

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an
abandoned well. Use form 3160-3 (APD) for such proposals.

FORM APPROVED
OMB No 1004-0135
Expires July 31, 1996

LM

5 Lease Serial No

NM-19423

6 If Indian, Allottee or Tribe Name

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

RECEIVED

APR 19 2010

NMOCD ARTESIA

8 Well Name and No

Hayduke 34 Federal No. 1

9 API Well No

30-015-36601

10 Field and Pool, or Exploratory Area

Cottonwood Draw; Morrow (G)

11 County or Parish, State

Eddy County, NM

SUBMIT IN TRIPLICATE - Other instructions on reverse side

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2 Name of Operator

Cimarex Energy Co. of Colorado

3a Address

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

3b Phone No (include area code)

432-571-7800

4 Location of Well (Footage, Sec., T., R., M., or Survey Description)

800 FNL & 660 FEL

34-25S-26E

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

☒ Notice of Intent☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☒ Alter Casing☐ Casing Repair☒ Change Plans☐ Convert to Injection☐ Deepen☐ Fracture Treat☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other Drill as horizontal

Wolfcamp instead of

vertical Morrow

13. Describe Proposed or Completed Operation (clearly state all pertinent details, included estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Cimarex has changed drilling plans on the Hayduke 34 Federal No. 1. Instead of drilling as a vertical Morrow well in N2 34-25S-26E, Cimarex will now drill the well as a horizontal Wolfcamp in N2N2 34-25S-26E. Revised drilling plans below. Preliminary directional survey and revised C-102 attached.

Casing Plan on APD

Surface 1: 17½" hole, 13½" 48# H-40 STC to 215'

Intermediate: 12¼" hole, 9½" 40# J-55 LTC to 1900'

Production: 8¾" hole, 5½" 17# P-110 LTC to 12675'

Proposed Casing Plan

Surface 1: 17½" hole, 13½" 48# H40 STC to 215'

Intermediate: 12¼" hole, 9½" 40# J/K-55 LTC to 1900'

Production: 8¾" hole, 7" 26# P-110 LTC to 9336'

Fiberglass: 8¾" hole, 2½" 2.18# IJ from 9336-10200'

Lateral Pt. 1: 6½" hole, 4½" 11.6# BTC from 9236-9854'

Lateral Pt. 2: 6½" hole, 4½" 11.6# BTC from 9854-13541'

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

P110 LTC

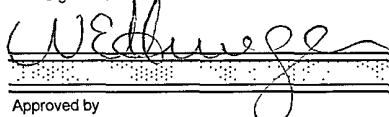
After drilling and setting surface and intermediate casing, drill to vertical TD 10200' and log. Set 7" casing to 9280' and cross over to 2¾" 2000 psi IJ fiberglass tubing underneath to 10200' and cement in place. Drill out of the bottom of the 7" with a 6½" bit and through cement and fiberglass to KOP @ 9396' and kick off to drill the lateral. The fiberglass effectively circulates cement to surface and plugs back the open hole.

Drill to lateral TD (13541' MD, 9579' TVD). Run 4½" cemented liner from liner hanger @ 9236' to TD @ 13541'. Request a 100' tieback for lateral casing string in order to be able to set the pump as deep as possible. Cement liner with Lead 620 sx Interfill H + 0.3% HR-601 + 5# Gilsonite + 0.125# Poly-E-Flake (wt 11.9, yld 2.47) and Tail 480 sx Super H + 0.5% Halad ® 344 + 0.25% D-Air 3000 + 0.4% CFR-3 + 1# Salt + 5# Gilsonite + 0.125# Poly-E-Flake + 0.35% HR-7 (wt 13.2, yld 1.61). Estimated TOC at 4000.'

14 I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Natalie Krueger

Signature



Title

Regulatory

Date

March 22, 2010

APPROVED

APR 16 2010

Myles Kristof

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Approved by

Title

Office

Conditions of Approval, if any, are attached. Approval of this notice 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

Title 18 U.S.C. Section 1001, makes 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 reverse)

m2

DISTRICT I

1625 N. French Dr., Hobbs, NM 88240

DISTRICT II

1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III

1000 Rio Brazos Rd., Artec, NM 87410

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102

Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-36601	Pool Code	Pool Name Wolfcamp Wildcat
Property Code 37376	Property Name HAYDUKE "34" FEDERAL	Well Number 1
OGED No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3343'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	34	25 S	26 E		800	NORTH	660	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	34	25 S	26 E		660	NORTH	660	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

