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) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-025-43401	96434	Red Hills; Bone Spring, North

Property Code	Property Name	Well Number
	RAIDER FEDERAL	301H

OGRID No.	Operator Name	Elevation
372165	CENTENNIAL RESOURCE PRODUCTION, LLC	3525

Surface Location

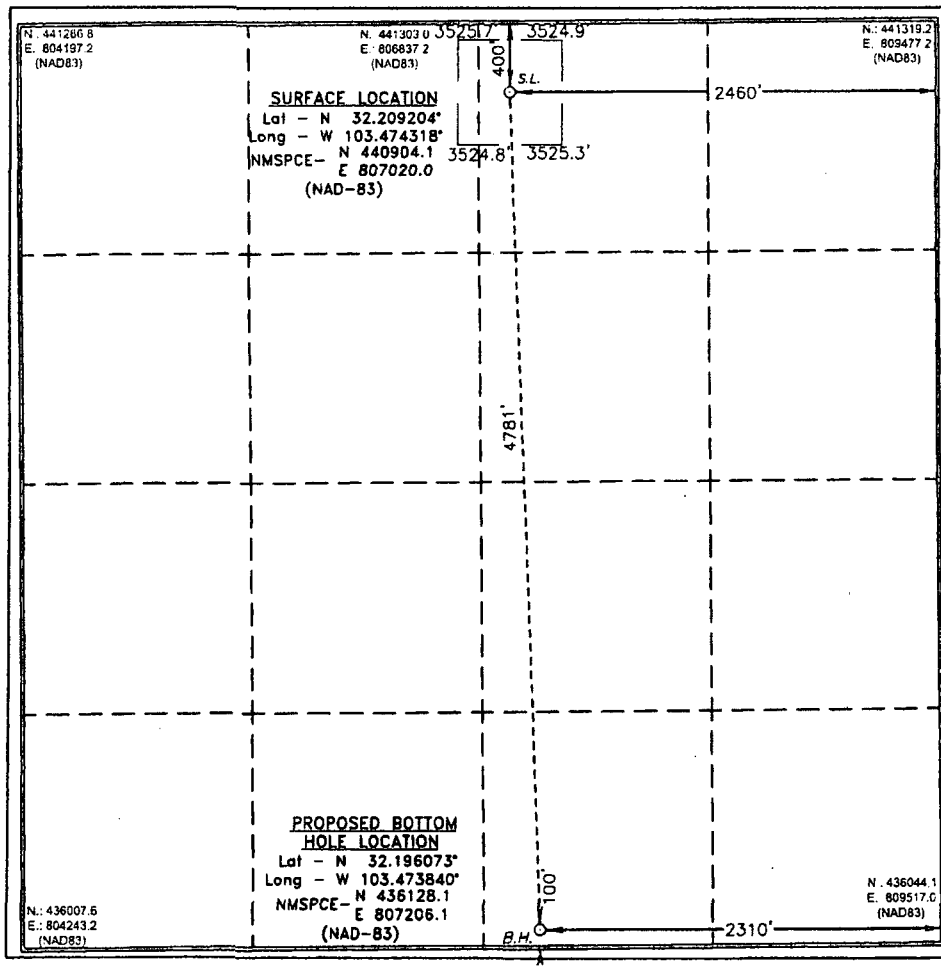
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
B	21	24 S	34 E		400	NORTH	2460	EAST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	SOUTH/South line	Feet from the	East/West line	County
O	21	24 S	34 E		100	SOUTH	2310	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unLEAsed mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Katie Biersmith 7/31/18
Signature Date

Katie Biersmith
Printed Name

Katie.biersmith@cdwinc.com
Email Address

SURVEYOR CERTIFICATION

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

MAY 28, 2014
Date Surveyed

Signature & Seal of Professional Surveyor

NEW MEXICO 7977 PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977
BASIN SURVEYS

0' 500' 1000' 1500' 2000'
SCALE: 1" = 1000'
WO Num.: 30493

identified at the time of the BLM witnessed BOP test. Any remote controls will be capable of both opening and closing all preventers and shall be readily accessible.

