

New Mexico Oil Conservation Division, District I
1625 N. French Drive
Hobbs, NM 88240

RECEIVED

AUG 02 2010

HOBSOCD

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 LC-060850, BHL LC-069832-B	
1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6 If Indian, Allottee or Tribe Name	
2 Name of Operator Cimarex Energy Co. of Colorado		7. If Unit or CA Agreement, Name and No. Pending	
3a. Address 600 N. Marienfeld St., Ste. 600; Midland, TX 79701		8. Lease Name and Well No. <u><37463></u> Independence 8 Federal Com No. 1 H	
3b. Phone No (include area code) 432-571-7800		9. API Well No. 30-005- <u>29151</u>	
4 Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 510 FNL & 2310 FEL <u>Unit B</u> At proposed prod. Zone 660 FNL & 330 FEL <u>Unit A</u> Horizontal Abo/Wolfcamp test		10. Field and Pool, or Exploratory Abo/Wolfcamp Wildcat <u><97722></u>	
11. Sec., T R. M. or Blk. and Survey or Area SHL 8-15S-31E, BHL 9-15S-31E		12. County or Parish Chaves	
13. State NM		14 Distance in miles and direction from nearest town or post office*	
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line if any) 510		16. No of acres in lease LC-060850 - 442.24 LC-069832-B - 280 acres	
17. Spacing Unit dedicated to this well N2NE 8-15S-31E & N2N2 9-15S-31E 240 acres		18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A	
19. Proposed Depth Pilot Hole 9100' MD 15765' TVD 8615'		20. BLM/BIA Bond No on File NM-2575	
21. Elevations (Show whether DF, KDB, RT, GL, etc) 4440' GR		22 Approximate date work will start* 06.01.10	
23. Estimated duration 25-30 days		24. Attachments ROSWELL CONTROLLED WATER BASIN	

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 <u>Zeno Farris</u>	Name (Printed/Typed) Zeno Farris	Date 03.24.10
Title Manager Operations Administration		
Approved By (Signature) <u>151 Angel Mayes</u>	Name (Printed/Typed) <u>Angel Mayes</u>	Date <u>07/28/10</u>
Title Assistant Field Manager, Lands And Minerals	Office ROSWELL 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)

DECLARED WATER BASIN

CLAMANT BEHIND THE 133"
CASING MUST BE CIRCULATED

WITNESS

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS ATTACHED

AUG 20 2010

APPROVED FOR 2 YEARS

RECEIVED

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brancos Rd., Artesia, NM 87410

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

AUG 02 2010
HOBBS

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-005-29151	Pool Code 97122	Pool Name Abo/Wolfcamp Wildcat
Property Code 37462	Property Name INDEPENDENCE "8" FEDERAL COM	Well Number 1
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 4440'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	8	15 S	31 E		510	NORTH	2310	EAST	CHAVES

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
A	9	15 S	31 E		660	NORTH	330	EAST	CHAVES

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
240		P	

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

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 to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Zeno Farris 3/24/2010
Signature Date

Zeno Farris
Printed Name

SURFACE LOCATION

Lat - N 33°02'10.49"
Long - W 103°50'34.85"
NMSPC- N 741074.7
E 691614.6
(NAD-83)

BOTTOM HOLE LOCATION

Lat - N 33°02'08.99"
Long - W 103°49'09.39"
NMSPC- N 740955.297
E 698874.044
(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.

NEW MEXICO
Professional Surveyor
2010

Date Surveyed: 3/24/2010
Signature & Seal of Professional Surveyor: [Signature]

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

Application to Drill
Independence 8 Federal Com No. 1
Cimarex Energy Co. of Colorado
Unit B, Section 8
T15S-R31E, Chaves 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 510 FNL & 2310 FEL, 8-15S-31E
BHL 660 FNL & 330 FEL, 9-15S-31E
- 2 Elevation above sea level: 4440' GR
- 3 Geologic name of surface formation: Quaternary Alluvium Deposits
- 4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.
- 5 Proposed drilling depth: Pilot Hole 9100' MD 15765' TVD 8615'
- 6 Estimated tops of geological markers:
- | | | | |
|------------|-------|--------------------|-------|
| Yates | 2470' | Abo Shale | 7425' |
| Queen | 3050' | Lower Abo Dolomite | 8715' |
| San Andres | 3745' | Wolfcamp LS | 8970' |
- 7 Possible mineral bearing formation:
Abo/Wolfcamp Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 340'	8.4 - 8.6	28	NC	FW
340' to 9100'	8.4-9.5	30-32	NC	FW, Brine
8235' to 15765'	9.0	28-32	May lose circ	Cut brine

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

Proposed drilling Plan

Drill 8 $\frac{3}{4}$ " hole to 9100' (pilot hole) and set 7" and 2 $\frac{7}{8}$ " fiberglass and cement as shown on page 2. Drill through cement and fiberglass tubing and kick off 6 $\frac{7}{8}$ " lateral @ 8335.' Drill 6 $\frac{7}{8}$ " hole to MD 15765' and TVD 8615.' Install 4 $\frac{1}{2}$ " Peak Completion Liner.

