

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.*5. Lease Serial No.
NMNM130854

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
COTTONBERRY 20 FEDERAL 1H9. API Well No.
30-015-45147-00-X110. Field and Pool or Exploratory Area
COTTONWOOD DRAW-BONE SPRING11. County or Parish, State
EDDY COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
CIMAREX ENERGY COMPANYContact: ARICKA EASTERLING
E-Mail: aeasterling@cimarex.com3a. Address
600 N MARIENFELD STE 600
MIDLAND, TX 797033b. Phone No. (include area code)
Ph: 918-560-7060

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

Sec 20 T25S R27E NWNW 950FNL 609FWL
32.120136 N Lat, 104.218880 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 recomplete 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 approval to change the BHL.

Approved:
330 FSL & 660 FWL
Proposed:
100 FSL & 660 FWLCarlsbad Field Office
OCD Artesia

Cimarex also proposes to change the Intermediate casing depth to 1935'

NM OIL CONSERVATION
ARTESIA DISTRICT

Please see attached C102 plat, Directional Plan and Drilling Plan.

NOV 28 2018

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

Electronic Submission #442903 verified by the BLM Well Information System

For CIMAREX ENERGY COMPANY, sent to the Carlsbad

Committed to AFMSS for processing by PRISCILLA PEREZ on 11/07/2018 (19PP0340SE)

Name (Printed/Typed) ARICKA EASTERLING

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 11/07/2018

RECEIVED

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZQTA STEVENS

Title PETROLEUM ENGINEER

Date 11/15/2018

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 Carlsbad

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 **

RUP 12-7-18

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NOV 28 2018

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

RECEIVED

OPERATOR'S NAME:	Cimarex Energy Company
LEASE NO.:	NMNM130854
WELL NAME & NO.:	Cottonberry 20 Federal 1H
SURFACE HOLE FOOTAGE:	950'/N & 609'/W
BOTTOM HOLE FOOTAGE:	100'/S & 660'/W
LOCATION:	Section 20, T.25 S., R.27 E., NMPM
COUNTY:	Eddy 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

All previous COAs still apply except for the following:

A. CASING

- The minimum required fill of cement behind the 9-5/8 inch intermediate casing, which shall be set at approximately 2041 feet, is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.
 - ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

LV111518

NM OIL CONSERVATION
ARTESIA DISTRICT

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: (575) 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

NOV 28 2018

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

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-45147	² Pool Code 97494	³ Pool Name Cottonwood Draw; Bone Spring
⁴ Property Code 322224	⁵ Property Name COTTONBERRY 20 FEDERAL	⁶ Well Number 1H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3149.3'

"Surface Location

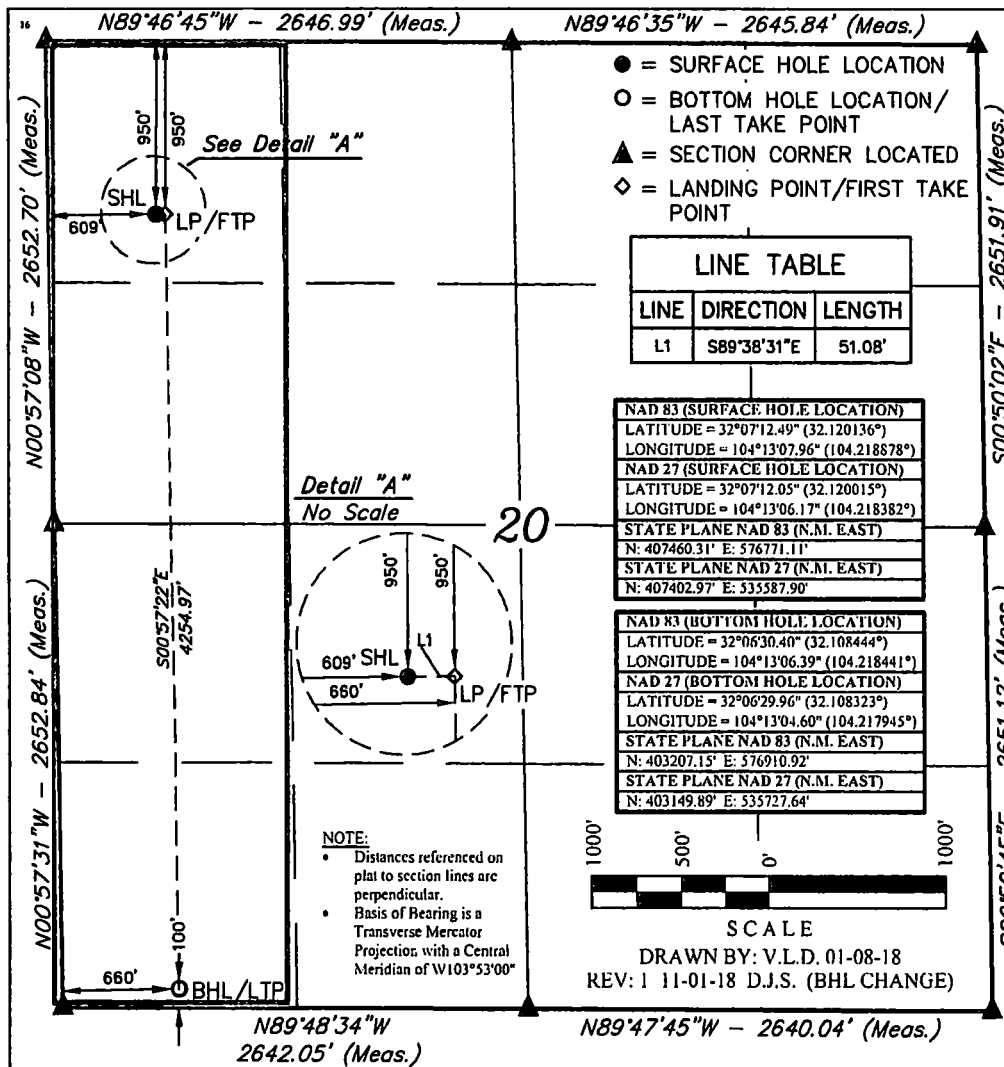
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	20	25S	27E		950	NORTH	609	WEST	EDDY

"Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	20	25S	27E		100	SOUTH	660	WEST	EDDY

¹⁰ Dedicated Acres 160	¹¹ Joint or Infill	¹² Consolidation Code	¹³ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



"OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location 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 is a voluntary pooling agreement or a compulsory pooling order approved by the division.

Signature: *Aricka Easterling* Date: 11/6/18

Aricka Easterling
Printed Name

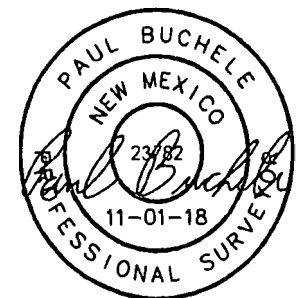
aeasterling@cimarex.com
E-mail Address

"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.

December 21, 2018

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number:

Ref 12-7-18

1. Geological Formations

TVD of target 7,380

Pilot Hole TD N/A

MD at TD 12,237

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	0	N/A	
Top Salt	1270	N/A	
Castille	1867	N/A	
Bell Canyon	2061	N/A	
Cherry Canyon	3016	Hydrocarbons	
Brushy Canyon	4056	Hydrocarbons	
Bone Spring	5612	Hydrocarbons	
Bone Spring "A" Shale	5756	Hydrocarbons	
Bone Spring "C" Shale	6103	Hydrocarbons	
1st Bone Spring Ss	6618	Hydrocarbons	
2nd Bone Spring Ss	7120	Hydrocarbons	
2nd BS Ss Horz Target	7230	Hydrocarbons	
3rd BS Limestone	7420	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	400	400	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	4.04	9.45	16.77
12 1/4	0	1935	1935	9-5/8"	36.00	J-55	LT&C	1.97	3.43	6.50
8 3/4	0	6960	6960	5-1/2"	17.00	L-80	LT&C	1.93	2.38	2.69
8 3/4	6960	12237	7380	5-1/2"	17.00	L-80	BT&C	1.82	2.24	55.60
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

FF
C/A

	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?	N
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?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	61	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	368	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	113	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	451	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1129	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	31
Intermediate	0	49
Production	1735	17

1841'

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	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			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.

	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 400'	FW Spud Mud	8.30 - 8.80	30-32	N/C
400' to 1935'	Brine Water	9.70 - 10.20	30-32	N/C
1935' to 12237'	FW/Cut Brine	8.50 - 9.00	30-32	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	
	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	3453 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.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

The casing string utilizing steel body pack-off will be tested to 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 Cottonberry 20 Federal 1H Rev2 RM 06Nov18 Proposal Geodetic Report

(Non-Def Plan)



Report Date: November 06, 2018 - 10:21 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Cottonberry 20 Federal 1H / Cimarex Cottonberry 20 Federal 1H
Well: Cimarex Cottonberry 20 Federal 1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Cottonberry 20 Federal 1H Rev2 RM 06Nov18
Survey Date: October 29, 2018
Tort / AHD / DDI / ERD Ratio: 122.276 ° / 5754.632 ft / 6.067 / 0.780
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 7' 12.48867", W 104° 13' 7.95904"
Location Grid N/E Y/X: N 407460.310 RUS, E 576771.110 RUS
CRS Grid Convergence Angle: 0.0609 °
Grid Scale Factor: 0.99991053
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 178.805 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3175.300 ft above MSL
Seabed / Ground Elevation: 3149.300 ft above MSL
Magnetic Declination: 7.323 °
Total Gravity Field Strength: 998.4466mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47861.022 nT
Magnetic Dip Angle: 59.793 °
Declination Date: November 06, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.0609 °
Total Corr Mag North->Grid North: 7.2620 °
Local Coord Referenced To: Structure Reference Point