String Detail:

	Conductor	Surface	Intermediate	Production
Hole Size	26	17.5	12.25	8.5
Top Setting Depth MD	0	0	0	0
Top Setting Depth TVD	0	0	0	0
Top Setting Depth MSL	3525	3525	3525	3525
Bottom Setting Depth MD	120	1300	5340	14833.78
Bottom Setting Depth TVD	120	1300	5340	10300
Bottom Setting Depth MSL	3405	2225	-1815	-6775
Calculated Casing Length MD	120	1300	5340	14833.78
Casing Size	20	13.375	9.625	5.5
Grade	H-40	J-55	J-55	P-110
Weight	94.0	54.5	40	20.0
Joint Type	WELD	BTC	LTC	TMK UP DQX
Condition	NEW	NEW	NEW	NEW
Standard				
Tapered String		NO	NO	NO
Collapse Design Safety Factor		1.76	1.31	2.08
Collapse Design Safety Factor type		DRY	1/3 FULL	DRY
Burst Design Safety Factor		4.26	1.42	2.36
Joint Tensile Design Safety Factor type		DRY	DRY	DRY
Joint Tensile Design Safety Factor		7.25	2.43	3.11
Body Tensile Design Safety Factor type		DRY	DRY	DRY
Body Tensile Design Safety Factor		12.04	2.95	3.11

Safety Factor Notes:					
13 3/8 Surface	**9 5/8 Intermediate**	**5 1/2 Production.1**	**API SF**	**BLM SF**	
1,130	2,570	11,110	1.125	1.125	**Collapse**
2,730	3,950	12,640	1.10	1.0	**Burst**
	0.8550				
514,000	520,000	641,000	1.80	1.6	**JT tensile**
853,000	630,000	641,000	1.80	1.6	**Body Tensile**

Cement Detail:

		Top MD Segment	Bottom MD Segment	Cement Type	Additives	Quantity (sks)	Yield (cu.ft./sk)	Density	Volume (cu.ft.)	Excess (%)
Conductor										
	LEAD	0	120	Grout	Bentonite 4% BWOC, Cellophane #/sx, CaCl2 2% BWOC.	121	1.49	12.9	181	NA
	TAIL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Surface										
	LEAD	0	800	Class C Premium	Premium Gel Bentonite 4%, C-45 Econolite 0.25%, Phenoseal 0.25#/sk, CaCl 1%, Defoamer C-41P 0.75%	798	1.74	13.5	1,389	150
	TAIL	800	1,300	Class C Premium	C-45 Econolite 0.10%, CaCl 2.%	522	1.33	14.8	695	100
Intermediate										
1st stage	LEAD	0	4,990	TXI Lightweight	Salt 0.81#/sk, C-45 Econolite 0.80%, Phenoseal 1.50#/sk, STE 6.0%, Citric Acid 0.20%, C-19 Fluid Loss Add've 0.10%, CSA-1000 Fluid Loss Add've 0.25%, Kol Seal 6.0#/sk,	919	3.40	10.7	3,126	100

					Defoamer C-41P 0.75%.					
1st stage	TAIL	4,990	5,340	Class H Premium	C-51 Susp Agent 0.05%, Retarder C-20 0.10%, C-503P Defoamer 0.30%	124	1.33	14.8	164	50
Production										
	LEAD	0	8,955	TXI Lightweight	Salt 9.0#/sk, Phenoseal 2.50#/sk, STE 6.0%, Citric Acid 0.20%, CSA-1000 Fluid Loss Add've 0.28%, Kol Seal 6.0#/sk, C-47B Fluid Loss Add've 0.10%, Defoamer C-503P 0.30%.	789	3.51	10.6	2,769	35
	TAIL	8,955	14,834	Class H Premium	CSA-1000 Fluid Loss Add've 0.07%, C47B Fluid Loss Add've 0.25%, Retarder C-20 0.15%	1,247	1.35	14.2	1,683	25

Mud System:

Centennial will use a closed loop system. No air or gas system will be used.

Sufficient quantities of mud materials will be on the well site at all times for the purpose of assuring well control and maintaining wellbore integrity. Surface interval will employ fresh water mud. The intermediate hole will utilize a diesel emulsified brine fluid to inhibit salt washout and prevent severe fluid losses. The production hole will employ oil base fluid to inhibit formation reactivity and of the appropriate density to maintain well control.