NM-19423 Proposed Producing Interval EOC 788 FNL & 954 FEL BHL 660 FNL & 660 FWL SHL & PP WC 800 FNL & 660 FEL		3344.1' 3336.8' 3346.8' 3334.4' SURFACE LOCATION Lat - N32°05'28.82" Long - W104°16'27.49" NMSPCE - N 396971.0 E 559617.8 (NAD-83)	OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location pursuant to a contract with an owner of such a mineral or working interest, or is a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Zeno Farris</i> 3/22/2010 Signature Date Zeno Farris Printed Name
PROPOSED BOTTOM HOLE LOCATION Lat - N32°05'30.37" Long - W104°17'13.73" NMSPCE - N 397125.66 E 555640.43 (NAD-83)		SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. JUNE 6, 2008 Date Surveyed <i>Gary L. Jones</i> Signature of Professional Surveyor <i>Gary L. Jones</i> Professional Surveyor Certificate No. Gary L. Jones 7977 BASIN SURVEYS	

Silver Oak 3

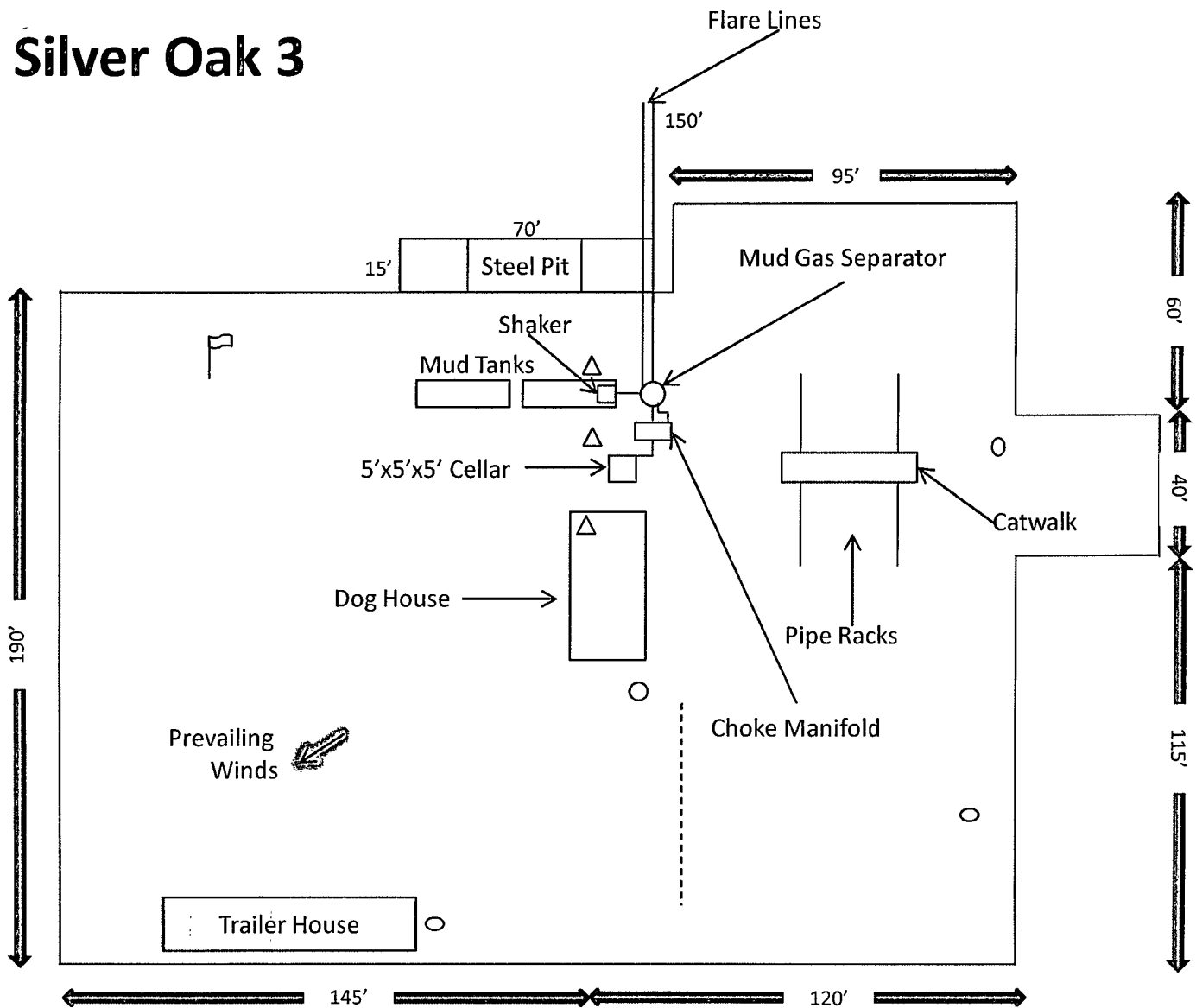


Exhibit D – Rig Diagram
Hayduke 34 Federal No. 1
 Cimarex Energy Co. of Colorado
 34-25S-26E
 SHL 800 FNL & 660 FEL
 BHL 660 FNL & 660 FWL
 Eddy County, NM

A 13 $\frac{3}{8}$ " 3000 PSI working pressure B.O.P. consisting of a one set of blind rams and one set of pipe rams and a 3000 psi annular-type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. 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. Test BOP equipment and choke manifold to 250 psi low and 3000 psi high and annular BOP to 250 psi low and 1500 psi high by an independent service company.

