

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

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.

SUBMIT IN TRIPLICATE - Other instructions on page 2

HOBBS OCD
RECEIVED
SEP 23 2019

5. Lease Serial No. NMNM0106040A
6. If Indian, Allottee or Tribe Name
7. If Unit or CA/Agreement, Name and/or No.
8. Well Name and No. RED HILLS 32-5 FEDERAL COM 156H
9. API Well No. 30-025-46295-00-X1
10. Field and Pool or Exploratory Area WC025G08S253235G-LWR BONE SPF
11. County or Parish, State LEA COUNTY, NM

1. Type of Well ☒ Oil Well ☒ Gas Well ☐ Other	
2. Name of Operator CIMAREX ENERGY COMPANY	
Contact: AMITHY E CRAWFORD E-Mail: acrawford@cimarex.com	
3a. Address 600 N. MARIENFELD SUITE 600 MIDLAND, TX 79701	3b. Phone No. (include area code) Ph: 432-620-1909
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 32 T25S R33E NENW 390FNL 2365FWL 32.093246 N Lat, 103.595222 W Lon	

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ 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 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 must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must 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 Respectfully requests to change the BHL as shown below and to change the formation to Bone Spring.

No New Surface Disturbance.

Previously Approved:
100' FSL & 2010' FWL Sec 5 26S 33E

Proposed:
100' FSL & 2100' FWL Sec 5 26S 33E

Carlsbad Field Office
OCD Hobbs

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

All Previous COAs still Apply, Except For the Following: f.i.p.

14. I hereby certify that the foregoing is true and correct. Electronic Submission #479213 verified by the BLM Well Information System For CIMAREX ENERGY COMPANY, sent to the Hobbs Committed to AFMSS for processing by PRISCILLA PEREZ on 09/13/2019 (19PP3172SE)	
Name (Printed/Typed) AMITHY E CRAWFORD	Title REGULATORY ANALYST
Signature (Electronic Submission)	Date 08/19/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By JEROMY PORTER	Title PETROLEUM ENGINEER	Date 09/17/2019
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 Hobbs

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.

(Instructions on page 2)

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

[Handwritten signature]

Additional data for EC transaction #479213 that would not fit on the form

32. Additional remarks, continued

Please see attached updated C102, Drilling Plan, BOP Diagrams, Directional Plan & Location Layout.

Cimarex Respectfully requests to update the dedicated acres of the C102 to 1280. A 1280 Com has been verbally approved by the BLM (Lewis Tromp, David Chase, James Glover) and State land Office (Niranjan Khalsa).

Revisions to Operator-Submitted EC Data for Sundry Notice #479213

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM0106040A	NMNM0106040A
Agreement:		
Operator:	CIMAREX ENERGY CO. OF COLORADO 600 N. MARIENFELD, SUITE 600 MIDLAND, TX 79701 Ph: 432-620-1909	CIMAREX ENERGY COMPANY 600 N. MARIENFELD SUITE 600 MIDLAND, TX 79701 Ph: 432.620.1938
Admin Contact:	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909
Tech Contact:	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909	AMITHY E CRAWFORD REGULATORY ANALYST E-Mail: acrawford@cimarex.com Ph: 432-620-1909
Location:		
State:	NM	NM
County:	LEA	LEA
Field/Pool:	BONE SPRING	WC025G08S253235G-LWR BONE SPR
Well/Facility:	RED HILLS 32-5 FEDERAL COM 156H Sec 32 T25S R33E 390FNL 2365FWL	RED HILLS 32-5 FEDERAL COM 156H Sec 32 T25S R33E NENW 390FNL 2365FWL 32.093246 N Lat, 103.595222 W Lon

1. Geological Formations

TVD of target 10,600

Pilot Hole TD N/A

MD at TD 20,535

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1000	N/A	
Top of Salt	1340	N/A	
Base of Salt	4644	N/A	
Lamar	4892	N/A	
Bell Canyon	4908	N/A	
Cherry Canyon	5980	N/A	
Brushy Canyon	7516	Hydrocarbons	
Bone Spring	9039	Hydrocarbons	
1st Bone Spring Sand	10024	Hydrocarbons	
2nd Bone Spring Carb	10224	Hydrocarbons	
2nd Bone Spring Sand	10579	Hydrocarbons	
3rd Bone Spring Carb	11049	Hydrocarbons	
3rd Bone Spring Sand	11704	Hydrocarbons	
Wolfcamp	12178	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1050	1050	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.54	3.60	6.39
12 1/4	0	4888	4888	9-5/8"	40.00	J-55	LT&C	1.40	1.55	2.66
8 3/4	0	10137	10137	5-1/2"	17.00	L-80	LT&C	1.33	1.63	1.88
8 3/4	10137	20535	10600	5-1/2"	17.00	L-80	BT&C	1.27	1.56	50.44
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N
Is AC Report included?	Y

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	509	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	136	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	925	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	281	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Production	470	10.30	3.64	22.18		Lead: Tuned Light + LCM
	2527	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	45
Intermediate	0	50
Production	4688	25

Cimarex request the ability to perform casing integrity tests after plug bump of cement job.

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram	X	
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram	X	
			Double Ram	X	
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.				
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.				
N	Are anchors required by manufacturer?				

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1050'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1050' to 4888'	Brine Water	9.50 - 10.00	30-32	N/C
4888' to 20535'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	4960 psi
Abnormal Temperature	No

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

X	H ₂ S is present
X	H ₂ S plan is attached

8. Other Facets of Operation**9. Wellhead**

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi.

All casing strings will be tested as per Onshore Order No.2 to atleast 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09 Proposal

Geodetic Report

(Def Plan)



Report Date:	August 09, 2019 - 01:30 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex Energy	Vertical Section Azimuth:	179.604 ° (Grid North)
Field:	NM Les County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Red Hills 32-5 Federal Com 156H / New Slot	TVD Reference Datum:	RKB
Well:	Red Hills 32-5 Federal Com 156H	TVD Reference Elevation:	3435.700 ft above MSL
Borehole:	Red Hills 32-5 Federal Com 156H	Seabed / Ground Elevation:	3409.700 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	6.828 °
Survey Name:	Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09	Total Gravity Field Strength:	988.4285mgn (9.80885 Based)
Survey Date:	October 03, 2018	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	102.387 ° / 10397.188 ft / 6.314 / 0.981	Total Magnetic Field Strength:	47735.838 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	58.693 °
Location Lat / Long:	N 32° 5' 35.68085", W 103° 35' 42.78071"	Declination Date:	August 09, 2019
Location Grid N/E Y/X:	N 398441.470 RUS, E 789914.850 RUS	Magnetic Declination Model:	HDGM 2019
CRS Grid Convergence Angle:	0.3922 °	North Reference:	Grid North
Grid Scale Factor:	0.99998893	Grid Convergence Used:	Total Corr Mag North->Grid
Version / Patch:	2.10.760.0	Local Coord Referenced To:	Well Head

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 [390' FNL, 2365' FWL]	0.00	0.00	181.82	0.00	0.00	0.00	0.00	N/A	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	100.00	0.00	281.85	100.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	200.00	0.00	281.85	200.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	300.00	0.00	281.85	300.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	400.00	0.00	281.85	400.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	500.00	0.00	281.85	500.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	600.00	0.00	281.85	600.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	700.00	0.00	281.85	700.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	800.00	0.00	281.85	800.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	900.00	0.00	281.85	900.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
Rustler	913.00	0.00	281.85	913.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	1000.00	0.00	281.85	1000.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	1100.00	0.00	281.85	1100.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	1200.00	0.00	281.85	1200.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	1300.00	0.00	281.85	1300.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
Top of Sall	1328.00	0.00	281.85	1328.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	1400.00	0.00	281.85	1400.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
Nudge 2°/100' DLS	1500.00	0.00	281.85	1500.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.68	W 103 35 42.79
	1600.00	2.00	281.85	1599.98	-0.37	0.36	-1.71	2.00	398441.83	789913.14	N 32 5 35.68	W 103 35 42.81
	1700.00	4.00	281.85	1599.94	-1.48	1.43	-8.83	2.00	398442.90	789908.02	N 32 5 35.70	W 103 35 42.87
	1800.00	6.00	281.85	1799.45	-3.33	3.22	-15.36	2.00	398444.89	789899.49	N 32 5 35.71	W 103 35 42.97
	1809.68	8.19	281.85	1809.07	-3.55	3.43	-16.36	2.00	398444.90	789898.49	N 32 5 35.72	W 103 35 42.98
	1900.00	8.19	281.85	1898.87	-5.61	5.43	-25.90	0.00	398446.90	789888.95	N 32 5 35.74	W 103 35 43.09
	2000.00	8.19	281.85	1988.29	-7.90	7.65	-36.46	0.00	398449.12	789878.39	N 32 5 35.76	W 103 35 43.21
	2100.00	8.19	281.85	2097.70	-10.19	9.87	-47.02	0.00	398451.34	789867.83	N 32 5 35.78	W 103 35 43.34
	2200.00	8.19	281.85	2197.12	-12.48	12.08	-57.58	0.00	398453.55	789857.27	N 32 5 35.80	W 103 35 43.46
	2300.00	8.19	281.85	2296.54	-14.77	14.30	-68.14	0.00	398455.77	789846.72	N 32 5 35.83	W 103 35 43.58
	2400.00	8.19	281.85	2395.95	-17.06	16.51	-78.70	0.00	398457.98	789836.16	N 32 5 35.85	W 103 35 43.70
	2500.00	8.19	281.85	2495.37	-19.34	18.73	-89.25	0.00	398460.20	789825.60	N 32 5 35.87	W 103 35 43.83
	2600.00	8.19	281.85	2594.78	-21.63	20.94	-99.81	0.00	398462.41	789815.04	N 32 5 35.89	W 103 35 43.95
	2700.00	8.19	281.85	2694.20	-23.92	23.16	-110.37	0.00	398464.63	789804.48	N 32 5 35.92	W 103 35 44.07
	2800.00	8.19	281.85	2793.62	-26.21	25.37	-120.93	0.00	398466.84	789793.92	N 32 5 35.94	W 103 35 44.19
	2900.00	8.19	281.85	2893.03	-28.50	27.59	-131.49	0.00	398469.06	789783.36	N 32 5 35.96	W 103 35 44.32
	3000.00	8.19	281.85	2992.45	-30.79	29.80	-142.05	0.00	398471.27	789772.81	N 32 5 35.99	W 103 35 44.44
	3100.00	8.19	281.85	3091.87	-33.07	32.02	-152.61	0.00	398473.49	789762.25	N 32 5 36.01	W 103 35 44.56
	3200.00	8.19	281.85	3191.28	-35.36	34.24	-163.17	0.00	398475.70	789751.69	N 32 5 36.03	W 103 35 44.68
	3300.00	8.19	281.85	3290.70	-37.65	36.45	-173.72	0.00	398477.92	789741.13	N 32 5 36.05	W 103 35 44.81
	3400.00	8.19	281.85	3390.11	-39.94	38.67	-184.28	0.00	398480.14	789730.57	N 32 5 36.08	W 103 35 44.93
	3500.00	8.19	281.85	3489.53	-42.23	40.88	-194.84	0.00	398482.35	789720.01	N 32 5 36.10	W 103 35 45.05
	3600.00	8.19	281.85	3588.95	-44.52	43.10	-205.40	0.00	398484.57	789709.46	N 32 5 36.12	W 103 35 45.17
	3700.00	8.19	281.85	3688.36	-46.80	45.31	-215.96	0.00	398486.78	789698.90	N 32 5 36.14	W 103 35 45.30
	3800.00	8.19	281.85	3787.78	-49.09	47.53	-226.52	0.00	398489.00	789688.34	N 32 5 36.17	W 103 35 45.42
	3900.00	8.19	281.85	3887.20	-51.38	49.74	-237.08	0.00	398491.21	789677.78	N 32 5 36.19	W 103 35 45.54
	4000.00	8.19	281.85	3986.61	-53.67	51.96	-247.64	0.00	398493.43	789667.22	N 32 5 36.21	W 103 35 45.67
Drop to Vertical 2°/100' DLS	4013.47	8.19	281.85	4000.00	-53.98	52.28	-249.08	0.00	398493.73	789665.80	N 32 5 36.21	W 103 35 45.68
	4100.00	4.48	281.85	4086.16	-55.68	53.91	-258.82	2.00	398495.38	789657.94	N 32 5 36.23	W 103 35 45.77
	4200.00	2.48	281.85	4185.97	-56.98	55.15	-262.83	2.00	398496.82	789652.03	N 32 5 36.24	W 103 35 45.84
	4300.00	0.48	281.85	4285.93	-57.50	55.67	-265.33	2.00	398497.14	789649.53	N 32 5 36.25	W 103 35 45.87
	4323.14	0.00	281.85	4309.07	-57.52	55.69	-265.42	2.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	4400.00	0.00	281.85	4385.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	4500.00	0.00	281.85	4465.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	4600.00	0.00	281.85	4545.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
Base of Sall	4644.07	0.00	281.85	4630.00	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	4700.00	0.00	281.85	4685.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	4800.00	0.00	281.85	4765.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	4900.00	0.00	281.85	4845.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
Ball Canyon	4922.07	0.00	281.85	4908.00	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5000.00	0.00	281.85	4985.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5100.00	0.00	281.85	5065.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5200.00	0.00	281.85	5145.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5300.00	0.00	281.85	5225.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5400.00	0.00	281.85	5305.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5500.00	0.00	281.85	5385.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5600.00	0.00	281.85	5465.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5700.00	0.00	281.85	5545.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5800.00	0.00	281.85	5625.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	5900.00	0.00	281.85	5705.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
Cherry Canyon	5944.07	0.00	281.85	5680.00	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6000.00	0.00	281.85	5765.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6100.00	0.00	281.85	5845.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6200.00	0.00	281.85	5925.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6300.00	0.00	281.85	6025.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6400.00	0.00	281.85	6105.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6500.00	0.00	281.85	6185.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6600.00	0.00	281.85	6265.93	-57.52	55.69	-265.42	0.00	398497.16	789648.44	N 32 5 36.25	W 103 35 45.87
	6											

