

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010**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.*5. Lease Serial No.
NMNM114350

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

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

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other8. Well Name and No.
KLEIN 33 FEDERAL COM 6H

2. Name of Operator

Contact: TERRI STATHEM

CIMAREX ENERGY COMPANY OF CO-Mail: tstathem@cimarex.com

9. API Well No.

30-015-42034-00-X1

3a. Address

600 NORTH MARIENFELD STREET SUITE 600
MIDLAND, TX 79701

3b. Phone No. (include area code)

Ph: 432-620-1936

10. Field and Pool, or Exploratory
WILDCAT

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

Sec 33 T26S R27E Lot 3 210FSL 2020FWL
32.000216 N Lat, 104.114845 W Lon

11. County or Parish, and State

EDDY COUNTY, NM

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

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

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplate 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 recomplate 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 Energy Co. respectfully requests approval to change the SHL for the Klein 33 Federal Com #6H. The SHL will move 20' West in order to accommodate the rig.

Proposed SHL: 210' FSL & 2000' FWL, Sec. 33, 26S, 27E - Eddy County, NM

Cimarex also proposes to change the target formation to Wildcat Wolfcamp and classify as a GAS well.

Please see attached Wolfcamp drilling plan information:
C102, Drilling Plan, Directional Plan, BOP & Manifold revisions.

NSL & NSP pending with NMOCD.

NM OIL CONSERVATION
ARTESIA DISTRICTAccepted for record
NMOCD 11 DEC 03 2014

RECEIVED

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Surface OK, 11/24/14

Eng OK CRW 11/25/14

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #276738 verified by the BLM Well Information System

For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad

Committed to AFMSS for processing by CHRISTOPHER WALLS on 11/07/2014 (15CRW0027SE)

Name (Printed/Typed) TERRI STATHEM

Title COORDINATOR REGULATORY COMPLIA

Signature (Electronic Submission)

Date 11/07/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

Date

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.

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

District I:
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II:
811 S. First St., Artesia, NM 88210
Phone: (505) 748-1283 Fax: (575) 748-9720
District III:
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV:
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30015-42034		2 Pool Code 98017		3 Pool Name WC-015; 5262728A; WC	
4 Property Code 40358		5 Property Name KLEIN 33 FEDERAL COM		6 Well Number 6H	
7 OGRID No. 215099		8 Operator Name CIMAREX ENERGY CO.		9 Elevation 3185.5'	

"Surface Location

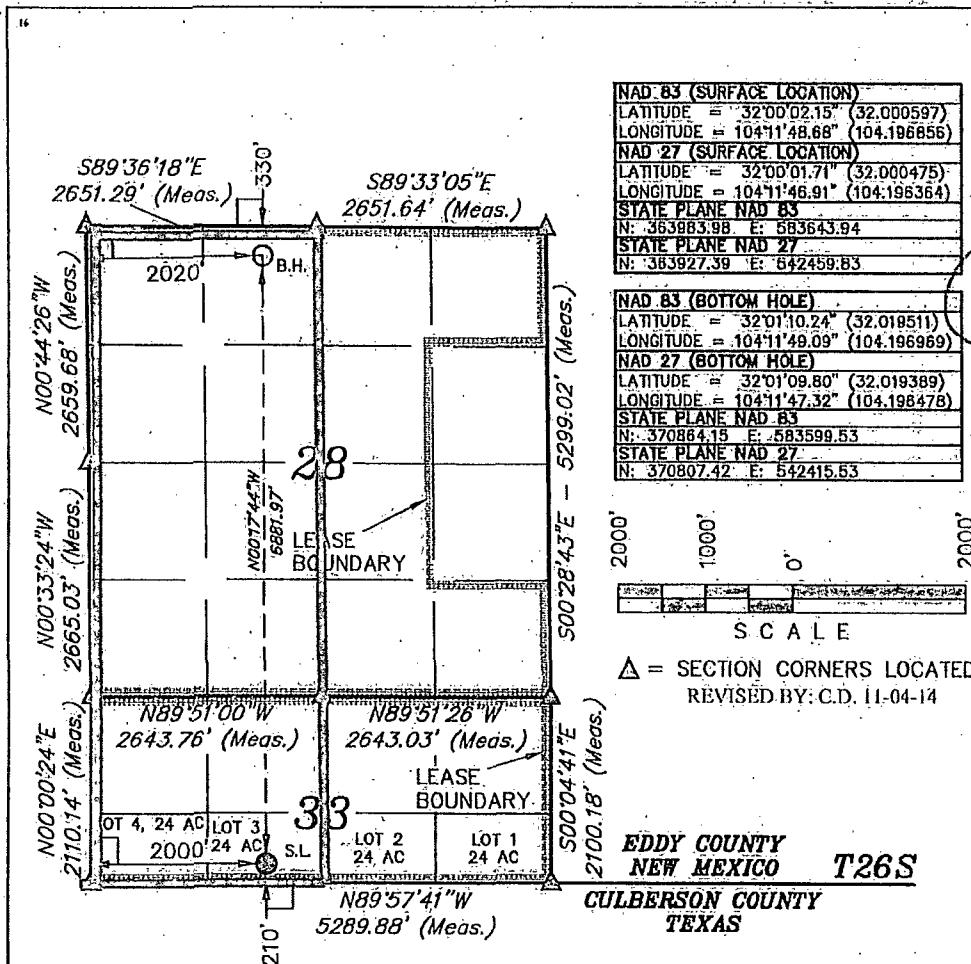
UT or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
3	33	26S	27E		210	SOUTH	2000	WEST	EDDY

"Bottom Hole Location If Different From Surface

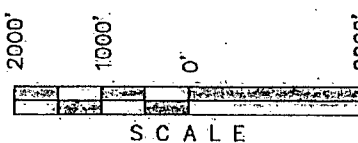
UT or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	28	26S	27E		330	NORTH	2020	WEST	EDDY

10 Dedicated Acres 446.77	11 Joint or Infill	12 Consolidation Code	13 Order No. NSL & NSP pending
------------------------------	--------------------	-----------------------	--

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.



NAD 83 (SURFACE LOCATION)	
LATITUDE =	32°00'02.15" (32.000597)
LONGITUDE =	104°11'48.68" (104.196856)
NAD 27 (SURFACE LOCATION)	
LATITUDE =	32°00'01.71" (32.000475)
LONGITUDE =	104°11'48.91" (104.196864)
STATE PLANE NAD 83	
N:	363983.98 E: 583643.94
STATE PLANE NAD 27	
N:	363927.39 E: 582459.83
NAD 83 (BOTTOM HOLE)	
LATITUDE =	32°01'10.24" (32.019511)
LONGITUDE =	104°11'49.09" (104.196869)
NAD 27 (BOTTOM HOLE)	
LATITUDE =	32°01'09.80" (32.019389)
LONGITUDE =	104°11'47.32" (104.196478)
STATE PLANE NAD 83	
N:	370864.15 E: 583599.53
STATE PLANE NAD 27	
N:	370807.42 E: 582415.53



Δ = SECTION CORNERS LOCATED.
REVISED BY: C.D. 11-04-14

EDDY COUNTY
NEW MEXICO T26S
CULBERSON COUNTY
TEXAS

"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 released mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this 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.

Signature: *Terri Stathem* Date: 11/6/14

Printed Name: Terri Stathem

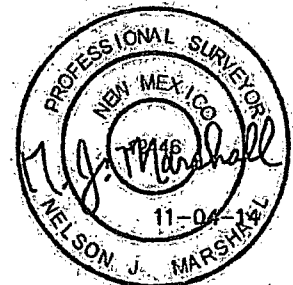
Email Address: tstatthem@cimarèx.com

"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.