BOP unit will be hydraulically operated. Below intermediate casing shoe, BOP will be 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 3000 psi BOP system.

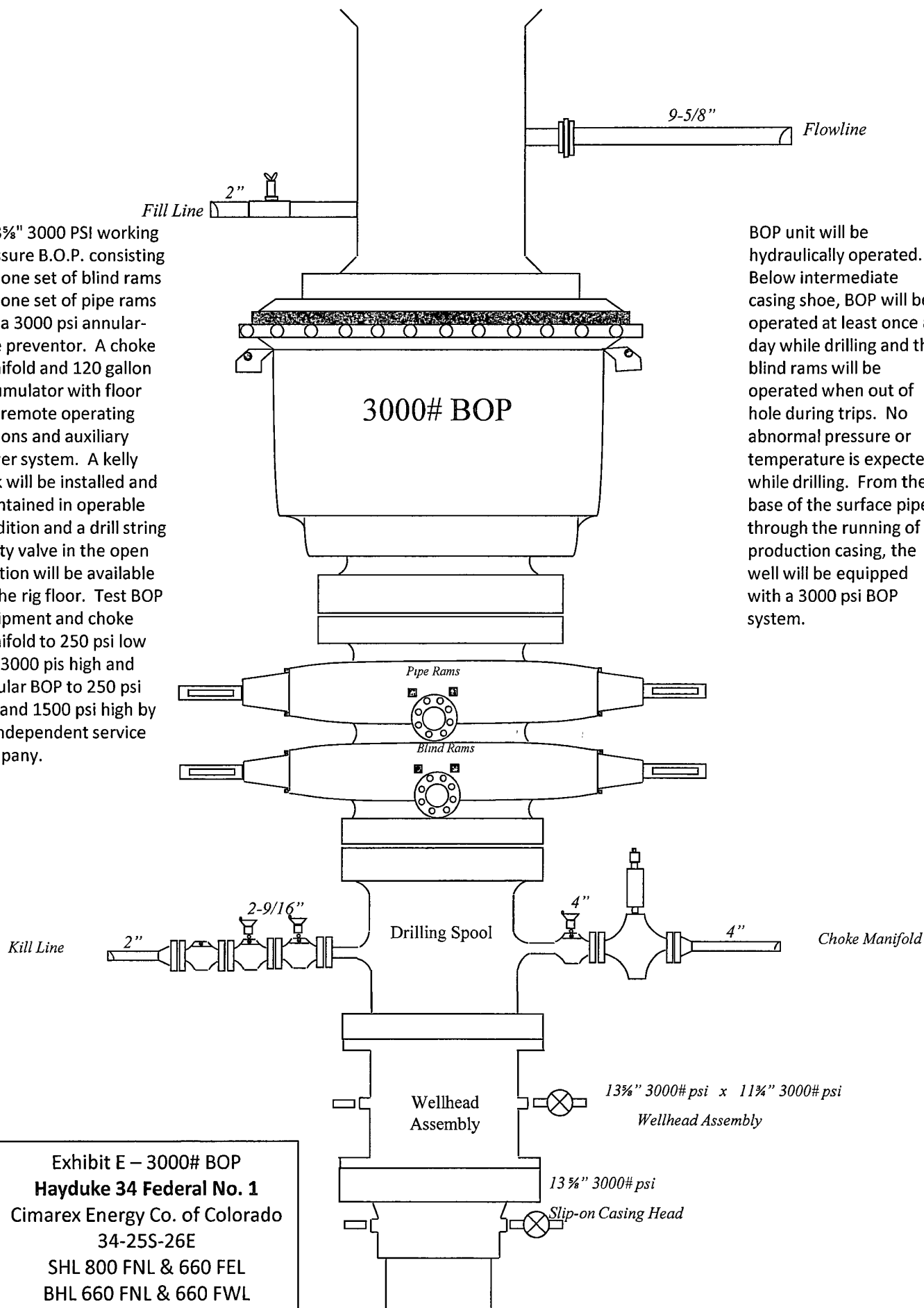


Exhibit E – 3000# BOP
Hayduke 34 Federal No. 1
 Cimarex Energy Co. of Colorado
 34-25S-26E
 SHL 800 FNL & 660 FEL
 BHL 660 FNL & 660 FWL
 Eddy County, NM

