: 211964 See attached htdrostatic test report

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

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

13. Testing, Logging and Coring Program: *See COA*

- A. Mud logging program: No mud logging program.
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
- C. No DSTs or cores are planned at this time.

14. Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex has encountered H₂S in a one-time encounter in an Intra-salt Pocket and while drilling and completing wells in the Delaware Mountain Group. In this regard, attached is an H₂S Drilling Operations Plan. The ROEs encountered do not meet the BLM's minimum requirements for the submission of a "Public Protection Plan" for the drilling and completion of this well. 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 4000 psi Estimated BHT 175°

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

Drilling expected to take 25-35 days

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

16. 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 potentialed as

OIL
X
a gas well.



Cimarex Energy Co.

Eddy County (NM83E)

Sec 23-T25S-R26E

Pintail 23 Fed Com #8

Wellbore #1

Plan: Plan #1

Standard Planning Report

01 December, 2010



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Eddy County (NM83E)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Sec 23-T25S-R26E			
Site Position:		Northing:	407,021.87 usft	Latitude:	32° 7' 8.278 N
From:	Map	Easting:	561,065.26 usft	Longitude:	104° 16' 10.598 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.03

Well	Pintail 23 Fed Com #8					
Well Position	+N/-S	-3,720.0 usft	Northing:	403,301.90 usft	Latitude:	32° 6' 31.464 N
	+E/-W	71.6 usft	Easting:	561,136.90 usft	Longitude:	104° 16' 9.791 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	0.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/01/10	7.95	59.99	48,582

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	355.00	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
7,438.5	0.00	0.00	7,438.5	0.0	0.0	0.00	0.00	0.00	0.00	
7,890.0	90.30	355.00	7,725.0	286.9	-25.1	20.00	20.00	0.00	355.00	
12,317.3	90.30	355.00	7,701.8	4,697.3	-411.0	0.00	0.00	0.00	0.00	Pintail #8 PBHL



Great White Directional Services

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Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,438.5	0.00	0.00	7,438.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP 20°/100 DLS @ 355° AZI									
7,440.0	0.30	355.00	7,440.0	0.0	0.0	0.0	20.00	20.00	0.00
7,450.0	2.30	355.00	7,450.0	0.2	0.0	0.2	20.00	20.00	0.00
7,460.0	4.30	355.00	7,460.0	0.8	-0.1	0.8	20.00	20.00	0.00
7,470.0	6.30	355.00	7,469.9	1.7	-0.2	1.7	20.00	20.00	0.00
7,480.0	8.30	355.00	7,479.9	3.0	-0.3	3.0	20.00	20.00	0.00
7,490.0	10.30	355.00	7,489.7	4.6	-0.4	4.6	20.00	20.00	0.00
7,500.0	12.30	355.00	7,499.5	6.6	-0.6	6.6	20.00	20.00	0.00
7,510.0	14.30	355.00	7,509.3	8.8	-0.8	8.9	20.00	20.00	0.00
7,520.0	16.30	355.00	7,518.9	11.5	-1.0	11.5	20.00	20.00	0.00
7,530.0	18.30	355.00	7,528.5	14.4	-1.3	14.5	20.00	20.00	0.00
7,540.0	20.30	355.00	7,537.9	17.7	-1.6	17.8	20.00	20.00	0.00
7,550.0	22.30	355.00	7,547.2	21.3	-1.9	21.4	20.00	20.00	0.00
7,560.0	24.30	355.00	7,556.4	25.3	-2.2	25.4	20.00	20.00	0.00
7,570.0	26.30	355.00	7,565.4	29.5	-2.6	29.7	20.00	20.00	0.00
7,580.0	28.30	355.00	7,574.3	34.1	-3.0	34.2	20.00	20.00	0.00
7,590.0	30.30	355.00	7,583.0	39.0	-3.4	39.1	20.00	20.00	0.00
7,600.0	32.30	355.00	7,591.6	44.2	-3.9	44.3	20.00	20.00	0.00
7,610.0	34.30	355.00	7,599.9	49.6	-4.3	49.8	20.00	20.00	0.00
7,620.0	36.30	355.00	7,608.1	55.4	-4.8	55.6	20.00	20.00	0.00
7,630.0	38.30	355.00	7,616.1	61.4	-5.4	61.7	20.00	20.00	0.00
7,640.0	40.30	355.00	7,623.8	67.7	-5.9	68.0	20.00	20.00	0.00
7,650.0	42.30	355.00	7,631.3	74.3	-6.5	74.6	20.00	20.00	0.00
7,660.0	44.30	355.00	7,638.6	81.1	-7.1	81.4	20.00	20.00	0.00
7,670.0	46.30	355.00	7,645.6	88.2	-7.7	88.6	20.00	20.00	0.00
7,680.0	48.30	355.00	7,652.4	95.5	-8.4	95.9	20.00	20.00	0.00
7,690.0	50.30	355.00	7,658.9	103.1	-9.0	103.5	20.00	20.00	0.00
7,700.0	52.30	355.00	7,665.2	110.9	-9.7	111.3	20.00	20.00	0.00
7,710.0	54.30	355.00	7,671.1	118.9	-10.4	119.3	20.00	20.00	0.00
7,720.0	56.30	355.00	7,676.8	127.0	-11.1	127.5	20.00	20.00	0.00
7,730.0	58.30	355.00	7,682.2	135.4	-11.8	135.9	20.00	20.00	0.00
7,740.0	60.30	355.00	7,687.3	144.0	-12.6	144.5	20.00	20.00	0.00
7,750.0	62.30	355.00	7,692.1	152.7	-13.4	153.3	20.00	20.00	0.00
7,760.0	64.30	355.00	7,696.6	161.6	-14.1	162.2	20.00	20.00	0.00
7,770.0	66.30	355.00	7,700.8	170.7	-14.9	171.3	20.00	20.00	0.00
7,780.0	68.30	355.00	7,704.7	179.9	-15.7	180.6	20.00	20.00	0.00
7,790.0	70.30	355.00	7,708.2	189.2	-16.6	189.9	20.00	20.00	0.00
7,800.0	72.30	355.00	7,711.4	198.6	-17.4	199.4	20.00	20.00	0.00
7,810.0	74.30	355.00	7,714.3	208.2	-18.2	209.0	20.00	20.00	0.00
7,820.0	76.30	355.00	7,716.8	217.8	-19.1	218.6	20.00	20.00	0.00
7,830.0	78.30	355.00	7,719.0	227.5	-19.9	228.4	20.00	20.00	0.00
7,840.0	80.30	355.00	7,720.9	237.3	-20.8	238.2	20.00	20.00	0.00
7,850.0	82.30	355.00	7,722.4	247.2	-21.6	248.1	20.00	20.00	0.00
7,860.0	84.30	355.00	7,723.6	257.0	-22.5	258.0	20.00	20.00	0.00
7,870.0	86.30	355.00	7,724.4	267.0	-23.4	268.0	20.00	20.00	0.00
7,880.0	88.30	355.00	7,724.9	276.9	-24.2	278.0	20.00	20.00	0.00
7,890.0	90.30	355.00	7,725.0	286.9	-25.1	288.0	20.00	20.00	0.00
EOC - Hold to TD									
7,900.0	90.30	355.00	7,724.9	296.8	-26.0	298.0	0.00	0.00	0.00
7,910.0	90.30	355.00	7,724.9	306.8	-26.8	308.0	0.00	0.00	0.00
7,920.0	90.30	355.00	7,724.8	316.8	-27.7	318.0	0.00	0.00	0.00
7,930.0	90.30	355.00	7,724.8	326.7	-28.6	328.0	0.00	0.00	0.00



