Form 3160-5
(June 2015)

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

5. Lease Serial No.
NMNM0559539

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
JAMES 20 FEDERAL 38H

2. Name of Operator
CIMAREX ENERGY COMPANY
Contact: AMITHY E CRAWFORD
E-Mail: acrawford@cimarex.com

9. API Well No.
30-025-45603-00-X1

3a. Address
600 N. MARIENFELD STREET STE 600
MIDLAND, TX 79701

3b. Phone No. (include area code)
Ph: 432-620-1909

10. Field and Pool or Exploratory Area
BONE SPRINGS

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 20 T23S R32E NWNW 340FNL 760FWL
32.296337 N Lat, 103.702751 W Lon

11. County or Parish, State
LEA COUNTY, NM

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 to Original A PD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 to change the well name to the James 20-29 Federal Com 38H.

Cimarex also requests to change the BHL and Drilling plan.

Proposed BHL:
100' FSL & 2178' FWL of Section 29, 23S 32E

There will be no new surface disturbance.

Please see attached- Updated C102, Wellsite layout, Drilling Plan, Multibowl Wellhead & Procedure, Casing Specs & Directional Plans.

Carlsbad Field Office
Operator Copy

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

Electronic Submission #503226 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 02/18/2020 (20PP1310SE)

Name *(Printed/Typed)* AMITHY E CRAWFORD — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 02/13/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By YOLANDA JIMENEZ — Title PETROLEUM ENGINEER — Date 03/23/2020

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 ****

Revisions to Operator-Submitted EC Data for Sundry Notice #503226

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	APDCH NOI	APDCH NOI
Lease:	NMNM0559539	NMNM0559539
Agreement:		
Operator:	CIMAREX ENERGY CO. 600 N. MARIENFELD SUITE 600 MIDLAND, TX 79705 Ph: 432-620-1909	CIMAREX ENERGY COMPANY 600 N. MARIENFELD STREET STE 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: County:	 NM LEA	 NM LEA
Field/Pool:	SAND DUNES; BONE SPRING	BONE SPRINGS
Well/Facility:	JAMES 20-29 FEDERAL COM 38H Sec 20 T23S R32E 340FNL 760FWL	JAMES 20 FEDERAL 38H Sec 20 T23S R32E NWNW 340FNL 760FWL 32.296337 N Lat, 103.702751 W Lon

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

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

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-025-45603	53805	Sand Dunes; Bone Spring, South

[4] Property Code	[5] Property Name	[6] Well Number
	JAMES 20-29 FEDERAL COM	38H

[7] OGRID No.	[8] Operator Name	[9] Elevation
215099	CIMAREX ENERGY CO.	3678.0

[10] 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	23S	32E		340	NORTH	760	WEST	LEA

[11] 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
N	29	23S	32E		100	SOUTH	2178	WEST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

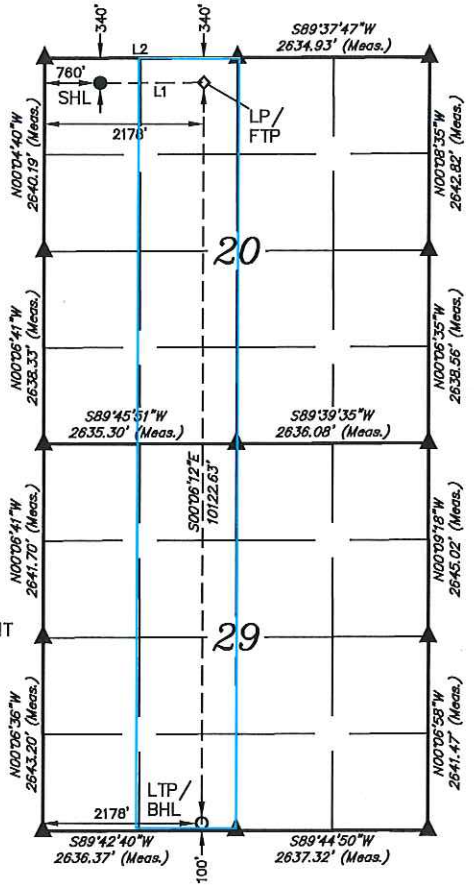
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

[16]

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°17'46.82" (32.296338°)
LONGITUDE = 103°42'09.90" (103.702749°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°17'46.37" (32.296215°)
LONGITUDE = 103°42'08.15" (103.702265°)
STATE PLANE NAD 83 (N.M. EAST)
N: 472113.19' E: 736181.35'
STATE PLANE NAD 27 (N.M. EAST)
N: 472053.63' E: 694998.04'

NAD 83 (LP/FTP)
LATITUDE = 32°17'46.86" (32.296349°)
LONGITUDE = 103°41'53.38" (103.698162°)
NAD 27 (LP/FTP)
LATITUDE = 32°17'46.41" (32.296226°)
LONGITUDE = 103°41'51.64" (103.697677°)
STATE PLANE NAD 83 (N.M. EAST)
N: 472125.79' E: 737598.97'
STATE PLANE NAD 27 (N.M. EAST)
N: 472066.23' E: 696415.66'

NAD 83 (LTP/BHL)
LATITUDE = 32°16'06.71" (32.268530°)
LONGITUDE = 103°41'53.37" (103.698159°)
NAD 27 (LTP/BHL)
LATITUDE = 32°16'06.26" (32.268407°)
LONGITUDE = 103°41'51.63" (103.697676°)
STATE PLANE NAD 83 (N.M. EAST)
N: 462005.19' E: 737659.68'
STATE PLANE NAD 27 (N.M. EAST)
N: 461945.91' E: 696476.08'



● = SURFACE HOLE LOCATION
◇ = LANDING POINT/FIRST TAKE POINT
O = BOTTOM HOLE LOCATION/ LAST TAKE POINT
▲ = SECTION CORNER LOCATED

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N89°43'53"E	1417.93'
L2	N89°43'55"E	2633.52'

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

2000' 1000' 0' 2000'
SCALE

REV: 2 S.T.O. 11-13-19 (NAME & WELLBORE CHANGE)

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

Signature 1/22/20 Date

Amithy Crawford
Printed Name

acrawford@cimarex.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

August 30, 2017
Date of Survey
Signature and Seal of Professional Surveyor:

PAUL BUCHELE NEW MEXICO 23782 PROFESSIONAL SURVEYOR 11-13-19

Certificate Number:

1. Geological Formations

TVD of target 10,550
MD at TD 20,561

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1160	N/A	
Salado	2260	N/A	
Castille	3260	N/A	
Base of Salt	4510	N/A	
Delaware Sands	4720	Hydrocarbons	
Bone Spring	8500	Hydrocarbons	
Avalon Shale	9050	Hydrocarbons	
Avalon Target	9345	Hydrocarbons	
1st Bone Spring Sand	9650	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	1200	1200	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	1.42	3.33	5.59
12 1/4	0	4700	4700	9-5/8"	40.00	J-55	BT&C	1.35	1.58	3.35
8 3/4	0	10800	10485	7"	32.00	P-110	LT&C	2.22	2.57	2.67
6	9167	20561	10550	4-1/2"	13.50	P-110	BT&C	1.62	1.89	22.60
						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

	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?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	779	14.80	1.34	9.15	9.5	Tail: Class C + LCM
Intermediate	881	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	272	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Intermediate 2 - Stage #2	470	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
						DV/ECP Tool 4850'
Intermediate 2 - Stage #1	649	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	141	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Completion System		14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0	25
Intermediate	0	43
Intermediate 2 - Stage #1	4850	45
Completion System	10600	10

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	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4		5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			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.

	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 1200'	FW Spud Mud	7.83 - 8.33	30-32	N/C
1200' to 4700'	Brine Water	9.70 - 10.20	30-32	N/C
4700' to 10800'	Cut Brine or OBM	8.40 - 8.90	27-70	N/C
10800' to 0'				N/C
11217' to 20561'	OBM	11.50 - 12.00	50-70	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

6. Logging and Testing Procedures

	Logging, Coring and Testing
X	Will run GR/CNL fromTD 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

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	6583 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	H2S is present
X	H2S 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 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 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 5000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 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.

Schlumberger

Cimarex James 20-29 Federal Com #38H Rev3 05Feb20 Proposal Geodetic Report

(Non-Def Plan)