Drilling Operations Choke Manifold 3M Service

Exhibit E-1 – Choke Manifold Diagram

Hayduke 34 Federal No. 1

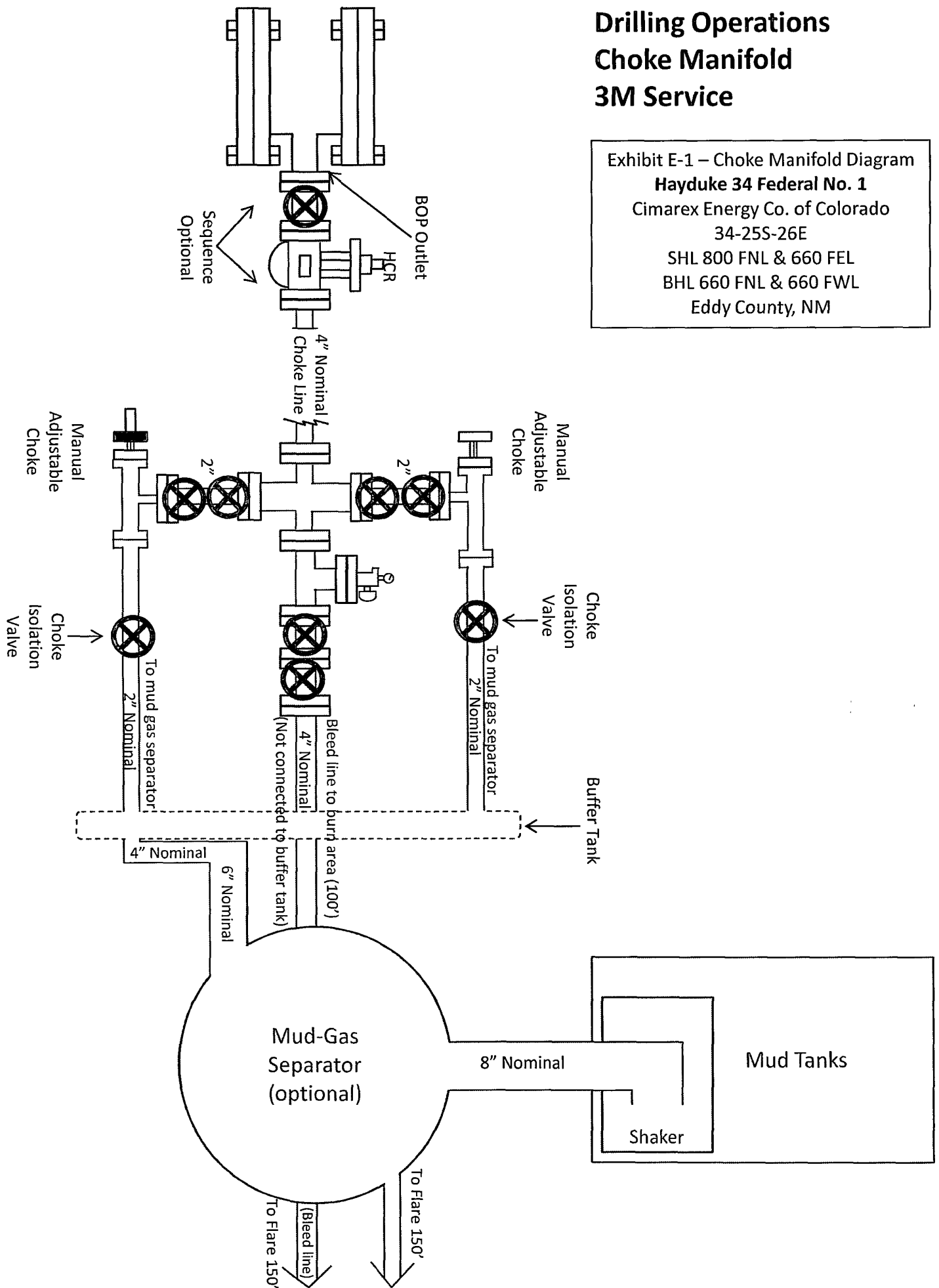
Cimarex Energy Co. of Colorado

34-25S-26E

SHL 800 FNL & 660 FEL

BHL 660 FNL & 660 FWL

Eddy County, NM



Cimarex Energy Co.