Great White Directional Services

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Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,940.0	90.30	355.00	7,724.7	336.7	-29.5	338.0	0.00	0.00	0.00
7,950.0	90.30	355.00	7,724.7	346.7	-30.3	348.0	0.00	0.00	0.00
7,960.0	90.30	355.00	7,724.6	356.6	-31.2	358.0	0.00	0.00	0.00
7,970.0	90.30	355.00	7,724.6	366.6	-32.1	368.0	0.00	0.00	0.00
7,980.0	90.30	355.00	7,724.5	376.5	-32.9	378.0	0.00	0.00	0.00
7,990.0	90.30	355.00	7,724.5	386.5	-33.8	388.0	0.00	0.00	0.00
8,000.0	90.30	355.00	7,724.4	396.5	-34.7	398.0	0.00	0.00	0.00
8,010.0	90.30	355.00	7,724.3	406.4	-35.6	408.0	0.00	0.00	0.00
8,020.0	90.30	355.00	7,724.3	416.4	-36.4	418.0	0.00	0.00	0.00
8,030.0	90.30	355.00	7,724.2	426.3	-37.3	428.0	0.00	0.00	0.00
8,040.0	90.30	355.00	7,724.2	436.3	-38.2	438.0	0.00	0.00	0.00
8,050.0	90.30	355.00	7,724.1	446.3	-39.0	448.0	0.00	0.00	0.00
8,060.0	90.30	355.00	7,724.1	456.2	-39.9	458.0	0.00	0.00	0.00
8,070.0	90.30	355.00	7,724.0	466.2	-40.8	468.0	0.00	0.00	0.00
8,080.0	90.30	355.00	7,724.0	476.2	-41.7	478.0	0.00	0.00	0.00
8,090.0	90.30	355.00	7,723.9	486.1	-42.5	488.0	0.00	0.00	0.00
8,100.0	90.30	355.00	7,723.9	496.1	-43.4	498.0	0.00	0.00	0.00
8,110.0	90.30	355.00	7,723.8	506.0	-44.3	508.0	0.00	0.00	0.00
8,120.0	90.30	355.00	7,723.8	516.0	-45.1	518.0	0.00	0.00	0.00
8,130.0	90.30	355.00	7,723.7	526.0	-46.0	528.0	0.00	0.00	0.00
8,140.0	90.30	355.00	7,723.7	535.9	-46.9	538.0	0.00	0.00	0.00
8,150.0	90.30	355.00	7,723.6	545.9	-47.8	548.0	0.00	0.00	0.00
8,160.0	90.30	355.00	7,723.6	555.9	-48.6	558.0	0.00	0.00	0.00
8,170.0	90.30	355.00	7,723.5	565.8	-49.5	568.0	0.00	0.00	0.00
8,180.0	90.30	355.00	7,723.5	575.8	-50.4	578.0	0.00	0.00	0.00
8,190.0	90.30	355.00	7,723.4	585.7	-51.2	588.0	0.00	0.00	0.00
8,200.0	90.30	355.00	7,723.4	595.7	-52.1	598.0	0.00	0.00	0.00
8,210.0	90.30	355.00	7,723.3	605.7	-53.0	608.0	0.00	0.00	0.00
8,220.0	90.30	355.00	7,723.2	615.6	-53.9	618.0	0.00	0.00	0.00
8,230.0	90.30	355.00	7,723.2	625.6	-54.7	628.0	0.00	0.00	0.00
8,240.0	90.30	355.00	7,723.1	635.5	-55.6	638.0	0.00	0.00	0.00
8,250.0	90.30	355.00	7,723.1	645.5	-56.5	648.0	0.00	0.00	0.00
8,260.0	90.30	355.00	7,723.0	655.5	-57.3	658.0	0.00	0.00	0.00
8,270.0	90.30	355.00	7,723.0	665.4	-58.2	668.0	0.00	0.00	0.00
8,280.0	90.30	355.00	7,722.9	675.4	-59.1	678.0	0.00	0.00	0.00
8,290.0	90.30	355.00	7,722.9	685.4	-60.0	688.0	0.00	0.00	0.00
8,300.0	90.30	355.00	7,722.8	695.3	-60.8	698.0	0.00	0.00	0.00
8,310.0	90.30	355.00	7,722.8	705.3	-61.7	708.0	0.00	0.00	0.00
8,320.0	90.30	355.00	7,722.7	715.2	-62.6	718.0	0.00	0.00	0.00
8,330.0	90.30	355.00	7,722.7	725.2	-63.4	728.0	0.00	0.00	0.00
8,340.0	90.30	355.00	7,722.6	735.2	-64.3	738.0	0.00	0.00	0.00
8,350.0	90.30	355.00	7,722.6	745.1	-65.2	748.0	0.00	0.00	0.00
8,360.0	90.30	355.00	7,722.5	755.1	-66.1	758.0	0.00	0.00	0.00
8,370.0	90.30	355.00	7,722.5	765.0	-66.9	768.0	0.00	0.00	0.00
8,380.0	90.30	355.00	7,722.4	775.0	-67.8	778.0	0.00	0.00	0.00
8,390.0	90.30	355.00	7,722.4	785.0	-68.7	788.0	0.00	0.00	0.00
8,400.0	90.30	355.00	7,722.3	794.9	-69.5	798.0	0.00	0.00	0.00
8,410.0	90.30	355.00	7,722.3	804.9	-70.4	808.0	0.00	0.00	0.00
8,420.0	90.30	355.00	7,722.2	814.9	-71.3	818.0	0.00	0.00	0.00
8,430.0	90.30	355.00	7,722.1	824.8	-72.2	828.0	0.00	0.00	0.00
8,440.0	90.30	355.00	7,722.1	834.8	-73.0	838.0	0.00	0.00	0.00
8,450.0	90.30	355.00	7,722.0	844.7	-73.9	848.0	0.00	0.00	0.00
8,460.0	90.30	355.00	7,722.0	854.7	-74.8	858.0	0.00	0.00	0.00
8,470.0	90.30	355.00	7,721.9	864.7	-75.6	868.0	0.00	0.00	0.00



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,480.0	90.30	355.00	7,721.9	874.6	-76.5	878.0	0.00	0.00	0.00
8,490.0	90.30	355.00	7,721.8	884.6	-77.4	888.0	0.00	0.00	0.00
8,500.0	90.30	355.00	7,721.8	894.6	-78.3	898.0	0.00	0.00	0.00
8,510.0	90.30	355.00	7,721.7	904.5	-79.1	908.0	0.00	0.00	0.00
8,520.0	90.30	355.00	7,721.7	914.5	-80.0	918.0	0.00	0.00	0.00
8,530.0	90.30	355.00	7,721.6	924.4	-80.9	928.0	0.00	0.00	0.00
8,540.0	90.30	355.00	7,721.6	934.4	-81.7	938.0	0.00	0.00	0.00
8,550.0	90.30	355.00	7,721.5	944.4	-82.6	948.0	0.00	0.00	0.00
8,560.0	90.30	355.00	7,721.5	954.3	-83.5	958.0	0.00	0.00	0.00
8,570.0	90.30	355.00	7,721.4	964.3	-84.4	968.0	0.00	0.00	0.00
8,580.0	90.30	355.00	7,721.4	974.2	-85.2	978.0	0.00	0.00	0.00
8,590.0	90.30	355.00	7,721.3	984.2	-86.1	988.0	0.00	0.00	0.00
8,600.0	90.30	355.00	7,721.3	994.2	-87.0	998.0	0.00	0.00	0.00
8,610.0	90.30	355.00	7,721.2	1,004.1	-87.9	1,008.0	0.00	0.00	0.00
8,620.0	90.30	355.00	7,721.2	1,014.1	-88.7	1,018.0	0.00	0.00	0.00
8,630.0	90.30	355.00	7,721.1	1,024.1	-89.6	1,028.0	0.00	0.00	0.00
8,640.0	90.30	355.00	7,721.0	1,034.0	-90.5	1,038.0	0.00	0.00	0.00
8,650.0	90.30	355.00	7,721.0	1,044.0	-91.3	1,048.0	0.00	0.00	0.00
8,660.0	90.30	355.00	7,720.9	1,053.9	-92.2	1,058.0	0.00	0.00	0.00
8,670.0	90.30	355.00	7,720.9	1,063.9	-93.1	1,068.0	0.00	0.00	0.00
8,680.0	90.30	355.00	7,720.8	1,073.9	-94.0	1,078.0	0.00	0.00	0.00
8,690.0	90.30	355.00	7,720.8	1,083.8	-94.8	1,088.0	0.00	0.00	0.00
8,700.0	90.30	355.00	7,720.7	1,093.8	-95.7	1,098.0	0.00	0.00	0.00
8,710.0	90.30	355.00	7,720.7	1,103.8	-96.6	1,108.0	0.00	0.00	0.00
8,720.0	90.30	355.00	7,720.6	1,113.7	-97.4	1,118.0	0.00	0.00	0.00
8,730.0	90.30	355.00	7,720.6	1,123.7	-98.3	1,128.0	0.00	0.00	0.00
8,740.0	90.30	355.00	7,720.5	1,133.6	-99.2	1,138.0	0.00	0.00	0.00
8,750.0	90.30	355.00	7,720.5	1,143.6	-100.1	1,148.0	0.00	0.00	0.00
8,760.0	90.30	355.00	7,720.4	1,153.6	-100.9	1,158.0	0.00	0.00	0.00
8,770.0	90.30	355.00	7,720.4	1,163.5	-101.8	1,168.0	0.00	0.00	0.00
8,780.0	90.30	355.00	7,720.3	1,173.5	-102.7	1,178.0	0.00	0.00	0.00
8,790.0	90.30	355.00	7,720.3	1,183.4	-103.5	1,188.0	0.00	0.00	0.00
8,800.0	90.30	355.00	7,720.2	1,193.4	-104.4	1,198.0	0.00	0.00	0.00
8,810.0	90.30	355.00	7,720.2	1,203.4	-105.3	1,208.0	0.00	0.00	0.00
8,820.0	90.30	355.00	7,720.1	1,213.3	-106.2	1,218.0	0.00	0.00	0.00
8,830.0	90.30	355.00	7,720.1	1,223.3	-107.0	1,228.0	0.00	0.00	0.00
8,840.0	90.30	355.00	7,720.0	1,233.3	-107.9	1,238.0	0.00	0.00	0.00
8,850.0	90.30	355.00	7,719.9	1,243.2	-108.8	1,248.0	0.00	0.00	0.00
8,860.0	90.30	355.00	7,719.9	1,253.2	-109.6	1,258.0	0.00	0.00	0.00
8,870.0	90.30	355.00	7,719.8	1,263.1	-110.5	1,268.0	0.00	0.00	0.00
8,880.0	90.30	355.00	7,719.8	1,273.1	-111.4	1,278.0	0.00	0.00	0.00
8,890.0	90.30	355.00	7,719.7	1,283.1	-112.3	1,288.0	0.00	0.00	0.00
8,900.0	90.30	355.00	7,719.7	1,293.0	-113.1	1,298.0	0.00	0.00	0.00
8,910.0	90.30	355.00	7,719.6	1,303.0	-114.0	1,308.0	0.00	0.00	0.00
8,920.0	90.30	355.00	7,719.6	1,312.9	-114.9	1,318.0	0.00	0.00	0.00
8,930.0	90.30	355.00	7,719.5	1,322.9	-115.7	1,328.0	0.00	0.00	0.00
8,940.0	90.30	355.00	7,719.5	1,332.9	-116.6	1,338.0	0.00	0.00	0.00
8,950.0	90.30	355.00	7,719.4	1,342.8	-117.5	1,348.0	0.00	0.00	0.00
8,960.0	90.30	355.00	7,719.4	1,352.8	-118.4	1,358.0	0.00	0.00	0.00
8,970.0	90.30	355.00	7,719.3	1,362.8	-119.2	1,368.0	0.00	0.00	0.00
8,980.0	90.30	355.00	7,719.3	1,372.7	-120.1	1,378.0	0.00	0.00	0.00
8,990.0	90.30	355.00	7,719.2	1,382.7	-121.0	1,388.0	0.00	0.00	0.00
9,000.0	90.30	355.00	7,719.2	1,392.6	-121.8	1,398.0	0.00	0.00	0.00
9,010.0	90.30	355.00	7,719.1	1,402.6	-122.7	1,408.0	0.00	0.00	0.00