Application to Drill
Independence 8 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 Unit B, Section 8
 T15S-R31E, Chaves County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth		Casing OD		Weight	Collar	Grade
Surface	17½"	0'	to 340'	New	13⅜"	48#	STC	H-40
Pilot Hole	8¾"	0'	to 8335'	New	7"	26#	LTC	P-110
Fiberglass	8¾"	8335'	to 9100'	New	2⅞"	2.18#		IJ
Lateral Pt. 1	6⅞"	8235'	to 8694'	New	4½"	11.6#	BTC	P-110
Lateral Pt. 2	6⅞"	8694'	to 15765'	New	4½"	11.6#	LTC	P-110

10 Cementing:

Surface

Lead: 110 sx Premium Plus + 1% CaCl₂ + 0.125# Poly-e-flake (wt 12.5, yld 1.97)

Tail: 220 sx Premium Plus + 2% CaCl₂ (wt 14.8, yld 1.35)

TOC Surface

Pilot Hole

Lead: 370 sx Interfill H + 0.1% HR-7 + 0.125# Poly-e-flake (wt 11.9, yld 2.49)

Tail: 270 sx Super H + 0.5% Halad-344 + 0.4% CFR-3 + 1# Salt + 5# Gilsonite + 0.125# Poly-e-flake + 0.35% HR-7 (wt 13.2, yld 1.61)

TOC Surface

Lateral

No cement needed. Peak completion assembly.

Fresh water zones will be protected by setting 13⅜" casing at 340' and cementing to surface. Hydrocarbon zones will be protected by setting 7" casing at 8335' and fiberglass to 9100' and cementing to surface.

Intermediate Contingency:

If wellbore integrity cannot be maintained while drilling the 8¾" hole, it will be reamed out to 12¼" and new 9⅝" casing contingency string will be run as follows:

Hole Size	Depth		Casing OD		Weight	Thread	Collar	Grade
12¼"	0'	to 3950'	New	9⅝"	40#	8-R	LTC	J-55

Contingency Cementing Plan:

Lead: 950 sx Econocem + 3% Salt + 2% CaCl₂ + 3# Gilsonite (wt 11.7, yld 2.06)

Tail: 215 sx Premium Plus + 1% CaCl₂ (wt 14.8, yld 1.34)

TOC Surface

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

Application to Drill
Independence 8 Federal Com No. 1
Cimarex Energy Co. of Colorado
Unit B, Section 8
T15S-R31E, Chaves County, NM

11 Pressure control Equipment:

Exhibit "E". A 13 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 6000.' A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

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

The BOP will be tested to 3000 psi by an independent service company.

12 Testing, Logging and Coring Program:

- A. Mud logging 2 man unit from 3950' to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
- C. No DSTs or cores are planned at this time.

13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H₂S from the surface to the Abo 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 **2300 psi** Estimated BHT **110°**

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

Drilling expected to take 10-15 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.

Abo/Wolfcamp pay will be perforated and stimulated.