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (m)	NS (ft)	EW (ft)	DLS (°/100ft)	Northings (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	6700.00	0.00	281.85	6885.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	6800.00	0.00	281.85	6785.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	6900.00	0.00	281.85	6885.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7000.00	0.00	281.85	6985.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7100.00	0.00	281.85	7085.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7200.00	0.00	281.85	7185.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7300.00	0.00	281.85	7285.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7400.00	0.00	281.85	7385.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7500.00	0.00	281.85	7485.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
Brushy Canyon	7530.07	0.00	281.85	7516.00	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7600.00	0.00	281.85	7585.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7700.00	0.00	281.85	7685.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7800.00	0.00	281.85	7785.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	7900.00	0.00	281.85	7885.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8000.00	0.00	281.85	7985.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8100.00	0.00	281.85	8085.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8200.00	0.00	281.85	8185.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8300.00	0.00	281.85	8285.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8400.00	0.00	281.85	8385.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8500.00	0.00	281.85	8485.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8600.00	0.00	281.85	8585.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8700.00	0.00	281.85	8685.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8800.00	0.00	281.85	8785.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	8900.00	0.00	281.85	8885.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9000.00	0.00	281.85	8985.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
Bone Spring Lime	9035.07	0.00	281.85	9021.00	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
Leonard Shale	9087.07	0.00	281.85	9073.00	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9100.00	0.00	281.85	9085.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9200.00	0.00	281.85	9185.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9300.00	0.00	281.85	9285.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
Avalon Shale	9350.07	0.00	281.85	9336.00	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9400.00	0.00	281.85	9385.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9500.00	0.00	281.85	9485.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9600.00	0.00	281.85	9585.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9700.00	0.00	281.85	9685.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9800.00	0.00	281.85	9785.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	9900.00	0.00	281.85	9885.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	10000.00	0.00	281.85	9985.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
1st Bone Spring Sand	10029.07	0.00	281.85	10015.00	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	10100.00	0.00	281.85	10085.93	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
KOP - Build 12"/100' DLS	10138.80	0.00	281.85	10122.54	-57.52	55.69	-265.42	0.00	398497.16	769649.44	N 32 5 36.25	W 103 35 45.87
	10200.00	7.61	179.60	10185.75	-53.32	51.49	-265.39	12.00	398492.96	769649.47	N 32 5 36.21	W 103 35 45.87
2nd Bone Spring Carb	10216.44	9.58	179.60	10202.00	-50.87	49.03	-265.38	12.00	398490.50	769649.48	N 32 5 36.18	W 103 35 45.87
	10300.00	19.61	179.60	10282.78	-29.84	28.01	-265.23	12.00	398469.47	769649.63	N 32 5 35.98	W 103 35 45.87
	10400.00	31.61	179.60	10372.77	13.30	-15.14	-264.93	12.00	398426.34	769649.63	N 32 5 35.55	W 103 35 45.87
	10500.00	43.61	179.60	10451.85	74.22	-78.05	-264.51	12.00	398385.43	769650.35	N 32 5 34.95	W 103 35 45.87
	10600.00	55.61	179.60	10516.53	150.24	-152.07	-263.99	12.00	398269.41	769650.87	N 32 5 34.19	W 103 35 45.87
2nd Bone Spring Sand	10650.81	61.72	179.60	10543.00	193.71	-195.53	-263.69	12.00	398245.94	769651.17	N 32 5 33.76	W 103 35 45.87
	10700.00	67.61	179.60	10564.00	238.05	-239.88	-263.38	12.00	398201.80	769651.48	N 32 5 33.32	W 103 35 45.87
	10800.00	79.61	179.60	10592.17	333.81	-335.63	-262.72	12.00	398105.85	769652.14	N 32 5 32.38	W 103 35 45.87
Landing Point	10888.80	90.00	179.60	10600.00	419.94	-421.78	-262.12	12.00	398019.72	769652.74	N 32 5 31.53	W 103 35 45.87
	10900.00	90.00	179.60	10600.00	433.34	-435.18	-262.03	0.00	398006.33	769652.83	N 32 5 31.33	W 103 35 45.87
	11000.00	90.00	179.60	10600.00	533.34	-535.18	-261.34	0.00	397906.33	769653.52	N 32 5 30.40	W 103 35 45.87
	11100.00	90.00	179.60	10600.00	633.34	-635.15	-260.65	0.00	397806.34	769654.21	N 32 5 29.47	W 103 35 45.87
	11200.00	90.00	179.60	10600.00	733.34	-735.15	-259.96	0.00	397706.34	769654.90	N 32 5 28.42	W 103 35 45.87
	11300.00	90.00	179.60	10600.00	833.34	-835.15	-259.28	0.00	397606.35	769655.59	N 32 5 27.43	W 103 35 45.87
	11400.00	90.00	179.60	10600.00	933.34	-935.15	-258.57	0.00	397506.35	769656.28	N 32 5 26.44	W 103 35 45.87
	11500.00	90.00	179.60	10600.00	1033.34	-1035.14	-257.88	0.00	397406.36	769656.98	N 32 5 25.48	W 103 35 45.87
	11600.00	90.00	179.60	10600.00	1133.34	-1135.14	-257.19	0.00	397306.37	769657.67	N 32 5 24.47	W 103 35 45.87
	11700.00	90.00	179.60	10600.00	1233.34	-1235.14	-256.50	0.00	397206.37	769658.36	N 32 5 23.48	W 103 35 45.87
	11800.00	90.00	179.60	10600.00	1333.34	-1335.14	-255.81	0.00	397106.38	769659.05	N 32 5 22.49	W 103 35 45.87
	11900.00	90.00	179.60	10600.00	1433.34	-1435.13	-255.12	0.00	397006.38	769659.74	N 32 5 21.50	W 103 35 45.87
	12000.00	90.00	179.60	10600.00	1533.34	-1535.13	-254.43	0.00	396906.39	769660.43	N 32 5 20.51	W 103 35 45.87
	12100.00	90.00	179.60	10600.00	1633.34	-1635.13	-253.74	0.00	396806.39	769661.12	N 32 5 19.52	W 103 35 45.87
	12200.00	90.00	179.60	10600.00	1733.34	-1735.13	-253.04	0.00	396706.40	769661.81	N 32 5 18.53	W 103 35 45.87
	12300.00	90.00	179.60	10600.00	1833.34	-1835.12	-252.35	0.00	396606.41	769662.50	N 32 5 17.54	W 103 35 45.87
	12400.00	90.00	179.60	10600.00	1933.34	-1935.12	-251.67	0.00	396506.41	769663.19	N 32 5 16.55	W 103 35 45.87
	12500.00	90.00	179.60	10600.00	2033.34	-2035.12	-250.98	0.00	396406.42	769663.88	N 32 5 15.56	W 103 35 45.87
	12600.00	90.00	179.60	10600.00	2133.34	-2135.12	-250.29	0.00	396306.42	769664.58	N 32 5 14.57	W 103 35 45.87
	12700.00	90.00	179.60	10600.00	2233.34	-2235.12	-249.60	0.00	396206.43	769665.27	N 32 5 13.58	W 103 35 45.87
	12800.00	90.00	179.60	10600.00	2333.34	-2335.11	-248.90	0.00	396106.43	769665.96	N 32 5 12.59	W 103 35 45.87
	12900.00	90.00	179.60	10600.00	2433.34	-2435.11	-248.21	0.00	396006.44	769666.65	N 32 5 11.60	W 103 35 45.87
	13000.00	90.00	179.60	10600.00	2533.34	-2535.11	-247.52	0.00	395906.45	769667.34	N 32 5 10.61	W 103 35 45.87
	13100.00	90.00	179.60	10600.00	2633.34	-2635.11	-246.82	0.00	395806.45	769668.03	N 32 5 9.62	W 103 35 45.87
	13200.00	90.00	179.60	10600.00	2733.34	-2735.10	-246.13	0.00	395706.46	769668.73	N 32 5 8.63	W 103 35 45.87
	13300.00	90.00	179.60	10600.00	2833.34	-2835.10	-245.44	0.00	395606.46	769669.42	N 32 5 7.64	W 103 35 45.87
	13400.00	90.00	179.60	10600.00	2933.34	-2935.						