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured: Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,020.0	90.30	355.00	7,719.1	1,412.6	-123.6	1,418.0	0.00	0.00	0.00
9,030.0	90.30	355.00	7,719.0	1,422.5	-124.5	1,428.0	0.00	0.00	0.00
9,040.0	90.30	355.00	7,719.0	1,432.5	-125.3	1,438.0	0.00	0.00	0.00
9,050.0	90.30	355.00	7,718.9	1,442.5	-126.2	1,448.0	0.00	0.00	0.00
9,060.0	90.30	355.00	7,718.8	1,452.4	-127.1	1,458.0	0.00	0.00	0.00
9,070.0	90.30	355.00	7,718.8	1,462.4	-127.9	1,468.0	0.00	0.00	0.00
9,080.0	90.30	355.00	7,718.7	1,472.3	-128.8	1,478.0	0.00	0.00	0.00
9,090.0	90.30	355.00	7,718.7	1,482.3	-129.7	1,488.0	0.00	0.00	0.00
9,100.0	90.30	355.00	7,718.6	1,492.3	-130.6	1,498.0	0.00	0.00	0.00
9,110.0	90.30	355.00	7,718.6	1,502.2	-131.4	1,508.0	0.00	0.00	0.00
9,120.0	90.30	355.00	7,718.5	1,512.2	-132.3	1,518.0	0.00	0.00	0.00
9,130.0	90.30	355.00	7,718.5	1,522.1	-133.2	1,528.0	0.00	0.00	0.00
9,140.0	90.30	355.00	7,718.4	1,532.1	-134.0	1,538.0	0.00	0.00	0.00
9,150.0	90.30	355.00	7,718.4	1,542.1	-134.9	1,548.0	0.00	0.00	0.00
9,160.0	90.30	355.00	7,718.3	1,552.0	-135.8	1,558.0	0.00	0.00	0.00
9,170.0	90.30	355.00	7,718.3	1,562.0	-136.7	1,568.0	0.00	0.00	0.00
9,180.0	90.30	355.00	7,718.2	1,572.0	-137.5	1,578.0	0.00	0.00	0.00
9,190.0	90.30	355.00	7,718.2	1,581.9	-138.4	1,588.0	0.00	0.00	0.00
9,200.0	90.30	355.00	7,718.1	1,591.9	-139.3	1,598.0	0.00	0.00	0.00
9,210.0	90.30	355.00	7,718.1	1,601.8	-140.1	1,608.0	0.00	0.00	0.00
9,220.0	90.30	355.00	7,718.0	1,611.8	-141.0	1,618.0	0.00	0.00	0.00
9,230.0	90.30	355.00	7,718.0	1,621.8	-141.9	1,628.0	0.00	0.00	0.00
9,240.0	90.30	355.00	7,717.9	1,631.7	-142.8	1,638.0	0.00	0.00	0.00
9,250.0	90.30	355.00	7,717.9	1,641.7	-143.6	1,648.0	0.00	0.00	0.00
9,260.0	90.30	355.00	7,717.8	1,651.7	-144.5	1,658.0	0.00	0.00	0.00
9,270.0	90.30	355.00	7,717.7	1,661.6	-145.4	1,668.0	0.00	0.00	0.00
9,280.0	90.30	355.00	7,717.7	1,671.6	-146.2	1,678.0	0.00	0.00	0.00
9,290.0	90.30	355.00	7,717.6	1,681.5	-147.1	1,688.0	0.00	0.00	0.00
9,300.0	90.30	355.00	7,717.6	1,691.5	-148.0	1,698.0	0.00	0.00	0.00
9,310.0	90.30	355.00	7,717.5	1,701.5	-148.9	1,708.0	0.00	0.00	0.00
9,320.0	90.30	355.00	7,717.5	1,711.4	-149.7	1,718.0	0.00	0.00	0.00
9,330.0	90.30	355.00	7,717.4	1,721.4	-150.6	1,728.0	0.00	0.00	0.00
9,340.0	90.30	355.00	7,717.4	1,731.3	-151.5	1,738.0	0.00	0.00	0.00
9,350.0	90.30	355.00	7,717.3	1,741.3	-152.3	1,748.0	0.00	0.00	0.00
9,360.0	90.30	355.00	7,717.3	1,751.3	-153.2	1,758.0	0.00	0.00	0.00
9,370.0	90.30	355.00	7,717.2	1,761.2	-154.1	1,768.0	0.00	0.00	0.00
9,380.0	90.30	355.00	7,717.2	1,771.2	-155.0	1,778.0	0.00	0.00	0.00
9,390.0	90.30	355.00	7,717.1	1,781.2	-155.8	1,788.0	0.00	0.00	0.00
9,400.0	90.30	355.00	7,717.1	1,791.1	-156.7	1,798.0	0.00	0.00	0.00
9,410.0	90.30	355.00	7,717.0	1,801.1	-157.6	1,808.0	0.00	0.00	0.00
9,420.0	90.30	355.00	7,717.0	1,811.0	-158.4	1,818.0	0.00	0.00	0.00
9,430.0	90.30	355.00	7,716.9	1,821.0	-159.3	1,828.0	0.00	0.00	0.00
9,440.0	90.30	355.00	7,716.9	1,831.0	-160.2	1,838.0	0.00	0.00	0.00
9,450.0	90.30	355.00	7,716.8	1,840.9	-161.1	1,848.0	0.00	0.00	0.00
9,460.0	90.30	355.00	7,716.8	1,850.9	-161.9	1,858.0	0.00	0.00	0.00
9,470.0	90.30	355.00	7,716.7	1,860.8	-162.8	1,868.0	0.00	0.00	0.00
9,480.0	90.30	355.00	7,716.6	1,870.8	-163.7	1,878.0	0.00	0.00	0.00
9,490.0	90.30	355.00	7,716.6	1,880.8	-164.5	1,888.0	0.00	0.00	0.00
9,500.0	90.30	355.00	7,716.5	1,890.7	-165.4	1,898.0	0.00	0.00	0.00
9,510.0	90.30	355.00	7,716.5	1,900.7	-166.3	1,908.0	0.00	0.00	0.00
9,520.0	90.30	355.00	7,716.4	1,910.7	-167.2	1,918.0	0.00	0.00	0.00
9,530.0	90.30	355.00	7,716.4	1,920.6	-168.0	1,928.0	0.00	0.00	0.00
9,540.0	90.30	355.00	7,716.3	1,930.6	-168.9	1,938.0	0.00	0.00	0.00
9,550.0	90.30	355.00	7,716.3	1,940.5	-169.8	1,948.0	0.00	0.00	0.00



Great White Directional Services Planning Report

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Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,560.0	90.30	355.00	7,716.2	1,950.5	-170.6	1,958.0	0.00	0.00	0.00
9,570.0	90.30	355.00	7,716.2	1,960.5	-171.5	1,968.0	0.00	0.00	0.00
9,580.0	90.30	355.00	7,716.1	1,970.4	-172.4	1,978.0	0.00	0.00	0.00
9,590.0	90.30	355.00	7,716.1	1,980.4	-173.3	1,988.0	0.00	0.00	0.00
9,600.0	90.30	355.00	7,716.0	1,990.4	-174.1	1,998.0	0.00	0.00	0.00
9,610.0	90.30	355.00	7,716.0	2,000.3	-175.0	2,008.0	0.00	0.00	0.00
9,620.0	90.30	355.00	7,715.9	2,010.3	-175.9	2,018.0	0.00	0.00	0.00
9,630.0	90.30	355.00	7,715.9	2,020.2	-176.7	2,028.0	0.00	0.00	0.00
9,640.0	90.30	355.00	7,715.8	2,030.2	-177.6	2,038.0	0.00	0.00	0.00
9,650.0	90.30	355.00	7,715.8	2,040.2	-178.5	2,048.0	0.00	0.00	0.00
9,660.0	90.30	355.00	7,715.7	2,050.1	-179.4	2,058.0	0.00	0.00	0.00
9,670.0	90.30	355.00	7,715.7	2,060.1	-180.2	2,068.0	0.00	0.00	0.00
9,680.0	90.30	355.00	7,715.6	2,070.0	-181.1	2,078.0	0.00	0.00	0.00
9,690.0	90.30	355.00	7,715.6	2,080.0	-182.0	2,088.0	0.00	0.00	0.00
9,700.0	90.30	355.00	7,715.5	2,090.0	-182.8	2,098.0	0.00	0.00	0.00
9,710.0	90.30	355.00	7,715.4	2,099.9	-183.7	2,108.0	0.00	0.00	0.00
9,720.0	90.30	355.00	7,715.4	2,109.9	-184.6	2,118.0	0.00	0.00	0.00
9,730.0	90.30	355.00	7,715.3	2,119.9	-185.5	2,128.0	0.00	0.00	0.00
9,740.0	90.30	355.00	7,715.3	2,129.8	-186.3	2,138.0	0.00	0.00	0.00
9,750.0	90.30	355.00	7,715.2	2,139.8	-187.2	2,148.0	0.00	0.00	0.00
9,760.0	90.30	355.00	7,715.2	2,149.7	-188.1	2,158.0	0.00	0.00	0.00
9,770.0	90.30	355.00	7,715.1	2,159.7	-188.9	2,168.0	0.00	0.00	0.00
9,780.0	90.30	355.00	7,715.1	2,169.7	-189.8	2,178.0	0.00	0.00	0.00
9,790.0	90.30	355.00	7,715.0	2,179.6	-190.7	2,188.0	0.00	0.00	0.00
9,800.0	90.30	355.00	7,715.0	2,189.6	-191.6	2,198.0	0.00	0.00	0.00
9,810.0	90.30	355.00	7,714.9	2,199.6	-192.4	2,208.0	0.00	0.00	0.00
9,820.0	90.30	355.00	7,714.9	2,209.5	-193.3	2,218.0	0.00	0.00	0.00
9,830.0	90.30	355.00	7,714.8	2,219.5	-194.2	2,228.0	0.00	0.00	0.00
9,840.0	90.30	355.00	7,714.8	2,229.4	-195.1	2,238.0	0.00	0.00	0.00
9,850.0	90.30	355.00	7,714.7	2,239.4	-195.9	2,248.0	0.00	0.00	0.00
9,860.0	90.30	355.00	7,714.7	2,249.4	-196.8	2,258.0	0.00	0.00	0.00
9,870.0	90.30	355.00	7,714.6	2,259.3	-197.7	2,268.0	0.00	0.00	0.00
9,880.0	90.30	355.00	7,714.6	2,269.3	-198.5	2,278.0	0.00	0.00	0.00
9,890.0	90.30	355.00	7,714.5	2,279.2	-199.4	2,288.0	0.00	0.00	0.00
9,900.0	90.30	355.00	7,714.5	2,289.2	-200.3	2,298.0	0.00	0.00	0.00
9,910.0	90.30	355.00	7,714.4	2,299.2	-201.2	2,308.0	0.00	0.00	0.00
9,920.0	90.30	355.00	7,714.3	2,309.1	-202.0	2,318.0	0.00	0.00	0.00
9,930.0	90.30	355.00	7,714.3	2,319.1	-202.9	2,328.0	0.00	0.00	0.00
9,940.0	90.30	355.00	7,714.2	2,329.1	-203.8	2,338.0	0.00	0.00	0.00
9,950.0	90.30	355.00	7,714.2	2,339.0	-204.6	2,348.0	0.00	0.00	0.00
9,960.0	90.30	355.00	7,714.1	2,349.0	-205.5	2,358.0	0.00	0.00	0.00
9,970.0	90.30	355.00	7,714.1	2,358.9	-206.4	2,368.0	0.00	0.00	0.00
9,980.0	90.30	355.00	7,714.0	2,368.9	-207.3	2,378.0	0.00	0.00	0.00
9,990.0	90.30	355.00	7,714.0	2,378.9	-208.1	2,388.0	0.00	0.00	0.00
10,000.0	90.30	355.00	7,713.9	2,388.8	-209.0	2,397.9	0.00	0.00	0.00
10,010.0	90.30	355.00	7,713.9	2,398.8	-209.9	2,407.9	0.00	0.00	0.00
10,020.0	90.30	355.00	7,713.8	2,408.7	-210.7	2,417.9	0.00	0.00	0.00
10,030.0	90.30	355.00	7,713.8	2,418.7	-211.6	2,427.9	0.00	0.00	0.00
10,040.0	90.30	355.00	7,713.7	2,428.7	-212.5	2,437.9	0.00	0.00	0.00
10,050.0	90.30	355.00	7,713.7	2,438.6	-213.4	2,447.9	0.00	0.00	0.00
10,060.0	90.30	355.00	7,713.6	2,448.6	-214.2	2,457.9	0.00	0.00	0.00
10,070.0	90.30	355.00	7,713.6	2,458.6	-215.1	2,467.9	0.00	0.00	0.00
10,080.0	90.30	355.00	7,713.5	2,468.5	-216.0	2,477.9	0.00	0.00	0.00
10,090.0	90.30	355.00	7,713.5	2,478.5	-216.8	2,487.9	0.00	0.00	0.00