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

SR & A

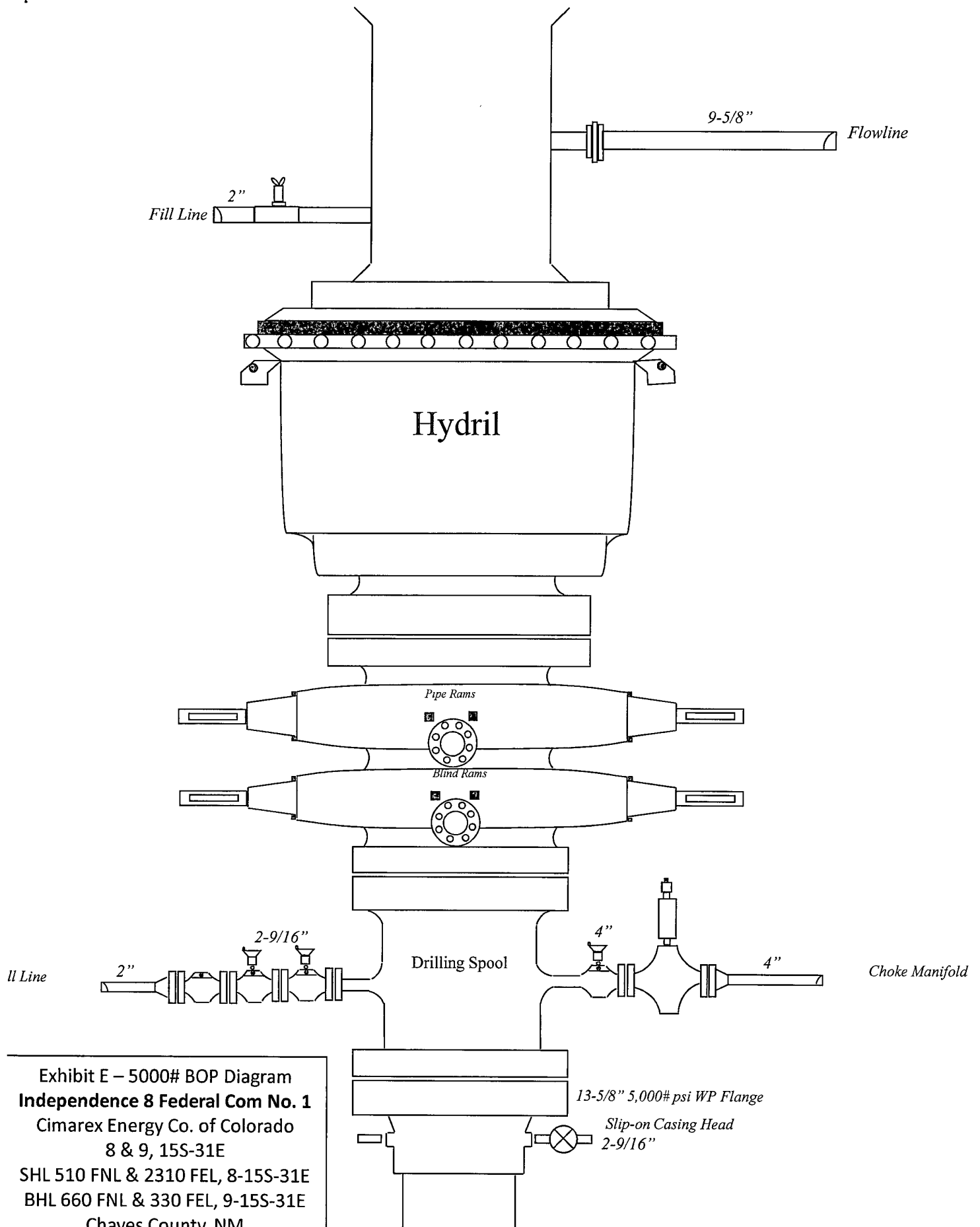


Exhibit E – 5000# BOP Diagram
Independence 8 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 8 & 9, 15S-31E
 SHL 510 FNL & 2310 FEL, 8-15S-31E
 BHL 660 FNL & 330 FEL, 9-15S-31E
 Chaves County, NM