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 ° ° °)
	16200.00	90.00	179.80	10800.00	5733.34	-5735.03	-225.40	0.00	382706.63	769899.48	N 32 4 38.95	W 103 35 45.87
	16300.00	90.00	179.80	10800.00	5833.34	-5835.03	-224.71	0.00	382806.63	769899.15	N 32 4 37.96	W 103 35 45.87
	16400.00	90.00	179.80	10800.00	5933.34	-5935.03	-224.02	0.00	382906.64	769898.84	N 32 4 36.97	W 103 35 45.87
	16500.00	90.00	179.80	10800.00	6033.34	-6035.02	-223.33	0.00	383006.65	769898.53	N 32 4 35.98	W 103 35 45.87
	16600.00	90.00	179.80	10800.00	6133.34	-6135.02	-222.63	0.00	383106.65	769898.22	N 32 4 34.99	W 103 35 45.87
	16700.00	90.00	179.80	10800.00	6233.34	-6235.02	-221.94	0.00	383206.66	769897.91	N 32 4 34.00	W 103 35 45.87
	16800.00	90.00	179.80	10800.00	6333.34	-6335.02	-221.25	0.00	383306.66	769897.61	N 32 4 33.01	W 103 35 45.87
	16900.00	90.00	179.80	10800.00	6433.34	-6435.01	-220.56	0.00	383406.67	769897.30	N 32 4 32.02	W 103 35 45.87
	17000.00	90.00	179.80	10800.00	6533.34	-6535.01	-219.87	0.00	383506.67	769896.99	N 32 4 31.03	W 103 35 45.87
	17100.00	90.00	179.80	10800.00	6633.34	-6635.01	-219.18	0.00	383606.68	769896.68	N 32 4 30.04	W 103 35 45.87
	17200.00	90.00	179.80	10800.00	6733.34	-6735.01	-218.49	0.00	383706.69	769896.37	N 32 4 29.05	W 103 35 45.87
	17300.00	90.00	179.80	10800.00	6833.34	-6835.01	-217.80	0.00	383806.69	769896.06	N 32 4 28.06	W 103 35 45.87
	17400.00	90.00	179.80	10800.00	6933.34	-6935.00	-217.10	0.00	383906.70	769895.75	N 32 4 27.07	W 103 35 45.87
	17500.00	90.00	179.80	10800.00	7033.34	-7035.00	-216.41	0.00	384006.70	769895.44	N 32 4 26.08	W 103 35 45.87
	17600.00	90.00	179.80	10800.00	7133.34	-7135.00	-215.72	0.00	384106.71	769895.13	N 32 4 25.09	W 103 35 45.87
	17700.00	90.00	179.80	10800.00	7233.34	-7235.00	-215.03	0.00	384206.71	769894.82	N 32 4 24.10	W 103 35 45.87
	17800.00	90.00	179.80	10800.00	7333.34	-7334.99	-214.34	0.00	384306.72	769894.52	N 32 4 23.11	W 103 35 45.86
	17900.00	90.00	179.80	10800.00	7433.34	-7434.99	-213.65	0.00	384406.72	769894.21	N 32 4 22.12	W 103 35 45.86
	18000.00	90.00	179.80	10800.00	7533.34	-7534.99	-212.96	0.00	384506.73	769893.90	N 32 4 21.14	W 103 35 45.86
	18100.00	90.00	179.80	10800.00	7633.34	-7634.99	-212.27	0.00	384606.74	769893.59	N 32 4 20.15	W 103 35 45.86
	18200.00	90.00	179.80	10800.00	7733.34	-7734.98	-211.58	0.00	384706.74	769893.28	N 32 4 19.16	W 103 35 45.86
	18300.00	90.00	179.80	10800.00	7833.34	-7834.98	-210.89	0.00	384806.75	769892.97	N 32 4 18.17	W 103 35 45.86
	18400.00	90.00	179.80	10800.00	7933.34	-7934.98	-210.19	0.00	384906.75	769892.66	N 32 4 17.18	W 103 35 45.86
	18500.00	90.00	179.80	10800.00	8033.34	-8034.98	-209.50	0.00	385006.76	769892.35	N 32 4 16.19	W 103 35 45.86
	18600.00	90.00	179.80	10800.00	8133.34	-8134.97	-208.81	0.00	385106.76	769892.04	N 32 4 15.20	W 103 35 45.86
	18700.00	90.00	179.80	10800.00	8233.34	-8234.97	-208.12	0.00	385206.77	769891.74	N 32 4 14.21	W 103 35 45.86
	18800.00	90.00	179.80	10800.00	8333.34	-8334.97	-207.43	0.00	385306.78	769891.43	N 32 4 13.22	W 103 35 45.86
	18900.00	90.00	179.80	10800.00	8433.34	-8434.97	-206.74	0.00	385406.78	769891.12	N 32 4 12.23	W 103 35 45.86
	19000.00	90.00	179.80	10800.00	8533.34	-8534.96	-206.05	0.00	385506.79	769890.81	N 32 4 11.24	W 103 35 45.86
	19100.00	90.00	179.80	10800.00	8633.34	-8634.96	-205.36	0.00	385606.79	769890.50	N 32 4 10.25	W 103 35 45.86
	19200.00	90.00	179.80	10800.00	8733.34	-8734.96	-204.68	0.00	385706.80	769890.19	N 32 4 9.26	W 103 35 45.86
	19300.00	90.00	179.80	10800.00	8833.34	-8834.96	-203.97	0.00	385806.80	769889.88	N 32 4 8.27	W 103 35 45.86
	19400.00	90.00	179.80	10800.00	8933.34	-8934.96	-203.28	0.00	385906.81	769889.57	N 32 4 7.28	W 103 35 45.86
	19500.00	90.00	179.80	10800.00	9033.34	-9034.95	-202.59	0.00	386006.82	769889.27	N 32 4 6.29	W 103 35 45.86
	19600.00	90.00	179.80	10800.00	9133.34	-9134.95	-201.90	0.00	386106.82	769888.96	N 32 4 5.30	W 103 35 45.86
	19700.00	90.00	179.80	10800.00	9233.34	-9234.95	-201.21	0.00	386206.83	769888.65	N 32 4 4.31	W 103 35 45.86
	19800.00	90.00	179.80	10800.00	9333.34	-9334.95	-200.52	0.00	386306.83	769888.34	N 32 4 3.32	W 103 35 45.86
	19900.00	90.00	179.80	10800.00	9433.34	-9434.94	-199.83	0.00	386406.84	769888.03	N 32 4 2.33	W 103 35 45.86
	20000.00	90.00	179.80	10800.00	9533.34	-9534.94	-199.14	0.00	386506.84	769887.72	N 32 4 1.34	W 103 35 45.86
	20100.00	90.00	179.80	10800.00	9633.34	-9634.94	-198.44	0.00	386606.85	769887.41	N 32 4 0.35	W 103 35 45.86
	20200.00	90.00	179.80	10800.00	9733.34	-9734.94	-197.75	0.00	386706.86	769887.10	N 32 3 59.37	W 103 35 45.86
	20300.00	90.00	179.80	10800.00	9833.34	-9834.93	-197.06	0.00	386806.86	769886.79	N 32 3 58.38	W 103 35 45.86
	20400.00	90.00	179.80	10800.00	9933.34	-9934.93	-196.37	0.00	386906.87	769886.48	N 32 3 57.39	W 103 35 45.86
	20500.00	90.00	179.80	10800.00	10033.34	-10034.93	-195.68	0.00	387006.87	769886.18	N 32 3 56.40	W 103 35 45.86
Cimarex Red Hills 32-5 Federal Com 156H - PBHL [100' FSL, 2100' FWL]	20535.14	90.00	179.80	10800.00	10068.47	-10070.08	-195.44	0.00	388371.74	769719.42	N 32 3 56.05	W 103 35 45.86

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7855 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Red Hills 32-5 Federal Com 156H / Cimarex Red Hills 32-5 Federal
	1	26.000	20535.135	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Com 156H Rev1 RM 09Aug09 Red Hills 32-5 Federal Com 156H / Cimarex Red Hills 32-5 Federal

Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09 Proposal

Geodetic Report

(Def Plan)



Report Date: August 09, 2019 - 01:30 PM
 Client: Cimarex Energy
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Red Hills 32-5 Federal Com 156H / New Slot
 Well: Red Hills 32-5 Federal Com 156H
 Borehole: Red Hills 32-5 Federal Com 156H
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09
 Survey Date: October 03, 2018
 Tort / AHD / DDI / ERD Ratio: 102.387' / 10397.198 ft / 6.314' / 0.981
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastam Zone, US Feet
 Location Lat / Long: N 32° 5' 35.88065", W 103° 35' 42.79071"
 Location Grid N/E Y/X: N 398441.470 NUS, E 789914.850 NUS
 CRS Grid Convergence Angle: 0.3922°
 Grid Scale Factor: 0.99996893
 Version / Patch: 2.10.760.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 178.804° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3435.700 ft above MSL
 Seabed / Ground Elevation: 3409.700 ft above MSL
 Magnetic Declination: 6.628°
 Total Gravity Field Strength: 998.4285mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 47735.838 nT
 Magnetic Dip Angle: 59.693°
 Declination Date: August 09, 2019
 Magnetic Declination Model: HDGM 2019
 North Reference: Grid North
 Grid Convergence Used: 0.3922°
 Total Corr Mag North->Grid: 6.2381°
 North: 6.2381°
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (NUS)	Easting (EUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2385' FWL]	0.00	0.00	181.82	0.00	0.00	0.00	0.00	N/A	398441.47	789914.85	N 32 5 35.88	W 103 35 42.79
Nudge 2°/100'	1500.00	0.00	281.85	1500.00	0.00	0.00	0.00	0.00	398441.47	789914.85	N 32 5 35.88	W 103 35 42.79
DLS	1809.88	6.19	281.85	1809.07	-3.55	3.43	-16.36	2.00	398444.90	789898.49	N 32 5 35.72	W 103 35 42.98
Hold Nudge	4013.47	6.19	281.85	4000.00	-53.98	52.28	-249.06	0.00	398493.73	789885.80	N 32 5 38.21	W 103 35 45.88
Drop to Vertical	4323.14	0.00	281.85	4309.07	-57.52	55.89	-285.42	2.00	398497.16	789849.44	N 32 5 38.25	W 103 35 45.87
2°/100' DLS	10138.80	0.00	281.85	10122.54	-57.52	55.89	-285.42	0.00	398497.16	789849.44	N 32 5 38.25	W 103 35 45.87
Hold Vertical	10888.60	90.00	179.80	10800.00	419.94	-421.76	-282.12	12.00	398019.72	789852.74	N 32 5 31.53	W 103 35 45.87
KOP - Build												
12°/100' DLS												
Landing Point												
Cimarex Red Hills 32-5												
Federal Com 156H - PBHL	20535.14	90.00	179.80	10800.00	10068.47	-10070.08	-195.44	0.00	388371.74	789719.42	N 32 3 56.05	W 103 35 45.86
[100' FSL, 2100' FWL]												

Survey Type: 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)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Red Hills 32-5 Federal Com 156H / Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09
	1	26.000	20535.135	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Red Hills 32-5 Federal Com 156H / Cimarex Red Hills 32-5 Federal

Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09 Anti-Collision Summary Report

Analysis Date-24hr Time: August 09, 2019 - 13:30

Client: Cimarex Energy

Field: NM Lea County (NAD 83)

Structure: Cimarex Red Hills 32-5 Federal Com 156H

Slot: New Slot

Well: Red Hills 32-5 Federal Com 156H

Borehole: Red Hills 32-5 Federal Com 156H

Scan MD Range: 0.00H - 20535.14H

Analysis Method: 3D Least Distance

Reference Trajectory: Cimarex Red Hills 32-5 Federal Com 156H Rev1 RM 09Aug09 (Def Plan)

Depth Interval: Every 10.00 Measured Depth (ft)

Rule Set: NAL Procedure: DDM AntiCollision Standard S002

Min Pat: All local minima indicated.

Version / Patch: 2.10.780.0

Database / Project: US1153APP452 dir db.com/drilling-NM Lea County 2.10

ISCHSAD 3.0 95.00% Confidence 2.7855 sigma for subject well. For offset wells, error model version is specified with each well respectively.

Offset Trajectories Summary

Injection Error Model:

Wellhead distance scan:

Selection filter:

Not performed!

Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans

- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

Offset Trajectory	Separation		Allow		Sep. Fact.	Controlling Rule	Reference Trajectory		Alert	Risk Level		Alert	Status
	Cl-C2 (ft)	MAS (ft)	EOU (ft)	Dev. (ft)			MD (ft)	TVD (ft)		Minor	Major		

Results Highlighted: Sep-Factor separation on 1.00 ft

(Cimarex Red Hills Unit 156H)
(Def Plan)
(Def Survey)

Fall Major

Surface

WHP

MHPs

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

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MHP-O-EQU

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MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

(Cimarex Red Hills Unit 156H)
(Def Plan)
(Def Survey)

Fall Major

Surface

WHP

MHPs

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

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MHP-O-CI

MHP-O-EQU

MHP-O-ADP

(Cimarex Red Hills 32-5 Federal)
(Com 156H Rev1 RM 09Aug09)
(Def Plan)

Warning Alert

Enter Alert

WHP

MHPs

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

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MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

(Cimarex Red Hills 32-5 Federal)
(Com 157H Rev1 RM 03Oct16)
(Def Plan)

Warning Alert

Enter Alert

WHP

MHPs

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

MHP-O-CI

MHP-O-EQU

MHP-O-ADP

Offset Trajectory	Separation		Allow	Sep.	Controlling	Reference Trajectory		Alert	Risk Level		Alert	Status
	Ch-Cl (ft)	MAS (ft)	EOU (ft)		Rule	MD (ft)	TVD (ft)		Minor	Major		

Continued Red Hills Unit #1
(Office) Gas Inc Only On
2/13/11 (Old Survey)