August 29, 2013

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number:

Application to Drill
Klein 33 Federal Com 6H
 Cimarex Energy Co.
 UL: 3, Sec. 33, 26S, 27E
 Eddy Co., 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 210 FSL & 2020 FWL, Sec. 33, 26S, 27E
 BHL 330 FNL & 2020 FWL; Sec. 28, 26S, 27E
- 2. Elevation Above Sea Level:** 3,186' 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:** 16,357 MD 9,760 TVD Pilot Hole TD: N/A
- 6. Estimated Tops of Geological Markers:**

Formation	Est Top	Bearing
Rustler		0 N/A
Salado	1281	N/A
Castille	1889	N/A
Bell Canyon	2061	N/A
Cherry Canyon	3057	N/A
Brushy Canyon	4218	N/A
Brushy Canyon Lower	5470	N/A
Bone Spring	5710	Hydrocarbons
Bone Spring A Shale	5817	Hydrocarbons
Bone Spring C Shale	6318	Hydrocarbons
1st Bone Spring Ss	6621	Hydrocarbons
2nd Bone Spring Ss	7092	Hydrocarbons
2nd Bone Ss	7925	Hydrocarbons
3rd Bone Spring SS	8397	Hydrocarbons
Wolfcamp	8732	Hydrocarbons
Wolfcamp B	9368	Hydrocarbons
Wolfcamp C	9517	Hydrocarbons
Wolfcamp D	9656	Hydrocarbons
Wolfcamp D Horz Target	9799	Hydrocarbons
Wolfcamp E	10268	Hydrocarbons

7. Possible Mineral Bearing Formation: Shown above

7A. OSE Ground Water Estimated Depth: 100'

8. Casing Program:

Name	Casing Depth From (ft)	Casing Setting Depth (ft) MD	Casing Setting Depth (ft) TVD	Open Hole Size (inches)	Casing Size (inches)	Casing Weight (lb/ft)	Casing Grade	Thread	Condition	BHP (psig)	Anticipated Mud Weight (ppg)	Collapse SF at Full Evacuation(1.125)	Collapse SF at 1/3 Evacuation(1.125)	Burst SF (1.125)	Cumulative Air Weight	Cumulative Bouyed Weight (lbs)	Bouyant Tension SF (1.8)
Surface	0	400	400	17 1/2	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	New	172	8.3	4.29		10.02	19,200	16,767	19.20
Intermediate	0	1925	1925	12 1/4	9-5/8"	36.00	J-55	LT&C	New	1001	10.0		2.02	3.52	69,300	58,720	7.71
Production	0	9198	9198	8 3/4	7"	32.00	L-80	LT&C	New	4304	9.0	2.00		2.10	309,152	266,673	2.52
Production	9198	9825	9661	8 3/4	7"	32.00	P-110	BT&C	New	4521	9.0	2.38		2.57	14,816	12,780	80.20
Completion System	9198	16356	9760	6	4-1/2"	11.60	P-110	BT&C	New	6090	12.0	1.24		1.76	6,519	5,325	68.92

Application to Drill
Klein 33 Federal Com 6H
 Cimarex Energy Co.
 UL: 3, Sec. 33, 26S, 27E
 Eddy Co., NM

8A. Casing Design and Casing Loading Assumptions:

Surface	Tension	A 1.8 design factor with effects of buoyancy: 8.30 ppg.
	Collapse	A 1.125 design factor with full internal evacuation and a collapse force equal to a 8.30 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Intermediate	Tension	A 1.8 design factor with effects of buoyancy: 10.00 ppg.
	Collapse	A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a 10.00 ppg mud gradient. During the running of the casing, the operator will stop and fill the casing as need to ensure it does not collapse.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.
Production and/or Completion System	Tension	A 1.8 design factor with effects of buoyancy: 9.00 ppg.
	Collapse	A 1.125 design factor with full internal evacuation of next casing string with a collapse force equal to a 9.00 ppg mud gradient.
	Burst	A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.

Note: The liner SFT is calculated for the worse case scenario of running in the hole. 4 1/2" completion system will be ran in the hole and cemented from the 4 1/2" shoe up to previous 7" casing shoe with a 10% OH Excess. A liner hanger with an isolation packer or HES versaset liner hanger will be set at the top of the 4 1/2" completion system close to the KOP. The length of liner overlap is to help with the fracture treatment efficiency during the pumping down of guns/plugs.

9. Cementing Program:

Casing Type	Type	Sacks	Yield	Weight	Cubic Feet	Cement Blend
Surface	Lead	60	1.75	13.50		104 Class C + Bentonite + Calcium Chloride + LCM, 8.829 gps water
	Tail	195	1.34	14.80		260 Class C + LCM, 6.320 gps water
	TOC: 0		31% Excess			Centralizers per Onshore Order 2.III.B.1f
Intermediate	Lead	352	1.88	12.90		661 35:65 (Poz:C) + Salt + Bentonite + LCM + Retarder, 9.650 gps water
	Tail	112	1.34	14.80		150 Class C + Retarder + LCM, 6.320 gps water
	TOC: 0		44% Excess			
Production	Lead	584	2.40	11.90		1400 35:65(Poz:H) + Salt + Sodium Metasilicate + Bentonite + LCM + Retarder, 13.800 gps water
	Tail	85	1.23	14.50		104 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + Retarder + Antifoam, 5.530 gps water
	TOC: 1725		24% Excess			No centralizers planned in the lateral section. 1 every jt from EOC to KOP. 1 every 4th joint from KOP to 500' inside previous casing.
Completion System	Tail	544	1.24	14.50		674 50:50(Poz:H) + Bentonite + Salt + Fluid Loss + Dispersant + LCM + Retarder, 5.550 gps water
	TOC: 9198		10% Excess			No centralizers planned in the lateral section.

Cement volumes will be adjusted depending on hole size

9a. Proposed Drilling Plan:

Pilot Hole TD: No Pilot KOP: 9,199' EOC: 9,491'

Set Surface and Intermediate casing strings. Drill production hole to KOP. Continue drilling lateral through the curve to TD. Run prod casing & cement.

Application to Drill
Klein 33 Federal Com 6H
Cimarex Energy Co.
UL: 3, Sec. 33, 26S, 27E
Eddy Co., NM

10. Pressure Control Equipment:

Exhibit "E-1". A BOP consisting of two rams with blind rams and pipe rams, and one annular preventer. Below the surface casing, a 2M system will be used. Below the intermediate casing, a 3M system will be used. Below the Production Casing, a 5M system will be used. See attachments for BOP and choke manifold diagrams. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A Rotating head may be installed as needed. 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 and associated equipment will be installed, used, maintained, and tested in a manner necessary to assure well control and shall be in place and operational prior to drilling the surface casing shoe. The Annular Preventer shall be functioned at least weekly. The pipe and blind rams will be operated each trip. No abnormal pressure or temperature is expected while drilling.

BOPS will be tested by an independent service company. The ram preventers, choke manifold, and safety valves will be tested as follows: On the surface casing, pressure tests will be made to 250 psi low and 2000 psi high. On the intermediate casing, pressure tests will be made to 250 psi low and 3000 psi high. On the production casing, pressure tests will be made to 250 psi low and 5000 psi high.

The Annular Preventer will be tested to 250 psi low and 1000 psi high on the surface casing, and 250 low and 1500 high on the intermediate casing, and 250 low and 2500 high on the production casing.

Cimarex Energy Co. of Colorado requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

11. Proposed Mud Circulating System:

Depth	Mud Weight	Visc	Fluid Loss	Type Mud
0' to 400'	7.80 - 8.30	28	NC	FW Spud Mud
400' to 1925'	9.50 - 10.00	30-32	NC	Brine Water
1925' to 9825'	8.50 - 9.00	30-32	NC	FW/Cut Brine
9491' to 16356'	11.50 - 12.00	50-70	5-15	Oil Based Mud

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.

The Mud Monitoring System is an electronic Pason System satisfying requirements of Onshore Order 1.