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,100.0	90.30	355.00	7,713.4	2,488.4	-217.7	2,497.9	0.00	0.00	0.00
10,110.0	90.30	355.00	7,713.4	2,498.4	-218.6	2,507.9	0.00	0.00	0.00
10,120.0	90.30	355.00	7,713.3	2,508.4	-219.5	2,517.9	0.00	0.00	0.00
10,130.0	90.30	355.00	7,713.2	2,518.3	-220.3	2,527.9	0.00	0.00	0.00
10,140.0	90.30	355.00	7,713.2	2,528.3	-221.2	2,537.9	0.00	0.00	0.00
10,150.0	90.30	355.00	7,713.1	2,538.3	-222.1	2,547.9	0.00	0.00	0.00
10,160.0	90.30	355.00	7,713.1	2,548.2	-222.9	2,557.9	0.00	0.00	0.00
10,170.0	90.30	355.00	7,713.0	2,558.2	-223.8	2,567.9	0.00	0.00	0.00
10,180.0	90.30	355.00	7,713.0	2,568.1	-224.7	2,577.9	0.00	0.00	0.00
10,190.0	90.30	355.00	7,712.9	2,578.1	-225.6	2,587.9	0.00	0.00	0.00
10,200.0	90.30	355.00	7,712.9	2,588.1	-226.4	2,597.9	0.00	0.00	0.00
10,210.0	90.30	355.00	7,712.8	2,598.0	-227.3	2,607.9	0.00	0.00	0.00
10,220.0	90.30	355.00	7,712.8	2,608.0	-228.2	2,617.9	0.00	0.00	0.00
10,230.0	90.30	355.00	7,712.7	2,617.9	-229.0	2,627.9	0.00	0.00	0.00
10,240.0	90.30	355.00	7,712.7	2,627.9	-229.9	2,637.9	0.00	0.00	0.00
10,250.0	90.30	355.00	7,712.6	2,637.9	-230.8	2,647.9	0.00	0.00	0.00
10,260.0	90.30	355.00	7,712.6	2,647.8	-231.7	2,657.9	0.00	0.00	0.00
10,270.0	90.30	355.00	7,712.5	2,657.8	-232.5	2,667.9	0.00	0.00	0.00
10,280.0	90.30	355.00	7,712.5	2,667.8	-233.4	2,677.9	0.00	0.00	0.00
10,290.0	90.30	355.00	7,712.4	2,677.7	-234.3	2,687.9	0.00	0.00	0.00
10,300.0	90.30	355.00	7,712.4	2,687.7	-235.1	2,697.9	0.00	0.00	0.00
10,310.0	90.30	355.00	7,712.3	2,697.6	-236.0	2,707.9	0.00	0.00	0.00
10,320.0	90.30	355.00	7,712.3	2,707.6	-236.9	2,717.9	0.00	0.00	0.00
10,330.0	90.30	355.00	7,712.2	2,717.6	-237.8	2,727.9	0.00	0.00	0.00
10,340.0	90.30	355.00	7,712.1	2,727.5	-238.6	2,737.9	0.00	0.00	0.00
10,350.0	90.30	355.00	7,712.1	2,737.5	-239.5	2,747.9	0.00	0.00	0.00
10,360.0	90.30	355.00	7,712.0	2,747.5	-240.4	2,757.9	0.00	0.00	0.00
10,370.0	90.30	355.00	7,712.0	2,757.4	-241.2	2,767.9	0.00	0.00	0.00
10,380.0	90.30	355.00	7,711.9	2,767.4	-242.1	2,777.9	0.00	0.00	0.00
10,390.0	90.30	355.00	7,711.9	2,777.3	-243.0	2,787.9	0.00	0.00	0.00
10,400.0	90.30	355.00	7,711.8	2,787.3	-243.9	2,797.9	0.00	0.00	0.00
10,410.0	90.30	355.00	7,711.8	2,797.3	-244.7	2,807.9	0.00	0.00	0.00
10,420.0	90.30	355.00	7,711.7	2,807.2	-245.6	2,817.9	0.00	0.00	0.00
10,430.0	90.30	355.00	7,711.7	2,817.2	-246.5	2,827.9	0.00	0.00	0.00
10,440.0	90.30	355.00	7,711.6	2,827.1	-247.3	2,837.9	0.00	0.00	0.00
10,450.0	90.30	355.00	7,711.6	2,837.1	-248.2	2,847.9	0.00	0.00	0.00
10,460.0	90.30	355.00	7,711.5	2,847.1	-249.1	2,857.9	0.00	0.00	0.00
10,470.0	90.30	355.00	7,711.5	2,857.0	-250.0	2,867.9	0.00	0.00	0.00
10,480.0	90.30	355.00	7,711.4	2,867.0	-250.8	2,877.9	0.00	0.00	0.00
10,490.0	90.30	355.00	7,711.4	2,877.0	-251.7	2,887.9	0.00	0.00	0.00
10,500.0	90.30	355.00	7,711.3	2,886.9	-252.6	2,897.9	0.00	0.00	0.00
10,510.0	90.30	355.00	7,711.3	2,896.9	-253.4	2,907.9	0.00	0.00	0.00
10,520.0	90.30	355.00	7,711.2	2,906.8	-254.3	2,917.9	0.00	0.00	0.00
10,530.0	90.30	355.00	7,711.2	2,916.8	-255.2	2,927.9	0.00	0.00	0.00
10,540.0	90.30	355.00	7,711.1	2,926.8	-256.1	2,937.9	0.00	0.00	0.00
10,550.0	90.30	355.00	7,711.0	2,936.7	-256.9	2,947.9	0.00	0.00	0.00
10,560.0	90.30	355.00	7,711.0	2,946.7	-257.8	2,957.9	0.00	0.00	0.00
10,570.0	90.30	355.00	7,710.9	2,956.6	-258.7	2,967.9	0.00	0.00	0.00
10,580.0	90.30	355.00	7,710.9	2,966.6	-259.5	2,977.9	0.00	0.00	0.00
10,590.0	90.30	355.00	7,710.8	2,976.6	-260.4	2,987.9	0.00	0.00	0.00
10,600.0	90.30	355.00	7,710.8	2,986.5	-261.3	2,997.9	0.00	0.00	0.00
10,610.0	90.30	355.00	7,710.7	2,996.5	-262.2	3,007.9	0.00	0.00	0.00
10,620.0	90.30	355.00	7,710.7	3,006.5	-263.0	3,017.9	0.00	0.00	0.00
10,630.0	90.30	355.00	7,710.6	3,016.4	-263.9	3,027.9	0.00	0.00	0.00