NM OIL CONSERVATION
ARTESIA DISTRICT

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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 950' FNL, 609' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	100.00	0.00	2.71	100.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	200.00	0.00	2.71	200.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	300.00	0.00	2.71	300.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	400.00	0.00	2.71	400.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	500.00	0.00	2.71	500.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	600.00	0.00	2.71	600.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	700.00	0.00	2.71	700.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	800.00	0.00	2.71	800.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	900.00	0.00	2.71	900.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1000.00	0.00	2.71	1000.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1100.00	0.00	2.71	1100.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
Top Salt	1198.00	0.00	2.71	1198.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1200.00	0.00	2.71	1200.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1300.00	0.00	2.71	1300.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1400.00	0.00	2.71	1400.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1500.00	0.00	2.71	1500.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1600.00	0.00	2.71	1600.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1700.00	0.00	2.71	1700.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
Base Salt	1761.00	0.00	2.71	1761.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1800.00	0.00	2.71	1800.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	1900.00	0.00	2.71	1900.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
Bell Canyon (Top Delaware)	1955.00	0.00	2.71	1955.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	2000.00	0.00	2.71	2000.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	2100.00	0.00	2.71	2100.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96

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 ° ' ")
	2200.00	0.00	2.71	2200.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	2300.00	0.00	2.71	2300.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	2400.00	0.00	2.71	2400.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	2500.00	0.00	2.71	2500.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
	2600.00	0.00	2.71	2600.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
Nudge 2°/100'	2700.00	0.00	2.71	2700.00	0.00	0.00	0.00	0.00	407460.31	576771.11	N 32 7 12.49 W 104 13	7.96
DLS	2800.00	2.00	2.71	2799.98	-1.74	1.74	0.08	2.00	407462.05	576771.19	N 32 7 12.51 W 104 13	7.96
	2900.00	4.00	2.71	2899.84	-6.96	6.97	0.33	2.00	407467.28	576771.44	N 32 7 12.56 W 104 13	7.96
Cherry Canyon	2942.29	4.85	2.71	2942.00	-10.22	10.23	0.48	2.00	407470.54	576771.59	N 32 7 12.59 W 104 13	7.95
	3000.00	6.00	2.71	2999.45	-15.66	15.68	0.74	2.00	407475.98	576771.85	N 32 7 12.64 W 104 13	7.95
	3100.00	8.00	2.71	3098.70	-27.82	27.85	1.32	2.00	407488.16	576772.43	N 32 7 12.76 W 104 13	7.94
	3200.00	10.00	2.71	3197.47	-43.42	43.47	2.06	2.00	407503.78	576773.17	N 32 7 12.92 W 104 13	7.93
	3300.00	12.00	2.71	3295.62	-62.46	62.53	2.96	2.00	407522.84	576774.07	N 32 7 13.11 W 104 13	7.92
	3400.00	14.00	2.71	3393.06	-84.90	85.00	4.02	2.00	407545.30	576775.13	N 32 7 13.33 W 104 13	7.91
Hold Nudge	3453.50	15.07	2.71	3444.84	-98.29	98.41	4.66	2.00	407558.71	576775.77	N 32 7 13.46 W 104 13	7.90
	3500.00	15.07	2.71	3489.74	-110.36	110.49	5.23	0.00	407570.79	576776.34	N 32 7 13.58 W 104 13	7.90
	3600.00	15.07	2.71	3586.30	-136.30	136.46	6.46	0.00	407596.76	576777.57	N 32 7 13.84 W 104 13	7.88
	3700.00	15.07	2.71	3682.86	-162.24	162.43	7.68	0.00	407622.73	576778.79	N 32 7 14.10 W 104 13	7.87
	3800.00	15.07	2.71	3779.43	-188.18	188.40	8.91	0.00	407648.69	576780.02	N 32 7 14.35 W 104 13	7.85
	3900.00	15.07	2.71	3875.99	-214.11	214.37	10.14	0.00	407674.66	576781.25	N 32 7 14.61 W 104 13	7.84
Brushy Canyon	3990.11	15.07	2.71	3963.00	-237.49	237.78	11.25	0.00	407698.06	576782.36	N 32 7 14.84 W 104 13	7.83
	4000.00	15.07	2.71	3972.55	-240.05	240.34	11.37	0.00	407700.63	576782.48	N 32 7 14.87 W 104 13	7.82
	4100.00	15.07	2.71	4069.11	-265.99	266.31	12.60	0.00	407726.60	576783.71	N 32 7 15.12 W 104 13	7.81
	4200.00	15.07	2.71	4165.67	-291.93	292.29	13.83	0.00	407752.57	576784.94	N 32 7 15.38 W 104 13	7.79
	4300.00	15.07	2.71	4262.23	-317.87	318.26	15.06	0.00	407778.54	576786.16	N 32 7 15.64 W 104 13	7.78
	4400.00	15.07	2.71	4358.79	-343.81	344.23	16.28	0.00	407804.51	576787.39	N 32 7 15.89 W 104 13	7.77
	4500.00	15.07	2.71	4455.35	-369.75	370.20	17.51	0.00	407830.47	576788.62	N 32 7 16.15 W 104 13	7.75
	4600.00	15.07	2.71	4551.91	-395.69	396.17	18.74	0.00	407856.44	576789.85	N 32 7 16.41 W 104 13	7.74
	4700.00	15.07	2.71	4648.47	-421.63	422.14	19.97	0.00	407882.41	576791.08	N 32 7 16.67 W 104 13	7.72
	4800.00	15.07	2.71	4745.03	-447.57	448.11	21.20	0.00	407908.38	576792.31	N 32 7 16.92 W 104 13	7.71
	4900.00	15.07	2.71	4841.60	-473.51	474.08	22.43	0.00	407934.35	576793.54	N 32 7 17.18 W 104 13	7.69
	5000.00	15.07	2.71	4938.16	-499.45	500.05	23.66	0.00	407960.32	576794.76	N 32 7 17.44 W 104 13	7.68
	5100.00	15.07	2.71	5034.72	-525.39	526.02	24.88	0.00	407986.29	576795.99	N 32 7 17.69 W 104 13	7.66
	5200.00	15.07	2.71	5131.28	-551.33	551.99	26.11	0.00	408012.25	576797.22	N 32 7 17.95 W 104 13	7.65
	5300.00	15.07	2.71	5227.84	-577.27	577.96	27.34	0.00	408038.22	576798.45	N 32 7 18.21 W 104 13	7.63
	5400.00	15.07	2.71	5324.40	-603.21	603.94	28.57	0.00	408064.19	576799.68	N 32 7 18.46 W 104 13	7.62
	5500.00	15.07	2.71	5420.96	-629.15	629.91	29.80	0.00	408090.16	576800.91	N 32 7 18.72 W 104 13	7.60
Drop to Vertical	5581.85	15.07	2.71	5500.00	-650.38	651.16	30.80	0.00	408111.42	576801.91	N 32 7 18.93 W 104 13	7.59
2°/100' DLS	5600.00	14.71	2.71	5517.54	-655.03	655.82	31.03	2.00	408116.07	576802.13	N 32 7 18.98 W 104 13	7.59
Bone Spring	5601.51	14.68	2.71	5519.00	-655.42	656.21	31.04	2.00	408116.46	576802.15	N 32 7 18.98 W 104 13	7.59
	5700.00	12.71	2.71	5614.68	-678.67	679.49	32.14	2.00	408139.74	576803.25	N 32 7 19.21 W 104 13	7.58
	5800.00	10.71	2.71	5712.60	-698.91	699.76	33.10	2.00	408160.00	576804.21	N 32 7 19.41 W 104 13	7.57
	5900.00	8.71	2.71	5811.16	-715.74	716.60	33.90	2.00	408176.84	576805.01	N 32 7 19.58 W 104 13	7.56
	6000.00	6.71	2.71	5910.25	-729.11	729.99	34.53	2.00	408190.24	576805.64	N 32 7 19.71 W 104 13	7.55
	6100.00	4.71	2.71	6009.75	-739.04	739.93	35.00	2.00	408200.17	576806.11	N 32 7 19.81 W 104 13	7.54
	6200.00	2.71	2.71	6109.54	-745.49	746.38	35.31	2.00	408206.63	576806.42	N 32 7 19.87 W 104 13	7.54
	6300.00	0.71	2.71	6209.49	-748.46	749.36	35.45	2.00	408209.60	576806.56	N 32 7 19.90 W 104 13	7.54
Hold Vertical	6335.35	0.00	2.71	6244.84	-748.68	749.58	35.46	2.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
	6400.00	0.00	2.71	6309.49	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
	6500.00	0.00	2.71	6409.49	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
	6600.00	0.00	2.71	6509.49	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
1st Bone Spring	6647.51	0.00	2.71	6557.00	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
Sand	6700.00	0.00	2.71	6609.49	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
	6800.00	0.00	2.71	6709.49	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
	6900.00	0.00	2.71	6809.49	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54