Warning Alert

4892.32	32.81	4589.82	4589.81	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
4892.20	32.81	4589.78	4589.48	N/A	MAS = 10.00 (m)	10.00	10.00					MHP-O-SF
4892.27	32.81	4589.77	4589.45	N/A	MAS = 10.00 (m)	20.00	20.00					MHP-O-SF
4892.27	32.81	4589.77	4589.45	N/A	MAS = 10.00 (m)	26.00	26.00					MHP-O-SF
4892.26	32.81	4578.48	4589.25	359.40	MAS = 10.00 (m)	450.00	450.00					MHP-O-SF
4892.33	32.81	4578.35	4589.61	355.78	MAS = 10.00 (m)	520.00	520.00					MHP-O-SF
4892.33	34.88	4587.25	4588.52	213.88	CSF1.50	600.00	600.00					MHP-O-SF
4892.33	41.00	4587.11	4588.86	178.05	CSF1.50	820.00	820.00					MHP-O-SF
4892.33	44.34	4587.01	4587.70	162.61	CSF1.50	960.00	960.00					MHP-O-SF
4892.33	50.36	4583.89	4583.64	127.35	CSF1.50	1110.00	1110.00					MHP-O-SF
4892.33	59.30	4582.65	4583.78	121.23	CSF1.50	1230.00	1230.00					MHP-O-SF
4892.33	70.83	4541.37	4571.59	100.75	CSF1.50	1360.00	1360.00					MHP-O-SF
4895.41	88.95	4534.31	4505.48	78.78	CSF1.50	1720.00	1718.78					MHP-O-SF
4898.88	91.45	4534.85	4505.34	77.47	CSF1.50	1770.00	1769.30					MHP-O-SF
4891.05	111.91	4535.85	4489.54	63.42	CSF1.50	2150.00	2147.41					MHP-O-SF
4818.56	120.40	4537.45	4488.15	58.73	CSF1.50	2350.00	2348.24					MHP-O-SF
4828.42	137.07	4538.07	4481.55	51.27	CSF1.50	2810.00	2804.73					MHP-O-SF
4834.58	144.07	4537.70	4480.51	48.08	CSF1.50	2780.00	2773.73					MHP-O-SF
4848.30	162.96	4538.05	4483.41	43.45	CSF1.50	3060.00	3051.82					MHP-O-SF
4853.15	174.76	4540.78	4483.35	38.71	CSF1.50	3340.00	3330.47					MHP-O-SF
4873.90	183.36	4543.05	4480.35	34.34	CSF1.50	3910.00	3897.14					MHP-O-SF
4883.38	208.34	4544.05	4478.43	31.82	CSF1.50	4340.00	4325.53					MHP-O-SF
4892.69	223.82	4542.87	4483.89	31.82	CSF1.50	4430.00	4415.83					MHP-O-SF
4893.11	225.34	4542.85	4487.78	31.87	CSF1.50	4730.00	4715.83					MHP-O-SF
4893.11	243.00	4527.11	4443.73	29.16	CSF1.50	5300.00	5285.83					MHP-O-SF
4893.11	278.65	4504.11	4412.72	25.84	CSF1.50	6400.00	6385.83					MHP-O-SF
4893.11	333.88	4488.28	4385.65	21.22	CSF1.50	7200.00	7185.83					MHP-O-SF
4893.11	378.68	4435.05	4308.66	18.66	CSF1.50	8200.00	8185.83					MHP-O-SF
4893.11	458.00	4383.93	4232.23	15.47	CSF1.50	9600.00	9585.83					MHP-O-SF
4893.11	517.48	4344.95	4173.30	13.66	CSF1.50	10600.00	10585.83					MHP-O-SF
4893.11	553.84	4409.13	4276.63	6.00	CSF1.50	13430.00	13400.00					MHP-O-SF
917.05	557.20	544.78	558.89	2.47	CSF1.50	15010.00	15000.00					MHP-O-SF
917.10	657.27	544.78	558.87	2.47	CSF1.50	15020.00	15000.00					MHP-O-SF
1840.31	653.87	1470.23	1288.44	5.00	CSF1.50	18810.00	18800.00					MHP-O-SF
5988.07	653.88	6325.88	5942.19	15.22	CSF1.50	20535.14	20535.14					MHP-O-SF

Continued Red Hills Unit #2H
(Office) Gas Inc Only On
1/30/11 (Old Survey)

Warning Alert

6012.53	32.81	6010.05	5978.74	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
6012.35	32.81	6009.83	5978.65	24218.79	MAS = 10.00 (m)	28.00	28.00					MHP-O-SF
6012.26	32.81	6009.80	5978.45	7897.94	MAS = 10.00 (m)	60.00	60.00					MHP-O-SF
6012.43	32.81	5983.15	5978.02	307.00	MAS = 10.00 (m)	600.00	600.00					MHP-O-SF
6011.85	37.30	5988.15	5974.83	258.00	CSF1.50	800.00	800.00					MHP-O-SF
6007.95	67.26	5982.26	5940.71	138.11	CSF1.50	1350.00	1350.00					MHP-O-SF
6010.02	77.41	5987.65	5932.81	120.30	CSF1.50	1800.00	1800.00					MHP-O-SF
6011.80	78.07	5987.64	5932.72	118.80	CSF1.50	1800.00	1800.00					MHP-O-SF
6020.47	102.96	5961.15	5917.78	90.10	CSF1.50	1800.00	1800.00					MHP-O-SF
6022.80	105.33	5961.05	5917.38	87.32	CSF1.50	1800.00	1800.00					MHP-O-SF
6025.41	139.36	5961.11	5918.12	86.37	CSF1.50	2000.00	2000.00					MHP-O-SF
6026.28	143.00	5962.35	5918.33	84.25	CSF1.50	2150.00	2143.91					MHP-O-SF
6022.21	188.48	5969.05	5913.72	54.84	CSF1.50	2750.00	2740.00					MHP-O-SF
6022.22	180.70	5972.05	5914.47	61.27	CSF1.50	3400.00	3400.00					MHP-O-SF
6118.10	205.36	5969.35	5912.80	43.21	CSF1.50	3800.00	3807.31					MHP-O-SF
6130.15	227.76	5977.50	5922.40	40.80	CSF1.50	4400.00	4403.83					MHP-O-SF
6131.02	231.48	5975.87	5899.84	40.15	CSF1.50	4900.00	4875.83					MHP-O-SF
6131.00	232.15	5976.00	5899.45	40.00	CSF1.50	4900.00	4875.83					MHP-O-SF
6131.25	248.35	5968.85	5885.57	37.70	CSF1.50	4900.00	4875.83					MHP-O-SF
6132.00	248.98	5968.05	5885.20	37.63	CSF1.50	4900.00	4875.83					MHP-O-SF
6131.28	255.58	5968.05	5878.72	39.39	CSF1.50	4900.00	4885.83					MHP-O-SF
6131.31	255.05	5968.04	5878.66	39.32	CSF1.50	5000.00	5000.00					MHP-O-SF
6128.05	269.78	5962.38	5882.29	34.77	CSF1.50	5200.00	5185.83					MHP-O-SF
6128.19	267.15	5962.27	5882.00	34.79	CSF1.50	5240.00	5225.83					MHP-O-SF
6128.34	267.91	5962.37	5882.00	34.71	CSF1.50	5200.00	5245.83					MHP-O-SF
6127.15	283.58	5907.27	5843.57	32.68	CSF1.50	5520.00	5505.83					MHP-O-SF
6127.07	359.83	5887.00	5798.04	23.79	CSF1.50	6900.00	6875.83					MHP-O-SF
6127.05	384.46	5878.78	5781.40	24.09	CSF1.50	7610.00	7605.83					MHP-O-SF
6127.05	432.43	5858.45	5685.15	21.37	CSF1.50	8300.00	8285.83					MHP-O-SF
6135.07	448.30	5858.37	5680.77	20.63	CSF1.50	8710.00	8695.83					MHP-O-SF
6135.07	472.87	5815.35	5658.09	19.49	CSF1.50	9150.00	9135.83					MHP-O-SF
6132.34	474.35	5813.33	5658.09	19.49	CSF1.50	9240.00	9225.83					MHP-O-SF
6132.75	474.88	5813.33	5657.85	19.47	CSF1.50	9270.00	9255.83					MHP-O-SF
6133.73	476.05	5813.05	5657.85	19.42	CSF1.50	9330.00	9315.83					MHP-O-SF
6138.25	514.36	5762.75	5622.11	17.66	CSF1.50	9970.00	9955.83					MHP-O-SF
1349.34	539.11	4474.58	4290.25	5.00	CSF1.50	10400.00	10400.00					MHP-O-SF
1358.11	562.31	4272.00	4025.79	4.25	CSF1.50	10500.00	10500.00					MHP-O-SF
1588.15	562.38	4272.41	4025.79	4.25	CSF1.50	10500.00	10500.00					MHP-O-SF
1688.28	562.40	4272.40	4025.80	4.25	CSF1.50	10500.00	10500.00					MHP-O-SF
1887.14	562.50	4481.25	4304.56	4.89	CSF1.50	17330.00	17300.00					MHP-O-SF
4477.50	558.02	4104.86	3819.49	12.08	CSF1.50	20535.14	20535.14					MHP-O-SF

Continued Red Hills Unit #1
(Office) Gas Inc Only On
2/13/11 (Old Survey)

Warning Alert

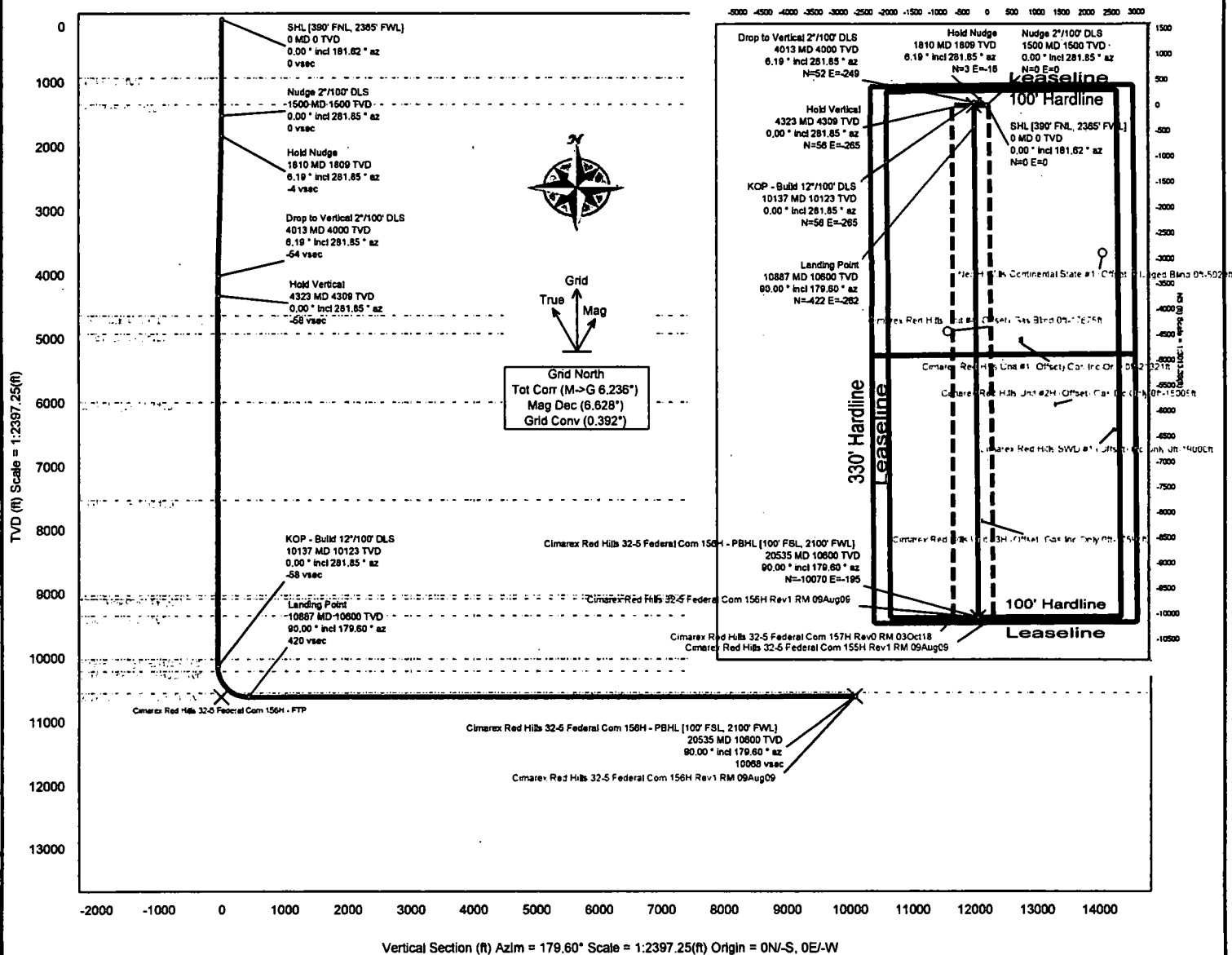
3897.16	32.81	3894.85	3894.35	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
3898.82	32.81	3894.35	3894.11	145339.85	MAS = 10.00 (m)	28.00	28.00					MHP-O-SF
3898.82	443.00	3400.00	3282.80	12.55	CSF1.50	1500.00	1500.00					MHP-O-SF
3898.21	1188.14	3100.95	2713.07	5.00	CSF1.50	3810.00	3787.72					MHP-O-SF
3810.07	1564.86	2865.37	2345.00	3.73	CSF1.50	5000.00	5075.83					MHP-O-SF
4510.83	1337.09	3005.27	3153.74	4.88	CSF1.50	7330.00	7315.83					MHP-O-SF
4895.17	890.74	6653.84	6434.43	13.88	CSF1.50	13370.00	13360.00					MHP-O-SF
4895.18	890.77	6653.84	6434.42	13.88	CSF1.50	13360.00	13360.00					MHP-O-SF
4895.21	890.80	6653.84	6434.43	13.88	CSF1.50	13360.00	13360.00					MHP-O-SF