**DRILLING OPERATIONS
CHOKE MANIFOLD
SM SERVICE**

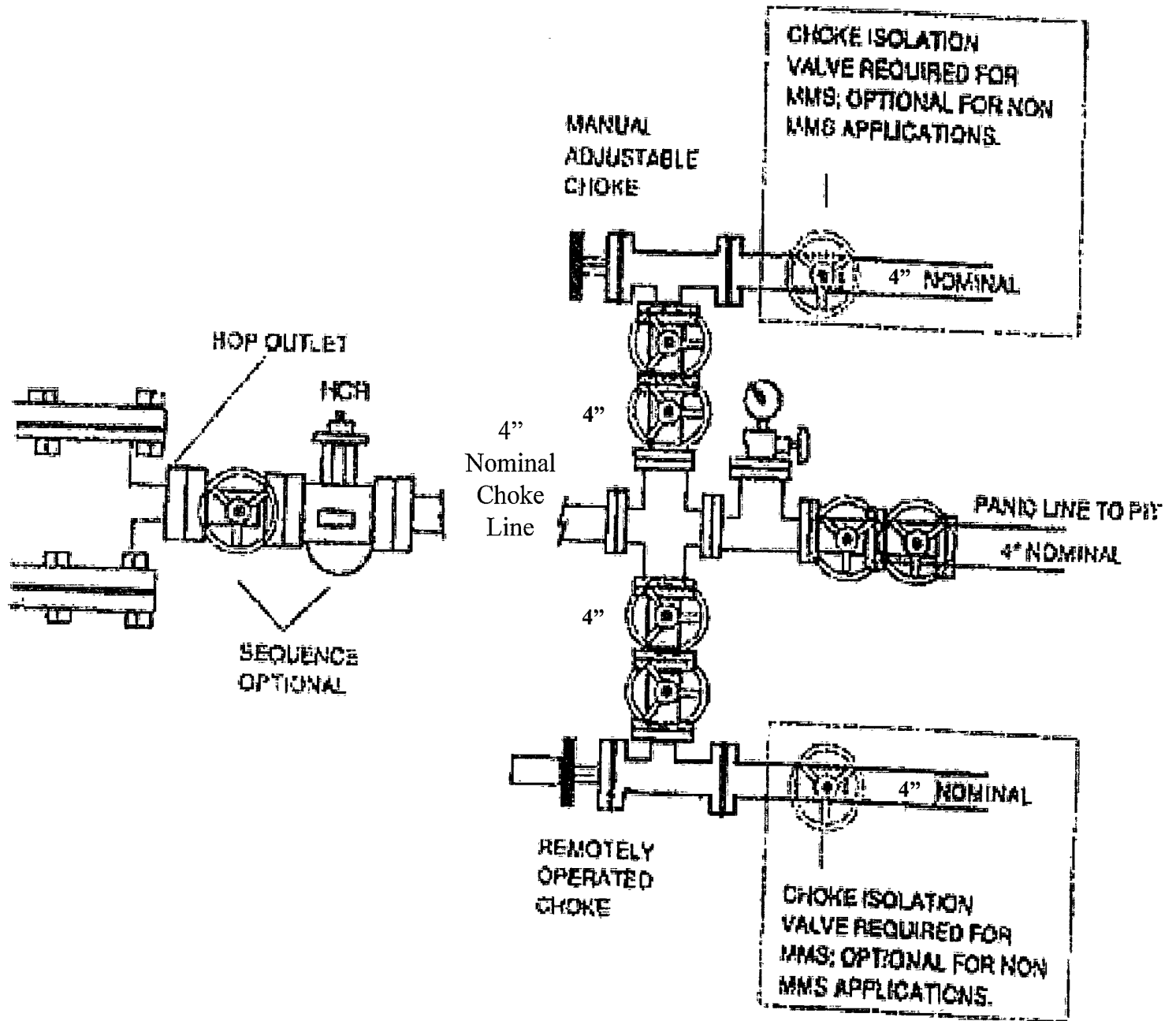


Exhibit E-1 – Choke Manifold Diagram
Independence 8 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 8 & 9, 15S-31E
 SHL 510 FNL & 2310 FEL, 8-15S-31E
 BHL 660 FNL & 330 FEL, 9-15S-31E
 Chaves County, NM



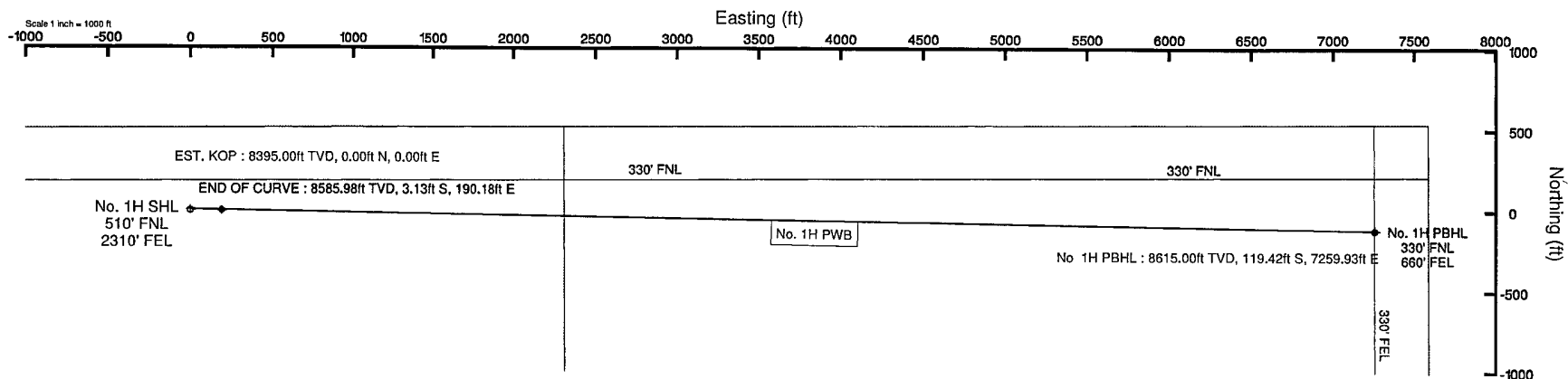
Cimarex Energy Co.