CIMAREX

Report Date:	February 05, 2020 - 12:06 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex	**Vertical Section Azimuth:**	179.619 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex James 20-29 Federal Com #38H / James 20-29 Federal Com #38H	**TVD Reference Datum:**	RKB
Well:	Cimarex James 20-29 Federal Com #38H	**TVD Reference Elevation:**	3704.000 ft above MSL
Borehole:	James 20-29 Federal Com #38H	**Seabed / Ground Elevation:**	3678.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.693 °
Survey Name:	Cimarex James 20-29 Federal Com #38H Rev3 05Feb20	**Total Gravity Field Strength:**	998.4354mgn (9.80665 Based)
Survey Date:	November 22, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	113.864 ° / 11532.390 ft / 6.408 / 1.093	**Total Magnetic Field Strength:**	47895.677 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.973 °
Location Lat / Long:	N 32° 17' 46.81622", W 103° 42' 9.89824"	**Declination Date:**	February 05, 2020
Location Grid N/E Y/X:	N 472113.190 ftUS, E 736181.350 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3369 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99995257	**Grid Convergence Used:**	0.3369 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.3565 °
		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 [340' FNL, 760' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	100.00	0.00	89.49	100.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	200.00	0.00	89.49	200.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	300.00	0.00	89.49	300.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	400.00	0.00	89.49	400.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	500.00	0.00	89.49	500.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	600.00	0.00	89.49	600.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	700.00	0.00	89.49	700.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	800.00	0.00	89.49	800.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	900.00	0.00	89.49	900.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1000.00	0.00	89.49	1000.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1100.00	0.00	89.49	1100.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
Rustler	*1130.00*	*0.00*	*89.49*	*1130.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472113.19*	*736181.35*	*N 32 17 46.82*	*W 103 42 9.90*
	1200.00	0.00	89.49	1200.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1300.00	0.00	89.49	1300.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1400.00	0.00	89.49	1400.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
Top of Salt	*1440.00*	*0.00*	*89.49*	*1440.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472113.19*	*736181.35*	*N 32 17 46.82*	*W 103 42 9.90*
	1500.00	0.00	89.49	1500.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1600.00	0.00	89.49	1600.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1700.00	0.00	89.49	1700.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1800.00	0.00	89.49	1800.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	1900.00	0.00	89.49	1900.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
Nudge 2°/100' DLS	2000.00	0.00	89.49	2000.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
	2100.00	2.00	89.49	2099.98	0.00	0.02	1.75	2.00	472113.21	736183.09	N 32 17 46.82	W 103 42 9.88
	2200.00	4.00	89.49	2199.84	-0.02	0.06	6.98	2.00	472113.25	736188.33	N 32 17 46.82	W 103 42 9.82
	2300.00	6.00	89.49	2299.45	-0.03	0.14	15.69	2.00	472113.33	736197.04	N 32 17 46.82	W 103 42 9.72
	2400.00	8.00	89.49	2398.70	-0.06	0.25	27.88	2.00	472113.44	736209.23	N 32 17 46.82	W 103 42 9.57
	2500.00	10.00	89.49	2497.47	-0.10	0.39	43.52	2.00	472113.58	736224.87	N 32 17 46.82	W 103 42 9.39
	2600.00	12.00	89.49	2595.62	-0.14	0.56	62.60	2.00	472113.75	736243.95	N 32 17 46.82	W 103 42 9.17
Hold Nudge	2604.04	12.08	89.49	2599.57	-0.14	0.56	63.44	2.00	472113.75	736244.79	N 32 17 46.82	W 103 42 9.16
	2700.00	12.08	89.49	2693.41	-0.19	0.74	83.53	0.00	472113.93	736264.87	N 32 17 46.82	W 103 42 8.93
	2800.00	12.08	89.49	2791.19	-0.23	0.93	104.45	0.00	472114.12	736285.80	N 32 17 46.82	W 103 42 8.68
	2900.00	12.08	89.49	2888.98	-0.28	1.11	125.38	0.00	472114.30	736306.73	N 32 17 46.82	W 103 42 8.44
	3000.00	12.08	89.49	2986.77	-0.32	1.30	146.31	0.00	472114.49	736327.65	N 32 17 46.82	W 103 42 8.19
	3100.00	12.08	89.49	3084.55	-0.37	1.48	167.24	0.00	472114.67	736348.58	N 32 17 46.82	W 103 42 7.95
	3200.00	12.08	89.49	3182.34	-0.42	1.67	188.17	0.00	472114.86	736369.51	N 32 17 46.82	W 103 42 7.71
	3300.00	12.08	89.49	3280.12	-0.46	1.85	209.09	0.00	472115.04	736390.43	N 32 17 46.82	W 103 42 7.46
	3400.00	12.08	89.49	3377.91	-0.51	2.04	230.02	0.00	472115.23	736411.36	N 32 17 46.82	W 103 42 7.22
	3500.00	12.08	89.49	3475.69	-0.56	2.23	250.95	0.00	472115.41	736432.29	N 32 17 46.82	W 103 42 6.97
	3600.00	12.08	89.49	3573.48	-0.60	2.41	271.88	0.00	472115.60	736453.21	N 32 17 46.82	W 103 42 6.73
	3700.00	12.08	89.49	3671.26	-0.65	2.60	292.81	0.00	472115.79	736474.14	N 32 17 46.82	W 103 42 6.49
	3800.00	12.08	89.49	3769.05	-0.70	2.78	313.73	0.00	472115.97	736495.07	N 32 17 46.83	W 103 42 6.24
	3900.00	12.08	89.49	3866.83	-0.74	2.97	334.66	0.00	472116.16	736516.00	N 32 17 46.83	W 103 42 6.00
	4000.00	12.08	89.49	3964.62	-0.79	3.15	355.59	0.00	472116.34	736536.92	N 32 17 46.83	W 103 42 5.76
	4100.00	12.08	89.49	4062.40	-0.83	3.34	376.52	0.00	472116.53	736557.85	N 32 17 46.83	W 103 42 5.51
	4200.00	12.08	89.49	4160.19	-0.88	3.52	397.45	0.00	472116.71	736578.78	N 32 17 46.83	W 103 42 5.27
	4300.00	12.08	89.49	4257.98	-0.93	3.71	418.37	0.00	472116.90	736599.70	N 32 17 46.83	W 103 42 5.02
	4400.00	12.08	89.49	4355.76	-0.97	3.90	439.30	0.00	472117.08	736620.63	N 32 17 46.83	W 103 42 4.78
	4500.00	12.08	89.49	4453.55	-1.02	4.08	460.23	0.00	472117.27	736641.56	N 32 17 46.83	W 103 42 4.54
Base of Salt	*4557.73*	*12.08*	*89.49*	*4510.00*	*-1.05*	*4.19*	*472.31*	*0.00*	*472117.38*	*736653.64*	*N 32 17 46.83*	*W 103 42 4.40*
	4600.00	12.08	89.49	4551.33	-1.07	4.27	481.16	0.00	472117.46	736662.49	N 32 17 46.83	W 103 42 4.29
	4700.00	12.08	89.49	4649.12	-1.11	4.45	502.09	0.00	472117.64	736683.41	N 32 17 46.83	W 103 42 4.05
Lamar	*4743.85*	*12.08*	*89.49*	*4692.00*	*-1.13*	*4.53*	*511.27*	*0.00*	*472117.72*	*736692.59*	*N 32 17 46.83*	*W 103 42 3.94*
	4800.00	12.08	89.49	4746.90	-1.16	4.64	523.02	0.00	472117.83	736704.34	N 32 17 46.83	W 103 42 3.80
	4900.00	12.08	89.49	4844.69	-1.21	4.82	543.94	0.00	472118.01	736725.27	N 32 17 46.83	W 103 42 3.56
Bell Canyon	*4915.66*	*12.08*	*89.49*	*4860.00*	*-1.21*	*4.85*	*547.22*	*0.00*	*472118.04*	*736728.54*	*N 32 17 46.83*	*W 103 42 3.52*
	5000.00	12.08	89.49	4942.47	-1.25	5.01	564.87	0.00	472118.20	736746.19	N 32 17 46.83	W 103 42 3.32
	5100.00	12.08	89.49	5040.26	-1.30	5.19	585.80	0.00	472118.38	736767.12	N 32 17 46.83	W 103 42 3.07
	5200.00	12.08	89.49	5138.04	-1.34	5.38	606.73	0.00	472118.57	736788.05	N 32 17 46.83	W 103 42 2.83
	5300.00	12.08	89.49	5235.83	-1.39	5.57	627.66	0.00	472118.75	736808.97	N 32 17 46.83	W 103 42 2.59
	5400.00	12.08	89.49	5333.61	-1.44	5.75	648.58	0.00	472118.94	736829.90	N 32 17 46.84	W 103 42 2.34
	5500.00	12.08	89.49	5431.40	-1.48	5.94	669.51	0.00	472119.13	736850.83	N 32 17 46.84	W 103 42 2.10
	5600.00	12.08	89.49	5529.19	-1.53	6.12	690.44	0.00	472119.31	736871.76	N 32 17 46.84	W 103 42 1.85
	5700.00	12.08	89.49	5626.97	-1.58	6.31	711.37	0.00	472119.50	736892.68	N 32 17 46.84	W 103 42 1.61
Cherry Canyon	*5754.23*	*12.08*	*89.49*	*5680.00*	*-1.60*	*6.41*	*722.72*	*0.00*	*472119.60*	*736904.03*	*N 32 17 46.84*	*W 103 42 1.48*
	5800.00	12.08	89.49	5724.76	-1.62	6.49	732.30	0.00	472119.68	736913.61	N 32 17 46.84	W 103 42 1.37
	5900.00	12.08	89.49	5822.54	-1.67	6.68	753.22	0.00	472119.87	736934.54	N 32 17 46.84	W 103 42 1.12
	6000.00	12.08	89.49	5920.33	-1.72	6.86	774.15	0.00	472120.05	736955.46	N 32 17 46.84	W 103 42 0.88
	6100.00	12.08	89.49	6018.11	-1.76	7.05	795.08	0.00	472120.24	736976.39	N 32 17 46.84	W 103 42 0.64
	6200.00	12.08	89.49	6115.90	-1.81	7.24	816.01	0.00	472120.42	736997.32	N 32 17 46.84	W 103 42 0.39
	6300.00	12.08	89.49	6213.68	-1.86	7.42	836.94	0.00	472120.61	737018.25	N 32 17 46.84	W 103 42 0.15
	6400.00	12.08	89.49	6311.47	-1.90	7.61	857.86	0.00	472120.80	737039.17	N 32 17 46.84	W 103 41 59.90
	6500.00	12.08	89.49	6409.25	-1.95	7.79	878.79	0.00	472120.98	737060.10	N 32 17 46.84	W 103 41 59.66
	6600.00	12.08	89.49	6507.04	-1.99	7.98	899.72	0.00	472121.17	737081.03	N 32 17 46.84	W 103 41 59.42
	6700.00	12.08	89.49	6604.82	-2.04	8.16	920.65	0.00	472121.35	737101.95	N 32 17 46.84	W 103 41 59.17