12. Testing, Logging and Coring Program:

- A. Mud logging program: 2 man unit from 1925 to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / GR -- Inter. Csg to TD
CNL / GR -- Surf to Inter. Csg
- C. No DSTs or cores are planned at this time
- D. CBL w/ CCL from as far as gravity will let it fall to TOC

13. Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H₂S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H₂S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H₂S Safety package on all wells, attached is an "H₂S Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP: 4392 psi

Estimated BHT: 158°

14. Construction and Drilling:

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

Drilling expected to take: 35 days.

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

Application to Drill
Klein 33 Federal Com 6H
Cimarex Energy Co.
UL: 3, Sec. 33, 26S, 27E
Eddy Co., NM

15. Other Facets of Operations:

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

Wolfcamp D Horz Target pay will be perforated and stimulated.

The proposed well will be tested and potential as **Gas**

Drilling 12-1/4" hole
below 13 3/8" Casing

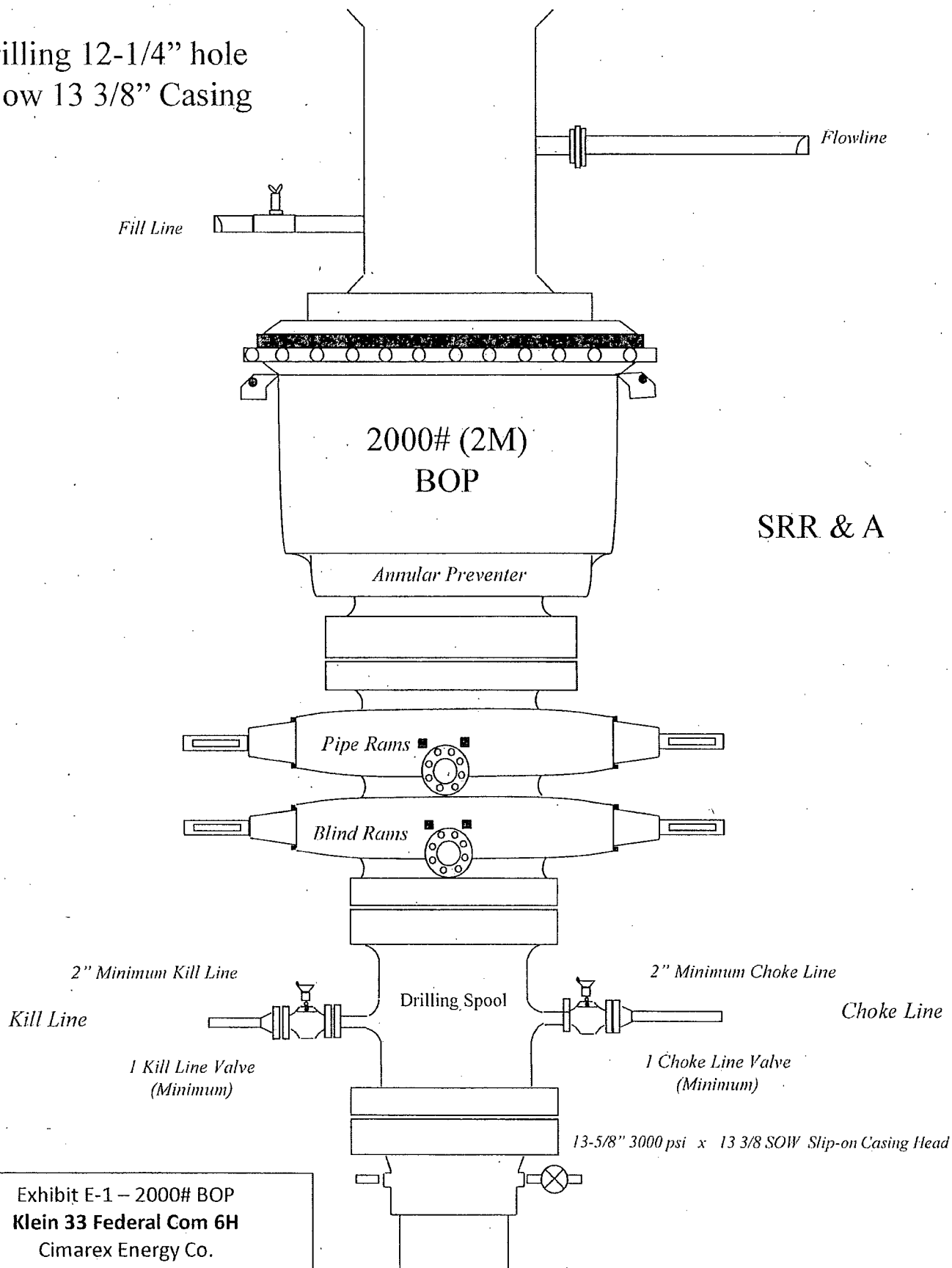


Exhibit E-1 – 2000# BOP
Klein 33 Federal Com 6H
Cimarex Energy Co.
33-26S-27E
SHL 210 FSL & 2020 FWL
BHL 330 FNL & 2020 FWL
Eddy County, NM

Drilling 8-3/4" hole
below 9 5/8" Casing

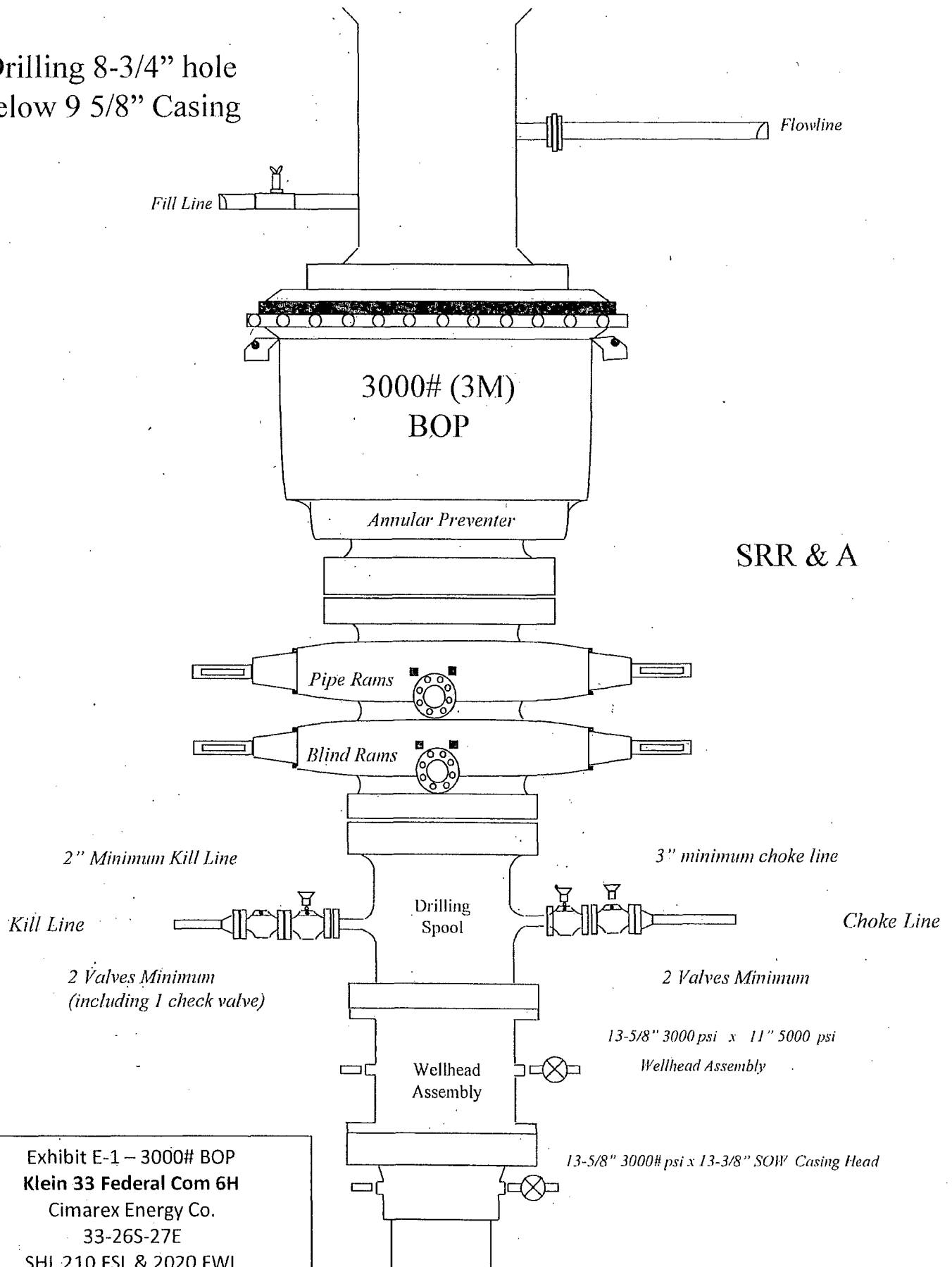


Exhibit E-1 – 3000# BOP
Klein 33 Federal Com 6H
Cimarex Energy Co.
33-26S-27E
SHL 210 FSL & 2020 FWL
BHL 330 FNL & 2020 FWL
Eddy County, NM