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,640.0	90.30	355.00	7,710.6	3,026.4	-264.8	3,037.9	0.00	0.00	0.00
10,650.0	90.30	355.00	7,710.5	3,036.3	-265.6	3,047.9	0.00	0.00	0.00
10,660.0	90.30	355.00	7,710.5	3,046.3	-266.5	3,057.9	0.00	0.00	0.00
10,670.0	90.30	355.00	7,710.4	3,056.3	-267.4	3,067.9	0.00	0.00	0.00
10,680.0	90.30	355.00	7,710.4	3,066.2	-268.3	3,077.9	0.00	0.00	0.00
10,690.0	90.30	355.00	7,710.3	3,076.2	-269.1	3,087.9	0.00	0.00	0.00
10,700.0	90.30	355.00	7,710.3	3,086.2	-270.0	3,097.9	0.00	0.00	0.00
10,710.0	90.30	355.00	7,710.2	3,096.1	-270.9	3,107.9	0.00	0.00	0.00
10,720.0	90.30	355.00	7,710.2	3,106.1	-271.7	3,117.9	0.00	0.00	0.00
10,730.0	90.30	355.00	7,710.1	3,116.0	-272.6	3,127.9	0.00	0.00	0.00
10,740.0	90.30	355.00	7,710.1	3,126.0	-273.5	3,137.9	0.00	0.00	0.00
10,750.0	90.30	355.00	7,710.0	3,136.0	-274.4	3,147.9	0.00	0.00	0.00
10,760.0	90.30	355.00	7,709.9	3,145.9	-275.2	3,157.9	0.00	0.00	0.00
10,770.0	90.30	355.00	7,709.9	3,155.9	-276.1	3,167.9	0.00	0.00	0.00
10,780.0	90.30	355.00	7,709.8	3,165.8	-277.0	3,177.9	0.00	0.00	0.00
10,790.0	90.30	355.00	7,709.8	3,175.8	-277.8	3,187.9	0.00	0.00	0.00
10,800.0	90.30	355.00	7,709.7	3,185.8	-278.7	3,197.9	0.00	0.00	0.00
10,810.0	90.30	355.00	7,709.7	3,195.7	-279.6	3,207.9	0.00	0.00	0.00
10,820.0	90.30	355.00	7,709.6	3,205.7	-280.5	3,217.9	0.00	0.00	0.00
10,830.0	90.30	355.00	7,709.6	3,215.7	-281.3	3,227.9	0.00	0.00	0.00
10,840.0	90.30	355.00	7,709.5	3,225.6	-282.2	3,237.9	0.00	0.00	0.00
10,850.0	90.30	355.00	7,709.5	3,235.6	-283.1	3,247.9	0.00	0.00	0.00
10,860.0	90.30	355.00	7,709.4	3,245.5	-283.9	3,257.9	0.00	0.00	0.00
10,870.0	90.30	355.00	7,709.4	3,255.5	-284.8	3,267.9	0.00	0.00	0.00
10,880.0	90.30	355.00	7,709.3	3,265.5	-285.7	3,277.9	0.00	0.00	0.00
10,890.0	90.30	355.00	7,709.3	3,275.4	-286.6	3,287.9	0.00	0.00	0.00
10,900.0	90.30	355.00	7,709.2	3,285.4	-287.4	3,297.9	0.00	0.00	0.00
10,910.0	90.30	355.00	7,709.2	3,295.3	-288.3	3,307.9	0.00	0.00	0.00
10,920.0	90.30	355.00	7,709.1	3,305.3	-289.2	3,317.9	0.00	0.00	0.00
10,930.0	90.30	355.00	7,709.1	3,315.3	-290.0	3,327.9	0.00	0.00	0.00
10,940.0	90.30	355.00	7,709.0	3,325.2	-290.9	3,337.9	0.00	0.00	0.00
10,950.0	90.30	355.00	7,709.0	3,335.2	-291.8	3,347.9	0.00	0.00	0.00
10,960.0	90.30	355.00	7,708.9	3,345.2	-292.7	3,357.9	0.00	0.00	0.00
10,970.0	90.30	355.00	7,708.8	3,355.1	-293.5	3,367.9	0.00	0.00	0.00
10,980.0	90.30	355.00	7,708.8	3,365.1	-294.4	3,377.9	0.00	0.00	0.00
10,990.0	90.30	355.00	7,708.7	3,375.0	-295.3	3,387.9	0.00	0.00	0.00
11,000.0	90.30	355.00	7,708.7	3,385.0	-296.1	3,397.9	0.00	0.00	0.00
11,010.0	90.30	355.00	7,708.6	3,395.0	-297.0	3,407.9	0.00	0.00	0.00
11,020.0	90.30	355.00	7,708.6	3,404.9	-297.9	3,417.9	0.00	0.00	0.00
11,030.0	90.30	355.00	7,708.5	3,414.9	-298.8	3,427.9	0.00	0.00	0.00
11,040.0	90.30	355.00	7,708.5	3,424.9	-299.6	3,437.9	0.00	0.00	0.00
11,050.0	90.30	355.00	7,708.4	3,434.8	-300.5	3,447.9	0.00	0.00	0.00
11,060.0	90.30	355.00	7,708.4	3,444.8	-301.4	3,457.9	0.00	0.00	0.00
11,070.0	90.30	355.00	7,708.3	3,454.7	-302.3	3,467.9	0.00	0.00	0.00
11,080.0	90.30	355.00	7,708.3	3,464.7	-303.1	3,477.9	0.00	0.00	0.00
11,090.0	90.30	355.00	7,708.2	3,474.7	-304.0	3,487.9	0.00	0.00	0.00
11,100.0	90.30	355.00	7,708.2	3,484.6	-304.9	3,497.9	0.00	0.00	0.00
11,110.0	90.30	355.00	7,708.1	3,494.6	-305.7	3,507.9	0.00	0.00	0.00
11,120.0	90.30	355.00	7,708.1	3,504.5	-306.6	3,517.9	0.00	0.00	0.00
11,130.0	90.30	355.00	7,708.0	3,514.5	-307.5	3,527.9	0.00	0.00	0.00
11,140.0	90.30	355.00	7,708.0	3,524.5	-308.4	3,537.9	0.00	0.00	0.00
11,150.0	90.30	355.00	7,707.9	3,534.4	-309.2	3,547.9	0.00	0.00	0.00
11,160.0	90.30	355.00	7,707.9	3,544.4	-310.1	3,557.9	0.00	0.00	0.00
11,170.0	90.30	355.00	7,707.8	3,554.4	-311.0	3,567.9	0.00	0.00	0.00



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,180.0	90.30	355.00	7,707.7	3,564.3	-311.8	3,577.9	0.00	0.00	0.00
11,190.0	90.30	355.00	7,707.7	3,574.3	-312.7	3,587.9	0.00	0.00	0.00
11,200.0	90.30	355.00	7,707.6	3,584.2	-313.6	3,597.9	0.00	0.00	0.00
11,210.0	90.30	355.00	7,707.6	3,594.2	-314.5	3,607.9	0.00	0.00	0.00
11,220.0	90.30	355.00	7,707.5	3,604.2	-315.3	3,617.9	0.00	0.00	0.00
11,230.0	90.30	355.00	7,707.5	3,614.1	-316.2	3,627.9	0.00	0.00	0.00
11,240.0	90.30	355.00	7,707.4	3,624.1	-317.1	3,637.9	0.00	0.00	0.00
11,250.0	90.30	355.00	7,707.4	3,634.1	-317.9	3,647.9	0.00	0.00	0.00
11,260.0	90.30	355.00	7,707.3	3,644.0	-318.8	3,657.9	0.00	0.00	0.00
11,270.0	90.30	355.00	7,707.3	3,654.0	-319.7	3,667.9	0.00	0.00	0.00
11,280.0	90.30	355.00	7,707.2	3,663.9	-320.6	3,677.9	0.00	0.00	0.00
11,290.0	90.30	355.00	7,707.2	3,673.9	-321.4	3,687.9	0.00	0.00	0.00
11,300.0	90.30	355.00	7,707.1	3,683.9	-322.3	3,697.9	0.00	0.00	0.00
11,310.0	90.30	355.00	7,707.1	3,693.8	-323.2	3,707.9	0.00	0.00	0.00
11,320.0	90.30	355.00	7,707.0	3,703.8	-324.0	3,717.9	0.00	0.00	0.00
11,330.0	90.30	355.00	7,707.0	3,713.7	-324.9	3,727.9	0.00	0.00	0.00
11,340.0	90.30	355.00	7,706.9	3,723.7	-325.8	3,737.9	0.00	0.00	0.00
11,350.0	90.30	355.00	7,706.9	3,733.7	-326.7	3,747.9	0.00	0.00	0.00
11,360.0	90.30	355.00	7,706.8	3,743.6	-327.5	3,757.9	0.00	0.00	0.00
11,370.0	90.30	355.00	7,706.8	3,753.6	-328.4	3,767.9	0.00	0.00	0.00
11,380.0	90.30	355.00	7,706.7	3,763.6	-329.3	3,777.9	0.00	0.00	0.00
11,390.0	90.30	355.00	7,706.6	3,773.5	-330.1	3,787.9	0.00	0.00	0.00
11,400.0	90.30	355.00	7,706.6	3,783.5	-331.0	3,797.9	0.00	0.00	0.00
11,410.0	90.30	355.00	7,706.5	3,793.4	-331.9	3,807.9	0.00	0.00	0.00
11,420.0	90.30	355.00	7,706.5	3,803.4	-332.8	3,817.9	0.00	0.00	0.00
11,430.0	90.30	355.00	7,706.4	3,813.4	-333.6	3,827.9	0.00	0.00	0.00
11,440.0	90.30	355.00	7,706.4	3,823.3	-334.5	3,837.9	0.00	0.00	0.00
11,450.0	90.30	355.00	7,706.3	3,833.3	-335.4	3,847.9	0.00	0.00	0.00
11,460.0	90.30	355.00	7,706.3	3,843.2	-336.2	3,857.9	0.00	0.00	0.00
11,470.0	90.30	355.00	7,706.2	3,853.2	-337.1	3,867.9	0.00	0.00	0.00
11,480.0	90.30	355.00	7,706.2	3,863.2	-338.0	3,877.9	0.00	0.00	0.00
11,490.0	90.30	355.00	7,706.1	3,873.1	-338.9	3,887.9	0.00	0.00	0.00
11,500.0	90.30	355.00	7,706.1	3,883.1	-339.7	3,897.9	0.00	0.00	0.00
11,510.0	90.30	355.00	7,706.0	3,893.1	-340.6	3,907.9	0.00	0.00	0.00
11,520.0	90.30	355.00	7,706.0	3,903.0	-341.5	3,917.9	0.00	0.00	0.00
11,530.0	90.30	355.00	7,705.9	3,913.0	-342.3	3,927.9	0.00	0.00	0.00
11,540.0	90.30	355.00	7,705.9	3,922.9	-343.2	3,937.9	0.00	0.00	0.00
11,550.0	90.30	355.00	7,705.8	3,932.9	-344.1	3,947.9	0.00	0.00	0.00
11,560.0	90.30	355.00	7,705.8	3,942.9	-345.0	3,957.9	0.00	0.00	0.00
11,570.0	90.30	355.00	7,705.7	3,952.8	-345.8	3,967.9	0.00	0.00	0.00
11,580.0	90.30	355.00	7,705.7	3,962.8	-346.7	3,977.9	0.00	0.00	0.00
11,590.0	90.30	355.00	7,705.6	3,972.8	-347.6	3,987.9	0.00	0.00	0.00
11,600.0	90.30	355.00	7,705.5	3,982.7	-348.4	3,997.9	0.00	0.00	0.00
11,610.0	90.30	355.00	7,705.5	3,992.7	-349.3	4,007.9	0.00	0.00	0.00
11,620.0	90.30	355.00	7,705.4	4,002.6	-350.2	4,017.9	0.00	0.00	0.00
11,630.0	90.30	355.00	7,705.4	4,012.6	-351.1	4,027.9	0.00	0.00	0.00
11,640.0	90.30	355.00	7,705.3	4,022.6	-351.9	4,037.9	0.00	0.00	0.00
11,650.0	90.30	355.00	7,705.3	4,032.5	-352.8	4,047.9	0.00	0.00	0.00
11,660.0	90.30	355.00	7,705.2	4,042.5	-353.7	4,057.9	0.00	0.00	0.00
11,670.0	90.30	355.00	7,705.2	4,052.4	-354.5	4,067.9	0.00	0.00	0.00
11,680.0	90.30	355.00	7,705.1	4,062.4	-355.4	4,077.9	0.00	0.00	0.00
11,690.0	90.30	355.00	7,705.1	4,072.4	-356.3	4,087.9	0.00	0.00	0.00
11,700.0	90.30	355.00	7,705.0	4,082.3	-357.2	4,097.9	0.00	0.00	0.00
11,710.0	90.30	355.00	7,705.0	4,092.3	-358.0	4,107.9	0.00	0.00	0.00