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 ° ' ")
Build 12°/100'	6960.06	0.00	2.71	6869.55	-748.68	749.58	35.46	0.00	408209.82	576806.57	N 32 7 19.91 W 104 13	7.54
DLS	7000.00	4.79	178.81	6909.44	-747.01	747.91	35.50	12.00	408208.15	576806.60	N 32 7 19.89 W 104 13	7.54
2nd Bone	7080.79	14.49	178.81	6989.00	-733.49	734.40	35.78	12.00	408194.64	576806.88	N 32 7 19.76 W 104 13	7.53
Spring Sand	7100.00	16.79	178.81	7007.49	-728.32	729.22	35.89	12.00	408189.47	576806.99	N 32 7 19.70 W 104 13	7.53
	7200.00	28.79	178.81	7099.52	-689.65	690.56	36.69	12.00	408150.81	576807.80	N 32 7 19.32 W 104 13	7.52
	7300.00	40.79	178.81	7181.49	-632.69	633.62	37.88	12.00	408093.87	576808.99	N 32 7 18.76 W 104 13	7.51
	7400.00	52.79	178.81	7249.83	-559.94	560.88	39.40	12.00	408021.14	576810.50	N 32 7 18.04 W 104 13	7.49
	7500.00	64.79	178.81	7301.55	-474.56	475.53	41.18	12.00	407935.79	576812.28	N 32 7 17.19 W 104 13	7.47
	7600.00	76.79	178.81	7334.39	-380.30	381.29	43.14	12.00	407841.56	576814.25	N 32 7 16.26 W 104 13	7.45
	7700.00	88.79	178.81	7346.91	-281.27	282.28	45.21	12.00	407742.56	576816.31	N 32 7 15.28 W 104 13	7.43
Landing Point -												
Hold to 1738'	7714.11	90.49	178.81	7347.00	-267.16	268.17	45.50	12.00	407728.46	576816.61	N 32 7 15.14 W 104 13	7.43
VS												
	7800.00	90.49	178.81	7346.27	-181.28	182.30	47.29	0.00	407642.60	576818.40	N 32 7 14.29 W 104 13	7.41
	7900.00	90.49	178.81	7345.42	-81.28	82.33	49.38	0.00	407542.63	576820.48	N 32 7 13.30 W 104 13	7.38
	8000.00	90.49	178.81	7344.58	18.71	-17.65	51.46	0.00	407442.67	576822.57	N 32 7 12.31 W 104 13	7.36
	8100.00	90.49	178.81	7343.73	118.71	-117.62	53.55	0.00	407342.70	576824.65	N 32 7 11.32 W 104 13	7.34
	8200.00	90.49	178.81	7342.88	218.71	-217.59	55.64	0.00	407242.74	576826.74	N 32 7 10.33 W 104 13	7.31
	8300.00	90.49	178.81	7342.03	318.70	-317.57	57.72	0.00	407142.77	576828.83	N 32 7 9.35 W 104 13	7.29
	8400.00	90.49	178.81	7341.19	418.70	-417.54	59.81	0.00	407042.80	576830.91	N 32 7 8.36 W 104 13	7.27
	8500.00	90.49	178.81	7340.34	518.70	-517.52	61.89	0.00	406942.84	576833.00	N 32 7 7.37 W 104 13	7.25
	8600.00	90.49	178.81	7339.49	618.69	-617.49	63.98	0.00	406842.87	576835.08	N 32 7 6.38 W 104 13	7.22
	8700.00	90.49	178.81	7338.64	718.69	-717.47	66.06	0.00	406742.91	576837.17	N 32 7 5.39 W 104 13	7.20
	8800.00	90.49	178.81	7337.79	818.69	-817.44	68.15	0.00	406642.94	576839.25	N 32 7 4.40 W 104 13	7.18
	8900.00	90.49	178.81	7336.95	918.68	-917.42	70.23	0.00	406542.98	576841.34	N 32 7 3.41 W 104 13	7.15
	9000.00	90.49	178.81	7336.10	1018.68	-1017.39	72.32	0.00	406443.01	576843.42	N 32 7 2.42 W 104 13	7.13
	9100.00	90.49	178.81	7335.25	1118.67	-1117.37	74.40	0.00	406343.05	576845.51	N 32 7 1.43 W 104 13	7.11
	9200.00	90.49	178.81	7334.40	1218.67	-1217.34	76.49	0.00	406243.08	576847.59	N 32 7 0.44 W 104 13	7.08
	9300.00	90.49	178.81	7333.56	1318.67	-1317.32	78.57	0.00	406143.11	576849.68	N 32 6 59.45 W 104 13	7.06