Eddy County (NM83E)

Sec 34 - T25S - R26E

Hayduke 34 Fed #1

Wellbore #1

Plan: Plan #1

Standard Planning Report

22 March, 2010

Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Sec 34 - T25S - R26E
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 34 - T25S - R26E	North Reference:	Grid
Well:	Hayduke 34 Fed #1	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 34 - T25S - R26E		
Site Position:	Map	Northing:	396,971.00 usft
From:		Easting:	559,617.80 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 5' 28.821 N
		Longitude:	104° 16' 27.494 W
		Grid Convergence:	0.03 °

Well	Hayduke 34 Fed #1		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
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	2010/03/22	8.03	59.99	48,637

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	272.23

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,396.0	0.00	0.00	9,396.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,854.0	91.60	272.23	9,682.4	11.5	-294.3	20.00	20.00	0.00	272.23	
13,541.3	91.60	272.23	9,579.4	154.9	-3,977.4	0.00	0.00	0.00	0.00	Hayduke #1 PBHL

Great White Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Sec 34 - T25S - R26E
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 34 - T25S - R26E	North Reference:	Grid
Well:	Hayduke 34 Fed #1	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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,396.0	0.00	0.00	9,396.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP 20°/100 DLS, 272.23° AZI									
9,400.0	0.80	272.23	9,400.0	0.0	0.0	0.0	20.00	20.00	0.00
9,425.0	5.80	272.23	9,425.0	0.1	-1.5	1.5	20.00	20.00	0.00
9,439.2	8.63	272.23	9,439.0	0.1	-3.2	3.2	20.00	20.00	0.00
Wolfcamp C									
9,450.0	10.80	272.23	9,449.7	0.2	-5.1	5.1	20.00	20.00	0.00
9,475.0	15.80	272.23	9,474.0	0.4	-10.8	10.8	20.00	20.00	0.00
9,500.0	20.80	272.23	9,497.7	0.7	-18.7	18.7	20.00	20.00	0.00
9,525.0	25.80	272.23	9,520.7	1.1	-28.5	28.6	20.00	20.00	0.00
9,544.6	29.71	272.23	9,538.0	1.5	-37.6	37.7	20.00	20.00	0.00
Wolfcamp D									
9,550.0	30.80	272.23	9,542.7	1.6	-40.4	40.4	20.00	20.00	0.00
9,575.0	35.80	272.23	9,563.6	2.1	-54.1	54.1	20.00	20.00	0.00
9,600.0	40.80	272.23	9,583.2	2.7	-69.6	69.6	20.00	20.00	0.00
9,625.0	45.80	272.23	9,601.4	3.4	-86.7	86.8	20.00	20.00	0.00
9,650.0	50.80	272.23	9,618.0	4.1	-105.3	105.4	20.00	20.00	0.00
9,675.0	55.80	272.23	9,632.9	4.9	-125.4	125.5	20.00	20.00	0.00
9,700.0	60.80	272.23	9,646.1	5.7	-146.6	146.7	20.00	20.00	0.00
9,725.0	65.80	272.23	9,657.3	6.6	-168.9	169.0	20.00	20.00	0.00
9,750.0	70.80	272.23	9,666.5	7.5	-192.1	192.3	20.00	20.00	0.00
9,775.0	75.80	272.23	9,673.7	8.4	-216.0	216.2	20.00	20.00	0.00
9,800.0	80.80	272.23	9,678.8	9.4	-240.5	240.7	20.00	20.00	0.00
9,825.0	85.80	272.23	9,681.7	10.3	-265.3	265.5	20.00	20.00	0.00
9,850.0	90.80	272.23	9,682.5	11.3	-290.3	290.5	20.00	20.00	0.00
9,854.0	91.60	272.23	9,682.4	11.5	-294.3	294.5	20.00	20.00	0.00
EOC - Hold to TD									
9,900.0	91.60	272.23	9,681.1	13.2	-340.2	340.5	0.00	0.00	0.00
10,000.0	91.60	272.23	9,678.3	17.1	-440.1	440.4	0.00	0.00	0.00
10,100.0	91.60	272.23	9,675.5	21.0	-540.0	540.4	0.00	0.00	0.00
10,200.0	91.60	272.23	9,672.7	24.9	-639.9	640.3	0.00	0.00	0.00
10,300.0	91.60	272.23	9,669.9	28.8	-739.7	740.3	0.00	0.00	0.00
10,400.0	91.60	272.23	9,667.1	32.7	-839.6	840.3	0.00	0.00	0.00
10,500.0	91.60	272.23	9,664.3	36.6	-939.5	940.2	0.00	0.00	0.00
10,600.0	91.60	272.23	9,661.5	40.5	-1,039.4	1,040.2	0.00	0.00	0.00
10,700.0	91.60	272.23	9,658.7	44.4	-1,139.3	1,140.1	0.00	0.00	0.00
10,800.0	91.60	272.23	9,656.0	48.3	-1,239.2	1,240.1	0.00	0.00	0.00
10,900.0	91.60	272.23	9,653.2	52.1	-1,339.1	1,340.1	0.00	0.00	0.00
11,000.0	91.60	272.23	9,650.4	56.0	-1,438.9	1,440.0	0.00	0.00	0.00
11,100.0	91.60	272.23	9,647.6	59.9	-1,538.8	1,540.0	0.00	0.00	0.00
11,200.0	91.60	272.23	9,644.8	63.8	-1,638.7	1,640.0	0.00	0.00	0.00
11,300.0	91.60	272.23	9,642.0	67.7	-1,738.6	1,739.9	0.00	0.00	0.00
11,400.0	91.60	272.23	9,639.2	71.6	-1,838.5	1,839.9	0.00	0.00	0.00
11,500.0	91.60	272.23	9,636.4	75.5	-1,938.4	1,939.8	0.00	0.00	0.00
11,600.0	91.60	272.23	9,633.6	79.4	-2,038.3	2,039.8	0.00	0.00	0.00
11,700.0	91.60	272.23	9,630.8	83.3	-2,138.1	2,139.8	0.00	0.00	0.00
11,800.0	91.60	272.23	9,628.0	87.1	-2,238.0	2,239.7	0.00	0.00	0.00
11,900.0	91.60	272.23	9,625.2	91.0	-2,337.9	2,339.7	0.00	0.00	0.00
12,000.0	91.60	272.23	9,622.4	94.9	-2,437.8	2,439.6	0.00	0.00	0.00
12,100.0	91.60	272.23	9,619.7	98.8	-2,537.7	2,539.6	0.00	0.00	0.00
12,200.0	91.60	272.23	9,616.9	102.7	-2,637.6	2,639.6	0.00	0.00	0.00
12,300.0	91.60	272.23	9,614.1	106.6	-2,737.4	2,739.5	0.00	0.00	0.00
12,400.0	91.60	272.23	9,611.3	110.5	-2,837.3	2,839.5	0.00	0.00	0.00
12,500.0	91.60	272.23	9,608.5	114.4	-2,937.2	2,939.4	0.00	0.00	0.00