Great White Directional Services Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,720.0	90.30	355.00	7,704.9	4,102.3	-358.9	4,117.9	0.00	0.00	0.00	
11,730.0	90.30	355.00	7,704.9	4,112.2	-359.8	4,127.9	0.00	0.00	0.00	
11,740.0	90.30	355.00	7,704.8	4,122.2	-360.6	4,137.9	0.00	0.00	0.00	
11,750.0	90.30	355.00	7,704.8	4,132.1	-361.5	4,147.9	0.00	0.00	0.00	
11,760.0	90.30	355.00	7,704.7	4,142.1	-362.4	4,157.9	0.00	0.00	0.00	
11,770.0	90.30	355.00	7,704.7	4,152.1	-363.3	4,167.9	0.00	0.00	0.00	
11,780.0	90.30	355.00	7,704.6	4,162.0	-364.1	4,177.9	0.00	0.00	0.00	
11,790.0	90.30	355.00	7,704.6	4,172.0	-365.0	4,187.9	0.00	0.00	0.00	
11,800.0	90.30	355.00	7,704.5	4,182.0	-365.9	4,197.9	0.00	0.00	0.00	
11,810.0	90.30	355.00	7,704.4	4,191.9	-366.7	4,207.9	0.00	0.00	0.00	
11,820.0	90.30	355.00	7,704.4	4,201.9	-367.6	4,217.9	0.00	0.00	0.00	
11,830.0	90.30	355.00	7,704.3	4,211.8	-368.5	4,227.9	0.00	0.00	0.00	
11,840.0	90.30	355.00	7,704.3	4,221.8	-369.4	4,237.9	0.00	0.00	0.00	
11,850.0	90.30	355.00	7,704.2	4,231.8	-370.2	4,247.9	0.00	0.00	0.00	
11,860.0	90.30	355.00	7,704.2	4,241.7	-371.1	4,257.9	0.00	0.00	0.00	
11,870.0	90.30	355.00	7,704.1	4,251.7	-372.0	4,267.9	0.00	0.00	0.00	
11,880.0	90.30	355.00	7,704.1	4,261.6	-372.8	4,277.9	0.00	0.00	0.00	
11,890.0	90.30	355.00	7,704.0	4,271.6	-373.7	4,287.9	0.00	0.00	0.00	
11,900.0	90.30	355.00	7,704.0	4,281.6	-374.6	4,297.9	0.00	0.00	0.00	
11,910.0	90.30	355.00	7,703.9	4,291.5	-375.5	4,307.9	0.00	0.00	0.00	
11,920.0	90.30	355.00	7,703.9	4,301.5	-376.3	4,317.9	0.00	0.00	0.00	
11,930.0	90.30	355.00	7,703.8	4,311.5	-377.2	4,327.9	0.00	0.00	0.00	
11,940.0	90.30	355.00	7,703.8	4,321.4	-378.1	4,337.9	0.00	0.00	0.00	
11,950.0	90.30	355.00	7,703.7	4,331.4	-378.9	4,347.9	0.00	0.00	0.00	
11,960.0	90.30	355.00	7,703.7	4,341.3	-379.8	4,357.9	0.00	0.00	0.00	
11,970.0	90.30	355.00	7,703.6	4,351.3	-380.7	4,367.9	0.00	0.00	0.00	
11,980.0	90.30	355.00	7,703.6	4,361.3	-381.6	4,377.9	0.00	0.00	0.00	
11,990.0	90.30	355.00	7,703.5	4,371.2	-382.4	4,387.9	0.00	0.00	0.00	
12,000.0	90.30	355.00	7,703.5	4,381.2	-383.3	4,397.9	0.00	0.00	0.00	
12,010.0	90.30	355.00	7,703.4	4,391.1	-384.2	4,407.9	0.00	0.00	0.00	
12,020.0	90.30	355.00	7,703.4	4,401.1	-385.0	4,417.9	0.00	0.00	0.00	
12,030.0	90.30	355.00	7,703.3	4,411.1	-385.9	4,427.9	0.00	0.00	0.00	
12,040.0	90.30	355.00	7,703.2	4,421.0	-386.8	4,437.9	0.00	0.00	0.00	
12,050.0	90.30	355.00	7,703.2	4,431.0	-387.7	4,447.9	0.00	0.00	0.00	
12,060.0	90.30	355.00	7,703.1	4,441.0	-388.5	4,457.9	0.00	0.00	0.00	
12,070.0	90.30	355.00	7,703.1	4,450.9	-389.4	4,467.9	0.00	0.00	0.00	
12,080.0	90.30	355.00	7,703.0	4,460.9	-390.3	4,477.9	0.00	0.00	0.00	
12,090.0	90.30	355.00	7,703.0	4,470.8	-391.1	4,487.9	0.00	0.00	0.00	
12,100.0	90.30	355.00	7,702.9	4,480.8	-392.0	4,497.9	0.00	0.00	0.00	
12,110.0	90.30	355.00	7,702.9	4,490.8	-392.9	4,507.9	0.00	0.00	0.00	
12,120.0	90.30	355.00	7,702.8	4,500.7	-393.8	4,517.9	0.00	0.00	0.00	
12,130.0	90.30	355.00	7,702.8	4,510.7	-394.6	4,527.9	0.00	0.00	0.00	
12,140.0	90.30	355.00	7,702.7	4,520.7	-395.5	4,537.9	0.00	0.00	0.00	
12,150.0	90.30	355.00	7,702.7	4,530.6	-396.4	4,547.9	0.00	0.00	0.00	
12,160.0	90.30	355.00	7,702.6	4,540.6	-397.2	4,557.9	0.00	0.00	0.00	
12,170.0	90.30	355.00	7,702.6	4,550.5	-398.1	4,567.9	0.00	0.00	0.00	
12,180.0	90.30	355.00	7,702.5	4,560.5	-399.0	4,577.9	0.00	0.00	0.00	
12,190.0	90.30	355.00	7,702.5	4,570.5	-399.9	4,587.9	0.00	0.00	0.00	
12,200.0	90.30	355.00	7,702.4	4,580.4	-400.7	4,597.9	0.00	0.00	0.00	
12,210.0	90.30	355.00	7,702.4	4,590.4	-401.6	4,607.9	0.00	0.00	0.00	
12,220.0	90.30	355.00	7,702.3	4,600.3	-402.5	4,617.9	0.00	0.00	0.00	
12,230.0	90.30	355.00	7,702.3	4,610.3	-403.3	4,627.9	0.00	0.00	0.00	
12,240.0	90.30	355.00	7,702.2	4,620.3	-404.2	4,637.9	0.00	0.00	0.00	
12,250.0	90.30	355.00	7,702.1	4,630.2	-405.1	4,647.9	0.00	0.00	0.00	



Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Pintail 23 Fed Com #8
Company:	Cimarex Energy Co.	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Project:	Eddy County (NM83E)	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 23-T25S-R26E	North Reference:	Grid
Well:	Pintail 23 Fed Com #8	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,260.0	90.30	355.00	7,702.1	4,640.2	-406.0	4,657.9	0.00	0.00	0.00
12,270.0	90.30	355.00	7,702.0	4,650.2	-406.8	4,667.9	0.00	0.00	0.00
12,280.0	90.30	355.00	7,702.0	4,660.1	-407.7	4,677.9	0.00	0.00	0.00
12,290.0	90.30	355.00	7,701.9	4,670.1	-408.6	4,687.9	0.00	0.00	0.00
12,300.0	90.30	355.00	7,701.9	4,680.0	-409.5	4,697.9	0.00	0.00	0.00
12,310.0	90.30	355.00	7,701.8	4,690.0	-410.3	4,707.9	0.00	0.00	0.00
12,317.3	90.30	355.00	7,701.8	4,697.3	-411.0	4,715.2	0.00	0.00	0.00
TD at 12317.3 - Pintail #8 PBHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Pintail #8 PBHL	0.00	0.00	7,700.0	4,696.9	-415.3	407,998.80	560,721.60	32° 7' 17.948 N	104° 16' 14.588 W
- plan misses target center by 4.7usft at 12317.3usft MD (7701.8 TVD, 4697.3 N, -411.0 E)									
- Point									

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
7,438.5	7,438.5	0.0	0.0	KOP 20°/100 DLS @ 355° AZI	
7,890.0	7,725.0	286.9	-25.1	EOC - Hold to TD	
12,317.3	7,701.8	4,697.3	-411.0	TD at 12317.3	



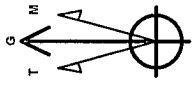
WELL DETAILS: Pintail 23 Fed Com #8



+N/-S +E/-W Northing Easting Longitude
0.0 0.0 403301.90 561136.90 104° 16' 9.791 W
SHL: 250' FSL / 800' FWL
BHL: 330' FNL / 400' FWL

Project: Eddy County (NM83E)
Site: Sec 23-T25S-R26E
Well: Pintail 23 Fed Com #8
Wellbore: Wellbore #1
Design: Plan #1

Admiralty to Grid North
Total Correction: 7.91°
Magnetic Field
Strength: 48582.5nT
Dip Angle: 59.99°
Date: 12/01/2010
Model: IGRF200510