	9400.00	90.49	178.81	7332.71	1418.66	-1417.29	80.66	0.00	406043.15	576851.76	N 32 6 58.46 W 104 13	7.04
	9500.00	90.49	178.81	7331.86	1518.66	-1517.26	82.75	0.00	405943.18	576853.85	N 32 6 57.47 W 104 13	7.02
	9600.00	90.49	178.81	7331.01	1618.66	-1617.24	84.83	0.00	405843.22	576855.93	N 32 6 56.48 W 104 13	6.99
	9700.00	90.49	178.81	7330.16	1718.65	-1717.21	86.92	0.00	405743.25	576858.02	N 32 6 55.50 W 104 13	6.97
Align to Target												
2°/100' DLS	9719.35	90.49	178.81	7330.00	1738.00	-1736.56	87.32	0.00	405723.91	576858.42	N 32 6 55.30 W 104 13	6.97
	9800.00	88.87	178.81	7330.45	1818.65	-1817.19	89.00	2.00	405643.29	576860.10	N 32 6 54.51 W 104 13	6.95
Hold to Target	9801.88	88.84	178.81	7330.49	1820.53	-1819.07	89.04	2.00	405641.41	576860.14	N 32 6 54.49 W 104 13	6.95
	9900.00	88.84	178.81	7332.48	1918.63	-1917.15	91.09	0.00	405543.34	576862.19	N 32 6 53.52 W 104 13	6.92
	10000.00	88.84	178.81	7334.52	2018.61	-2017.10	93.17	0.00	405443.39	576864.27	N 32 6 52.53 W 104 13	6.90
	10100.00	88.84	178.81	7336.55	2118.59	-2117.06	95.26	0.00	405343.44	576866.36	N 32 6 51.54 W 104 13	6.88
	10200.00	88.84	178.81	7338.58	2218.57	-2217.02	97.34	0.00	405243.49	576868.44	N 32 6 50.55 W 104 13	6.85
	10300.00	88.84	178.81	7340.62	2318.55	-2316.98	99.43	0.00	405143.55	576870.53	N 32 6 49.56 W 104 13	6.83
	10400.00	88.84	178.81	7342.65	2418.52	-2416.93	101.51	0.00	405043.60	576872.61	N 32 6 48.57 W 104 13	6.81
	10500.00	88.84	178.81	7344.68	2518.50	-2516.89	103.60	0.00	404943.65	576874.70	N 32 6 47.58 W 104 13	6.79
	10600.00	88.84	178.81	7346.71	2618.48	-2616.85	105.68	0.00	404843.70	576876.78	N 32 6 46.59 W 104 13	6.76
	10700.00	88.84	178.81	7348.75	2718.46	-2716.81	107.77	0.00	404743.75	576878.87	N 32 6 45.60 W 104 13	6.74
	10800.00	88.84	178.81	7350.78	2818.44	-2816.76	109.85	0.00	404643.80	576880.95	N 32 6 44.61 W 104 13	6.72
	10900.00	88.84	178.81	7352.81	2918.42	-2916.72	111.94	0.00	404543.86	576883.04	N 32 6 43.63 W 104 13	6.69
	11000.00	88.84	178.81	7354.85	3018.40	-3016.68	114.02	0.00	404443.91	576885.12	N 32 6 42.64 W 104 13	6.67
	11100.00	88.84	178.81	7356.88	3118.38	-3116.64	116.11	0.00	404343.96	576887.21	N 32 6 41.65 W 104 13	6.65
	11200.00	88.84	178.81	7358.91	3218.36	-3216.59	118.19	0.00	404244.01	576889.29	N 32 6 40.66 W 104 13	6.62
	11300.00	88.84	178.81	7360.94	3318.34	-3316.55	120.28	0.00	404144.06	576891.38	N 32 6 39.67 W 104 13	6.60
	11400.00	88.84	178.81	7362.98	3418.32	-3416.51	122.36	0.00	404044.11	576893.46	N 32 6 38.68 W 104 13	6.58
	11500.00	88.84	178.81	7365.01	3518.30	-3516.47	124.45	0.00	403944.16	576895.55	N 32 6 37.69 W 104 13	6.56
	11600.00	88.84	178.81	7367.04	3618.28	-3616.42	126.53	0.00	403844.22	576897.63	N 32 6 36.70 W 104 13	6.53
	11700.00	88.84	178.81	7369.08	3718.26	-3716.38	128.62	0.00	403744.27	576899.72	N 32 6 35.71 W 104 13	6.51
	11800.00	88.84	178.81	7371.11	3818.24	-3816.34	130.70	0.00	403644.32	576901.80	N 32 6 34.72 W 104 13	6.49