Drilling below 7" Casing

Fill Line

Flowline

5000# (5M)
BOP

Annular Preventer

SRR & A

Pipe Rams

Blind Rams

2" Minimum Kill Line

Kill Line

Drilling
Spool

3" minimum choke line

Choke Line

2 Valves Minimum
(HCR Required)

2 Valves and a check valve

Wellhead
Assembly

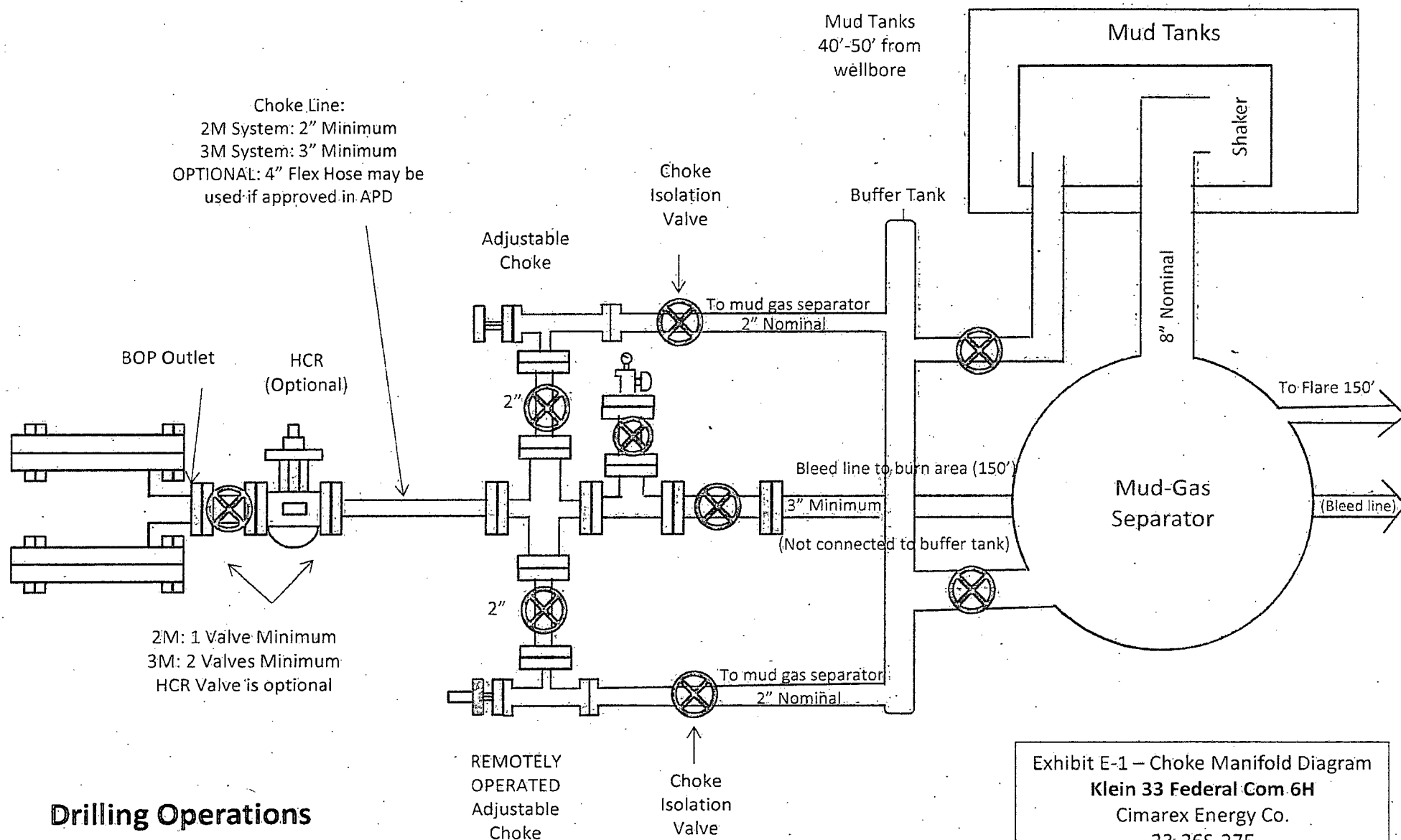
11" 5000 psi x 7-1/16" 10,000 psi
Wellhead Assembly

Wellhead
Assembly

13-5/8" 3000 psi x 11" 5000 psi
Wellhead Assembly

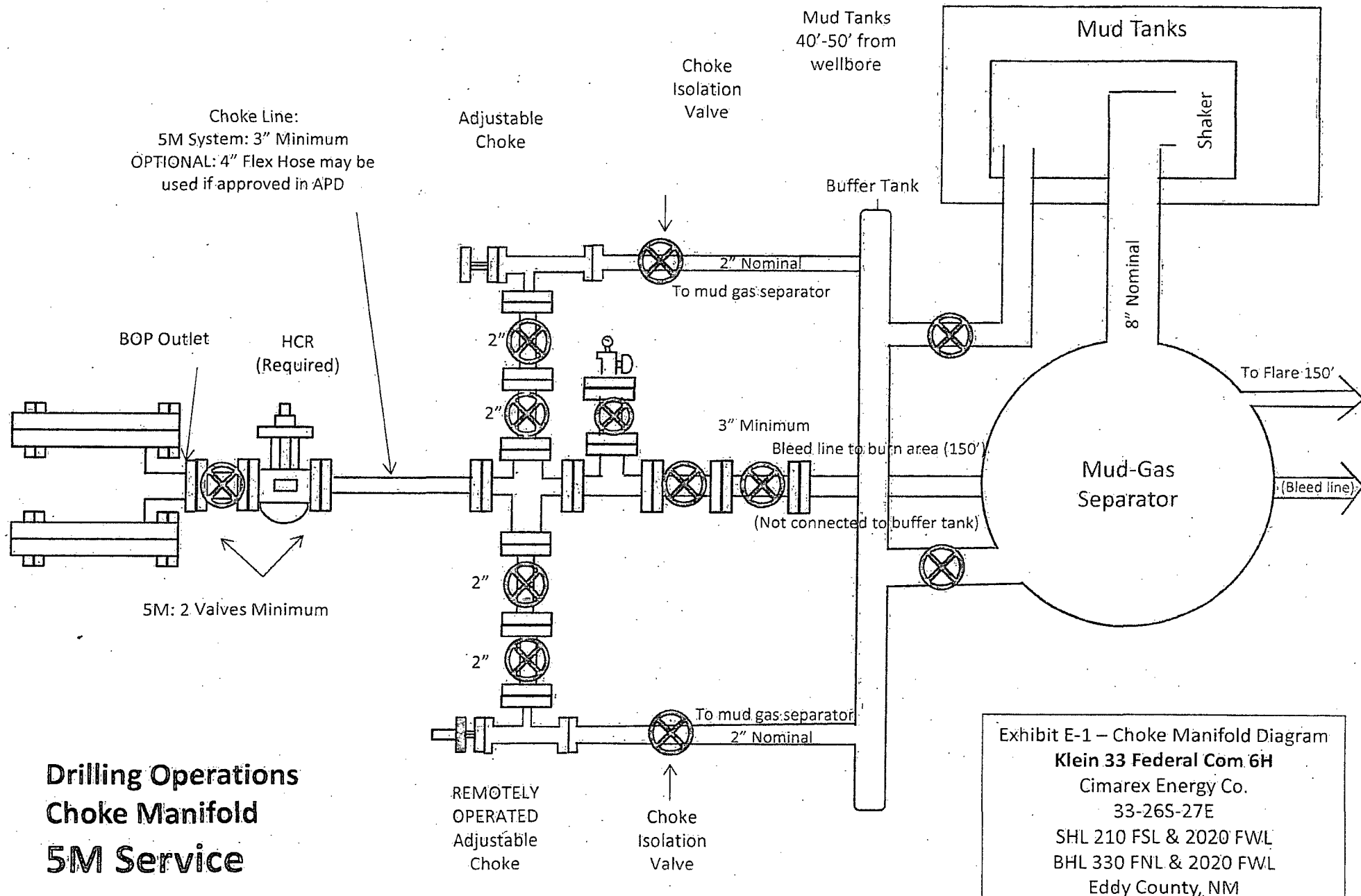
13-5/8" 3000# psi x 13-3/8" SOW Casing Head