Location: Chaves County, NM
Field: (Independence) Sec 8, T15S, R31E
Facility: Independence 8 Fed Com No. 1H

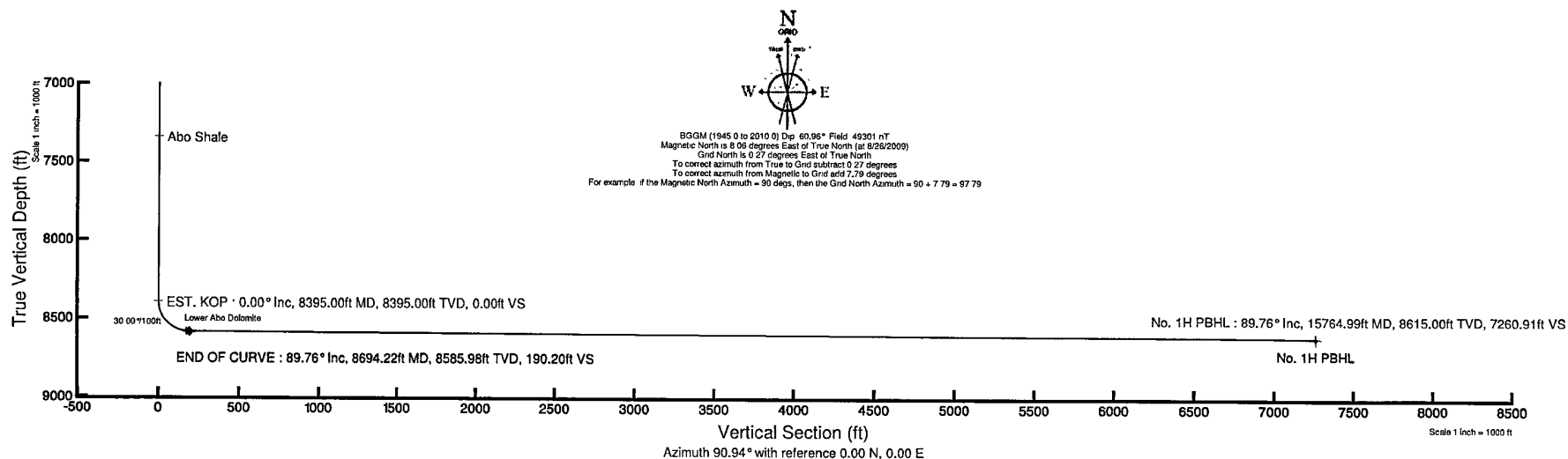
Slot: No. 1H SHL
Well: No. 1H
Wellbore: No. 1H PWB

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	90.942	0.00	0.00	0.00	0.00	0.00
EST. KOP	8395.00	0.000	90.942	8395.00	0.00	0.00	0.00	0.00
END OF CURVE	8694.22	89.765	90.942	8585.98	-3.13	190.18	30.00	190.20
No. 1H PBHL	15764.99	89.765	90.942	8615.00	-119.42	7259.93	0.00	7260.91



Plot reference wellpath is Plan #1	
True vertical depths are referenced to Rig on No. 1H SHL (RT)	Grid System NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 1H SHL (RT)	North Reference Grid north
Rig on No. 1H SHL (RT) to Mean Sea Level 4458 feet	Scale True distance
Mean Sea Level to Mud line (Facility Independence 8 Fed Com No. 1H) -4440 feet	Depths are in feet
Coordinates are in feet referenced to Facility Center	Created by Victor Hernandez on 8/27/2009





Declination & Convergence Report

Slot: No. 1H SHL

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FIELD INFORMATION

Field: (Independence) Sec 8, T15S, R31E	Operator: Cimarex Energy Co.	Area: Chaves County, NM
Field Grid System: NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	North Reference: Grid North	Scale: True Distance
Field Reference	Horizontal Ref Pt: Field Center	Vertical Ref Pt: Mean Sea Level
	Easting: 691614.60USft Northing: 741074.70USft	Lat: 33°02'10.489"N Long: 103°50'34.646"W