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 ° ' ")
	6800.00	12.08	89.49	6702.61	-2.09	8.35	941.58	0.00	472121.54	737122.88	N 32 17 46.84	W 103 41 58.93
	6900.00	12.08	89.49	6800.40	-2.13	8.53	962.51	0.00	472121.72	737143.81	N 32 17 46.84	W 103 41 58.68
	7000.00	12.08	89.49	6898.18	-2.18	8.72	983.43	0.00	472121.91	737164.73	N 32 17 46.85	W 103 41 58.44
Brushy Canyon	*7052.99*	*12.08*	*89.49*	*6950.00*	*-2.20*	*8.82*	*994.52*	*0.00*	*472122.01*	*737175.82*	*N 32 17 46.85*	*W 103 41 58.31*
	7100.00	12.08	89.49	6995.97	-2.23	8.91	1004.36	0.00	472122.09	737185.66	N 32 17 46.85	W 103 41 58.20
	7200.00	12.08	89.49	7093.75	-2.27	9.09	1025.29	0.00	472122.28	737206.59	N 32 17 46.85	W 103 41 57.95
	7300.00	12.08	89.49	7191.54	-2.32	9.28	1046.22	0.00	472122.47	737227.52	N 32 17 46.85	W 103 41 57.71
	7400.00	12.08	89.49	7289.32	-2.37	9.46	1067.15	0.00	472122.65	737248.44	N 32 17 46.85	W 103 41 57.47
	7500.00	12.08	89.49	7387.11	-2.41	9.65	1088.07	0.00	472122.84	737269.37	N 32 17 46.85	W 103 41 57.22
	7600.00	12.08	89.49	7484.89	-2.46	9.83	1109.00	0.00	472123.02	737290.30	N 32 17 46.85	W 103 41 56.98
	7700.00	12.08	89.49	7582.68	-2.50	10.02	1129.93	0.00	472123.21	737311.22	N 32 17 46.85	W 103 41 56.73
	7800.00	12.08	89.49	7680.46	-2.55	10.20	1150.86	0.00	472123.39	737332.15	N 32 17 46.85	W 103 41 56.49
	7900.00	12.08	89.49	7778.25	-2.60	10.39	1171.79	0.00	472123.58	737353.08	N 32 17 46.85	W 103 41 56.25
	8000.00	12.08	89.49	7876.03	-2.64	10.58	1192.71	0.00	472123.76	737374.01	N 32 17 46.85	W 103 41 56.00
	8100.00	12.08	89.49	7973.82	-2.69	10.76	1213.64	0.00	472123.95	737394.93	N 32 17 46.85	W 103 41 55.76
	8200.00	12.08	89.49	8071.60	-2.74	10.95	1234.57	0.00	472124.14	737415.86	N 32 17 46.85	W 103 41 55.52
	8300.00	12.08	89.49	8169.39	-2.78	11.13	1255.50	0.00	472124.32	737436.79	N 32 17 46.85	W 103 41 55.27
	8400.00	12.08	89.49	8267.18	-2.83	11.32	1276.43	0.00	472124.51	737457.71	N 32 17 46.85	W 103 41 55.03
	8500.00	12.08	89.49	8364.96	-2.88	11.50	1297.35	0.00	472124.69	737478.64	N 32 17 46.85	W 103 41 54.78
	8600.00	12.08	89.49	8462.75	-2.92	11.69	1318.28	0.00	472124.88	737499.57	N 32 17 46.85	W 103 41 54.54
	8700.00	12.08	89.49	8560.53	-2.97	11.87	1339.21	0.00	472125.06	737520.49	N 32 17 46.86	W 103 41 54.30
Bone Spring Drop to Vertical 2°/100' DLS	8740.36	12.08	89.49	8600.00	-2.99	11.95	1347.66	0.00	472125.14	737528.94	N 32 17 46.86	W 103 41 54.20
	8800.00	10.89	89.49	8658.44	-3.01	12.05	1359.53	2.00	472125.24	737540.81	N 32 17 46.86	W 103 41 54.06
Leonard Shale	*8857.49*	*9.74*	*89.49*	*8715.00*	*-3.04*	*12.15*	*1369.82*	*2.00*	*472125.33*	*737551.10*	*N 32 17 46.86*	*W 103 41 53.94*
	8900.00	8.89	89.49	8756.95	-3.05	12.21	1376.70	2.00	472125.40	737557.98	N 32 17 46.86	W 103 41 53.86
	9000.00	6.89	89.49	8856.00	-3.08	12.33	1390.42	2.00	472125.52	737571.71	N 32 17 46.86	W 103 41 53.70
	9100.00	4.89	89.49	8955.47	-3.10	12.42	1400.68	2.00	472125.61	737581.96	N 32 17 46.86	W 103 41 53.58
	9200.00	2.89	89.49	9055.23	-3.12	12.48	1407.46	2.00	472125.67	737588.74	N 32 17 46.86	W 103 41 53.50
Avalon Shale	*9284.82*	*1.19*	*89.49*	*9140.00*	*-3.13*	*12.51*	*1410.48*	*2.00*	*472125.70*	*737591.76*	*N 32 17 46.86*	*W 103 41 53.47*
	9300.00	0.89	89.49	9155.17	-3.13	12.51	1410.76	2.00	472125.70	737592.04	N 32 17 46.86	W 103 41 53.46
Hold Vertical	9344.40	0.00	89.49	9199.57	-3.13	12.51	1411.10	2.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	9400.00	0.00	89.49	9255.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	9500.00	0.00	89.49	9355.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	9600.00	0.00	89.49	9455.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	9700.00	0.00	89.49	9555.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	9800.00	0.00	89.49	9655.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	9900.00	0.00	89.49	9755.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
1st Bone Spring Sand	*9924.83*	*0.00*	*89.49*	*9780.00*	*-3.13*	*12.51*	*1411.10*	*0.00*	*472125.70*	*737592.38*	*N 32 17 46.86*	*W 103 41 53.46*
	10000.00	0.00	89.49	9855.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
	10100.00	0.00	89.49	9955.17	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
KOP - Build 12°/100' DLS	10167.37	0.00	89.49	10022.54	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
2nd Bone Spring Carb	*10194.84*	*3.30*	*179.62*	*10050.00*	*-2.34*	*11.72*	*1411.11*	*12.00*	*472124.91*	*737592.39*	*N 32 17 46.85*	*W 103 41 53.46*
	10200.00	3.92	179.62	10055.15	-2.01	11.40	1411.11	12.00	472124.59	737592.39	N 32 17 46.85	W 103 41 53.46
	10300.00	15.92	179.62	10153.47	15.18	-5.79	1411.22	12.00	472107.40	737592.50	N 32 17 46.68	W 103 41 53.46
	10400.00	27.92	179.62	10246.08	52.43	-43.05	1411.47	12.00	472070.15	737592.75	N 32 17 46.31	W 103 41 53.46
	10500.00	39.92	179.62	10328.91	108.13	-98.74	1411.84	12.00	472014.45	737593.12	N 32 17 45.76	W 103 41 53.46
2nd Bone Spring Sand	*10528.21*	*43.30*	*179.62*	*10350.00*	*126.86*	*-117.47*	*1411.96*	*12.00*	*471995.73*	*737593.24*	*N 32 17 45.57*	*W 103 41 53.46*
	10600.00	51.92	179.62	10398.36	179.83	-170.44	1412.32	12.00	471942.76	737593.60	N 32 17 45.05	W 103 41 53.46
	10700.00	63.92	179.62	10451.38	264.40	-255.01	1412.88	12.00	471858.19	737594.16	N 32 17 44.21	W 103 41 53.46
	10800.00	75.92	179.62	10485.65	358.15	-348.75	1413.50	12.00	471764.45	737594.78	N 32 17 43.28	W 103 41 53.46
	10900.00	87.92	179.62	10499.69	456.97	-447.58	1414.16	12.00	471665.63	737595.44	N 32 17 42.30	W 103 41 53.45
2nd BSPG SS Target Landing Point	10914.89	89.70	179.62	10500.00	471.86	-462.47	1414.26	12.00	471650.74	737595.54	N 32 17 42.16	W 103 41 53.45
	11000.00	89.70	179.62	10500.44	556.97	-547.57	1414.82	0.00	471565.65	737596.10	N 32 17 41.32	W 103 41 53.45
	11100.00	89.70	179.62	10500.96	656.97	-647.57	1415.49	0.00	471465.66	737596.77	N 32 17 40.33	W 103 41 53.45
	11200.00	89.70	179.62	10501.48	756.96	-747.56	1416.15	0.00	471365.66	737597.43	N 32 17 39.34	W 103 41 53.45
	11300.00	89.70	179.62	10502.00	856.96	-847.56	1416.82	0.00	471265.67	737598.10	N 32 17 38.35	W 103 41 53.45
	11400.00	89.70	179.62	10502.51	956.96	-947.56	1417.48	0.00	471165.68	737598.76	N 32 17 37.36	W 103 41 53.45
	11500.00	89.70	179.62	10503.03	1056.96	-1047.55	1418.15	0.00	471065.69	737599.43	N 32 17 36.37	W 103 41 53.45
	11600.00	89.70	179.62	10503.55	1156.96	-1147.55	1418.81	0.00	470965.70	737600.09	N 32 17 35.38	W 103 41 53.45
	11700.00	89.70	179.62	10504.07	1256.96	-1247.55	1419.48	0.00	470865.71	737600.76	N 32 17 34.39	W 103 41 53.45
	11800.00	89.70	179.62	10504.59	1356.96	-1347.54	1420.14	0.00	470765.71	737601.42	N 32 17 33.40	W 103 41 53.45
	11900.00	89.70	179.62	10505.11	1456.95	-1447.54	1420.81	0.00	470665.72	737602.09	N 32 17 32.41	W 103 41 53.45
	12000.00	89.70	179.62	10505.62	1556.95	-1547.53	1421.47	0.00	470565.73	737602.75	N 32 17 31.42	W 103 41 53.45
	12100.00	89.70	179.62	10506.14	1656.95	-1647.53	1422.14	0.00	470465.74	737603.42	N 32 17 30.43	W 103 41 53.44
	12200.00	89.70	179.62	10506.66	1756.95	-1747.53	1422.80	0.00	470365.75	737604.08	N 32 17 29.44	W 103 41 53.44
	12300.00	89.70	179.62	10507.18	1856.95	-1847.52	1423.47	0.00	470265.76	737604.75	N 32 17 28.45	W 103 41 53.44
	12400.00	89.70	179.62	10507.70	1956.95	-1947.52	1424.13	0.00	470165.77	737605.41	N 32 17 27.46	W 103 41 53.44
	12500.00	89.70	179.62	10508.22	2056.95	-2047.52	1424.80	0.00	470065.77	737606.08	N 32 17 26.47	W 103 41 53.44
	12600.00	89.70	179.62	10508.73	2156.95	-2147.51	1425.46	0.00	469965.78	737606.74	N 32 17 25.48	W 103 41 53.44
	12700.00	89.70	179.62	10509.25	2256.94	-2247.51	1426.13	0.00	469865.79	737607.41	N 32 17 24.49	W 103 41 53.44
	12800.00	89.70	179.62	10509.77	2356.94	-2347.51	1426.79	0.00	469765.80	737608.07	N 32 17 23.50	W 103 41 53.44
	12900.00	89.70	179.62	10510.29	2456.94	-2447.50	1427.46	0.00	469665.81	737608.74	N 32 17 22.52	W 103 41 53.44
	13000.00	89.70	179.62	10510.81	2556.94	-2547.50	1428.12	0.00	469565.82	737609.40	N 32 17 21.53	W 103 41 53.44
	13100.00	89.70	179.62	10511.33	2656.94	-2647.50	1428.79	0.00	469465.82	737610.07	N 32 17 20.54	W 103 41 53.44
	13200.00	89.70	179.62	10511.84	2756.94	-2747.49	1429.45	0.00	469365.83	737610.73	N 32 17 19.55	W 103 41 53.44
	13300.00	89.70	179.62	10512.36	2856.94	-2847.49	1430.12	0.00	469265.84	737611.40	N 32 17 18.56	W 103 41 53.43
	13400.00	89.70	179.62	10512.88	2956.93	-2947.49	1430.78	0.00	469165.85	737612.06	N 32 17 17.57	W 103 41 53.43
	13500.00	89.70	179.62	10513.40	3056.93	-3047.48	1431.45	0.00	469065.86	737612.73	N 32 17 16.58	W 103 41 53.43
	13600.00	89.70	179.62	10513.92	3156.93	-3147.48	1432.11	0.00	468965.87	737613.39	N 32 17 15.59	W 103 41 53.43
	13700.00	89.70	179.62	10514.44	3256.93	-3247.47	1432.78	0.00	468865.88	737614.06	N 32 17 14.60	W 103 41 53.43
	13800.00	89.70	179.62	10514.95	3356.93	-3347.47	1433.44	0.00	468765.88	737614.72	N 32 17 13.61	W 103 41 53.43
	13900.00	89.70	179.62	10515.47	3456.93	-3447.47	1434.11	0.00	468665.89	737615.39	N 32 17 12.62	W 103 41 53.43
	14000.00	89.70	179.62	10515.99	3556.93	-3547.46	1434.77	0.00	468565.90	737616.05	N 32 17 11.63	W 103 41 53.43
	14100.00	89.70	179.62	10516.51	3656.92	-3647.46	1435.44	0.00	468465.91	737616.72	N 32 17 10.64	W 103 41 53.43
	14200.00	89.70	179.62	10517.03	3756.92	-3747.46	1436.10	0.00	468365.92	737617.38	N 32 17 9.65	W 103 41 53.43
	14300.00	89.70	179.62	10517.55	3856.92	-3847.45	1436.77	0.00	468265.93	737618.05	N 32 17 8.66	W 103 41 53.43
	14400.00	89.70	179.62	10518.06	3956.92	-3947.45	1437.43	0.00	468165.94	737618.71	N 32 17 7.67	W 103 41 53.42
	14500.00	89.70	179.62	10518.58	4056.92	-4047.45	1438.10	0.00	468065.94	737619.38	N 32 17 6.68	W 103 41 53.42
	14600.00	89.70	179.62	10519.10	4156.92	-4147.44	1438.76	0.00	467965.95	737620.04	N 32 17 5.69	W 103 41 53.42
	14700.00	89.70	179.62	10519.62	4256.92	-4247.44	1439.43	0.00	467865.96	737620.71	N 32 17 4.70	W 103 41 53.42
	14800.00	89.70	179.62	10520.14	4356.92	-4347.44	1440.09	0.00	467765.97	737621.37	N 32 17 3.71	W 103 41 53.42
	14900.00	89.70	179.62	10520.66	4456.91	-4447.43	1440.76	0.00	467665.98	737622.04	N 32 17 2.73	W 103 41 53.42
	15000.00	89.70	179.62	10521.17	4556.91	-4547.43	1441.42	0.00	467565.99	737622.70	N 32 17 1.74	W 103 41 53.42
	15100.00	89.70	179.62	10521.69	4656.91	-4647.42	1442.09	0.00	467465.99	737623.37	N 32 17 0.75	W 103 41 53.42
	15200.00	89.70	179.62	10522.21	4756.91	-4747.42	1442.75	0.00	467366.00	737624.03	N 32 16 59.76	W 103 41 53.42
	15300.00	89.70	179.62	10522.73	4856.91	-4847.42	1443.42	0.00	467266.01	737624.70	N 32 16 58.77	W 103 41 53.42
	15400.00	89.70	179.62	10523.25	4956.91	-4947.41	1444.08	0.00	467166.02	737625.36	N 32 16 57.78	W 103 41 53.42
	15500.00	89.70	179.62	10523.77	5056.91	-5047.41	1444.75	0.00	467066.03	737626.03	N 32 16 56.79	W 103 41 53.42
	15600.00	89.70	179.62	10524.28	5156.90	-5147.41	1445.41	0.00	466966.04	737626.69	N 32 16 55.80	W 103 41 53.41
	15700.00	89.70	179.62	10524.80	5256.90	-5247.40	1446.08	0.00	466866.05	737627.36	N 32 16 54.81	W 103 41 53.41
	15800.00	89.70	179.62	10525.32	5356.90	-5347.40	1446.74	0.00	466766.05	737628.02	N 32 16 53.82	W 103 41 53.41