Exhibit E-1 – 5000# BOP
Klein 33 Federal Com 6H
Cimarex Energy Co.
33-26S-27E
SHL 210 FSL & 2020 FWL
BHL 330 FNL & 2020 FWL
Eddy County, NM



Drilling Operations Choke Manifold 2M/3M Service

Exhibit E-1 – Choke Manifold Diagram
Klein 33 Federal Com 6H
Cimarex Energy Co.
33-26S-27E
SHL 210 FSL & 2020 FWL
BHL 330 FNL & 2020 FWL
Eddy County, NM





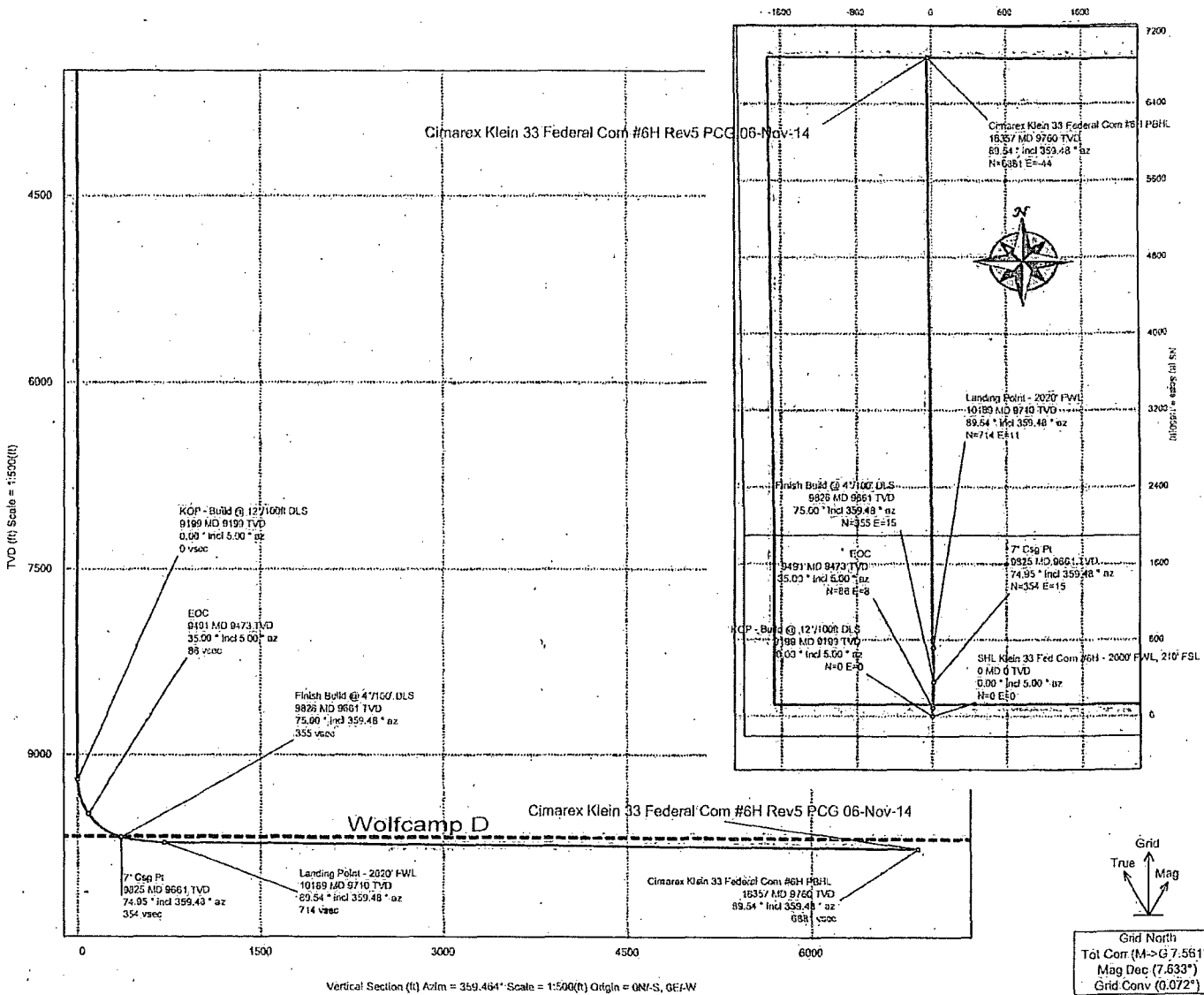
Cimarex

PATHFINDER
A Schlumberger Company

Borehole:	Well:	Field:	Structure:
Original Borehole	Klein 33 Federal Com #6H	NM Eddy County	Cactus 112

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Mech: HDGM 2014 Dip: 59.724° Date: 16-Oct-2014	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Main ID
Mag Dec: 7.633° I _s : 48217.191nT Gravity FS: 005.686mgals (0.00665 Based)	Lat: N 32 0 2.15 Northing: 363983.948US Grid Conv: 0.0723°	Slot: Federal Com # TVD Ref: RRG(1110.5ft above MSL)
	Long: W 104 11 45.68 Easting: 583643.948US Scale Fact: 0.99991114	Plan: Rev5 PCG 05-Nov-14

EW (ft) Scale = 1:6500



Critical Points							
Critical Point	MD	INCL	AZIM	TVD	VSEC	H(+)/S(-)	E(+)/W(-)
SHL Klein 33 Fed Com #6H - 2000' FWL, 210' FSL	0.00	0.00	5.00	0.00	0.00	0.00	0.00
KOP - Build @ 12°/100' DLS	9189.90	0.00	5.00	9195.90	0.00	0.00	0.00
EOC	9450.57	35.00	5.00	9472.76	85.05	26.02	7.53
7" Csg Pt	9825.39	74.95	359.43	9261.15	354.27	354.43	14.74
Finish Build @ 4°/100' DLS	9825.80	75.00	359.48	9261.26	354.68	354.83	14.73
Landing Point - 2020' FWL	10189.04	89.54	359.43	9710.00	713.64	713.78	11.48
Cimarex Klein 33 Federal Com #6H PBHL	10356.51	89.54	359.43	9760.00	6680.01	6680.60	-44.41

CONTROLLED		
Plan ref:	Cimarex Klein 33 Federal Com #6H Rev5 PCG 06-Nov-14	
Drawing ref:		
Copy number	of 1	
Date	06-Nov-2014	
1	Originator	Craig Geaslen
2	DE Sign Off Authority	
3	D&M Line Manager	
4	Client	
Copy number		for