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	7815.54	1114.48	7071.73	6701.07	10.54	OSF1.50	18280.00	10800.00				MinPt-O-SF	
	9408.45	1275.00	8557.81	8133.45	11.00	OSF1.50	20535.14	10800.00				TD	

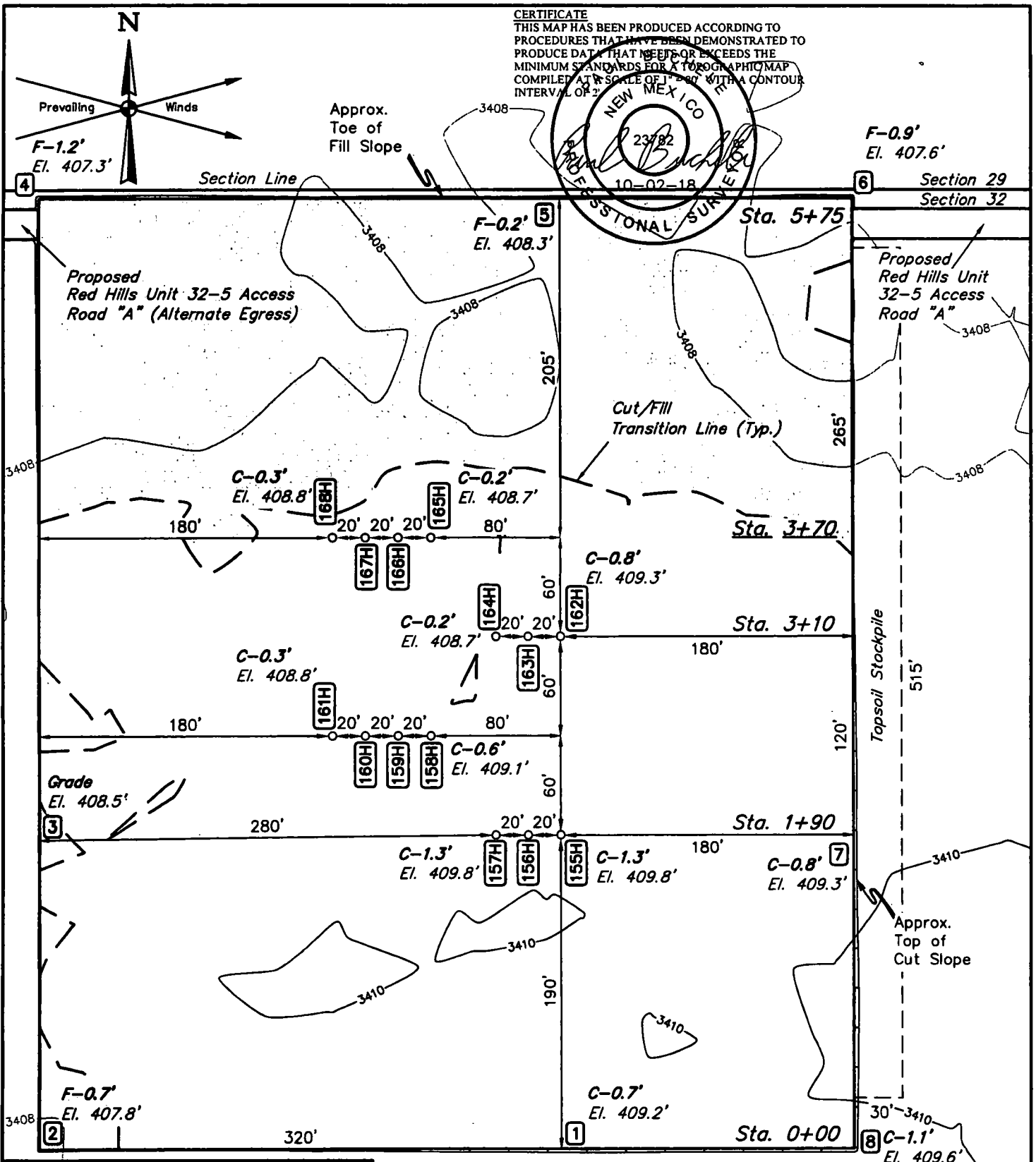
Cimarex Red Hills SWD #1
(Offset) Inc Only 08-190000
(Def Survey)

	6862.53	32.81	6880.33	6830.02	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	6862.59	32.81	6880.08	6829.78	210348.58	MAS = 10.00 (m)	28.00	28.00				MinPt-O-SF	
	6862.41	32.81	6859.77	6829.61	48812.41	MAS = 10.00 (m)	80.00	80.00				MinPt	
	6866.13	78.91	6814.03	6789.23	138.37	OSF1.50	1520.00	1620.00				MinPt-CICI	
	6868.20	63.48	6811.72	6784.72	127.17	OSF1.50	1680.00	1859.82				MINPT-O-EQU	
	6871.23	87.13	6812.31	6784.09	121.74	OSF1.50	1740.00	1739.72				MinPt-O-ADP	
	6872.19	130.13	6841.60	6799.08	81.41	OSF1.50	2580.00	2574.60				MINPT-O-EQU	
	6834.64	138.08	6841.35	6795.98	78.35	OSF1.50	2870.00	2884.38				MINPT-O-EQU	
	6848.85	158.75	6841.51	6790.10	67.53	OSF1.50	2930.00	2922.88				MinPt	
	6885.28	287.37	6818.19	6727.90	38.80	OSF1.50	5170.00	5155.83				MinPt-CICI	
	6898.25	270.35	6818.18	6725.80	38.17	OSF1.50	5320.00	5305.83				MINPT-O-EQU	
	6897.39	271.73	6818.41	6725.65	38.97	OSF1.50	5390.00	5375.83				MinPt-O-ADP	
	7004.91	283.88	6814.98	6721.24	37.38	OSF1.50	5880.00	5875.83				MINPT-O-EQU	
	7004.40	347.78	6771.72	6658.83	30.42	OSF1.50	6780.00	6745.83				MinPt-CICI	
	7008.01	433.08	6718.47	6574.98	24.41	OSF1.50	8410.00	8395.83				MinPt-CICI	
	7006.52	514.94	6682.39	6481.58	20.60	OSF1.50	8880.00	8865.83				MinPt-CICI	
	2785.35	583.54	2388.83	2201.82	7.39	OSF1.50	16880.00	16860.00				MinPt-CICI	
	2785.38	583.80	2388.82	2201.70	7.39	OSF1.50	16870.00	16860.00				MinPt	
	2786.81	584.01	2388.77	2202.00	7.38	OSF1.50	16840.00	16860.00				MinPt-O-SF	
	4801.30	585.87	4223.35	4035.83	12.25	OSF1.50	20535.14	10800.00				TD	

Borehole: Red Hills 32-5 Federal Com 156H		Well: Red Hills 32-5 Federal Com 156H		Field: NM Lea County (NAD 83)		Structure: Cimarex Red Hills 32-5 Federal Com 156H	
Gravity & Magnetic Parameters		Surface Location		Miscellaneous			
Model: HDGM 2019	Dip: 68.632°	Date: 09-Aug-2019	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Lat: N 32 5 35.88	North: 398441.4711US	Grid Conv: 0.3922°	Site: New Site
MagDec: 6.628°	FB: 47735.828nT	Gravity FB: 998.428mg (9.80665 Based)	Lon: W 103 35 42.78	Easting: 76914.8511US	Scale Fact: 0.99996923		TVD Ref: RUS(3438.7ft above MSL)
						Plan: Cimarex Red Hills 32-5 Federal Com 156H Rev 1 RM 09Aug09	
						EW (0) Scale = 1:3013.20(0)	



Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL (390° FNL, 2385° FWL)	0.00	0.00	181.82	0.00	0.00	0.00	0.00	
Rustler	913.00	0.00	281.85	913.00	0.00	0.00	0.00	0.00
Top of Salt	1328.00	0.00	281.85	1328.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	1500.00	0.00	281.85	1500.00	0.00	0.00	0.00	0.00
Hold Nudge	1809.88	6.19	281.85	1809.07	-3.55	3.43	-16.38	2.00
Drop to Vertical 2°/100' DLS	4013.47	6.19	281.85	4000.00	-63.98	52.26	-249.08	0.00
Hold Vertical	4323.14	0.00	281.85	4309.07	-57.52	55.69	-265.42	2.00
Base of Salt	4644.07	0.00	281.85	4630.00	-57.52	55.69	-265.42	0.00
Bell Canyon	4922.07	0.00	281.85	4908.00	-57.52	55.69	-265.42	0.00
Cherry Canyon	5994.07	0.00	281.85	5980.00	-57.52	55.69	-265.42	0.00
Brushy Canyon	7530.07	0.00	281.85	7516.00	-57.52	55.69	-265.42	0.00
Bone Spring Lime	9035.07	0.00	281.85	9021.00	-57.52	55.69	-265.42	0.00
Leonard Shale	9087.07	0.00	281.85	9073.00	-57.52	55.69	-265.42	0.00
Avalon Shale	9350.07	0.00	281.85	9336.00	-57.52	55.69	-265.42	0.00
1st Bone Spring Sand	10029.07	0.00	281.85	10015.00	-57.52	55.69	-265.42	0.00
KOP - Build 12°/100' DLS	10136.80	0.00	281.85	10122.54	-57.52	55.69	-265.42	0.00
2nd Bone Spring Carb	10216.44	9.58	179.60	10202.00	-60.87	49.03	-265.38	12.00
2nd Bone Spring Sand	10850.91	61.72	179.60	10543.00	193.71	-195.53	-263.69	12.00
Landing Point	10886.80	90.00	179.60	10800.00	419.94	-421.76	-262.12	12.00
Cimarex Red Hills 32-5 Federal Com 156H - PBHL (100° FSL, 2100° FWL)	20535.14	90.00	179.60	10600.00	10068.47	-10070.08	-195.44	0.00
3rd Bone Spring Carb	NaN			10996.00				
3rd Bone Spring Sand	NaN			11661.00				



FINISHED GRADE ELEVATION = 3408.5' **REV: 2 10-02-18 D.J.S. (NAME CHANGE)**

NOTES:

- Flare pit is to be located a min. of 100' from the wellhead.
- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