Great White Directional Services

Planning Report

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Site:	Sec 34 - T25S - R26E	North Reference:	Grid
Well:	Hayduke 34 Fed #1	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 (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,600.0	91.60	272.23	9,605.7	118.3	-3,037.1	3,039.4	0.00	0.00	0.00
12,700.0	91.60	272.23	9,602.9	122.2	-3,137.0	3,139.4	0.00	0.00	0.00
12,800.0	91.60	272.23	9,600.1	126.0	-3,236.9	3,239.3	0.00	0.00	0.00
12,900.0	91.60	272.23	9,597.3	129.9	-3,336.8	3,339.3	0.00	0.00	0.00
13,000.0	91.60	272.23	9,594.5	133.8	-3,436.6	3,439.3	0.00	0.00	0.00
13,100.0	91.60	272.23	9,591.7	137.7	-3,536.5	3,539.2	0.00	0.00	0.00
13,200.0	91.60	272.23	9,588.9	141.6	-3,636.4	3,639.2	0.00	0.00	0.00
13,300.0	91.60	272.23	9,586.1	145.5	-3,736.3	3,739.1	0.00	0.00	0.00
13,400.0	91.60	272.23	9,583.4	149.4	-3,836.2	3,839.1	0.00	0.00	0.00
13,500.0	91.60	272.23	9,580.6	153.3	-3,936.1	3,939.1	0.00	0.00	0.00
13,541.2	91.60	272.23	9,579.4	154.9	-3,977.3	3,980.3	0.00	0.00	0.00
Hayduke #1 PBHL									
13,541.3	91.60	272.23	9,579.4	154.9	-3,977.4	3,980.4	0.00	0.00	0.00
TD at 13541.3									

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
Hayduke #1 PBHL	0.00	0.00	9,583.0	154.7	-3,977.4	397,125.66	555,640.43	32° 5' 30.370 N	104° 17' 13.729 W
- plan misses target center by 3.6usft at 13541.2usft MD (9579.4 TVD, 154.9 N, -3977.3 E)									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
9,260.0	9,260.0	Wolfcamp B		0.00	
9,439.2	9,439.0	Wolfcamp C		0.00	
9,544.6	9,538.0	Wolfcamp D		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,396.0	9,396.0	0.0	0.0	KOP 20°/100 DLS, 272.23° AZI
9,854.0	9,682.4	11.5	-294.3	EOC - Hold to TD
13,541.3	9,579.4	154.9	-3,977.4	TD at 13541.3

Cimarex Energy Co.