**Cimarex Klein 33 Federal Com #6H Rev5 PCG 06-Nov-14 Proposal Geodetic
Report - 100ft Interpolated
(Non-Def Plan)**



Report Date: November 06, 2014 - 01:20 PM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Klein 33 Federal Com #6H / Cimarex Klein 33 Federal Com #6H
Well: Cimarex Klein 33 Federal Com #6H
Borehole: Original Borehole
UWI / API#: Cactus 112 / Unknown
Survey Name: Cimarex Klein 33 Federal Com #6H Rev5 PCG 06-Nov-14
Survey Date: August 25, 2014
Tort / AHD / DDI / ERD Ratio: 89.765° / 6881.578 ft / 6.015 / 0.705
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 0' 2.15491", W 104° 11' 48.67751"
Location Grid N/E Y/X: N 363983.980 ftUS, E 583643.940 ftUS
CRS Grid Convergence Angle: 0.0723°
Grid Scale Factor: 0.99991114
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.464° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3210.500 ft above
Seabed / Ground Elevation: 3185.500 ft above
Magnetic Declination: 7.633°
Total Gravity Field Strength: 998.6864mgn (9.80665 Based)
Gravity Model: DOX
Total Magnetic Field Strength: 48217.191 nT
Magnetic Dip Angle: 59.724°
Declination Date: October 16, 2014
Magnetic Declination Model: HDGM 2014
North Reference: Grid North
Grid Convergence Used: 0.0723°
Total Corr Mag North->Grid North: 7.5607°
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
SHL Klein 33 Fed Com #6H - 2000' FWL, 210' FSL	0.00	0.00	5.00	0.00	0.00	0.00	0.00	N/A	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	100.00	0.00	5.00	100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	200.00	0.00	5.00	200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	300.00	0.00	5.00	300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	400.00	0.00	5.00	400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	500.00	0.00	5.00	500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	600.00	0.00	5.00	600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	700.00	0.00	5.00	700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	800.00	0.00	5.00	800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	900.00	0.00	5.00	900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1000.00	0.00	5.00	1000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1100.00	0.00	5.00	1100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1200.00	0.00	5.00	1200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1300.00	0.00	5.00	1300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1400.00	0.00	5.00	1400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1500.00	0.00	5.00	1500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1600.00	0.00	5.00	1600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1700.00	0.00	5.00	1700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1800.00	0.00	5.00	1800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	
	1900.00	0.00	5.00	1900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15 W 104 11 48.68	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	2000.00	0.00	5.00	2000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2100.00	0.00	5.00	2100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2200.00	0.00	5.00	2200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2300.00	0.00	5.00	2300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2400.00	0.00	5.00	2400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2500.00	0.00	5.00	2500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2600.00	0.00	5.00	2600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2700.00	0.00	5.00	2700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2800.00	0.00	5.00	2800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	2900.00	0.00	5.00	2900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3000.00	0.00	5.00	3000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3100.00	0.00	5.00	3100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3200.00	0.00	5.00	3200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3300.00	0.00	5.00	3300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3400.00	0.00	5.00	3400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3500.00	0.00	5.00	3500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3600.00	0.00	5.00	3600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3700.00	0.00	5.00	3700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3800.00	0.00	5.00	3800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	3900.00	0.00	5.00	3900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4000.00	0.00	5.00	4000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4100.00	0.00	5.00	4100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4200.00	0.00	5.00	4200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4300.00	0.00	5.00	4300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4400.00	0.00	5.00	4400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4500.00	0.00	5.00	4500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4600.00	0.00	5.00	4600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4700.00	0.00	5.00	4700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4800.00	0.00	5.00	4800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	4900.00	0.00	5.00	4900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5000.00	0.00	5.00	5000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5100.00	0.00	5.00	5100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5200.00	0.00	5.00	5200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5300.00	0.00	5.00	5300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5400.00	0.00	5.00	5400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5500.00	0.00	5.00	5500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5600.00	0.00	5.00	5600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5700.00	0.00	5.00	5700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5800.00	0.00	5.00	5800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	5900.00	0.00	5.00	5900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6000.00	0.00	5.00	6000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6100.00	0.00	5.00	6100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6200.00	0.00	5.00	6200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6300.00	0.00	5.00	6300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6400.00	0.00	5.00	6400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6500.00	0.00	5.00	6500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6600.00	0.00	5.00	6600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	6700.00	0.00	5.00	6700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6800.00	0.00	5.00	6800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	6900.00	0.00	5.00	6900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7000.00	0.00	5.00	7000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7100.00	0.00	5.00	7100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7200.00	0.00	5.00	7200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7300.00	0.00	5.00	7300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7400.00	0.00	5.00	7400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7500.00	0.00	5.00	7500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7600.00	0.00	5.00	7600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7700.00	0.00	5.00	7700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7800.00	0.00	5.00	7800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	7900.00	0.00	5.00	7900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8000.00	0.00	5.00	8000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8100.00	0.00	5.00	8100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8200.00	0.00	5.00	8200.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8300.00	0.00	5.00	8300.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8400.00	0.00	5.00	8400.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8500.00	0.00	5.00	8500.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8600.00	0.00	5.00	8600.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8700.00	0.00	5.00	8700.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8800.00	0.00	5.00	8800.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	8900.00	0.00	5.00	8900.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	9000.00	0.00	5.00	9000.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	9100.00	0.00	5.00	9100.00	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
KOP - Build @ 12"/100ft DLS	9198.90	0.00	5.00	9198.90	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	9200.00	0.13	5.00	9200.00	0.00	0.00	0.00	12.00	363983.98	583643.94	N 32 0 2.15	W 104 11 48.68
	9300.00	12.13	5.00	9299.25	10.61	10.62	0.93	12.00	363994.60	583644.87	N 32 0 2.26	W 104 11 48.67
	9400.00	24.13	5.00	9394.11	41.53	41.57	3.64	12.00	364025.55	583647.58	N 32 0 2.57	W 104 11 48.63
EOC	9490.57	35.00	5.00	9472.76	85.95	86.02	7.53	12.00	364069.99	583651.47	N 32 0 3.01	W 104 11 48.59
	9500.00	36.12	4.72	9480.44	91.41	91.49	7.99	12.00	364075.46	583651.93	N 32 0 3.06	W 104 11 48.58
	9600.00	48.03	2.48	9554.54	158.12	158.24	12.04	12.00	364142.21	583655.98	N 32 0 3.72	W 104 11 48.54
	9700.00	59.96	0.95	9613.22	238.81	238.96	14.38	12.00	364222.91	583658.32	N 32 0 4.52	W 104 11 48.51
	9800.00	71.92	359.76	9653.91	329.95	330.10	14.90	12.00	364314.05	583658.84	N 32 0 5.42	W 104 11 48.50
7" Csg Pt Finish Build @ 4"/100' DLS	9825.39	74.95	359.48	9661.15	354.27	354.43	14.74	12.00	364338.38	583658.68	N 32 0 5.66	W 104 11 48.50
	9825.80	75.00	359.48	9661.26	354.68	354.83	14.73	12.00	364338.78	583658.67	N 32 0 5.67	W 104 11 48.50
	9900.00	77.97	359.48	9678.60	426.81	426.96	14.08	4.00	364410.90	583658.02	N 32 0 6.38	W 104 11 48.51
	10000.00	81.97	359.48	9696.01	525.26	525.41	13.19	4.00	364509.34	583657.12	N 32 0 7.35	W 104 11 48.52
	10100.00	85.97	359.48	9706.51	624.69	624.83	12.28	4.00	364608.76	583656.22	N 32 0 8.34	W 104 11 48.53
Landing Point - 2020' FWL	10189.04	89.54	359.48	9710.00	713.64	713.78	11.48	4.00	364697.70	583655.42	N 32 0 9.22	W 104 11 48.53
	10200.00	89.54	359.48	9710.09	724.61	724.74	11.38	0.00	364708.66	583655.32	N 32 0 9.33	W 104 11 48.53
	10300.00	89.54	359.48	9710.90	824.60	824.74	10.47	0.00	364808.64	583654.41	N 32 0 10.32	W 104 11 48.54
	10400.00	89.54	359.48	9711.71	924.60	924.73	9.56	0.00	364908.63	583653.50	N 32 0 11.31	W 104 11 48.55
	10500.00	89.54	359.48	9712.52	1024.60	1024.72	8.65	0.00	365008.61	583652.59	N 32 0 12.29	W 104 11 48.56
	10600.00	89.54	359.48	9713.34	1124.59	1124.72	7.75	0.00	365108.59	583651.69	N 32 0 13.28	W 104 11 48.57