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 ° ' ")
	11900.00	88.84	178.81	7373.14	3918.21	-3916.30	132.79	0.00	403544.37	576903.89	N 32 6 33.73 W 104 13 6.46	
	12000.00	88.84	178.81	7375.17	4018.19	-4016.25	134.87	0.00	403444.42	576905.97	N 32 6 32.75 W 104 13 6.44	
	12100.00	88.84	178.81	7377.21	4118.17	-4116.21	136.96	0.00	403344.47	576908.06	N 32 6 31.76 W 104 13 6.42	
	12200.00	88.84	178.81	7379.24	4218.15	-4216.17	139.04	0.00	403244.53	576910.14	N 32 6 30.77 W 104 13 6.39	
Cimarex Cottonberry 20 Federal 1H - PBHL [100' FSL, 660' FWL]	12237.39	88.84	178.81	7380.00	4255.54	-4253.55	139.82	0.00	403207.15	576910.92	N 32 6 30.40 W 104 13 6.39	

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)	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	Original Borehole / Cimarex Cottonberry 20 Federal 1H Rev2 RM 06Nov18
	1	26.000	12237.395	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Cottonberry 20 Federal 1H Rev2

EW (ft) Scale = 1:286.43(ft)

Cimarex Cottonberry 20 Federal 1H Rev2 RM 06Nov18 Anti-Collision Summary Report

Analysis Date-24hr Time: November 06, 2018 - 10:21

Client: Cimarex

Field: NM Eddy County (NAD 83)

Structure: Cimarex Cottonberry 20 Federal 1H

Slot: Cimarex Cottonberry 20 Federal 1H

Well: Cimarex Cottonberry 20 Federal 1H

Borehole: Original Borehole

Scan MD Range: 0.00ft ~ 12237.39ft

Analysis Method: 3D Least Distance

Reference Trajectory: Cimarex Cottonberry 20 Federal 1H Rev2 RM 06Nov18 (Non-Def Plan)

Depth Interval: Every 10.00 Measured Depth (ft)

Rule Set: NAL Procedure: D&M AntiCollision Standard S002

Min Pts: All local minima indicated.

Version / Patch: 2.10.740.0

Database \ Project: US1153APP452.dir.slb.com\drilling-NM Eddy County 2.10

ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Trajectory Error Model:**Offset Selection Criteria**

Wellhead distance scan:

Selection filters:

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 Trajectories Summary

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

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Cottonberry 20
Federal 5H Rev2 RM 06Nov18
(Def Plan)