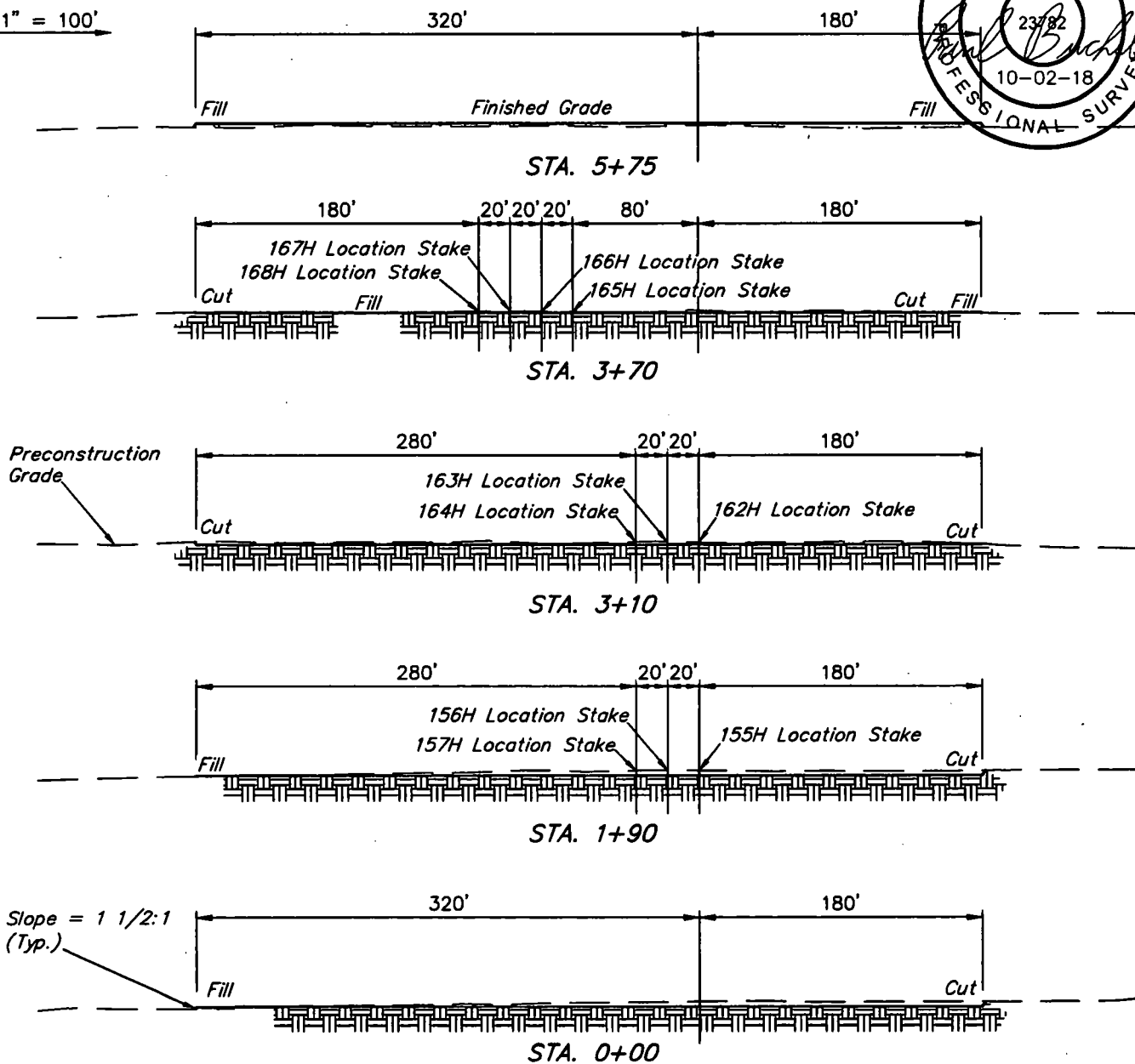
CIMAREX ENERGY CO.

RED HILLS 32-5 FEDERAL COM E2W2 PAD #3
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	1" = 80'

LOCATION LAYOUT **EXHIBIT J**

1" = 40'
X-Section
Scale
1" = 100'



APPROXIMATE EARTHWORK QUANTITIES	
(4") TOPSOIL STRIPPING	3,580 Cu. Yds.
REMAINING LOCATION	3,530 Cu. Yds.
TOTAL CUT	7,110 Cu. Yds.
FILL	3,530 Cu. Yds.
EXCESS MATERIAL	3,580 Cu. Yds.
TOPSOIL	3,580 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	0 Cu. Yds.

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	ACRES
WELL SITE DISTURBANCE	NA	±6.991

REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)

CIMAREX ENERGY CO.

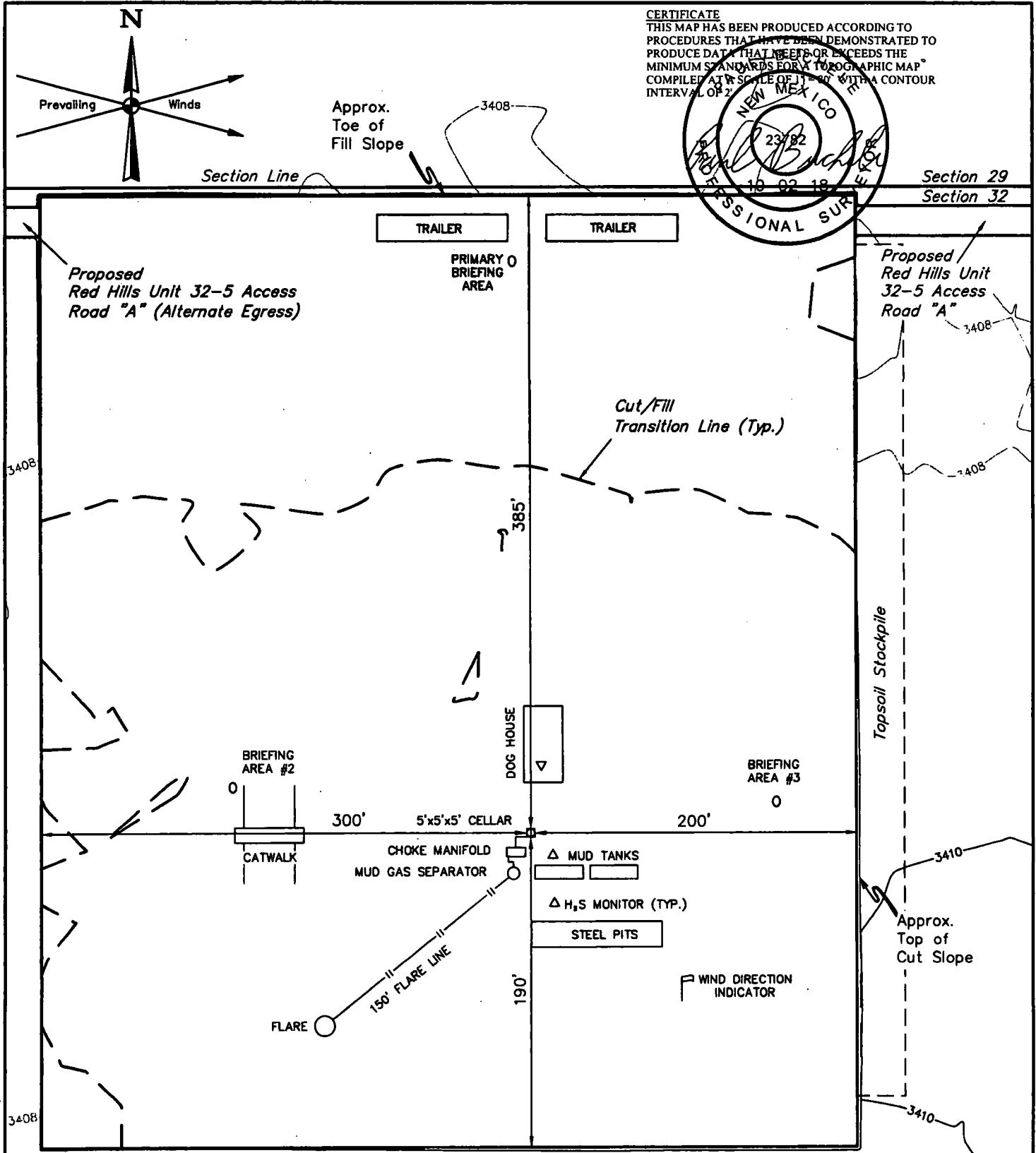
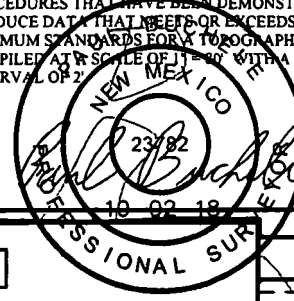
RED HILLS 32-5 FEDERAL COM E2W2 PAD #3
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	AS SHOWN
TYPICAL CROSS SECTIONS EXHIBIT J			



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

CERTIFICATE
THIS MAP HAS BEEN PRODUCED ACCORDING TO
PROCEDURES THAT HAVE BEEN DEMONSTRATED TO
PRODUCE DATA THAT MEETS OR EXCEEDS THE
MINIMUM STANDARDS FOR A TOPOGRAPHIC MAP
COMPILED AT A SCALE OF 1" = 80' WITH A CONTOUR
INTERVAL OF 2'



REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

- Contours shown at 2' intervals.

CIMAREX ENERGY CO.

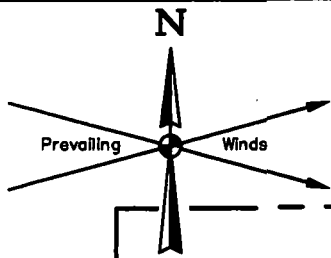
RED HILLS 32-5 FEDERAL COM 156H
390' FNL 2365' FWL
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	1" = 80'

TYPICAL RIG LAYOUT EXHIBIT K



UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



660' X 760' Archaeological Survey Boundary



Section Line

Section 29

Section 32

Proposed
Red Hills Unit 32-5 Access
Road "A" (Alternate Egress)

Proposed
Red Hills Unit
32-5 Access
Road "A"

168H
167H
166H
165H

164H
163H
162H

161H
160H
159H
158H

157H
156H
155H

Topsail Stockpile

REV: 2 10-02-18 D.J.S. (NAME CHANGE)

NOTES:

CIMAREX ENERGY CO.

**RED HILLS 32-5 FEDERAL COM E2W2 PAD #3
NE 1/4 NW 1/4, SECTION 32, T25S, R33E, N.M.P.M.
LEA COUNTY, NEW MEXICO**

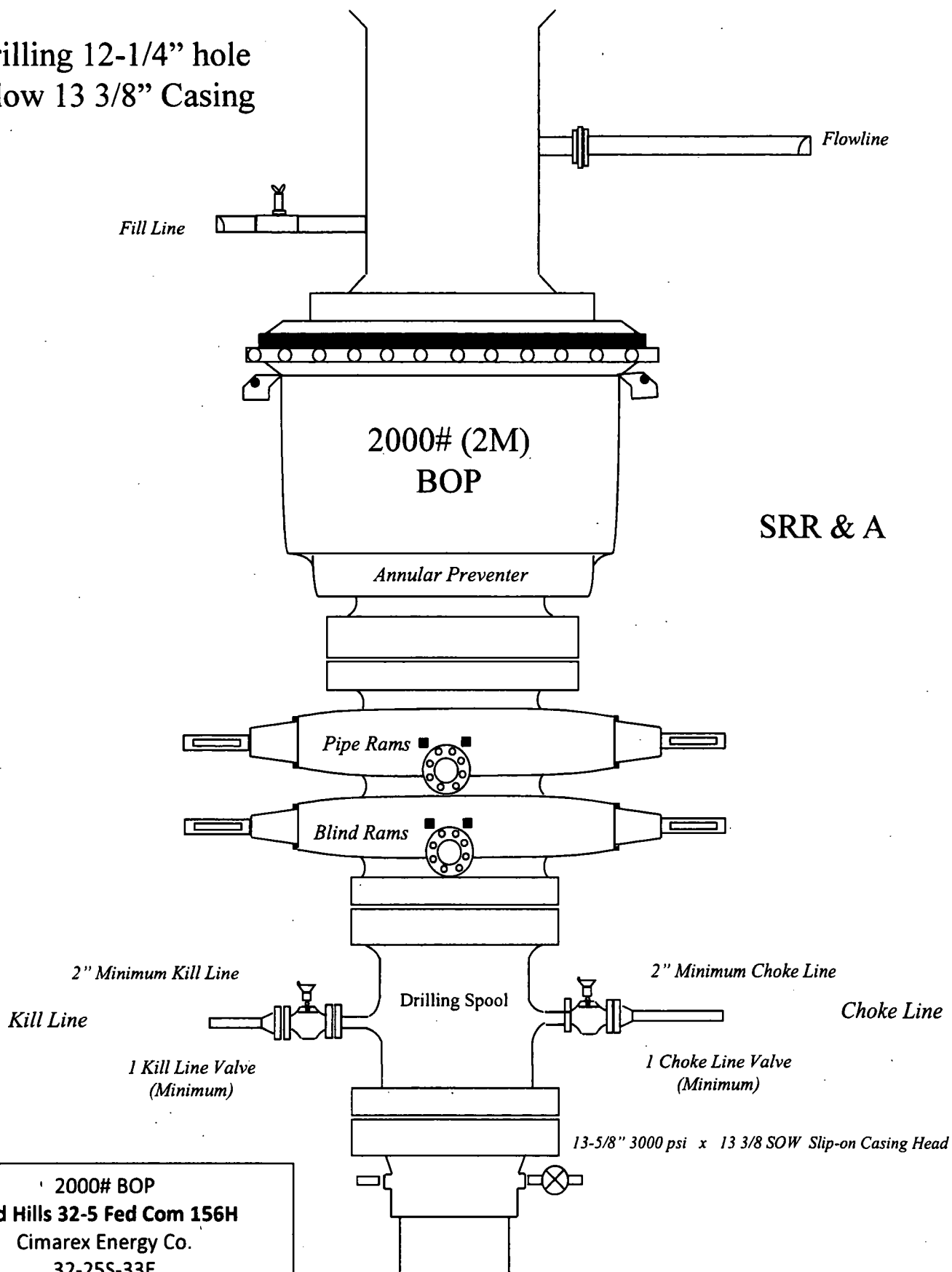


UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	J.J., C.H.	05-01-18	SCALE
DRAWN BY	J.A.	05-08-18	1" = 100'