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	10700.00	89.54	359.48	9714.15	1224.59	1224.71	6.84	0.00	365208.58	583650.78	N 32 0 14.27	W 104 11 48.58
	10800.00	89.54	359.48	9714.96	1324.59	1324.70	5.93	0.00	365308.56	583649.87	N 32 0 15.26	W 104 11 48.59
	10900.00	89.54	359.48	9715.77	1424.58	1424.69	5.03	0.00	365408.54	583648.96	N 32 0 16.25	W 104 11 48.60
	11000.00	89.54	359.48	9716.58	1524.58	1524.69	4.12	0.00	365508.53	583648.06	N 32 0 17.24	W 104 11 48.61
	11100.00	89.54	359.48	9717.39	1624.58	1624.68	3.21	0.00	365608.51	583647.15	N 32 0 18.23	W 104 11 48.62
	11200.00	89.54	359.48	9718.20	1724.57	1724.67	2.30	0.00	365708.49	583646.24	N 32 0 19.22	W 104 11 48.63
	11300.00	89.54	359.48	9719.01	1824.57	1824.66	1.40	0.00	365808.48	583645.34	N 32 0 20.21	W 104 11 48.63
	11400.00	89.54	359.48	9719.83	1924.57	1924.66	0.49	0.00	365908.46	583644.43	N 32 0 21.20	W 104 11 48.64
	11500.00	89.54	359.48	9720.64	2024.56	2024.65	-0.42	0.00	366008.44	583643.52	N 32 0 22.19	W 104 11 48.65
	11600.00	89.54	359.48	9721.45	2124.56	2124.64	-1.32	0.00	366108.43	583642.62	N 32 0 23.18	W 104 11 48.66
	11700.00	89.54	359.48	9722.26	2224.56	2224.63	-2.23	0.00	366208.41	583641.71	N 32 0 24.17	W 104 11 48.67
	11800.00	89.54	359.48	9723.07	2324.55	2324.63	-3.14	0.00	366308.40	583640.80	N 32 0 25.16	W 104 11 48.68
	11900.00	89.54	359.48	9723.88	2424.55	2424.62	-4.04	0.00	366408.38	583639.90	N 32 0 26.15	W 104 11 48.69
	12000.00	89.54	359.48	9724.69	2524.55	2524.61	-4.95	0.00	366508.36	583638.99	N 32 0 27.14	W 104 11 48.70
	12100.00	89.54	359.48	9725.50	2624.54	2624.60	-5.86	0.00	366608.35	583638.08	N 32 0 28.13	W 104 11 48.71
	12200.00	89.54	359.48	9726.31	2724.54	2724.60	-6.76	0.00	366708.33	583637.18	N 32 0 29.12	W 104 11 48.72
	12300.00	89.54	359.48	9727.13	2824.54	2824.59	-7.67	0.00	366808.31	583636.27	N 32 0 30.11	W 104 11 48.73
	12400.00	89.54	359.48	9727.94	2924.53	2924.58	-8.58	0.00	366908.30	583635.36	N 32 0 31.10	W 104 11 48.73
	12500.00	89.54	359.48	9728.75	3024.53	3024.57	-9.48	0.00	367008.28	583634.46	N 32 0 32.08	W 104 11 48.74
	12600.00	89.54	359.48	9729.56	3124.53	3124.57	-10.39	0.00	367108.26	583633.55	N 32 0 33.07	W 104 11 48.75
	12700.00	89.54	359.48	9730.37	3224.52	3224.56	-11.30	0.00	367208.25	583632.64	N 32 0 34.06	W 104 11 48.76
	12800.00	89.54	359.48	9731.18	3324.52	3324.55	-12.20	0.00	367308.23	583631.74	N 32 0 35.05	W 104 11 48.77
	12900.00	89.54	359.48	9731.99	3424.52	3424.54	-13.11	0.00	367408.21	583630.83	N 32 0 36.04	W 104 11 48.78
	13000.00	89.54	359.48	9732.80	3524.51	3524.54	-14.02	0.00	367508.20	583629.92	N 32 0 37.03	W 104 11 48.79
	13100.00	89.54	359.48	9733.61	3624.51	3624.53	-14.92	0.00	367608.18	583629.02	N 32 0 38.02	W 104 11 48.80
	13200.00	89.54	359.48	9734.42	3724.51	3724.52	-15.83	0.00	367708.16	583628.11	N 32 0 39.01	W 104 11 48.81
	13300.00	89.54	359.48	9735.23	3824.50	3824.52	-16.74	0.00	367808.15	583627.21	N 32 0 40.00	W 104 11 48.82
	13400.00	89.54	359.48	9736.04	3924.50	3924.51	-17.64	0.00	367908.13	583626.30	N 32 0 40.99	W 104 11 48.82
	13500.00	89.54	359.48	9736.86	4024.50	4024.50	-18.55	0.00	368008.11	583625.39	N 32 0 41.98	W 104 11 48.83
	13600.00	89.54	359.48	9737.67	4124.49	4124.49	-19.45	0.00	368108.10	583624.49	N 32 0 42.97	W 104 11 48.84
	13700.00	89.54	359.48	9738.48	4224.49	4224.49	-20.36	0.00	368208.08	583623.58	N 32 0 43.96	W 104 11 48.85
	13800.00	89.54	359.48	9739.29	4324.49	4324.48	-21.27	0.00	368308.07	583622.68	N 32 0 44.95	W 104 11 48.86
	13900.00	89.54	359.48	9740.10	4424.48	4424.47	-22.17	0.00	368408.05	583621.77	N 32 0 45.94	W 104 11 48.87
	14000.00	89.54	359.48	9740.91	4524.48	4524.46	-23.08	0.00	368508.03	583620.86	N 32 0 46.93	W 104 11 48.88
	14100.00	89.54	359.48	9741.72	4624.48	4624.46	-23.98	0.00	368608.02	583619.96	N 32 0 47.92	W 104 11 48.89
	14200.00	89.54	359.48	9742.53	4724.48	4724.45	-24.89	0.00	368708.00	583619.05	N 32 0 48.91	W 104 11 48.90
	14300.00	89.54	359.48	9743.34	4824.47	4824.44	-25.80	0.00	368807.98	583618.15	N 32 0 49.90	W 104 11 48.91
	14400.00	89.54	359.48	9744.15	4924.47	4924.43	-26.70	0.00	368907.97	583617.24	N 32 0 50.88	W 104 11 48.92
	14500.00	89.54	359.48	9744.96	5024.47	5024.43	-27.61	0.00	369007.95	583616.34	N 32 0 51.87	W 104 11 48.92
	14600.00	89.54	359.48	9745.77	5124.46	5124.42	-28.51	0.00	369107.93	583615.43	N 32 0 52.86	W 104 11 48.93
	14700.00	89.54	359.48	9746.58	5224.46	5224.41	-29.42	0.00	369207.92	583614.52	N 32 0 53.85	W 104 11 48.94
	14800.00	89.54	359.48	9747.39	5324.46	5324.40	-30.32	0.00	369307.90	583613.62	N 32 0 54.84	W 104 11 48.95
	14900.00	89.54	359.48	9748.20	5424.45	5424.40	-31.23	0.00	369407.88	583612.71	N 32 0 55.83	W 104 11 48.96
	15000.00	89.54	359.48	9749.01	5524.45	5524.39	-32.14	0.00	369507.87	583611.81	N 32 0 56.82	W 104 11 48.97
	15100.00	89.54	359.48	9749.82	5624.45	5624.38	-33.04	0.00	369607.85	583610.90	N 32 0 57.81	W 104 11 48.98
	15200.00	89.54	359.48	9750.63	5724.44	5724.37	-33.95	0.00	369707.83	583610.00	N 32 0 58.80	W 104 11 48.99
	15300.00	89.54	359.48	9751.44	5824.44	5824.37	-34.85	0.00	369807.82	583609.09	N 32 0 59.79	W 104 11 49.00
	15400.00	89.54	359.48	9752.25	5924.44	5924.36	-35.76	0.00	369907.80	583608.19	N 32 1 0 78	W 104 11 49.01