40.02	32.51	37.52	7.50	N/A	MAS = 9.91 (m)	0.00	0.00	CICI<=15m<15.00				Enter Alert	
40.01	32.51	37.51	7.50	N/A	MAS = 9.91 (m)	26.00	26.00					WRP	
32.44	32.51	14.51	-0.07	1.94	MAS = 9.91 (m)	2520.00	2520.00		SfcRtd<9.91			Enter Major	
31.82	32.51	13.57	-0.69	1.86	MAS = 9.91 (m)	2570.00	2570.00					MinPts	
31.83	32.51	13.53	-0.68	1.86	MAS = 9.91 (m)	2580.00	2580.00					MINPT-O-EOU	
31.90	32.51	13.53	-0.61	1.85	MAS = 9.91 (m)	2590.00	2590.00					MinPt-O-SF	
32.48	32.51	13.94	-0.03	1.87	MAS = 9.91 (m)	2620.00	2620.00		SfcRtd>9.91			Exit Major	
98.20	32.51	76.50	65.69	4.98	MAS = 9.91 (m)	3180.00	3177.76		OSF>5.00			Exit Alert	
109.87	34.75	85.87	75.11	4.99	OSF1.50	3520.00	3509.06		OSF<5.00			Enter Alert	
105.34	57.91	65.91	47.44	2.78	OSF1.50	5590.00	5507.87					MinPt-CICI	
105.36	57.98	65.88	47.39	2.78	OSF1.50	5600.00	5517.54					MinPts	
107.11	57.53	67.93	49.58	2.85	OSF1.50	6960.06	6869.55					MinPts	
183.52	57.48	144.36	126.03	4.94	OSF1.50	7240.00	7133.72		OSF>5.00			Exit Alert	
454.72	32.51	434.42	422.21	25.41	MAS = 9.91 (m)	7714.11	7347.00					MinPts	
458.30	93.26	395.29	365.04	7.53	OSF1.50	10000.00	7334.52					MinPt-CICI	
458.54	93.90	395.11	364.64	7.48	OSF1.50	10040.00	7335.33					MINPT-O-EOU	
458.68	94.06	395.14	364.62	7.47	OSF1.50	10050.00	7335.53					MinPt-O-ADP	
540.91	159.53	433.73	381.38	5.14	OSF1.50	12237.39	7380.00					MinPt-O-SF	

Cimarex Cottonberry 20
Federal 2H Survey MWD 0ft to
12651ft (Def Survey)

2748.11	32.81	2745.61	2715.30	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	Pass
2748.08	32.81	2745.57	2715.27	N/A	MAS = 10.00 (m)	10.00	10.00					MinPt-O-SF	
2748.07	32.81	2745.57	2715.26	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
2747.91	32.81	2745.00	2715.10	6733.47	MAS = 10.00 (m)	140.00	140.00					MinPts	
2747.95	32.81	2744.98	2715.14	5557.34	MAS = 10.00 (m)	160.00	160.00					MINPT-O-EOU	

Offset Trajectory	Separation			Allow	Sep.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.		MD (ft)	TVD (ft)	Alert	Minor	Major		
2748.26	32.81	2742.99	2715.49	994.65	MAS = 10.00 (m)	660.00	660.00					MinPts	
2745.91	32.81	2737.88	2713.10	496.06	MAS = 10.00 (m)	1290.00	1290.00					MinPts	
2745.99	32.81	2737.76	2713.18	478.43	MAS = 10.00 (m)	1340.00	1340.00					MINPT-O-EOU	
2604.51	32.81	2582.97	2571.71	137.51	MAS = 10.00 (m)	4240.00	4204.29					MinPt-O-SF	
2401.97	40.05	2374.33	2361.92	96.67	OSF1.50	5400.00	5324.40					MinPt-O-SF	
1461.40	50.97	1426.18	1410.43	46.27	OSF1.50	7100.00	7007.49					MinPt-O-SF	
1422.27	50.97	1386.99	1371.30	45.21	OSF1.50	7640.00	7341.89					MinPt-O-SF	
1421.75	50.96	1386.46	1370.79	45.23	OSF1.50	7710.00	7347.02					MinPts	
1422.59	51.04	1387.25	1371.56	45.21	OSF1.50	7780.00	7346.44					MinPt-O-SF	
1424.59	51.13	1389.17	1373.45	45.20	OSF1.50	7840.00	7345.93					MinPt-O-SF	
1429.82	51.31	1394.27	1378.50	45.21	OSF1.50	7930.00	7345.17					MinPt-O-SF	
1373.41	129.40	1285.81	1244.01	16.38	OSF1.50	9830.00	7331.06					MinPt-CtCt	
1371.75	140.40	1276.82	1231.35	15.04	OSF1.50	10090.00	7336.35					MinPt-CtCt	
1372.13	147.35	1272.56	1224.78	14.32	OSF1.50	10250.00	7339.60					MinPt-CtCt	
1319.86	184.51	1195.50	1135.35	10.94	OSF1.50	11100.00	7356.88					MinPt-CtCt	
1319.92	184.74	1195.41	1135.18	10.92	OSF1.50	11120.00	7357.28					MINPT-O-EOU	
1320.01	184.85	1195.42	1135.16	10.92	OSF1.50	11130.00	7357.49					MinPt-O-ADP	
1318.99	226.17	1166.86	1092.82	8.88	OSF1.50	12020.00	7375.58					MinPts	
1318.92	225.98	1166.91	1092.93	8.89	OSF1.50	12030.00	7375.78					MinPt-CtCt	
1334.46	219.57	1186.69	1114.89	9.26	OSF1.50	12237.39	7380.00					TD	

Cimarex Cottonberry 20
Federal #3H MWD Off to
12324ft (Def Survey)