WELLBORE TARGET DETAILS

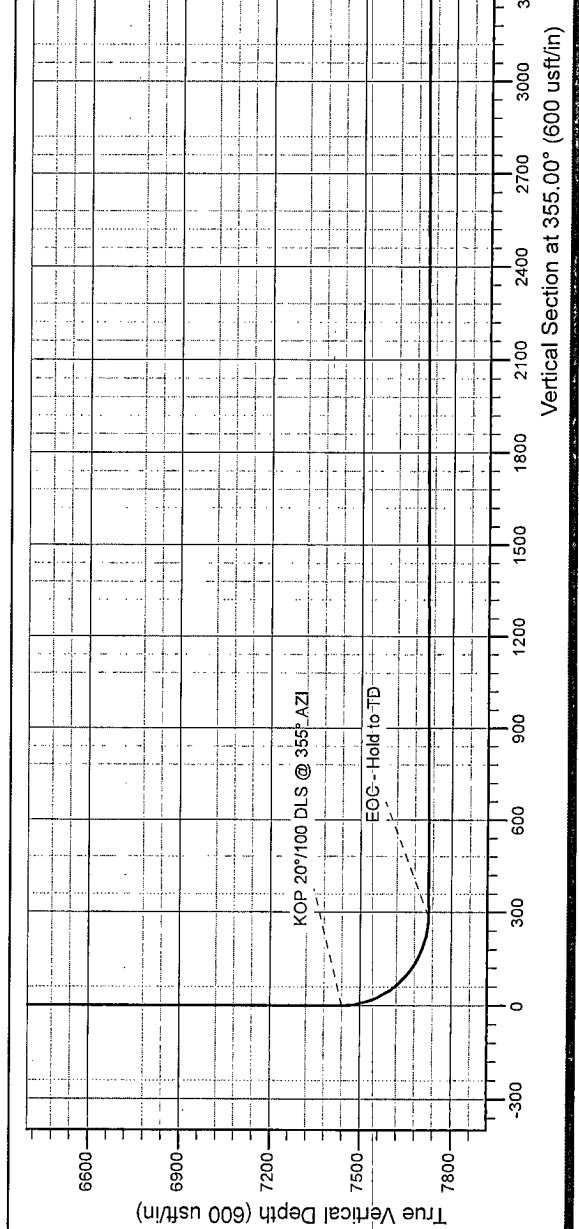
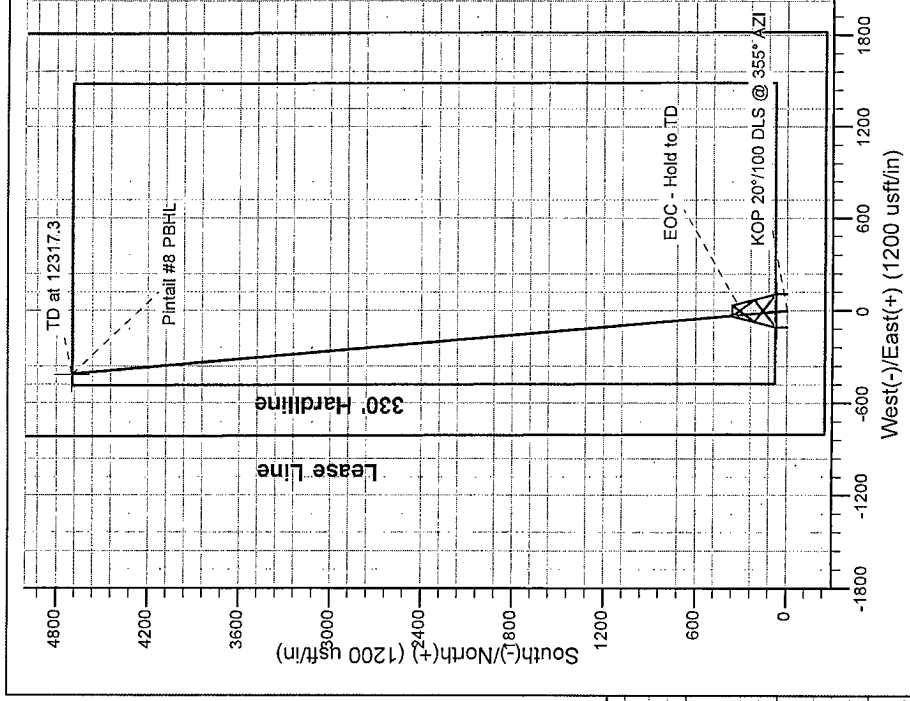
Name	TVD	+N/-S	+E/-W	Northing	Easting
Pintail #8 PBHL	7700.0	4696.9	-415.3	407998.80	560721.60

PLAN DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
7438.5	0.00	0.00	7438.5	0.0	0.0	0.00	0.00	0.0	
7890.0	90.30355.00	7725.0	286.9	-25.1	20.00355.00	288.0			
12317.3	90.30355.00	7701.8	4697.3	-411.0	0.004715.2				Pintail #8 PBHL

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSDeparture	Annotation
7438.5	7438.5	0.00	0.00	0.0	0.0	0.0	KOP 20°/100 DLS @ 355° AZI
7725.0	7890.0	90.30	355.00	286.9	-25.1	288.0	EOC - Hold to TD
7701.8	12317.3	90.30	355.00	4697.3	-411.0	4715.2	TD at 12317.3



SR & A

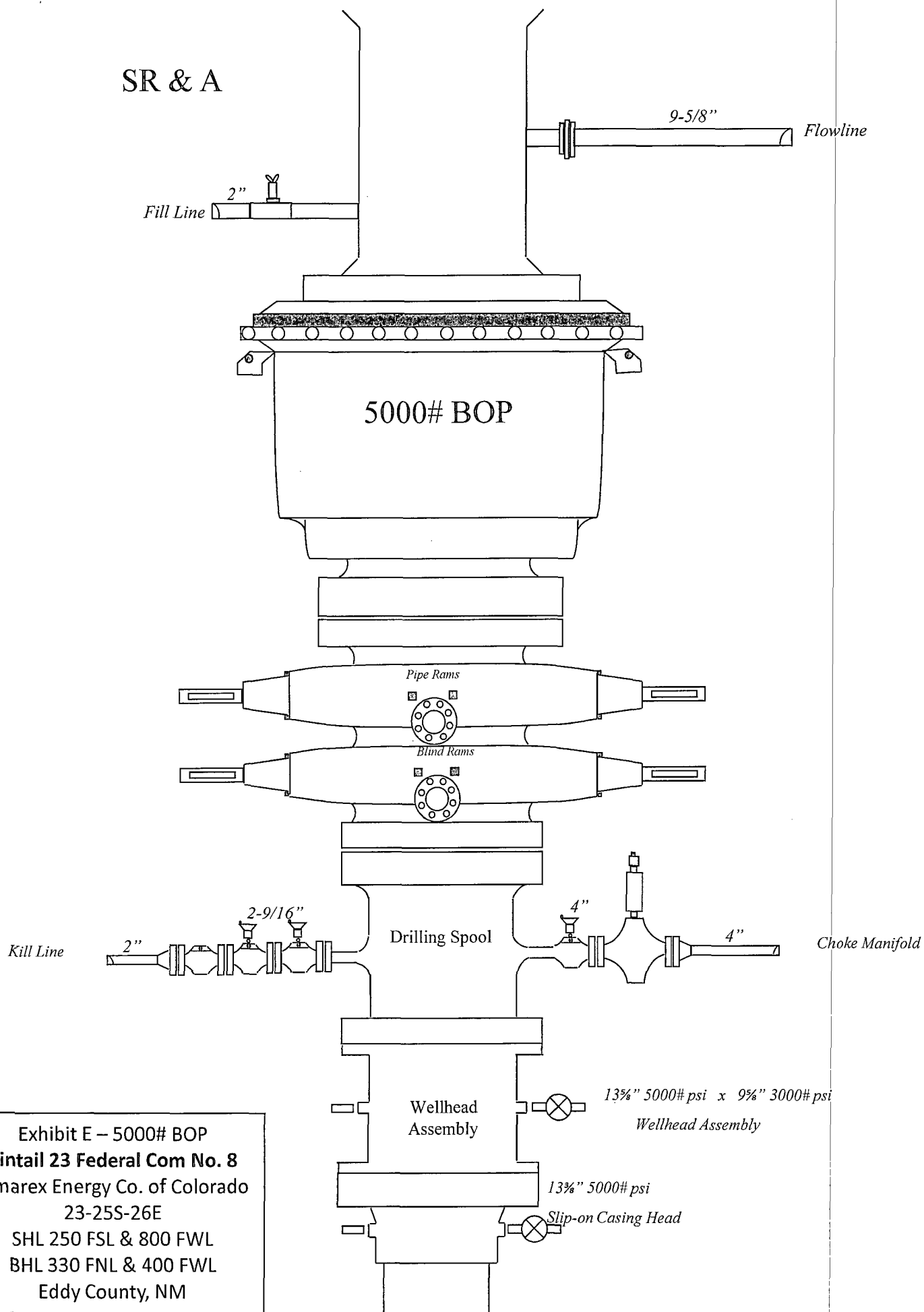
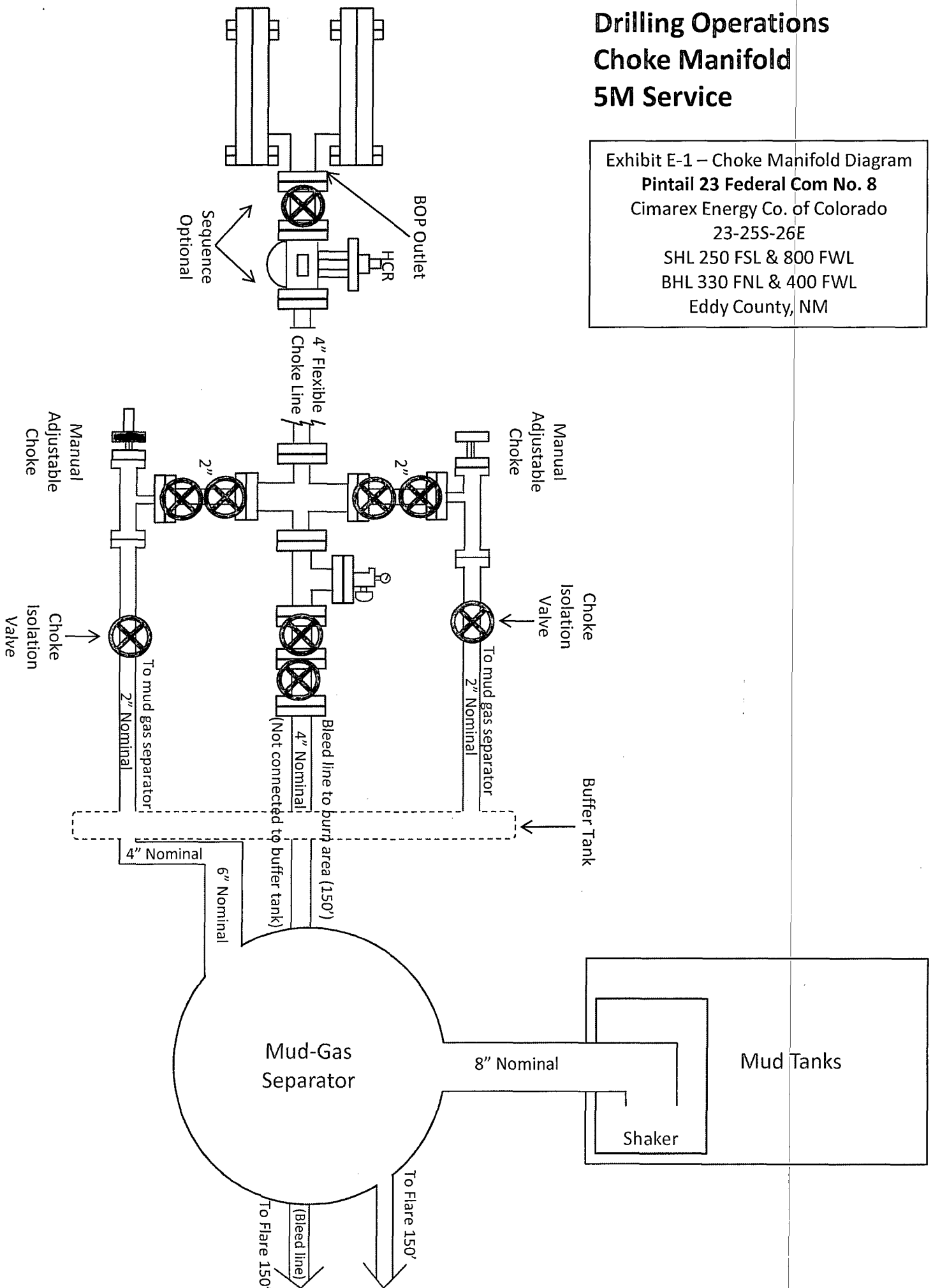