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 ° ' '')
	15900.00	89.70	179.62	10525.84	5456.90	-5447.40	1447.41	0.00	466666.06	737628.69	N 32 16 52.83	W 103 41 53.41
	16000.00	89.70	179.62	10526.36	5556.90	-5547.39	1448.07	0.00	466566.07	737629.35	N 32 16 51.84	W 103 41 53.41
	16100.00	89.70	179.62	10526.88	5656.90	-5647.39	1448.74	0.00	466466.08	737630.02	N 32 16 50.85	W 103 41 53.41
	16200.00	89.70	179.62	10527.39	5756.90	-5747.39	1449.40	0.00	466366.09	737630.68	N 32 16 49.86	W 103 41 53.41
	16300.00	89.70	179.62	10527.91	5856.90	-5847.38	1450.07	0.00	466266.10	737631.35	N 32 16 48.87	W 103 41 53.41
	16400.00	89.70	179.62	10528.43	5956.89	-5947.38	1450.73	0.00	466166.11	737632.01	N 32 16 47.88	W 103 41 53.41
	16500.00	89.70	179.62	10528.95	6056.89	-6047.38	1451.40	0.00	466066.11	737632.68	N 32 16 46.89	W 103 41 53.41
	16600.00	89.70	179.62	10529.47	6156.89	-6147.37	1452.06	0.00	465966.12	737633.34	N 32 16 45.90	W 103 41 53.41
	16700.00	89.70	179.62	10529.99	6256.89	-6247.37	1452.73	0.00	465866.13	737634.01	N 32 16 44.91	W 103 41 53.41
	16800.00	89.70	179.62	10530.50	6356.89	-6347.36	1453.39	0.00	465766.14	737634.67	N 32 16 43.93	W 103 41 53.40
	16900.00	89.70	179.62	10531.02	6456.89	-6447.36	1454.06	0.00	465666.15	737635.34	N 32 16 42.94	W 103 41 53.40
	17000.00	89.70	179.62	10531.54	6556.89	-6547.36	1454.72	0.00	465566.16	737636.00	N 32 16 41.95	W 103 41 53.40
	17100.00	89.70	179.62	10532.06	6656.88	-6647.35	1455.39	0.00	465466.16	737636.67	N 32 16 40.96	W 103 41 53.40
	17200.00	89.70	179.62	10532.58	6756.88	-6747.35	1456.05	0.00	465366.17	737637.33	N 32 16 39.97	W 103 41 53.40
	17300.00	89.70	179.62	10533.10	6856.88	-6847.35	1456.72	0.00	465266.18	737637.99	N 32 16 38.98	W 103 41 53.40
	17400.00	89.70	179.62	10533.61	6956.88	-6947.34	1457.38	0.00	465166.19	737638.66	N 32 16 37.99	W 103 41 53.40
	17500.00	89.70	179.62	10534.13	7056.88	-7047.34	1458.05	0.00	465066.20	737639.32	N 32 16 37.00	W 103 41 53.40
	17600.00	89.70	179.62	10534.65	7156.88	-7147.34	1458.71	0.00	464966.21	737639.99	N 32 16 36.01	W 103 41 53.40
	17700.00	89.70	179.62	10535.17	7256.88	-7247.33	1459.38	0.00	464866.22	737640.65	N 32 16 35.02	W 103 41 53.40
	17800.00	89.70	179.62	10535.69	7356.88	-7347.33	1460.04	0.00	464766.22	737641.32	N 32 16 34.03	W 103 41 53.40
	17900.00	89.70	179.62	10536.21	7456.87	-7447.33	1460.71	0.00	464666.23	737641.98	N 32 16 33.04	W 103 41 53.40
	18000.00	89.70	179.62	10536.72	7556.87	-7547.32	1461.37	0.00	464566.24	737642.65	N 32 16 32.05	W 103 41 53.39
	18100.00	89.70	179.62	10537.24	7656.87	-7647.32	1462.04	0.00	464466.25	737643.31	N 32 16 31.06	W 103 41 53.39
	18200.00	89.70	179.62	10537.76	7756.87	-7747.31	1462.70	0.00	464366.26	737643.98	N 32 16 30.07	W 103 41 53.39
	18300.00	89.70	179.62	10538.28	7856.87	-7847.31	1463.37	0.00	464266.27	737644.64	N 32 16 29.08	W 103 41 53.39
	18400.00	89.70	179.62	10538.80	7956.87	-7947.31	1464.03	0.00	464166.28	737645.31	N 32 16 28.09	W 103 41 53.39
	18500.00	89.70	179.62	10539.32	8056.87	-8047.30	1464.70	0.00	464066.28	737645.97	N 32 16 27.10	W 103 41 53.39
	18600.00	89.70	179.62	10539.83	8156.86	-8147.30	1465.36	0.00	463966.29	737646.64	N 32 16 26.11	W 103 41 53.39
	18700.00	89.70	179.62	10540.35	8256.86	-8247.30	1466.03	0.00	463866.30	737647.30	N 32 16 25.12	W 103 41 53.39
	18800.00	89.70	179.62	10540.87	8356.86	-8347.29	1466.69	0.00	463766.31	737647.97	N 32 16 24.14	W 103 41 53.39
	18900.00	89.70	179.62	10541.39	8456.86	-8447.29	1467.36	0.00	463666.32	737648.63	N 32 16 23.15	W 103 41 53.39
	19000.00	89.70	179.62	10541.91	8556.86	-8547.29	1468.02	0.00	463566.33	737649.30	N 32 16 22.16	W 103 41 53.39
	19100.00	89.70	179.62	10542.43	8656.86	-8647.28	1468.69	0.00	463466.33	737649.96	N 32 16 21.17	W 103 41 53.39
	19200.00	89.70	179.62	10542.94	8756.86	-8747.28	1469.35	0.00	463366.34	737650.63	N 32 16 20.18	W 103 41 53.38
	19300.00	89.70	179.62	10543.46	8856.86	-8847.28	1470.02	0.00	463266.35	737651.29	N 32 16 19.19	W 103 41 53.38
	19400.00	89.70	179.62	10543.98	8956.85	-8947.27	1470.68	0.00	463166.36	737651.96	N 32 16 18.20	W 103 41 53.38
	19500.00	89.70	179.62	10544.50	9056.85	-9047.27	1471.35	0.00	463066.37	737652.62	N 32 16 17.21	W 103 41 53.38
	19600.00	89.70	179.62	10545.02	9156.85	-9147.26	1472.01	0.00	462966.38	737653.29	N 32 16 16.22	W 103 41 53.38
	19700.00	89.70	179.62	10545.54	9256.85	-9247.26	1472.68	0.00	462866.39	737653.95	N 32 16 15.23	W 103 41 53.38
	19800.00	89.70	179.62	10546.05	9356.85	-9347.26	1473.34	0.00	462766.39	737654.62	N 32 16 14.24	W 103 41 53.38
	19900.00	89.70	179.62	10546.57	9456.85	-9447.25	1474.01	0.00	462666.40	737655.28	N 32 16 13.25	W 103 41 53.38
	20000.00	89.70	179.62	10547.09	9556.85	-9547.25	1474.67	0.00	462566.41	737655.95	N 32 16 12.26	W 103 41 53.38
	20100.00	89.70	179.62	10547.61	9656.84	-9647.25	1475.34	0.00	462466.42	737656.61	N 32 16 11.27	W 103 41 53.38
	20200.00	89.70	179.62	10548.13	9756.84	-9747.24	1476.00	0.00	462366.43	737657.28	N 32 16 10.28	W 103 41 53.38
	20300.00	89.70	179.62	10548.65	9856.84	-9847.24	1476.67	0.00	462266.44	737657.94	N 32 16 9.29	W 103 41 53.37
	20400.00	89.70	179.62	10549.16	9956.84	-9947.24	1477.33	0.00	462166.45	737658.61	N 32 16 8.30	W 103 41 53.37
	20500.00	89.70	179.62	10549.68	10056.84	-10047.23	1478.00	0.00	462066.45	737659.27	N 32 16 7.31	W 103 41 53.37
Cimarex James 20-29 Federal Com #38H - PBHL [100' FSL, 2178' FWL]	20561.27	89.70	179.62	10550.00	10118.11	-10108.50	1478.40	0.00	462005.19	737659.68	N 32 16 6.71	W 103 41 53.37

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	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	James 20-29 Federal Com #38H / Cimarex James 20-29 Federal Com #38H Rev3 05Feb20
	1	26.000	20561.269	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	James 20-29 Federal Com #38H / Cimarex James 20-29 Federal

Schlumberger

Cimarex James 20-29 Federal Com #38H Rev3 05Feb20 Proposal Geodetic Report

(Non-Def Plan)

CIMAREX

Report Date:	February 05, 2020 - 12:06 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex	**Vertical Section Azimuth:**	179.619 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex James 20-29 Federal Com #38H / James 20-29 Federal Com #38H	**TVD Reference Datum:**	RKB
Well:	Cimarex James 20-29 Federal Com #38H	**TVD Reference Elevation:**	3704.000 ft above MSL
Borehole:	James 20-29 Federal Com #38H	**Seabed / Ground Elevation:**	3678.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.693 °
Survey Name:	Cimarex James 20-29 Federal Com #38H Rev3 05Feb20	**Total Gravity Field Strength:**	998.4354mgn (9.80665 Based)
Survey Date:	November 22, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	113.864 ° / 11532.390 ft / 6.408 / 1.093	**Total Magnetic Field Strength:**	47895.677 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.973 °
Location Lat / Long:	N 32° 17' 46.81622", W 103° 42' 9.89824"	**Declination Date:**	February 05, 2020
Location Grid N/E Y/X:	N 472113.190 ftUS, E 736181.350 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3369 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99995257	**Grid Convergence Used:**	0.3369 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.3565 °
		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 [340' FNL, 760' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
Nudge 2°/100' DLS	2000.00	0.00	89.49	2000.00	0.00	0.00	0.00	0.00	472113.19	736181.35	N 32 17 46.82	W 103 42 9.90
Hold Nudge	2604.04	12.08	89.49	2599.57	-0.14	0.56	63.44	2.00	472113.75	736244.79	N 32 17 46.82	W 103 42 9.16
Drop to Vertical 2°/100' DLS	8740.36	12.08	89.49	8600.00	-2.99	11.95	1347.66	0.00	472125.14	737528.94	N 32 17 46.86	W 103 41 54.20
Hold Vertical	9344.40	0.00	89.49	9199.57	-3.13	12.51	1411.10	2.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
KOP - Build 12°/100' DLS	10167.37	0.00	89.49	10022.54	-3.13	12.51	1411.10	0.00	472125.70	737592.38	N 32 17 46.86	W 103 41 53.46
Landing Point	10914.89	89.70	179.62	10500.00	471.86	-462.47	1414.26	12.00	471650.74	737595.54	N 32 17 42.16	W 103 41 53.45
Cimarex James 20-29 Federal Com #38H - PBHL [100' FSL, 2178' FWL]	20561.27	89.70	179.62	10550.00	10118.11	-10108.50	1478.40	0.00	462005.19	737659.68	N 32 16 6.71	W 103 41 53.37