FACILITY INFORMATION

Facility: Independence 8 Fed Com No. 1H	Horizontal Ref Pt: Facility Center			Vertical Ref Pt: Facility Vertical Datum	
	Easting: 691614.60USft Northing: 741074.70USft			Lat: 33°02'10.489"N Long: 103°50'34.646"W	
Horiz Offset from Field Ref 0.00ft North 0.00ft East	Facility Vert Ref Pt	Field Vert Ref Pt	Distance	Facility Vertical Datum to Mud Line: 0.00ft	
	Facility Vertical Datum	to Mean Sea Level	4440.00ft		
Facility Location Uncertainty	Horizontal Error Radius: 3.000ft			Vertical Error Radius: 3.000ft	

SLOT INFORMATION

Slot Name	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Elev above Fac [ft]	Elev above Mudline [ft]	Active Decl [°]	Grid Conv [°]	Scale Factor	Horiz Err Radius [ft]	Vert Err Radius [ft]
No. 1H SHL	0.00	0.00	691614.60	741074.70	33°02'10.489"N	103°50'34.646"W	18.00	18.00	8.06E	0.27E	0.999935	2.00	1.00

DECLINATION AND CONVERGENCE INFORMATION

Data Source: BGGM (1945.0 to 2010.0)	Calculation Date: 8/26/2009	
Magnetic Flux Dip Angle: 60.96°	Magnetic Field Strength: 49301 nT	
Declination: 8.06° East	Convergence: 0.27° East	
Magnetic North is 8.06 degrees East of True North		
Grid North is 0.27 degrees East of True North		
To correct azimuth from True to Grid subtract 0.27 degrees		
To correct azimuth from Magnetic to Grid add 7.79 degrees		
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.79 = 97.79		



Planned Wellpath Report

Plan #1
Page 1 of 5



REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Independence) Sec 8, T15S, R31E	Wellbore	No. 1H PWB
Facility	Independence 8 Fed Com No. 1H		

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999935	Report Generated	8/26/2009 at 3:17:22 PM
Convergence at slot	0.27° East	Database/Source file	WA_Midland/No. 1H_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	691614.60	741074.70	33°02'10.489"N	103°50'34.646"W
Facility Reference Pt			691614.60	741074.70	33°02'10.489"N	103°50'34.646"W
Field Reference Pt			691614.60	741074.70	33°02'10.489"N	103°50'34.646"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H SHL (RT) to Facility Vertical Datum	18.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 1H SHL (RT) to Mean Sea Level	4458.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 1H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	90.94°



Planned Wellpath Report

Plan #1
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REFERENCE WELLPATH IDENTIFICATION			
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Area	Chaves County, NM	Well	No. 1H
Field	(Independence) Sec 8, T15S, R31E	Wellbore	No. 1H PWB
Facility	Independence 8 Fed Com No. 1H		

WELLPATH DATA (82 stations). † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]	Comments
0.00	0.000	90.942	0.00	0.00	0.00	0.00	691614.60	741074.70	0.00	Tie On
2312.00†	0.000	90.942	2312.00	0.00	0.00	0.00	691614.60	741074.70	0.00	Yates
3090.00†	0.000	90.942	3090.00	0.00	0.00	0.00	691614.60	741074.70	0.00	Queen
3940.00†	0.000	90.942	3940.00	0.00	0.00	0.00	691614.60	741074.70	0.00	San Andres
7340.00†	0.000	90.942	7340.00	0.00	0.00	0.00	691614.60	741074.70	0.00	Abo Shale
8395.00	0.000	90.942	8395.00	0.00	0.00	0.00	691614.60	741074.70	0.00	EST. KOP
8495.00†	30.000	90.942	8490.49	25.59	-0.42	25.58	691640.18	741074.28	30.00	
8595.00†	60.000	90.942	8560.40	95.49	-1.57	95.48	691710.07	741073.13	30.00	
8675.59†	84.176	90.942	8585.00	171.60	-2.82	171.58	691786.17	741071.88	30.00	Lower Abo Dolomite
8694.22†	89.765	90.942	8585.98	190.20	-3.13	190.18	691804.76	741071.57	30.00	END OF CURVE
8695.00†	89.765	90.942	8585.99	190.99	-3.14	190.96	691805.55	741071.56	0.00	
8795.00†	89.765	90.942	8586.40	290.99	-4.79	290.95	691905.53	741069.91	0.00	
8895.00†	89.765	90.942	8586.81	390.98	-6.43	390.93	692005.51	741068.27	0.00	
8995.00†	89.765	90.942	8587.22	490.98	-8.08	490.92	692105.48	741066.63	0.00	
9095.00†	89.765	90.942	8587.63	590.98	-9.72	590.90	692205.46	741064.98	0.00	
9195.00†	89.765	90.942	8588.04	690.98	-11.36	690.89	692305.44	741063.34	0.00	
9295.00†	89.765	90.942	8588.45	790.98	-13.01	790.87	692405.42	741061.69	0.00	
9395.00†	89.765	90.942	8588.86	890.98	-14.65	890.86	692505.40	741060.05	0.00	
9495.00†	89.765	90.942	8589.27	990.98	-16.30	990.85	692605.38	741058.40	0.00	
9595.00†	89.765	90.942	8589.68	1090.98	-17.94	1090.83	692705.36	741056.76	0.00	
9695.00†	89.765	90.942	8590.09	1190.98	-19.59	1190.82	692805.34	741055.11	0.00	
9795.00†	89.765	90.942	8590.50	1290.98	-21.23	1290.80	692905.32	741053.47	0.00	
9895.00†	89.765	90.942	8590.91	1390.98	-22.88	1390.79	693005.29	741051.82	0.00	
9995.00†	89.765	90.942	8591.32	1490.97	-24.52	1490.77	693105.27	741050.18	0.00	
10095.00†	89.765	90.942	8591.73	1590.97	-26.17	1590.76	693205.25	741048.53	0.00	
10195.00†	89.765	90.942	8592.14	1690.97	-27.81	1690.74	693305.23	741046.89	0.00	
10295.00†	89.765	90.942	8592.55	1790.97	-29.46	1790.73	693405.21	741045.25	0.00	
10395.00†	89.765	90.942	8592.96	1890.97	-31.10	1890.72	693505.19	741043.60	0.00	
10495.00†	89.765	90.942	8593.37	1990.97	-32.75	1990.70	693605.17	741041.96	0.00	
10595.00†	89.765	90.942	8593.78	2090.97	-34.39	2090.69	693705.15	741040.31	0.00	