Project Eddy County (NM83E)
Site: Sec 34 - T25S - R26E
Well Hayduke 34 Fed #1
Wellbore Wellbore #1
Design Plan #1

WELL DETAILS: Hayduke 34 Fed #1

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	396971.00	559617.80	32° 5' 28.821 N	104° 16' 27.494 W
SHL: 800' FNL / 660' FEL					
BHL: 660' FNL / 660' FWL					



Azimuths to Grid North
Total Correction: 8.00°
Magnetic Field
Strength: 48637.4nT
Dip Angle: 59.99°
Date: 2010/03/22
Model: IGRF200510

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Point
Hayduke #1 PBHL	9583.0	154.7	-3977.4	397125.66	555640.43	

FORMATION TOP DETAILS

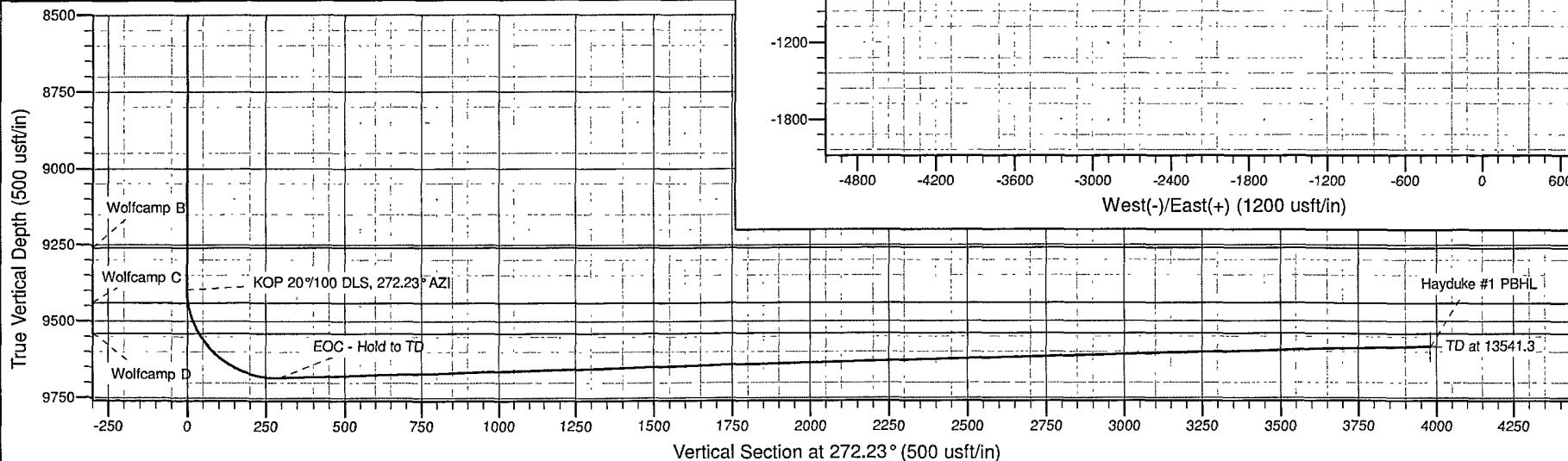
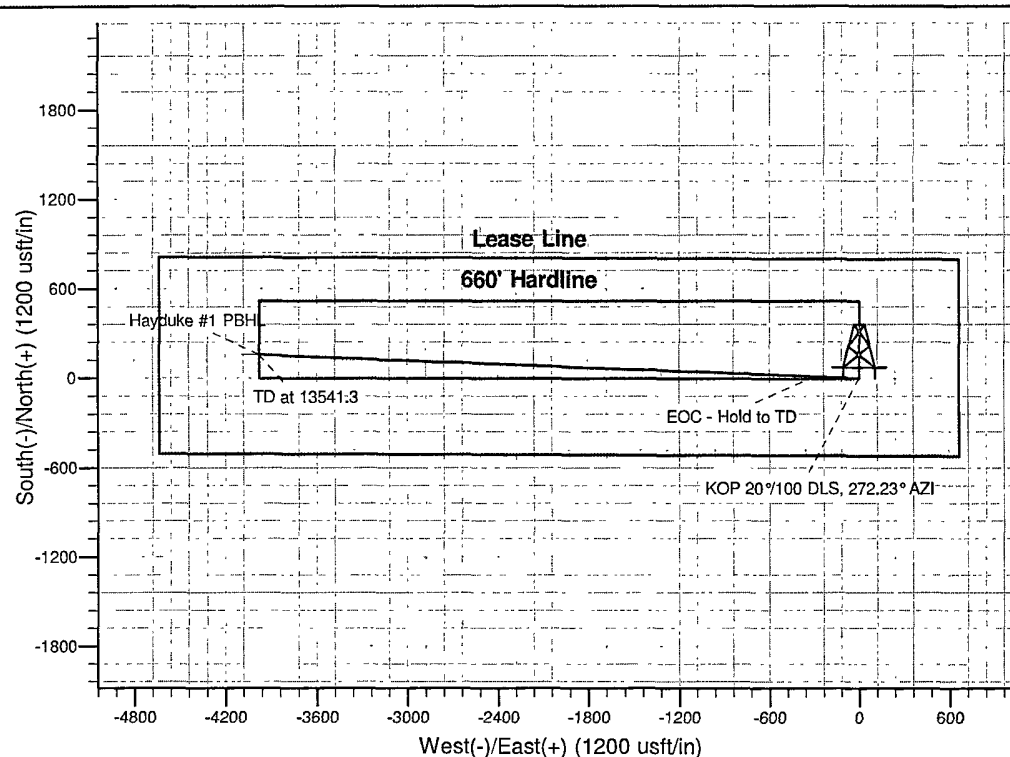
TVDPath	MDPath	Formation	DipAngle	DipDir
9260.0	9260.0	Wolfcamp B	0.00	
9439.0	9439.2	Wolfcamp C	0.00	
9538.0	9544.6	Wolfcamp D	0.00	