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	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	James 20-29 Federal Com #38H / Cimarex James 20-29 Federal Com #38H Rev3 05Feb20
	1	26.000	20561.269	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	James 20-29 Federal Com #38H / Cimarex James 20-29 Federal

Schlumberger

CIMAREX

Cimarex James 20-29 Federal Com #38H Rev3 05Feb20 Anti-Collision Summary Report

Analysis Date-24hr Time:	February 05, 2020 - 12:07	**Analysis Method:**	3D Least Distance
Client:	Cimarex	**Reference Trajectory:**	Cimarex James 20-29 Federal Com #38H Rev3 05Feb20 (Non-Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex James 20-29 Federal Com #38H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	James 20-29 Federal Com #38H	**Min Pts:**	All local minima indicated.
Well:	Cimarex James 20-29 Federal Com #38H	**Version / Patch:**	2.10.787.0
Borehole:	James 20-29 Federal Com #38H	**Database \ Project:**	us1153APP452.DIR.SLB.COM\DRILLING-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 20561.27ft		

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

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan: Not performed!

Selection filters: 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.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Results highlighted: Sep-Factor separation <= 1.50 ft													
Cimarex James 20-29 Federal Com #39H Rev3 RM 05Feb20 (Def Plan)													Warning Alert
	19.93	16.20	18.65	3.73	N/A	MAS = 4.94 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	19.93	16.20	18.64	3.73	N/A	MAS = 4.94 (m)	26.00	26.00				WRP	
	19.93	19.54	6.47	0.39	1.53	OSF1.50	2000.00	2000.00				MinPt-CtCt	
	19.95	19.62	6.44	0.33	1.53	OSF1.50	2010.00	2010.00				MINPT-O-EOU	
	20.00	19.69	6.45	0.31	1.53	OSF1.50	2020.00	2020.00				MinPts	
	72.18	22.71	56.61	49.47	4.96	OSF1.50	2550.00	2546.63	OSF>5.00			Exit Alert	
	405.95	56.56	367.81	349.39	10.98	OSF1.50	7040.00	6937.29				MinPt-O-SF	
	791.90	71.36	743.90	720.54	16.92	OSF1.50	10210.00	10065.12				MinPt-CtCt	
	791.91	71.40	743.89	720.51	16.91	OSF1.50	10240.00	10094.89				MINPT-O-EOU	
	791.92	71.41	743.89	720.51	16.91	OSF1.50	10250.00	10104.76				MinPt-O-ADP	
	792.32	71.49	744.23	720.83	16.90	OSF1.50	10330.00	10182.05				MinPt-O-SF	
	851.82	256.48	680.41	595.34	5.00	OSF1.50	17930.00	10536.36	OSF<5.00			Enter Alert	
	846.89	338.72	620.65	508.17	3.76	OSF1.50	20561.27	10550.00				MinPts	
Cimarex James 20-29 Federal Com #37H Rev0 RM 02Jul19 (Non-Def Plan)													Warning Alert
	112.37	32.81	110.39	79.56	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	112.37	32.81	110.39	79.56	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	73.42	32.81	57.05	40.61	4.97	MAS = 10.00 (m)	2550.00	2546.63	OSF<5.00			Enter Alert	
	59.93	32.81	42.62	27.12	3.78	MAS = 10.00 (m)	2760.00	2752.08				MinPts	
	60.14	32.81	42.75	27.34	3.77	MAS = 10.00 (m)	2780.00	2771.64				MinPt-O-SF	
	84.61	32.81	66.00	51.80	4.97	MAS = 10.00 (m)	3040.00	3025.88	OSF>5.00			Exit Alert	
	1481.52	56.40	1443.26	1425.12	40.78	OSF1.50	7330.00	7220.87				MinPt-O-SF	
	1785.45	67.81	1739.58	1717.64	40.64	OSF1.50	8740.36	8600.00				MinPt-O-SF	
	1848.76	72.00	1800.10	1776.76	39.56	OSF1.50	10220.00	10075.07				MinPt-O-SF	
	1848.41	71.78	1799.89	1776.63	39.68	OSF1.50	10320.00	10172.59				MinPt-O-ADP	
	1848.37	71.74	1799.89	1776.64	39.70	OSF1.50	10330.00	10182.05				MINPT-O-EOU	
	1847.75	70.35	1800.19	1777.40	40.49	OSF1.50	10640.00	10421.68				MinPt-CtCt	
	1847.75	325.19	1630.30	1522.57	8.57	OSF1.50	20561.27	10550.00				MinPts	
Devon Alley Cat 17 20 Federal Com #216H (Offset) MWD 0ft-21324ft (Def Survey)													Warning Alert
	6732.86	32.81	6731.84	6700.06	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	6732.66	32.81	6731.62	6699.86	257303.00	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	6732.55	32.81	6731.43	6699.74	68854.88	MAS = 10.00 (m)	70.00	70.00				MinPts	
	6732.91	32.81	6731.21	6700.10	9930.10	MAS = 10.00 (m)	210.00	210.00				MINPT-O-EOU	
	6737.91	32.81	6733.01	6705.10	1738.36	MAS = 10.00 (m)	930.00	930.00				MINPT-O-EOU	
	6739.45	32.81	6732.97	6706.64	1233.66	MAS = 10.00 (m)	1260.00	1260.00				MINPT-O-EOU	
	6743.95	32.81	6734.24	6711.15	775.79	MAS = 10.00 (m)	2000.00	2000.00				MINPT-O-EOU	
	961.46	291.11	766.44	670.35	4.99	OSF1.50	10240.00	10094.89	OSF<5.00			Enter Alert	
	823.29	360.78	581.56	462.51	3.44	OSF1.50	11140.00	10501.17				MinPt-CtCt	
	823.84	373.71	573.48	450.13	3.32	OSF1.50	11390.00	10502.46				MinPt-CtCt	
	825.49	384.16	568.16	441.33	3.24	OSF1.50	11590.00	10503.50				MinPt-CtCt	
	824.13	403.12	554.17	421.01	3.08	OSF1.50	11960.00	10505.42				MinPt-CtCt	
	825.12	422.18	542.46	402.95	2.94	OSF1.50	12320.00	10507.28				MinPt-CtCt	
	839.58	539.14	478.94	300.43	2.34	OSF1.50	14510.00	10518.63				MinPt-CtCt	
	851.79	584.77	460.67	267.02	2.19	OSF1.50	15370.00	10523.09				MinPts	
	852.03	585.00	460.74	267.03	2.19	OSF1.50	15380.00	10523.14				MinPt-O-SF	
	1286.72	395.70	1020.09	891.02	4.95	OSF1.50	16320.00	10528.02	OSF>5.00			Exit Alert	
	5274.99	121.17	5193.20	5153.83	66.94	OSF1.50	20561.27	10550.00				TD	
Cimarex James Federal #20H MWD 0ft to 12150ft (Def Survey)													Pass
	5232.39	32.81	5230.42	5199.59	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	5232.35	32.81	5230.32	5199.54	98205.56	MAS = 10.00 (m)	26.00	26.00				WRP	
	5231.96	32.81	5229.42	5199.15	9380.62	MAS = 10.00 (m)	170.00	170.00				MinPts	
	5232.27	32.81	5228.40	5199.46	2763.80	MAS = 10.00 (m)	480.00	480.00				MinPts	
	5221.17	32.81	5209.95	5188.36	565.47	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	5102.25	36.18	5077.46	5066.07	224.04	OSF1.50	5850.00	5773.65				MinPt-CtCt	
	5102.75	37.86	5076.83	5064.88	213.48	OSF1.50	6070.00	5988.78				MINPT-O-EOU	
	5102.97	38.13	5076.87	5064.84	211.88	OSF1.50	6110.00	6027.89				MinPt-O-ADP	
	5100.49	39.98	5073.16	5060.51	201.42	OSF1.50	6360.00	6272.35				MinPt-CtCt	
	5100.65	40.78	5072.80	5059.87	197.26	OSF1.50	6460.00	6370.14				MINPT-O-EOU	
	5100.84	41.01	5072.83	5059.83	196.11	OSF1.50	6490.00	6399.47				MinPt-O-ADP	
	5102.78	43.67	5073.01	5059.11	183.55	OSF1.50	6830.00	6731.95				MINPT-O-EOU	
	5102.91	43.82	5073.04	5059.09	182.88	OSF1.50	6850.00	6751.50				MinPt-O-ADP	
	5152.32	58.78	5112.47	5093.54	136.01	OSF1.50	8800.00	8658.44				MinPt-O-SF	
	5188.58	58.33	5149.04	5130.25	138.05	OSF1.50	10167.37	10022.54				MinPt-O-SF	
	5188.18	58.34	5148.63	5129.84	138.03	OSF1.50	10200.00	10055.15				MinPt-O-SF	
	491.76	128.55	405.39	363.20	5.80	OSF1.50	15570.00	10524.13				MinPt-O-SF	
	489.68	127.62	403.94	362.06	5.82	OSF1.50	15600.00	10524.28				MinPt-O-ADP	
	489.39	127.22	403.92	362.17	5.84	OSF1.50	15610.00	10524.34				MINPT-O-EOU	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	489.31	126.77	404.14	362.54	5.86	OSF1.50	15620.00	10524.39				MinPt-CtCt	
	4963.44	50.13	4929.37	4913.32	154.58	OSF1.50	20561.27	10550.00				TD	
Cimarex James Federal #20H ST01 MWD 8951ft to 14067ft (Def Survey)													Pass
	5232.39	32.81	5230.42	5199.59	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	5232.35	32.81	5230.32	5199.54	98205.55	MAS = 10.00 (m)	26.00	26.00				WRP	
	5231.96	32.81	5229.42	5199.15	9380.62	MAS = 10.00 (m)	170.00	170.00				MinPts	
	5232.27	32.81	5228.40	5199.46	2763.80	MAS = 10.00 (m)	480.00	480.00				MinPts	
	5221.17	32.81	5209.95	5188.36	565.47	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	5102.25	36.18	5077.46	5066.07	224.04	OSF1.50	5850.00	5773.65				MinPt-CtCt	
	5102.75	37.86	5076.83	5064.88	213.48	OSF1.50	6070.00	5988.78				MINPT-O-EOU	
	5102.97	38.13	5076.87	5064.84	211.88	OSF1.50	6110.00	6027.89				MinPt-O-ADP	
	5100.49	39.98	5073.16	5060.51	201.42	OSF1.50	6360.00	6272.35				MinPt-CtCt	
	5100.65	40.78	5072.80	5059.87	197.26	OSF1.50	6460.00	6370.14				MINPT-O-EOU	
	5100.84	41.01	5072.83	5059.83	196.11	OSF1.50	6490.00	6399.47				MinPt-O-ADP	
	5102.78	43.67	5073.01	5059.11	183.55	OSF1.50	6830.00	6731.95				MINPT-O-EOU	
	5102.91	43.82	5073.04	5059.09	182.88	OSF1.50	6850.00	6751.50				MinPt-O-ADP	
	5152.32	58.78	5112.47	5093.54	136.01	OSF1.50	8800.00	8658.44				MinPt-O-SF	
	1107.33	141.65	1012.23	965.68	11.87	OSF1.50	16440.00	10528.64				MinPt-CtCt	
	1107.93	143.57	1011.56	964.36	11.72	OSF1.50	16510.00	10529.00				MINPT-O-EOU	
	1119.03	169.32	1005.49	949.71	10.01	OSF1.50	17510.00	10534.18				MINPT-O-EOU	
	1128.21	185.61	1003.81	942.60	9.20	OSF1.50	18140.00	10537.45				MINPT-O-EOU	