												Pass
2679.44	32.81	2676.94	2646.63	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
2679.40	32.81	2676.90	2646.60	893007.84	MAS = 10.00 (m)	10.00	10.00					MinPt-O-SF
2679.40	32.81	2676.90	2646.59	N/A	MAS = 10.00 (m)	20.00	20.00					MinPts
2679.40	32.81	2676.90	2646.59	N/A	MAS = 10.00 (m)	26.00	26.00					WRP
2679.77	32.81	2676.73	2646.96	4916.17	MAS = 10.00 (m)	170.00	170.00					MINPT-O-EOU
2678.27	32.81	2669.75	2645.46	444.46	MAS = 10.00 (m)	1400.00	1400.00					MinPts
2678.47	32.81	2669.32	2645.66	402.70	MAS = 10.00 (m)	1540.00	1540.00					MINPT-O-EOU
2495.95	41.75	2467.24	2454.20	95.59	OSF1.50	5600.00	5517.54					MinPt-O-SF
2450.88	40.72	2422.85	2410.16	96.50	OSF1.50	6850.00	6759.49					MinPt-CtCt
2450.91	40.78	2422.83	2410.13	96.35	OSF1.50	6860.00	6769.49					MINPT-O-EOU
2450.96	40.84	2422.85	2410.12	96.20	OSF1.50	6870.00	6779.49					MinPt-O-ADP
2452.98	41.36	2424.52	2411.62	94.97	OSF1.50	6960.06	6869.55					MinPt-O-SF
2694.34	69.30	2647.31	2625.05	60.45	OSF1.50	8030.00	7344.32					MinPt-CtCt
2700.97	88.72	2640.99	2612.25	46.95	OSF1.50	8520.00	7340.17					MINPT-O-EOU
2638.57	195.96	2507.10	2442.61	20.44	OSF1.50	10520.00	7345.09					MinPt-CtCt
2654.77	321.88	2439.35	2332.89	12.46	OSF1.50	12060.00	7376.39					MinPt-CtCt
2654.83	322.08	2439.28	2332.75	12.45	OSF1.50	12080.00	7376.80					MINPT-O-EOU
2654.92	322.17	2439.30	2332.74	12.45	OSF1.50	12090.00	7377.00					MinPt-O-ADP
2657.39	322.82	2441.34	2334.57	12.43	OSF1.50	12180.00	7378.83					MinPt-O-SF
2660.55	323.04	2444.35	2337.51	12.44	OSF1.50	12237.39	7380.00					TD

Cimarex Cottonberry 20
Federal 4H MWD Off to 11975ft
(Def Survey)

												Pass
4017.88	32.81	4015.38	3985.07	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
4017.86	32.81	4015.36	3985.06	N/A	MAS = 10.00 (m)	26.00	26.00					WRP
4008.58	32.81	4001.43	3975.77	861.30	MAS = 10.00 (m)	970.00	970.00					MinPts
4008.66	32.81	4001.36	3975.85	835.83	MAS = 10.00 (m)	1030.00	1030.00					MINPT-O-EOU
4009.21	32.81	4000.61	3976.41	656.76	MAS = 10.00 (m)	1320.00	1320.00					MINPT-O-EOU
3918.07	41.18	3889.76	3876.89	152.08	OSF1.50	5600.00	5517.54					MinPt-O-SF
3910.83	39.00	3883.98	3871.83	160.85	OSF1.50	6050.00	5959.96					MinPt-O-ADP
3910.74	38.89	3883.97	3871.85	161.32	OSF1.50	6070.00	5979.87					MINPT-O-EOU

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	3910.71	38.79	3884.00	3871.93	161.79	OSF 1.50	6090.00	5999.79				MinPt-CtCt	
	3920.91	40.76	3892.89	3880.15	153.75	OSF 1.50	6960.06	6869.55				MinPt-O-SF	
	3918.74	39.52	3891.55	3879.23	158.90	OSF 1.50	7160.00	7063.70				MinPt-O-ADP	
	3918.52	39.25	3891.50	3879.27	160.04	OSF 1.50	7190.00	7090.70				MinPt-O-EOU	
	3918.40	38.87	3891.64	3879.53	161.73	OSF 1.50	7230.00	7125.34				MinPt-CtCt	
	3981.19	68.22	3934.88	3912.97	90.81	OSF 1.50	8860.00	7337.29				MinPt-CtCt	
	3982.66	72.71	3933.36	3909.95	85.03	OSF 1.50	9030.00	7335.84				MinPt-O-EOU	
	3983.47	73.60	3933.57	3909.87	83.98	OSF 1.50	9070.00	7335.51				MinPt-O-ADP	
	3958.54	137.13	3866.29	3821.42	44.08	OSF 1.50	10490.00	7344.48				MinPt-CtCt	
	3959.19	139.04	3865.67	3820.15	43.47	OSF 1.50	10580.00	7346.31				MinPt-O-EOU	
	3959.90	139.88	3865.82	3820.02	43.21	OSF 1.50	10620.00	7347.12				MinPt-O-ADP	
	3965.76	207.98	3826.27	3757.77	28.93	OSF 1.50	12090.00	7377.00				MinPt-CtCt	
	3965.82	208.19	3826.19	3757.63	28.90	OSF 1.50	12110.00	7377.41				MinPt-O-EOU	
	3965.98	208.39	3826.22	3757.59	28.88	OSF 1.50	12130.00	7377.82				MinPt-O-ADP	
	3968.57	209.41	3828.13	3759.16	28.75	OSF 1.50	12237.39	7380.00				MinPt-O-SF	