Planned Wellpath Report

Plan #1
Page 3 of 5



REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Independence) Sec 8, T15S, R31E	Wellbore	No. 1H PWB
Facility	Independence 8 Fed Com No. 1H		

WELLPATH DATA (82 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]	Comments
10695.00†	89.765	90.942	8594.19	2190.97	-36.04	2190.67	693805.13	741038.67	0.00	
10795.00†	89.765	90.942	8594.61	2290.97	-37.68	2290.66	693905.10	741037.02	0.00	
10895.00†	89.765	90.942	8595.02	2390.97	-39.32	2390.64	694005.08	741035.38	0.00	
10995.00†	89.765	90.942	8595.43	2490.97	-40.97	2490.63	694105.06	741033.73	0.00	
11095.00†	89.765	90.942	8595.84	2590.97	-42.61	2590.62	694205.04	741032.09	0.00	
11195.00†	89.765	90.942	8596.25	2690.96	-44.26	2690.60	694305.02	741030.44	0.00	
11295.00†	89.765	90.942	8596.66	2790.96	-45.90	2790.59	694405.00	741028.80	0.00	
11395.00†	89.765	90.942	8597.07	2890.96	-47.55	2890.57	694504.98	741027.16	0.00	
11495.00†	89.765	90.942	8597.48	2990.96	-49.19	2990.56	694604.96	741025.51	0.00	
11595.00†	89.765	90.942	8597.89	3090.96	-50.84	3090.54	694704.94	741023.87	0.00	
11695.00†	89.765	90.942	8598.30	3190.96	-52.48	3190.53	694804.92	741022.22	0.00	
11795.00†	89.765	90.942	8598.71	3290.96	-54.13	3290.51	694904.89	741020.58	0.00	
11895.00†	89.765	90.942	8599.12	3390.96	-55.77	3390.50	695004.87	741018.93	0.00	
11995.00†	89.765	90.942	8599.53	3490.96	-57.42	3490.49	695104.85	741017.29	0.00	
12095.00†	89.765	90.942	8599.94	3590.96	-59.06	3590.47	695204.83	741015.64	0.00	
12195.00†	89.765	90.942	8600.35	3690.96	-60.71	3690.46	695304.81	741014.00	0.00	
12295.00†	89.765	90.942	8600.76	3790.96	-62.35	3790.44	695404.79	741012.35	0.00	
12395.00†	89.765	90.942	8601.17	3890.95	-63.99	3890.43	695504.77	741010.71	0.00	
12495.00†	89.765	90.942	8601.58	3990.95	-65.64	3990.41	695604.75	741009.06	0.00	
12595.00†	89.765	90.942	8601.99	4090.95	-67.28	4090.40	695704.73	741007.42	0.00	
12695.00†	89.765	90.942	8602.40	4190.95	-68.93	4190.39	695804.70	741005.78	0.00	
12795.00†	89.765	90.942	8602.81	4290.95	-70.57	4290.37	695904.68	741004.13	0.00	
12895.00†	89.765	90.942	8603.22	4390.95	-72.22	4390.36	696004.66	741002.49	0.00	
12995.00†	89.765	90.942	8603.63	4490.95	-73.86	4490.34	696104.64	741000.84	0.00	
13095.00†	89.765	90.942	8604.04	4590.95	-75.51	4590.33	696204.62	740999.20	0.00	
13195.00†	89.765	90.942	8604.45	4690.95	-77.15	4690.31	696304.60	740997.55	0.00	
13295.00†	89.765	90.942	8604.86	4790.95	-78.80	4790.30	696404.58	740995.91	0.00	
13395.00†	89.765	90.942	8605.27	4890.95	-80.44	4890.28	696504.56	740994.26	0.00	
13495.00†	89.765	90.942	8605.68	4990.95	-82.09	4990.27	696604.54	740992.62	0.00	
13595.00†	89.765	90.942	8606.10	5090.94	-83.73	5090.26	696704.51	740990.97	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Independence) Sec 8, T15S, R31E	Wellbore	No. 1H PWB
Facility	Independence 8 Fed Com No. 1H		