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	15500.00	89.54	359.48	9753.06	6024.43	6024.35	-36.66	0.00	370007.79	583607.28	N 32 1 1.77	W 104 11 49.01
	15600.00	89.54	359.48	9753.87	6124.43	6124.35	-37.57	0.00	370107.77	583606.38	N 32 1 2.76	W 104 11 49.02
	15700.00	89.54	359.48	9754.68	6224.43	6224.34	-38.47	0.00	370207.75	583605.47	N 32 1 3.75	W 104 11 49.03
	15800.00	89.54	359.48	9755.49	6324.42	6324.33	-39.38	0.00	370307.74	583604.57	N 32 1 4.74	W 104 11 49.04
	15900.00	89.54	359.48	9756.30	6424.42	6424.32	-40.28	0.00	370407.72	583603.66	N 32 1 5.73	W 104 11 49.05
	16000.00	89.54	359.48	9757.11	6524.42	6524.32	-41.19	0.00	370507.70	583602.76	N 32 1 6.72	W 104 11 49.06
	16100.00	89.54	359.48	9757.92	6624.41	6624.31	-42.09	0.00	370607.69	583601.85	N 32 1 7.71	W 104 11 49.07
	16200.00	89.54	359.48	9758.73	6724.41	6724.30	-43.00	0.00	370707.67	583600.95	N 32 1 8.70	W 104 11 49.08
	16300.00	89.54	359.48	9759.54	6824.41	6824.29	-43.90	0.00	370807.65	583600.04	N 32 1 9.69	W 104 11 49.09
Cimarex Klein 33 Federal Com #6H PBHL	16356.51	89.54	359.48	9760.00	6880.91	6880.80	-44.41	0.00	370864.15	583599.53	N 32 1 10.24	W 104 11 49.09

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	1/100.000	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Klein 33 Federal Com #6H Rev5 PCG
	1	25.000	9175.000	1/100.000	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Klein 33 Federal Com #6H Rev5 PCG
	1	9175.000	16356.506	1/100.000	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Klein 33 Federal Com #6H Rev5 PCG



Cimarex Klein 33 Federal Com #6H Rev5 PCG 06-Nov-14 Proposal Geodetic



Report (Non-Def Plan)

Report Date: November 06, 2014 - 01:19 PM
 Client: Cimarex
 Field: NM Eddy County (NAD 83)
 Structure / Slot: Cimarex Klein 33 Federal Com #6H / Cimarex Klein 33 Federal Com #6H
 Well: Cimarex Klein 33 Federal Com #6H
 Borehole: Original Borehole
 UWI / API#: Cactus 112 / Unknown
 Survey Name: Cimarex Klein 33 Federal Com #6H Rev5 PCG 06-Nov-14
 Survey Date: August 25, 2014
 Tort / AHD / DDI / ERD Ratio: 89.765 % / 6881.578 ft / 6.015 / 0.705
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 0' 2.15491", W 104° 11' 48.67751"
 Location Grid N/E Y/X: N 363983.980 ftUS, E 583643.940 ftUS
 CRS Grid Convergence Angle: 0.0723°
 Grid Scale Factor: 0.99991114
 Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 359.484° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3210.500 ft above
 Seabed / Ground Elevation: 3185.500 ft above
 Magnetic Declination: 7.633°
 Total Gravity Field Strength: 998.6864 mgn (9.80665 Based)
 Gravity Model: DOX
 Total Magnetic Field Strength: 48217.191 nT
 Magnetic Dip Angle: 59.724°
 Declination Date: October 16, 2014
 Magnetic Declination Model: HDGM 2014
 North Reference: Grid North
 Grid Convergence Used: 0.0723°
 Total Corr Mag North -> Grid North: 7.5607°
 Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL Klein 33 Fed Com #6H - 2000' FWL, 210' FSL	0.00	0.00	5.00	0.00	0.00	0.00	0.00	N/A	363983.98	583643.94	N 32° 0' 2.15	W 104° 11' 48.68
KOP - Build @ 12°/100ft DLS	9198.90	0.00	5.00	9198.90	0.00	0.00	0.00	0.00	363983.98	583643.94	N 32° 0' 2.15	W 104° 11' 48.68
EOC	9490.57	35.00	5.00	9472.76	85.95	86.02	7.53	12.00	364069.99	583551.47	N 32° 0' 3.01	W 104° 11' 48.59
7" Csg Pt	9825.39	74.95	359.48	9661.15	354.27	354.43	14.74	12.00	364338.38	583658.68	N 32° 0' 5.66	W 104° 11' 48.50
Finish Build @ 4°/100' DLS	9825.80	75.00	359.48	9661.26	354.68	354.83	14.73	12.00	364338.78	583658.67	N 32° 0' 5.67	W 104° 11' 48.50
Landing Point - 2020' FWL Cimarex Klein 33 Federal Com #6H PBHL	10189.04	89.54	359.48	9740.00	713.64	713.78	11.48	4.00	364697.70	583655.42	N 32° 0' 9.22	W 104° 11' 48.53
	16356.51	89.54	359.48	9760.00	6880.91	6880.80	-44.41	0.00	370864.15	-583599.53	N 32° 1' 10.24	W 104° 11' 49.09

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955' sigma
 Survey Program:

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey				
	1	0.000	25.000	1/100.000	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Klein 33 Federal Com #6H Rev5 PCG				
	1	25.000	9175.000	1/100.000	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Klein 33 Federal Com #6H Rev5 PCG				
	1	9175.000	16356.506	1/100.000	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Klein 33 Federal Com #6H Rev5 PCG				

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co. of Colorado
LEASE NO.:	NMNM-114350
WELL NAME & NO.:	Klein 33 Federal Com 6H
SURFACE HOLE FOOTAGE:	0210' FSL & 2000' FWL
BOTTOM HOLE FOOTAGE:	0330' FNL & 2020' FWL Sec. 28, T. 26 S., R 27 E
LOCATION:	Section 33, T. 26 S., R 27 E., NMPM
COUNTY:	Eddy County, New Mexico

The last perforation in the lateral shall not be closer than 660' from the North line.

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper**

copies. The top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst

Possibility of water flows in the Castile and Delaware.

Possibility of lost circulation in the Salado and Delaware.

1. The 13-3/8 inch surface casing shall be set at approximately 400 feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt. Excess calculates to 10% - Additional cement may be required.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing, which shall be set at approximately 1925 feet, is:

- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

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

- ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

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

- ☒ Cement should tie-back to the top of the liner. Operator shall provide method of verification. **Excess calculates to 0% - Additional cement may be required.**

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

- 1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
- 2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with

a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
 - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.
5. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 7 inch production casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**
6. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength,

whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

- c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock with a corresponding chart (i.e. two hour clock-two hour chart, one hour clock-one hour chart).
- d. The results of the test shall be reported to the appropriate BLM office.
- e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

CRW 112514