	1129.07	224.99	978.42	904.08	7.58	OSF1.50	19590.00	10544.97				MinPt-CtCt	
	1130.26	231.39	975.34	898.87	7.38	OSF1.50	19810.00	10546.11				MinPt-CtCt	
	1132.81	245.49	968.49	887.32	6.97	OSF1.50	20320.00	10548.75				MinPt-CtCt	
	1132.88	245.66	968.45	887.22	6.96	OSF1.50	20330.00	10548.80				MinPts	
	1134.06	246.18	969.28	887.88	6.95	OSF1.50	20370.00	10549.01				MinPt-O-SF	
	1158.92	244.88	995.01	914.05	7.14	OSF1.50	20561.27	10550.00				TD	
Cimarex James Federal #38 (Offset) (Def Survey)													Pass
	5696.82	32.81	5694.84	5664.01	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	5696.69	32.81	5694.39	5663.88	17317.82	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	5137.81	58.66	5097.85	5079.14	137.24	OSF1.50	8800.00	8658.44				MinPt-O-SF	
	5134.81	58.04	5095.27	5076.77	138.69	OSF1.50	8970.00	8826.24				MinPt-O-ADP	
	5134.78	58.00	5095.27	5076.78	138.79	OSF1.50	8980.00	8836.15				MINPT-O-EOU	
	5134.76	57.95	5095.28	5076.81	138.89	OSF1.50	8990.00	8846.08				MinPt-CtCt	
	5156.87	56.13	5118.65	5100.74	143.93	OSF1.50	9440.00	9295.17				MinPt-O-SF	
	1315.27	165.45	1204.31	1149.82	12.05	OSF1.50	16630.00	10529.62				MinPt-CtCt	
	1315.70	166.95	1203.74	1148.74	11.94	OSF1.50	16680.00	10529.88				MINPT-O-EOU	
	1316.40	167.83	1203.85	1148.57	11.89	OSF1.50	16710.00	10530.04				MinPt-O-ADP	
	1322.54	172.16	1207.11	1150.38	11.64	OSF1.50	16870.00	10530.87				MinPt-O-ADP	
	1311.91	195.91	1180.65	1116.00	10.13	OSF1.50	17670.00	10535.01				MinPt-CtCt	
	1313.88	204.88	1176.63	1109.00	9.70	OSF1.50	17950.00	10536.47				MinPt-CtCt	
	1316.07	220.16	1168.63	1095.90	9.03	OSF1.50	18410.00	10538.85				MinPt-CtCt	
	1316.04	223.88	1166.13	1092.17	8.88	OSF1.50	18520.00	10539.42				MinPt-CtCt	
	1317.14	227.17	1165.03	1089.97	8.76	OSF1.50	18620.00	10539.94				MINPT-O-EOU	
	1320.32	230.84	1165.77	1089.49	8.64	OSF1.50	18730.00	10540.51				MinPt-O-ADP	
	1319.34	264.54	1142.32	1054.80	7.53	OSF1.50	19700.00	10545.54				MinPt-CtCt	
	1320.72	268.08	1141.34	1052.64	7.43	OSF1.50	19810.00	10546.11				MINPT-O-EOU	
	1322.26	269.93	1141.65	1052.33	7.39	OSF1.50	19870.00	10546.42				MinPt-O-ADP	
	1336.24	282.25	1147.41	1053.98	7.14	OSF1.50	20130.00	10547.76				MINPT-O-EOU	
	1336.96	283.25	1147.47	1053.71	7.12	OSF1.50	20140.00	10547.82				MinPts	
	1431.39	276.06	1246.69	1155.33	7.82	OSF1.50	20561.27	10550.00				TD	
Cimarex James 29 Federal 36H XEM + MWD 0ft - 13872ft MD (Def Survey)													Pass
	5157.90	32.81	5155.93	5125.10	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	5157.81	32.81	5155.74	5125.00	58329.27	MAS = 10.00 (m)	26.00	26.00				WRP	
	5157.53	32.81	5155.32	5124.72	22165.31	MAS = 10.00 (m)	110.00	110.00				MinPts	
	5157.68	32.81	5155.21	5124.87	10520.64	MAS = 10.00 (m)	170.00	170.00				MINPT-O-EOU	
	5160.18	32.81	5155.71	5127.37	2074.24	MAS = 10.00 (m)	610.00	610.00				MINPT-O-EOU	
	5161.18	32.81	5155.37	5128.38	1344.51	MAS = 10.00 (m)	910.00	910.00				MINPT-O-EOU	
	5165.88	32.81	5156.97	5133.07	745.42	MAS = 10.00 (m)	1620.00	1620.00				MINPT-O-EOU	
	5146.54	32.81	5129.69	5113.74	345.82	MAS = 10.00 (m)	4250.00	4209.08				MinPts	
	5146.77	32.81	5129.45	5113.97	335.31	MAS = 10.00 (m)	4360.00	4316.65				MINPT-O-EOU	
	5149.38	32.81	5130.40	5116.57	302.86	MAS = 10.00 (m)	4740.00	4688.23				MinPts	
	5149.84	32.81	5129.15	5117.04	275.04	MAS = 10.00 (m)	5110.00	5050.04				MinPts	
	5150.56	32.81	5128.60	5117.75	257.79	MAS = 10.00 (m)	5370.00	5304.28				MINPT-O-EOU	
	5152.64	34.69	5128.85	5117.95	236.18	OSF1.50	5740.00	5666.08				MINPT-O-EOU	
	5153.19	35.36	5128.96	5117.83	231.44	OSF1.50	5830.00	5754.09				MinPt-O-ADP	
	5154.23	36.33	5129.35	5117.90	224.96	OSF1.50	5960.00	5881.21				MinPt-O-ADP	
	5232.41	58.21	5192.95	5174.26	139.53	OSF1.50	8800.00	8658.44				MinPt-O-SF	
	1410.91	117.35	1332.02	1293.56	18.32	OSF1.50	16160.00	10527.19				MinPt-CtCt	
	1411.65	119.42	1331.38	1292.23	18.00	OSF1.50	16250.00	10527.65				MINPT-O-EOU	
	1412.01	119.82	1331.47	1292.19	17.95	OSF1.50	16270.00	10527.76				MinPt-O-ADP	
	1415.77	125.06	1331.74	1290.71	17.23	OSF1.50	16450.00	10528.69				MINPT-O-EOU	
	1407.91	160.59	1300.19	1247.32	13.30	OSF1.50	17550.00	10534.39				MinPt-CtCt	
	1409.26	169.50	1295.60	1239.76	12.60	OSF1.50	17810.00	10535.74				MinPt-CtCt	
	1413.84	182.22	1291.70	1231.62	11.75	OSF1.50	18190.00	10537.71				MINPT-O-EOU	
	1397.33	216.35	1252.43	1180.98	9.76	OSF1.50	19110.00	10542.48				MinPt-CtCt	
	1396.82	221.25	1248.66	1175.57	9.54	OSF1.50	19250.00	10543.20				MinPt-CtCt	
	1397.58	223.64	1247.82	1173.94	9.44	OSF1.50	19340.00	10543.67				MINPT-O-EOU	
	1398.68	224.96	1248.05	1173.73	9.40	OSF1.50	19390.00	10543.93				MinPt-O-ADP	
	1480.66	271.89	1298.74	1208.77	8.22	OSF1.50	20480.00	10549.58				MinPts	
	1481.83	272.73	1299.35	1209.10	8.20	OSF1.50	20490.00	10549.63				MinPt-O-SF	
	1492.06	271.40	1310.47	1220.66	8.30	OSF1.50	20561.27	10550.00				TD	
Harvard James 20 Federal #1 (Offset) Oil Inc Only 0ft-8889 (Def Survey)													Pass
	3211.36	32.81	3209.38	3178.55	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	3211.36	32.81	3209.38	3178.55	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	3211.36	32.81	3209.25	3178.56	23613.75	MAS = 10.00 (m)	26.00	26.00				WRP	
	3208.47	55.13	3171.06	3153.34	90.49	OSF1.50	1090.00	1090.00				MinPt-CtCt	
	2990.62	396.28	2725.76	2594.34	11.37	OSF1.50	7720.00	7602.24				MinPt-CtCt	
	3002.02	458.80	2695.49	2543.22	9.85	OSF1.50	8890.00	8747.08				MinPt-CtCt	
	3002.58	464.95	2691.96	2537.63	9.72	OSF1.50	9040.00	8895.74				MinPts	
	2270.81	330.22	2050.00	1940.59	10.37	OSF1.50	11850.00	10504.85				MinPt-O-SF	
	1660.34	122.37	1578.10	1537.96	20.66	OSF1.50	13120.00	10511.43				MinPt-O-ADP	
	1631.18	87.74	1572.02	1543.44	28.50	OSF1.50	13430.00	10513.04				MinPt-CtCt	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1632.29	89.49	1571.97	1542.80	27.95	OSF1.50	13490.00	10513.35				MINPT-O-EOU	
	1660.41	123.28	1577.56	1537.12	20.51	OSF1.50	13740.00	10514.64				MinPt-O-ADP	
	2264.11	330.12	2043.37	1933.99	10.34	OSF1.50	15000.00	10521.17				MinPt-O-SF	
	7315.62	455.09	7011.57	6860.53	24.21	OSF1.50	20561.27	10550.00				TD	
Harvard James 20 Federal #2 (Offset) Oil Inc Only 0ft-8850ft (Def Survey)													Pass
	2057.40	32.81	2055.42	2024.59	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2057.33	32.81	2055.34	2024.52	269084.67	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	2057.31	32.81	2055.33	2024.50	N/A	MAS = 10.00 (m)	20.00	20.00				MinPts	
	2057.31	32.81	2055.33	2024.50	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	2053.26	66.84	2008.04	1986.42	47.44	OSF1.50	1370.00	1370.00				MinPt-CtCt	
	1674.25	384.96	1416.91	1289.28	6.55	OSF1.50	7600.00	7484.89				MinPt-CtCt	
	1672.10	440.03	1378.09	1232.07	5.72	OSF1.50	8650.00	8511.64				MinPt-CtCt	
	1674.01	458.41	1367.74	1215.60	5.49	OSF1.50	9010.00	8865.93				MinPts	
	1674.14	458.47	1367.83	1215.67	5.49	OSF1.50	9020.00	8875.87				MinPt-O-SF	
	1685.73	117.23	1606.92	1568.50	21.91	OSF1.50	11740.00	10504.28				MinPt-O-ADP	
	1657.92	83.60	1601.52	1574.31	30.43	OSF1.50	11910.00	10505.16				MINPT-O-EOU	
	1647.16	65.41	1602.89	1581.75	38.91	OSF1.50	12100.00	10506.14				MinPt-CtCt	
	1658.25	84.31	1601.38	1573.94	30.18	OSF1.50	12290.00	10507.13				MINPT-O-EOU	
	1686.35	118.13	1606.94	1568.22	21.75	OSF1.50	12460.00	10508.01				MinPt-O-ADP	
	2304.31	325.32	2086.78	1979.00	10.68	OSF1.50	13710.00	10514.49				MinPt-O-SF	
	8621.52	451.57	8319.81	8169.94	28.76	OSF1.50	20561.27	10550.00				TD	
Devon Lonecat Federal #1 (Offset) Oil Inc Only 0ft-8870ft (Def Survey)													Pass
	4461.11	32.81	4459.13	4428.30	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4461.09	32.81	4459.11	4428.28	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	4461.09	32.81	4458.87	4428.28	17978.87	MAS = 10.00 (m)	26.00	26.00				WRP	
	4458.40	40.76	4430.57	4417.65	172.39	OSF1.50	830.00	830.00				MinPt-CtCt	
	4457.09	95.05	4393.06	4362.04	71.80	OSF1.50	1870.00	1870.00				MinPt-CtCt	
	4306.01	388.49	4046.35	3917.52	16.70	OSF1.50	7600.00	7484.89				MinPt-CtCt	
	4306.84	431.19	4018.71	3875.64	15.04	OSF1.50	8400.00	8267.18				MinPt-CtCt	
	4311.47	445.63	4013.72	3865.84	14.57	OSF1.50	8780.00	8638.82				MINPT-O-EOU	
	4316.23	462.43	4007.29	3853.80	14.05	OSF1.50	9030.00	8885.80				MinPts	
	2274.43	327.50	2055.44	1946.93	10.47	OSF1.50	13180.00	10511.74				MinPt-O-SF	
	1651.70	115.18	1574.26	1536.52	21.86	OSF1.50	14740.00	10519.83				MinPt-CtCt	