WELLPATH DATA (82 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]	Comments
13695.00†	89.765	90.942	8606.51	5190.94	-85.38	5190.24	696804.49	740989.33	0.00	
13795.00†	89.765	90.942	8606.92	5290.94	-87.02	5290.23	696904.47	740987.69	0.00	
13895.00†	89.765	90.942	8607.33	5390.94	-88.67	5390.21	697004.45	740986.04	0.00	
13995.00†	89.765	90.942	8607.74	5490.94	-90.31	5490.20	697104.43	740984.40	0.00	
14095.00†	89.765	90.942	8608.15	5590.94	-91.95	5590.18	697204.41	740982.75	0.00	
14195.00†	89.765	90.942	8608.56	5690.94	-93.60	5690.17	697304.39	740981.11	0.00	
14295.00†	89.765	90.942	8608.97	5790.94	-95.24	5790.16	697404.37	740979.46	0.00	
14395.00†	89.765	90.942	8609.38	5890.94	-96.89	5890.14	697504.35	740977.82	0.00	
14495.00†	89.765	90.942	8609.79	5990.94	-98.53	5990.13	697604.33	740976.17	0.00	
14595.00†	89.765	90.942	8610.20	6090.94	-100.18	6090.11	697704.30	740974.53	0.00	
14695.00†	89.765	90.942	8610.61	6190.94	-101.82	6190.10	697804.28	740972.88	0.00	
14795.00†	89.765	90.942	8611.02	6290.93	-103.47	6290.08	697904.26	740971.24	0.00	
14895.00†	89.765	90.942	8611.43	6390.93	-105.11	6390.07	698004.24	740969.59	0.00	
14995.00†	89.765	90.942	8611.84	6490.93	-106.76	6490.05	698104.22	740967.95	0.00	
15095.00†	89.765	90.942	8612.25	6590.93	-108.40	6590.04	698204.20	740966.31	0.00	
15195.00†	89.765	90.942	8612.66	6690.93	-110.05	6690.03	698304.18	740964.66	0.00	
15295.00†	89.765	90.942	8613.07	6790.93	-111.69	6790.01	698404.16	740963.02	0.00	
15395.00†	89.765	90.942	8613.48	6890.93	-113.34	6890.00	698504.14	740961.37	0.00	
15495.00†	89.765	90.942	8613.89	6990.93	-114.98	6989.98	698604.11	740959.73	0.00	
15595.00†	89.765	90.942	8614.30	7090.93	-116.63	7089.97	698704.09	740958.08	0.00	
15695.00†	89.765	90.942	8614.71	7190.93	-118.27	7189.95	698804.07	740956.44	0.00	
15764.99	89.765	90.942	8615.00†	7260.91	-119.42	7259.93	698874.04	740955.29	0.00	No. 1H PBHL



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Chaves County, NM	Well	No. 1H
Field	(Independence) Sec 8, T15S, R31E	Wellbore	No. 1H PWB
Facility	Independence 8 Fed Com No. 1H		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 1H PBHL	15764.99	8615.00	-119.42	7259.93	698874.04	740955.29	33°02'08.964"N	103°49'09.376"W	point

SURVEY PROGRAM Ref Wellbore: No. 1H PWB Ref Wellpath: Plan #1				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	8694.00	NaviTrak (Standard)		No. 1H PWB
8694.00	15764.99	AutoTrak G3 (Standard)		No. 1H PWB