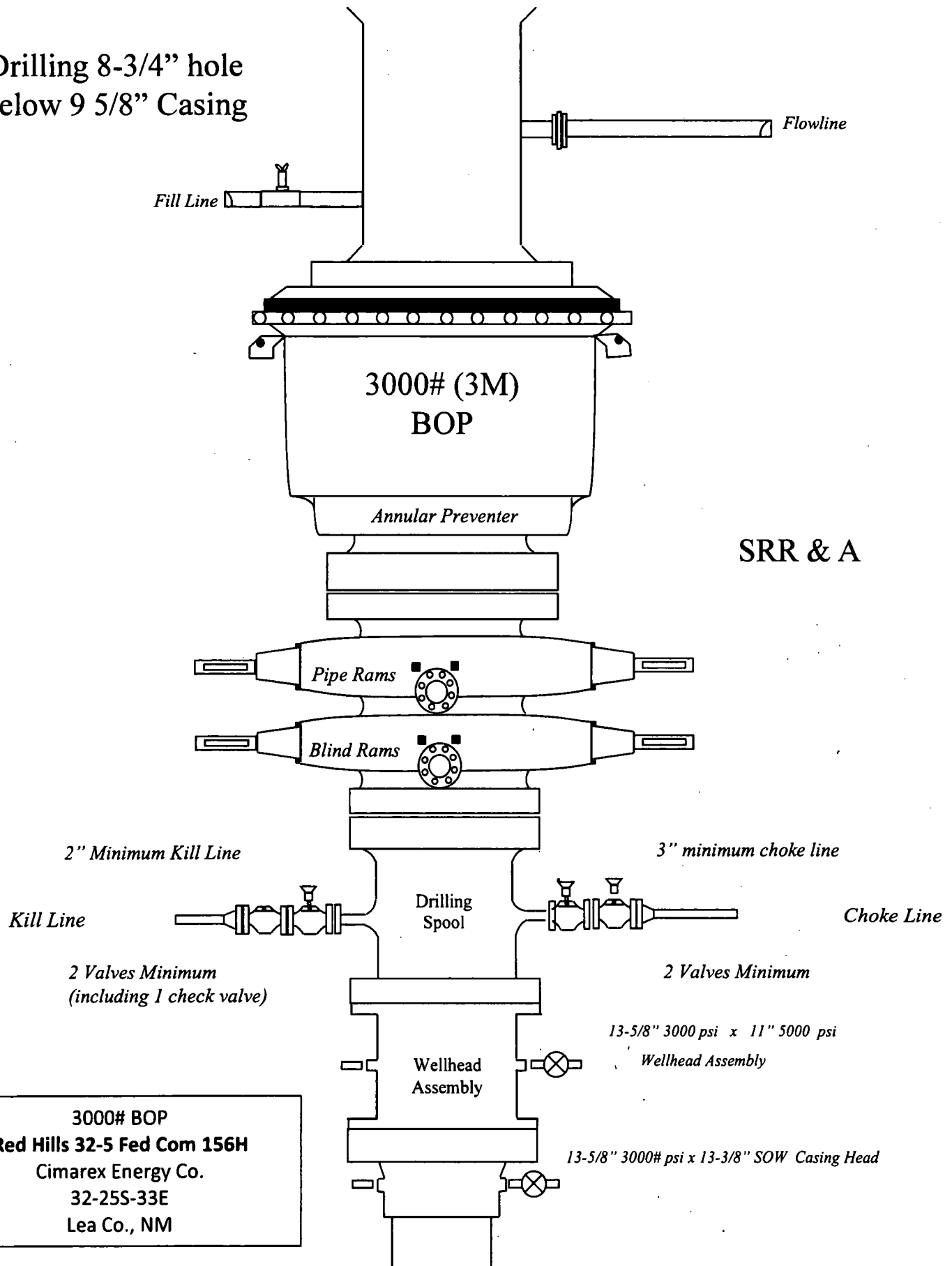
ARCHAEOLOGICAL SURVEY BOUNDARY EXHIBIT L

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

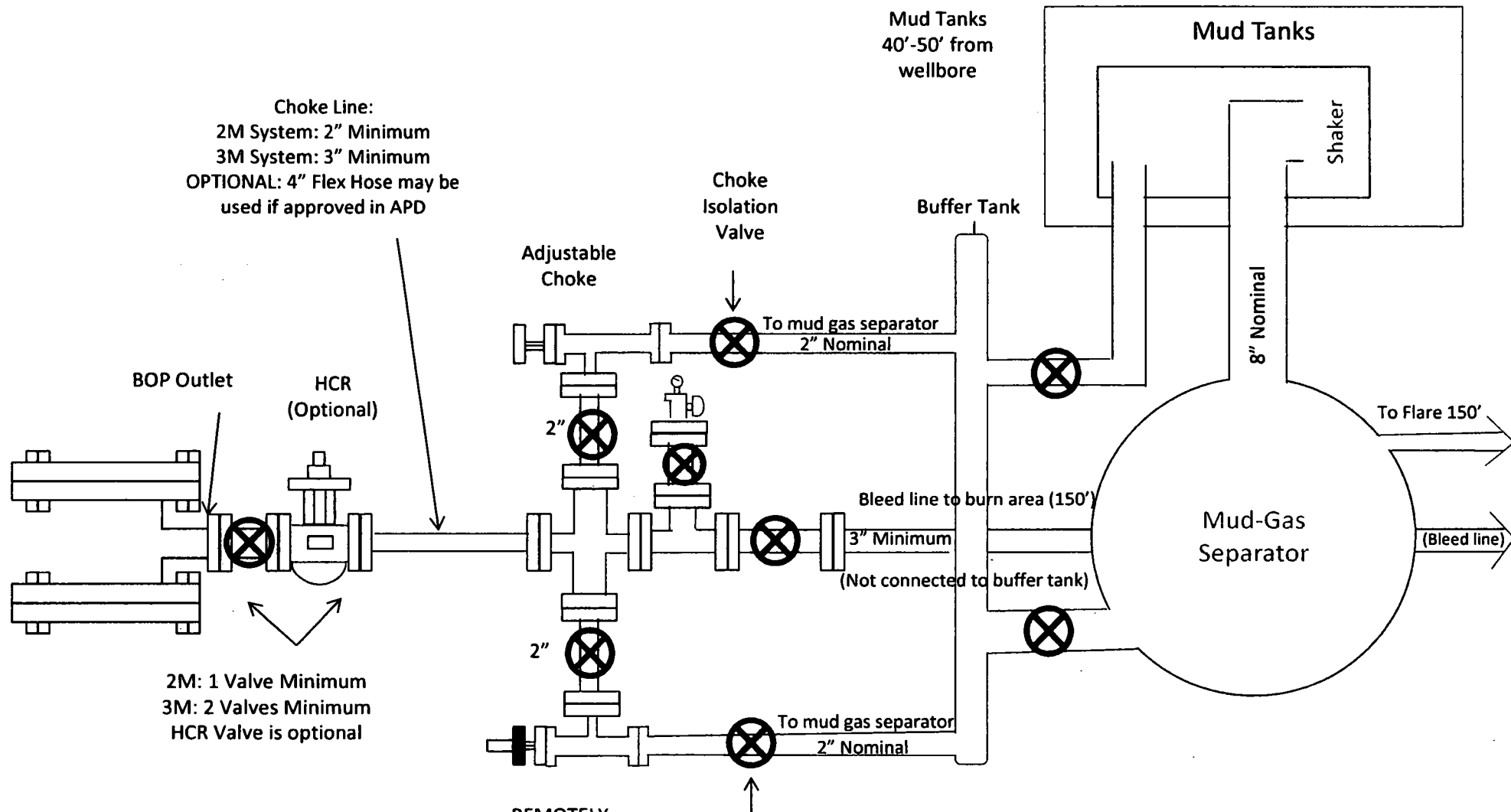


2000# BOP
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

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



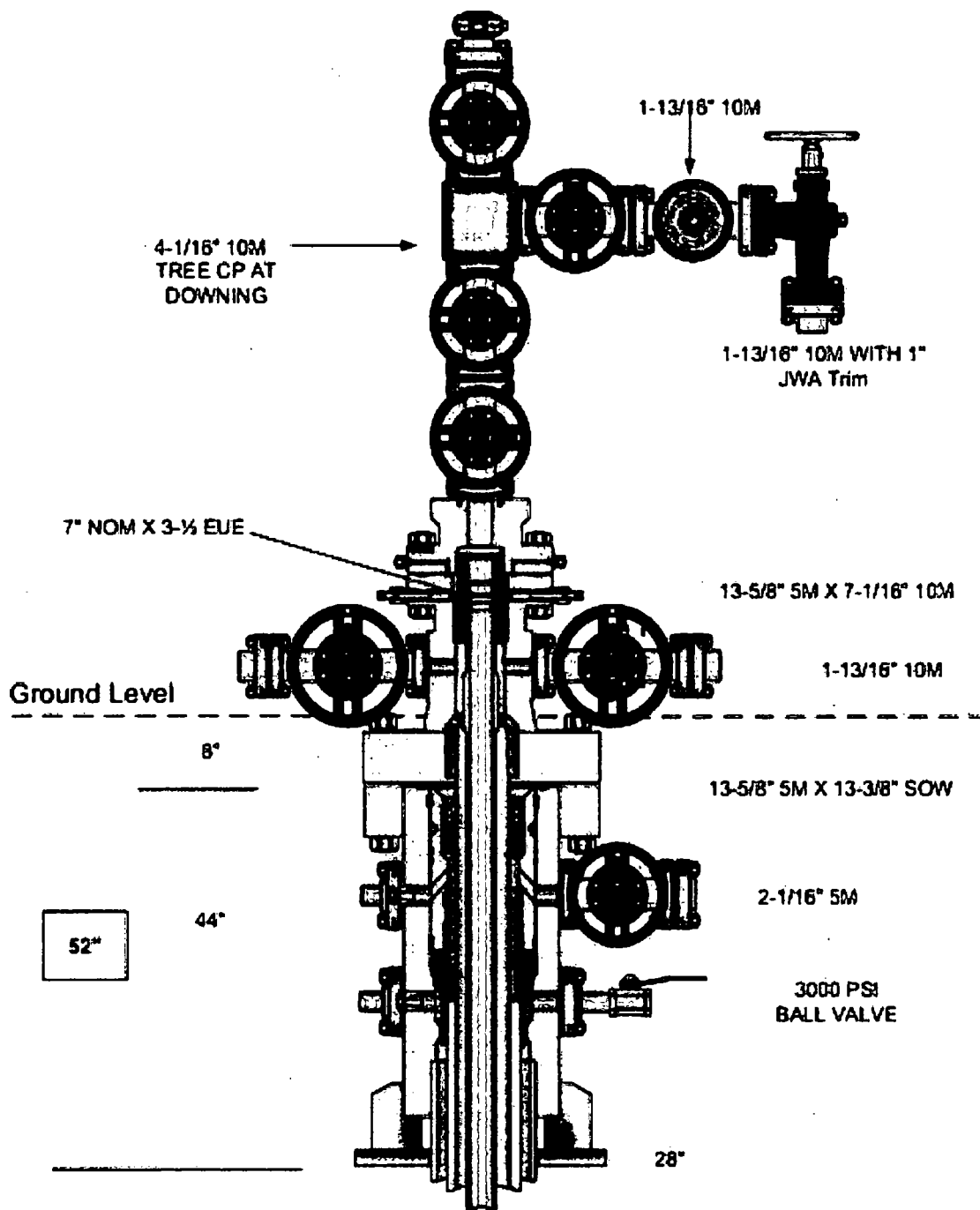
3000# BOP
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM



Drilling Operations **Choke Manifold** **2M/3M Service**

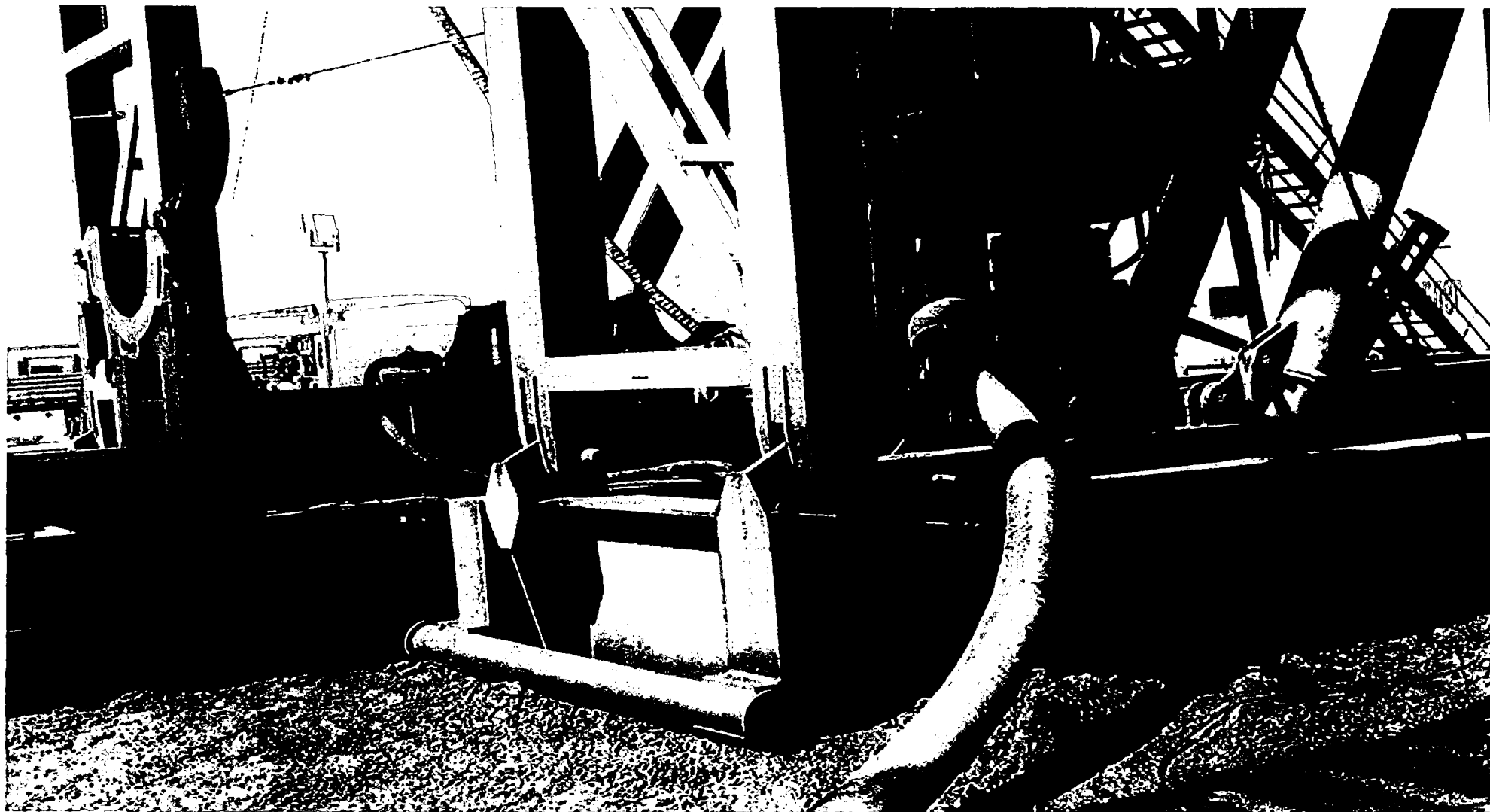
Choke Manifold Diagram
Red Hills 32-5 Fed Com 156H
 Cimarex Energy Co.
 32-25S-33E
 Lea Co., NM

Multi-bowl Wellhead Diagram



Multi-bowl Wellhead Diagram
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

Co-Flex Hose
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM



Co-Flex Hose Hydrostatic Test
 Red Hills 32-5 Fed Com 156H
 Cimarex Energy Co.
 32-25S-33E
 Lea Co., NM



Midwest Hose & Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

Customer: Oderco Inc		P.O. Number: odyd-271	
HOSE SPECIFICATIONS			
Type: Stainless Steel Armor Choke & Kill Hose		Hose Length: 45'ft.	
I.D. 4 INCHES		O.D. 9 INCHES	
WORKING PRESSURE 10,000 PSI	TEST PRESSURE 15,000 PSI	BURST PRESSURE 0 PSI	
COUPLINGS			
Stem Part No. OKC OKC		Ferrule No. OKC OKC	
Type of Coupling: Swage-It			
PROCEDURE			
<u>Hose assembly pressure tested with water at ambient temperature.</u>			
TIME HELD AT TEST PRESSURE 15 MIN.		ACTUAL BURST PRESSURE: 0 PSI	
Hose Assembly Serial Number: 79793		Hose Serial Number: OKC	
Comments:			
Date: 3/8/2011	Tested: <i>A. John Doe</i>	Approved: <i>[Signature]</i>	



Midwest Hose
& Specialty, Inc.

Internal Hydrostatic Test Graph

March 3, 2011

Customer: Houston

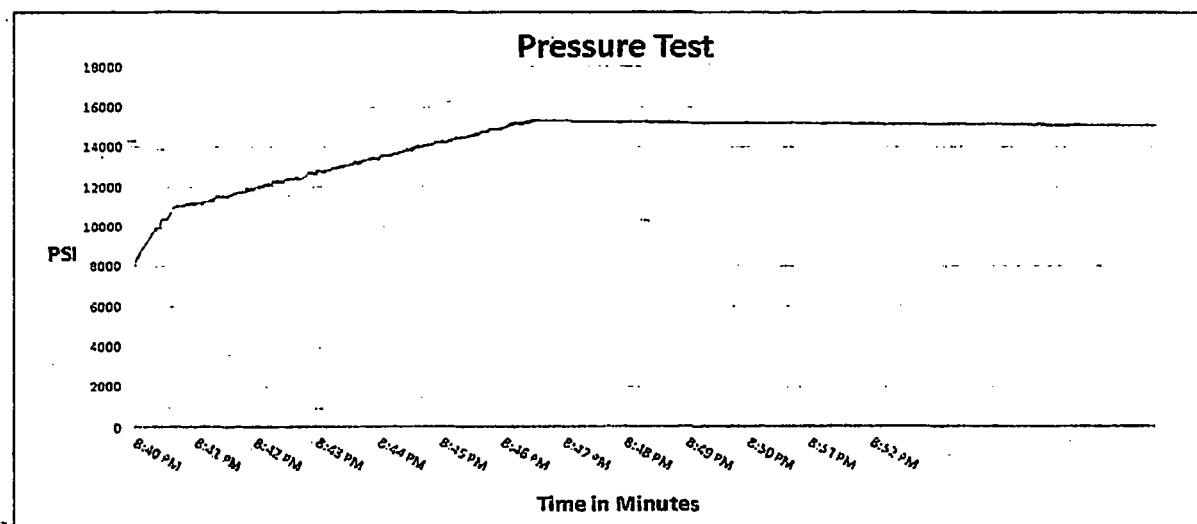
Pick Ticket #: 94260

Hose Specifications

<u>Hose Type</u>	<u>Length</u>
C & K	45'
<u>I.D.</u>	<u>O.D.</u>
4"	6.09"
<u>Working Pressure</u>	<u>Burst Pressure</u>
10000 PSI	Standard Safety Multiplier Applies

Verification

<u>Type of Fitting</u>	<u>Coupling Method</u>
4 1/16 10K	Swage
<u>Die Size</u>	<u>Final O.D.</u>
6.98"	6.25"
<u>Hose Serial #</u>	<u>Hose Assembly Serial #</u>
5544	79793



Test Pressure
15000 PSI

Time Held at Test Pressure
11 Minutes

Actual Burst Pressure

Peak Pressure
15483 PSI

Comments: Hose assembly pressure tested with water at ambient temperature.

Tested By: Zac McConnell

Approved By: Kim Thomas

Co-Flex Hose Hydrostatic Test
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-255-33E
Lea Co., NM

Co-Flex Hose
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM



Midwest Hose & Specialty, Inc.

Certificate of Conformity

Customer:

DEM

PO

ODYD-271

SPECIFICATIONS

Sales Order

79793

Dated:

3/8/2011

We hereby certify that the material supplied
for the referenced purchase order to be true
according to the requirements of the purchase
order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

Comments:

Approved:

Janet Garcia

Date:

3/8/2011



Co-Flex Hose
Red Hills 32-5 Fed Com 156H
Cimarex Energy Co.
32-25S-33E
Lea Co., NM

Specification Sheet Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium componets. The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermiculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

Working Pressure:	5,000 or 10,000 psi working pressure
Test Pressure:	10,000 or 15,000 psi test pressure
Reinforcement:	Multiple steel cables
Cover:	Stainless Steel Armor
Inner Tube:	Petroleum resistant, Abrasion resistant
End Fitting:	API flanges, API male threads, threaded or butt weld hammer unions, unbolt and other special connections
Maximum Length:	110 Feet
ID:	2-1/2", 3", 3-1/2". 4"
Operating Temperature:	-22 deg F to +180 deg F (-30 deg C to +82 deg C)

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CIMAREX ENERGY COMPANY
LEASE NO.:	NMNM0106040A
WELL NAME & NO.:	Red Hills 32-5 Federal Com 156H
SURFACE HOLE FOOTAGE:	390'/N & 2365'/W
BOTTOM HOLE FOOTAGE:	100'/S & 2100'/W
LOCATION:	Section 32, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

COA

H2S	☐ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The 13-3/8 inch surface casing shall be set at approximately **1050 feet** (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - 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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

- include the lead cement)
- 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.

Operator shall fill 1/3rd casing with fluid while running intermediate casing to maintain collapse safety factor.

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi**.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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GENERAL 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

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
393-3612

1. 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.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. 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 are located, this does not include the dog house or stairway area.
3. 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 Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. 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.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. 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.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: 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.
3. 5M or higher 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.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. 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 (8 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).
- d. 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. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. 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.

SēAH

13-3/8" 48# 46.020 J-55 STC

Dimensions (Nominal)

Outside Diameter	13.375	In.
Wall	0.330	In.
Inside Diameter	12.715	In.
Drift	12.550	In.
Weight, T&C	48.000	lbs/ft
Weight, PE	46.020	lbs/ft

Performance Ratings, Minimum

Collapse, PE	740	psi
Internal Viscous Pressure		
PE	2370	psi
STC	2370	psi
Yield Strength, Pipe Body	744	1000 lbs
Joint Strength, STC	433	1000 lbs