	1651.91	115.63	1574.16	1536.28	21.78	OSF1.50	14770.00	10519.98				MINPT-O-EOU	
	1663.33	128.29	1577.15	1535.04	19.73	OSF1.50	14940.00	10520.86				MinPt-O-ADP	
	2255.78	329.35	2035.56	1926.44	10.33	OSF1.50	16280.00	10527.81				MinPt-O-SF	
	6047.57	448.09	5748.18	5599.48	20.33	OSF1.50	20561.27	10550.00				TD	
Harvard James Federal #12 Blind_Inc_Only 0ft to 8865' (Def Survey)													Pass
	5730.33	32.81	5728.35	5697.52	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	5730.30	32.81	5728.32	5697.50	N/A	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	5730.30	32.81	5728.32	5697.49	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	5521.52	506.00	5183.51	5015.52	16.43	OSF1.50	8510.00	8374.74				MinPt-CtCt	
	5519.88	537.36	5160.97	4982.53	15.46	OSF1.50	8960.00	8816.32				MinPt-O-SF	
	5519.80	537.33	5160.91	4982.47	15.46	OSF1.50	8990.00	8846.08				MinPts	
	2280.36	377.23	2027.91	1903.14	9.13	OSF1.50	14390.00	10518.01				MinPt-O-SF	
	1667.47	154.82	1563.60	1512.65	16.34	OSF1.50	15950.00	10526.10				MinPt-CtCt	
	1669.13	158.18	1563.01	1510.95	16.01	OSF1.50	16020.00	10526.46				MINPT-O-EOU	
	1686.77	178.53	1567.09	1508.24	14.31	OSF1.50	16200.00	10527.39				MinPt-O-ADP	
	2239.18	385.54	1981.49	1853.64	8.75	OSF1.50	17440.00	10533.82				MinPt-O-SF	
	4907.71	512.91	4565.11	4394.80	14.40	OSF1.50	20561.27	10550.00				TD	
Harvard James Federal #5 (Offset) Oil Inc Only 0ft-8664ft (Def Survey)													Pass
	7101.91	32.81	7100.78	7069.10	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	7101.83	32.81	7100.69	7069.02	722026.34	MAS = 10.00 (m)	20.00	20.00				MinPt-O-SF	
	7101.81	32.81	7100.67	7069.00	793432.33	MAS = 10.00 (m)	26.00	26.00				WRP	
	7101.80	32.81	7100.64	7068.99	228276.40	MAS = 10.00 (m)	40.00	40.00				MinPts	
	7099.95	55.41	7062.64	7044.55	196.19	OSF1.50	1140.00	1140.00				MinPt-CtCt	
	6946.16	379.82	6692.54	6566.34	27.52	OSF1.50	7580.00	7465.34				MinPt-CtCt	
	6947.10	382.62	6691.62	6564.48	27.32	OSF1.50	7720.00	7602.24				MINPT-O-EOU	
	6935.74	449.27	6635.83	6486.47	23.21	OSF1.50	8850.00	8707.62				MinPt-O-SF	
	6935.70	449.25	6635.80	6486.45	23.21	OSF1.50	8870.00	8727.34				MinPts	
	2451.04	316.41	2239.08	2134.63	11.72	OSF1.50	15740.00	10525.01				MinPt-O-SF	
	1835.86	165.75	1724.99	1670.11	16.72	OSF1.50	17360.00	10533.41				MinPt-CtCt	
	1836.21	166.74	1724.67	1669.47	16.62	OSF1.50	17400.00	10533.61				MINPT-O-EOU	
	1837.87	168.68	1725.04	1669.19	16.44	OSF1.50	17450.00	10533.87				MinPt-O-ADP	
	2387.29	324.86	2170.34	2062.43	11.06	OSF1.50	18890.00	10541.34				MinPt-O-SF	
	3686.89	406.64	3415.42	3280.25	13.63	OSF1.50	20561.27	10550.00				TD	
Harvard James Federal #3 (Offset) Oil Inc Only 0ft-8610ft (Def Survey)													Pass
	8389.21	32.81	8387.23	8356.40	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	8389.20	32.81	8387.22	8356.39	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	8389.20	32.81	8387.17	8356.39	163910.26	MAS = 10.00 (m)	26.00	26.00				WRP	
	8386.39	93.70	8323.26	8292.69	137.12	OSF1.50	1880.00	1880.00				MinPt-CtCt	
	8281.77	302.03	8079.73	7979.74	41.40	OSF1.50	6110.00	6027.89				MinPt-CtCt	
	8255.50	389.19	7995.36	7866.31	31.98	OSF1.50	7740.00	7621.79				MinPt-CtCt	
	8250.03	444.97	7952.71	7805.06	27.93	OSF1.50	8790.00	8648.63				MinPts	
	2496.24	312.37	2286.42	2183.87	12.15	OSF1.50	17090.00	10532.01				MinPt-O-SF	
	1926.03	193.84	1796.14	1732.19	15.04	OSF1.50	18680.00	10540.25				MinPt-CtCt	
	1926.49	194.86	1795.92	1731.63	14.97	OSF1.50	18720.00	10540.46				MINPT-O-EOU	
	1927.37	195.85	1796.14	1731.52	14.90	OSF1.50	18750.00	10540.61				MinPt-O-ADP	
	2430.23	324.83	2213.02	2105.40	11.28	OSF1.50	20160.00	10547.92				MinPt-O-SF	
	2693.77	353.22	2457.63	2340.55	11.50	OSF1.50	20561.27	10550.00				TD	
Cimarex James 29 Federal #35H XEM + MWD 0ft to 13649ft MD (Def Survey)													Pass
	5275.54	32.81	5273.56	5242.73	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	5275.45	32.81	5273.47	5242.64	663876.42	MAS = 10.00 (m)	20.00	20.00				MinPt-O-SF	
	5275.44	32.81	5273.46	5242.63	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	5275.30	32.81	5273.15	5242.49	31534.17	MAS = 10.00 (m)	90.00	90.00				MinPts	
	5275.38	32.81	5273.08	5242.57	16467.40	MAS = 10.00 (m)	130.00	130.00				MINPT-O-EOU	
	5277.89	32.81	5274.70	5245.08	4374.06	MAS = 10.00 (m)	330.00	330.00				MINPT-O-EOU	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	5278.58	32.81	5273.18	5245.77	1543.83	MAS = 10.00 (m)	800.00	800.00				MinPts	
	5279.38	32.81	5272.74	5246.58	1130.34	MAS = 10.00 (m)	1060.00	1060.00				MINPT-O-EOU	
	5286.52	32.81	5275.54	5253.71	587.11	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	5598.02	59.38	5557.78	5538.65	146.24	OSF1.50	8800.00	8658.44				MinPt-O-SF	
	5614.23	58.60	5574.50	5555.63	148.68	OSF1.50	9020.00	8875.87				MinPt-O-SF	
	2055.42	126.30	1970.57	1929.13	24.78	OSF1.50	16350.00	10528.17				MinPt-CtCt	
	2055.50	126.55	1970.47	1928.94	24.73	OSF1.50	16370.00	10528.28				MINPT-O-EOU	
	2055.70	126.80	1970.51	1928.91	24.68	OSF1.50	16390.00	10528.38				MinPt-O-ADP	
	2060.26	138.11	1967.53	1922.16	22.68	OSF1.50	16710.00	10530.04				MinPt-CtCt	
	2060.97	140.29	1966.79	1920.69	22.33	OSF1.50	16800.00	10530.50				MINPT-O-EOU	
	2062.35	142.37	1966.78	1919.98	22.01	OSF1.50	16870.00	10530.87				MINPT-O-EOU	
	2049.62	183.89	1926.36	1865.73	16.88	OSF1.50	17890.00	10536.15				MinPt-CtCt	
	2053.88	196.59	1922.16	1857.29	15.82	OSF1.50	18240.00	10537.97				MINPT-O-EOU	
	2059.35	214.02	1916.01	1845.33	14.55	OSF1.50	18600.00	10539.83				MinPt-CtCt	
	2017.16	259.28	1843.64	1757.87	11.75	OSF1.50	19620.00	10545.12				MinPt-CtCt	
	2018.61	263.14	1842.52	1755.47	11.58	OSF1.50	19750.00	10545.79				MINPT-O-EOU	
	2022.54	268.21	1843.07	1754.33	11.38	OSF1.50	19890.00	10546.52				MinPt-O-ADP	
	2067.19	322.56	1851.49	1744.63	9.66	OSF1.50	20510.00	10549.73				MinPts	
	2072.73	321.89	1857.47	1750.84	9.71	OSF1.50	20561.27	10550.00				TD	
Harvard James Federal #4 (Offset) Oil Inc Only 0ft-8633ft (Def Survey)													Pass
	8532.74	32.81	8531.61	8499.94	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	8532.72	32.81	8531.59	8499.91	N/A	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	8532.71	32.81	8531.53	8499.90	170049.61	MAS = 10.00 (m)	26.00	26.00				MinPts	
	8534.37	75.09	8483.94	8459.28	173.07	OSF1.50	1540.00	1540.00				MinPt-CtCt	
	8287.12	446.49	7989.01	7840.63	27.92	OSF1.50	8830.00	8687.93				MinPt-O-SF	
	8286.53	446.41	7988.48	7840.12	27.92	OSF1.50	8910.00	8766.84				MinPts	
	8286.52	446.39	7988.48	7840.13	27.92	OSF1.50	8920.00	8776.72				MinPt-CtCt	
	2343.04	305.66	2138.20	2037.38	11.60	OSF1.50	17530.00	10534.29				MinPt-O-SF	
	2044.07	263.99	1867.71	1780.09	11.66	OSF1.50	18680.00	10540.25				MinPt-CtCt	
	2044.36	264.66	1867.54	1779.70	11.63	OSF1.50	18710.00	10540.40				MINPT-O-EOU	
	2044.80	265.17	1867.64	1779.63	11.61	OSF1.50	18730.00	10540.51				MinPt-O-ADP	
	2347.69	333.41	2125.04	2014.28	10.59	OSF1.50	19830.00	10546.21				MinPt-O-SF	
	2781.23	376.43	2529.90	2404.80	11.11	OSF1.50	20561.27	10550.00				TD	
Harvard James Federal #2 (Offset) Oil Blind+Inc Only 0ft-8151ft (Def Survey)													Pass
	9627.35	32.81	9625.37	9594.54	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	9627.24	32.81	9625.25	9594.43	728995.86	MAS = 10.00 (m)	26.00	26.00				WRP	
	9577.27	388.08	9317.88	9189.19	37.20	OSF1.50	5740.00	5666.08				MinPt-CtCt	
	9577.53	388.84	9317.63	9188.69	37.13	OSF1.50	5890.00	5812.76				MINPT-O-EOU	
	9577.87	389.26	9317.70	9188.61	37.09	OSF1.50	5970.00	5890.99				MinPt-O-ADP	
	9572.04	401.46	9303.74	9170.58	35.93	OSF1.50	7140.00	7035.08				MinPt-CtCt	
	9573.17	404.82	9302.63	9168.36	35.64	OSF1.50	7420.00	7308.88				MINPT-O-EOU	
	9574.86	406.84	9302.98	9168.03	35.47	OSF1.50	7580.00	7465.34				MinPt-O-ADP	
	9570.18	422.28	9288.01	9147.91	34.15	OSF1.50	8290.00	8159.61				MinPt-CtCt	
	9570.19	422.29	9288.00	9147.90	34.15	OSF1.50	8300.00	8169.39				MinPts	
	9571.06	422.39	9288.81	9148.67	34.14	OSF1.50	8420.00	8286.73				MinPt-O-SF	
	2906.94	292.51	2710.65	2614.42	15.08	OSF1.50	18310.00	10538.33				MinPt-O-SF	
	2367.69	219.92	2220.41	2147.76	16.28	OSF1.50	20000.00	10547.09				MinPt-CtCt	
	2367.92	220.50	2220.26	2147.42	16.24	OSF1.50	20030.00	10547.25				MINPT-O-EOU	
	2368.29	220.94	2220.33	2147.35	16.21	OSF1.50	20050.00	10547.35				MinPt-O-ADP	
	2434.11	244.08	2270.73	2190.03	15.07	OSF1.50	20561.27	10550.00				MinPt-O-SF	