PLAN DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
9396.0	0.00	0.00	9396.0	0.0	0.0	0.00	0.00	0.0	
9854.0	91.60	272.23	9682.4	11.5	-294.3	20.00	272.23	294.5	
13541.3	91.60	272.23	9579.4	154.9	-3977.4	0.00	0.00	3980.4	Hayduke #1 PBHL

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
9396.0	9396.0	0.00	0.00	0.0	0.0	0.0	0.0	KOP 20°/100 DLS, 272.23° AZI
9682.4	9854.0	91.60	272.23	11.5	-294.3	294.5	294.5	EOC - Hold to TD
9579.4	13541.3	91.60	272.23	154.9	-3977.4	3980.4	3980.4	TD at 13541.3



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co. of Colorado
LEASE NO.:	NM-19423
WELL NAME & NO.:	Hayduke 34 Federal No. 1
SURFACE HOLE FOOTAGE:	800' FNL & 660' FEL
BOTTOM HOLE FOOTAGE	660' FNL & 660' FWL
LOCATION:	Section 34, T. 25 S., R 26 E., NMPM
COUNTY:	Eddy County, New Mexico

I. DRILLING

A. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

1. The minimum required fill of cement behind the 7 inch production casing is:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

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

2. The minimum required fill of cement behind the 4 1/2 inch liner is:

☒ Cement should come to top of the liner. 100' tie-back approved. Operator shall provide method of verification.

MAK 041610

13 3/8	surface csg in a	17 1/2	inch hole.		Design Factors		SURFACE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	48.00	H 40	ST&C	31.2	8.02	1.75	215	10,320	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,117				Tail Cmt	does	circ to sfc.	Totals:	215 10,320	
Comparison of Proposed to Minimum Required Cement Volumes									
Hole	Annular	Proposed	CuFt Cmt	Min	Excess	Drilling	Calc	Req'd	Min Dist
Size	Volume	Sx Cmt	Proposed	Cu Ft	% Cmt	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	500	670	198	239	8.60	569	2M	1.56

9 5/8	casing inside the	13 3/8	casing.	—	<u>Design Factors</u>		<u>INTERMEDIATE</u>		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	40.00	J 55	LT&C	6.84	2.60	0.76	1,900	76,000	
"B"							0	0	
"C"							0	0	
"D"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500						Totals:	1,900	76,000	
<u>The cement volume(s) proposed may achieve a top</u>					0	<u>feet from surface.</u>			
Hole	Annular	Proposed	CuFt Cmt	Min	Excess	Drilling	Calc	Req'd	Min Dist
Size	Volume	Sx Cmt	Proposed	Cu Ft	% Cmt	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1000	1958	627	212	10.00	2949	3M	0.81
Frac gradient of 2.08 OK for Burst									

7	casing inside the 9 5/8				<u>Design Factors</u>		<u>INTERMEDIATE</u>		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	26.00	P 110	LT&C	2.85	1.31	1.92	9,336	242,736	
"B"							0	0	
"C"							0	0	
"D"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,054						Totals:	9,336	242,736	
<u>The cement volume(s) proposed may achieve a top</u>				0	<u>feet from surface.</u>				
Hole	Annular	Proposed	CuFt Cmt	Min	Excess	Drilling	Calc	Req'd	Min Dist
Size	Volume	Sx Cmt	Proposed	Cu Ft	% Cmt	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.1503	1100	2304	1789	29	9.80	2397	3M	0.55
Tail cmt proposed for the csg below could overlap the previous csg shoe.									