Exhibit E – 5000# BOP
Pintail 23 Federal Com No. 8
Cimarex Energy Co. of Colorado
23-25S-26E
SHL 250 FSL & 800 FWL
BHL 330 FNL & 400 FWL
Eddy County, NM

Drilling Operations Choke Manifold 5M Service

Exhibit E-1 – Choke Manifold Diagram
Pintail 23 Federal Com No. 8
Cimarex Energy Co. of Colorado
23-25S-26E
SHL 250 FSL & 800 FWL
BHL 330 FNL & 400 FWL
Eddy County, NM





Midwest Hose
& Specialty, Inc.

Specification Sheet Choke & Kill Hose

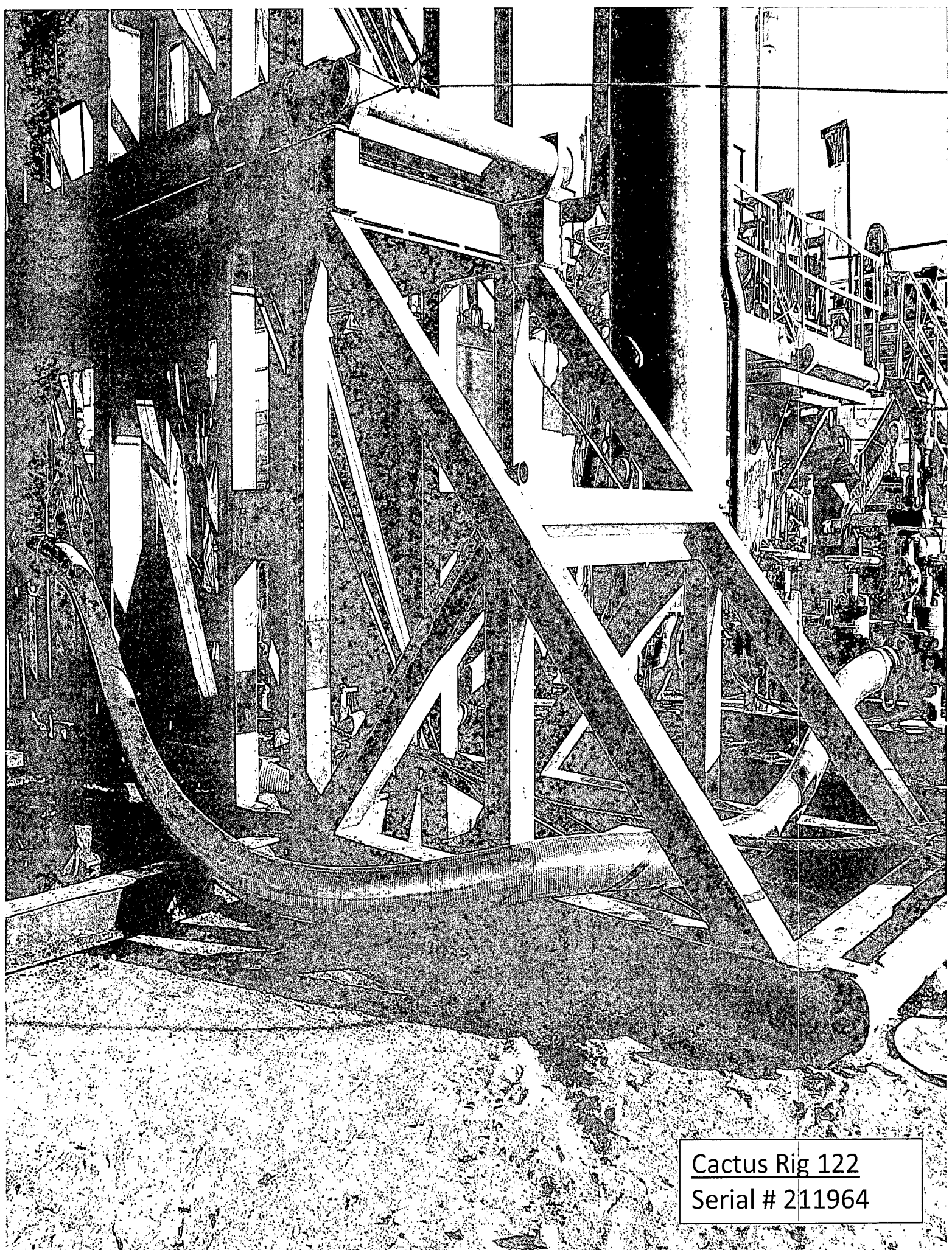
The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium components. The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API 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)

M I D W E S T

HOSE AND SPECIALTY INC.

INTERNAL HYDROSTATIC TEST REPORT				
Customer: CACTUS		P.O. Number: Asset#M4812		
HOSE SPECIFICATIONS				
Type:	CHOKE LINE	Length:	35'	
I.D.	4" INCHES	O.D.	8" INCHES	
WORKING PRESSURE	TEST PRESSURE	BURST PRESSURE		
10,000 PSI	15,000 PSI	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		ACTUAL BURST PRESSURE:		
15	MIN.	0 PSI		
COMMENTS: s/n#O211964 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:	6/28/2006	Tested By:	BOBBY FINK	
		Approved:	MENDI JACKSON	



Cactus Rig 122
Serial # 211964

DISTRICT I --- CHECKLIST FOR INTENTS TO DRILL

Operator CIMAREX ENERGY CO. of COLORADO OGRID # 162683
 34072 Well Name & # PINTAIL 27 FEDERAL COM #8H Surface Type (F) (S) (P)
 Location: UL M, Sect 23, Township 25s, RNG 26e, Sub-surface Type (F) (S) (P)
0 23 -25 -26

A. Date C101 rec'd / / C101 reviewed / /

B. 1. Check mark, Information is OK on Forms:

OGRID X, BONDING FED PROP CODE X, WELL # , SIGNATURE
 2. Inactive Well list as of: 4/4/11 # wells 1633 # Inactive wells 8

a. District Grant APD but see number of inactive wells:

No letter required X; Sent Letter to Operator , to Santa Fe

3. Additional Bonding as of: 4/4/11

a. District Denial because operator needs addition bonding:

No Letter required X; Sent Letter to Operator , To Santa Fe

b. District Denial because of Inactive well list and Financial Assurance:

No Letter required X; Sent Letter to Operator , To Santa Fe

C. C102 YES X NO , Signature X

1. Pool WILCATS BONE SPRING, Code 96403

a. Dedicated acreage 160, What Units DELM

b. SUR. Location Standard ; Non-Standard Location X

c. Well shares acres: Yes , No X, # of wells plus this well #

2. 2nd. Operator in same acreage, Yes , No X
 Agreement Letter , Disagreement letter

3. Intent to Directional Drill Yes X, No

a. Dedicated acreage 160, What Units DELM

b. Bottomhole Location Standard X, Non-Standard Bottomhole

4. Downhole Commingle: Yes , No X

a. Pool #2 , Code , Acres

Pool #3 , Code , Acres

Pool #4 , Code , Acres

5. POTASH Area Yes , No FED

D. Blowout Preventer Yes X, No

E. H2S Yes , No , PARTIAL APD

F. C144 Pit Registration Yes , No

G. Does APD require Santa Fe Approval:

1. Non-Standard Location: Yes X, No , NSL #

2. Non-Standard Proration: Yes , No X, NSP #

3. Simultaneous Dedication: Yes , No X, SD #

Number of wells Plus #

4. Injection order Yes , No X; PMX # or WFX #

5. SWD order Yes , NO X; SWD #

6. DHC from SF ; DHC-HOB ; Holding

7. OCD Approval Date 04/04/11

API #30-015 -- 38657

8. Reviewers X