Schlumberger

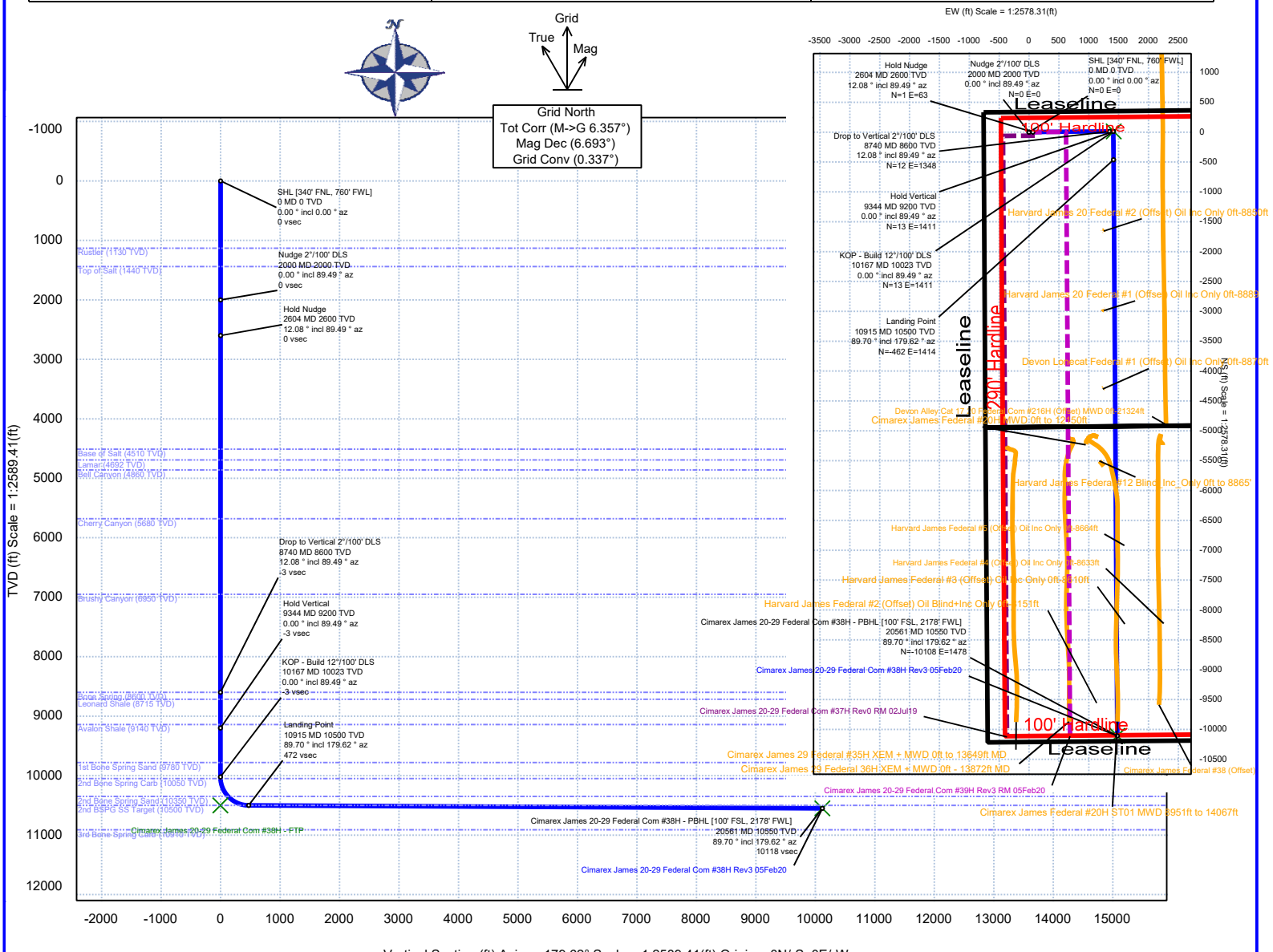
Cimarex

Rev 3

CIMAREX

Borehole:	Well:	Field:	Structure:
James 20-29 Federal Com #38H	Cimarex James 20-29 Federal Com #38H	NM Lea County (NAD 83)	Cimarex James 20-29 Federal Com #38H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous			
Model:	HDGM 2019	Dip:	59.973°	Date:	05-Feb-2020	Lat:	N 32 17 46.82	Northing:	472113.19ftUS	Grid Conv:	0.3369°	Slot:	James 20-29 Federal Com # 38H	TVD Ref:	RKB(3704ft above MSL)
MagDec:	6.693°	FS:	47895.677nT	Gravity FS:	998.435mgn (9.80665 Based)	Lon:	W 103 42 9.90	Easting:	736181.35ftUS	Scale Fact:	0.99995257	Plan:	Cimarex James 20-29 Federal Com #38H Rev3 05Feb20		



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [340' FNL, 760' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	1130.00	0.00	89.49	1130.00	0.00	0.00	0.00	0.00
Top of Salt	1440.00	0.00	89.49	1440.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	2000.00	0.00	89.49	2000.00	0.00	0.00	0.00	0.00
Hold Nudge	2604.04	12.08	89.49	2599.57	-0.14	0.56	63.44	2.00
Base of Salt	4557.73	12.08	89.49	4510.00	-1.05	4.19	472.31	0.00
Lamar	4743.85	12.08	89.49	4692.00	-1.13	4.53	511.27	0.00
Bell Canyon	4915.66	12.08	89.49	4860.00	-1.21	4.85	547.22	0.00
Cherry Canyon	5754.23	12.08	89.49	5680.00	-1.60	6.41	722.72	0.00
Brushy Canyon	7052.99	12.08	89.49	6950.00	-2.20	8.82	994.52	0.00
Bone Spring	8740.36	12.08	89.49	8600.00	-2.99	11.95	1347.66	0.00
Drop to Vertical 2°/100' DLS	8740.36	12.08	89.49	8600.00	-2.99	11.95	1347.66	0.00
Leonard Shale	8857.49	9.74	89.49	8715.00	-3.04	12.15	1369.82	2.00
Avalon Shale	9284.82	1.19	89.49	9140.00	-3.13	12.51	1410.48	2.00
Hold Vertical	9344.40	0.00	89.49	9199.57	-3.13	12.51	1411.10	2.00
1st Bone Spring Sand	9924.83	0.00	89.49	9780.00	-3.13	12.51	1411.10	0.00
KOP - Build 12°/100' DLS	10167.37	0.00	89.49	10022.54	-3.13	12.51	1411.10	0.00
2nd Bone Spring Carb	10194.84	3.30	179.62	10050.00	-2.34	11.72	1411.11	12.00
2nd Bone Spring Sand	10528.21	43.30	179.62	10350.00	126.86	-117.47	1411.96	12.00
2nd BSPG SS Target	10914.89	89.70	179.62	10500.00	471.86	-462.47	1414.26	12.00
Landing Point	10914.89	89.70	179.62	10500.00	471.86	-462.47	1414.26	12.00
Cimarex James 20-29 Federal Com #38H - PBHL [100' FSL, 2178' FWL]	20561.27	89.70	179.62	10550.00	10118.11	-10108.50	1478.40	0.00
3rd Bone Spring Carb	NaN			10910.00				

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Cimarex Energy Company**
LEASE NO.:	**NMNM0559539**
WELL NAME & NO.:	James 20-29 Federal Com 38H
SURFACE HOLE FOOTAGE:	340'/N & 760'/W
BOTTOM HOLE FOOTAGE	100'/S & 2178'/W
LOCATION:	Section 20, T.23 S., R.32 E., NMPM
COUNTY:	Lea County, New Mexico

COA

H2S	(•) Yes	( ) No	
Potash	(•) None	( ) Secretary	( ) R-111-P
Cave/Karst Potential	(•) Low	( ) Medium	( ) High
Cave/Karst Potential	( ) Critical		
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	[x] COM	[ ] Unit

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Sand Dunes** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8 inch** surface casing shall be set at approximately **1,210 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.

2. The minimum required fill of cement behind the **9-5/8 inch** intermediate 1 casing is:

(Single Stage):

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

3. The minimum required fill of cement behind the **7 inch** intermediate 2 casing is:

(Single Stage):

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

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

- Cement should tie-back **100 feet** into the previous casing. 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2,000 (2M) psi**.

3. 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 intermediate 1 casing shoe shall be **5000 (5M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) 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 Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, 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.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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: The flex line must meet the requirements of API 16C. 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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

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.

YJ (03/25/2020)

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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 19637

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
CIMAREX ENERGY CO. 600 N. Marienfeld Street Suite 600 Midland, TX79701	215099	19637	C-103A

OCD Reviewer	Condition
pkautz	None