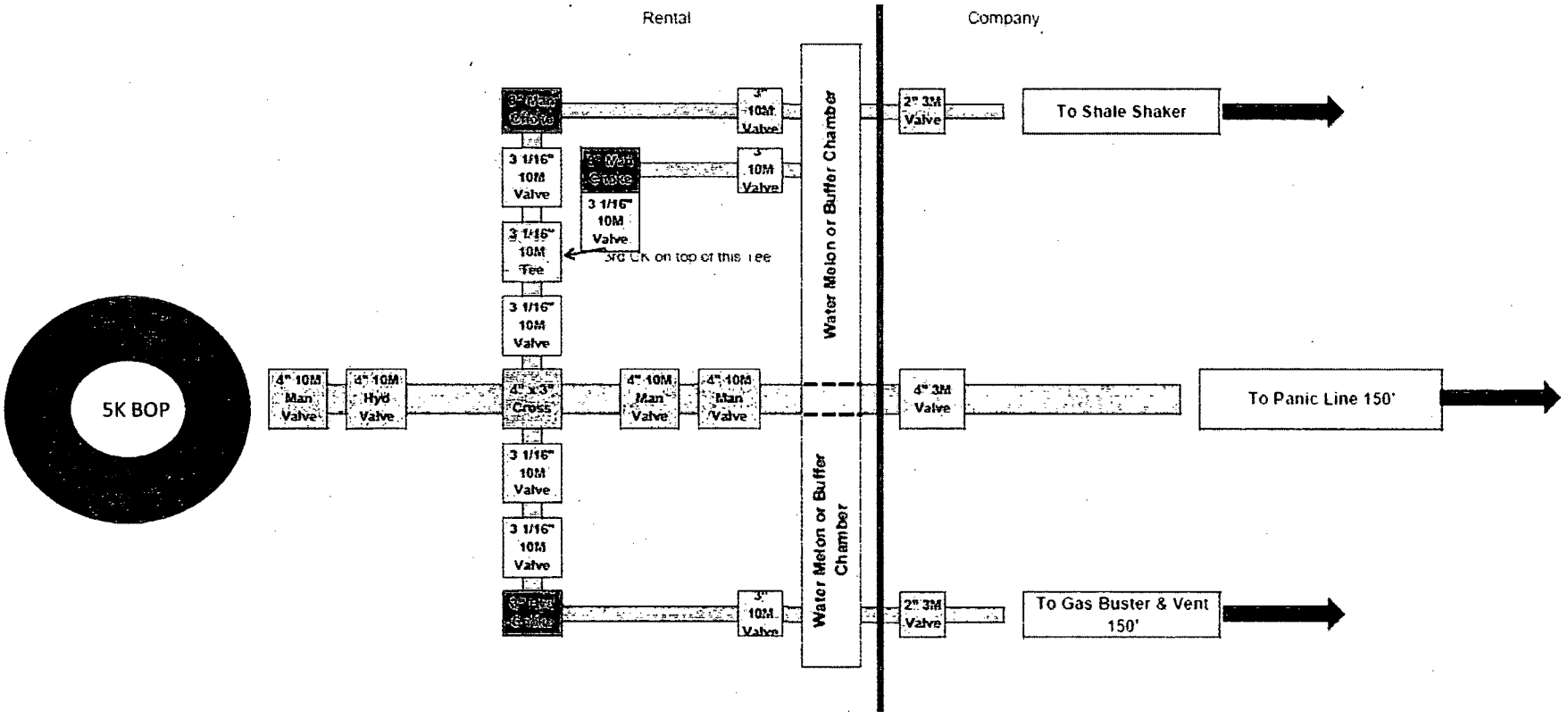
Mud monitoring system will be a centrifuge separation system. Open tank monitoring with EDR will be used for drilling fluids and return volumes. Open tank monitoring will be used for cement and cuttings return volumes. Mud properties will be monitored at least every 24 hours using industry accepted mud check practices.

	Top Depth	**Bottom Depth**	**Mud Type**	**Min weight(lbs./gal.)**	**Max weight (lbs./gal.)**
Surface	0	1300	FW	8.6	9.5
Intermediate	1300	5340	Brine	9.0	10.0
Production	5340	14833.78	Brine/OBM	8.8	10.0

Anticipated Bottom Hole Pressure: 5346

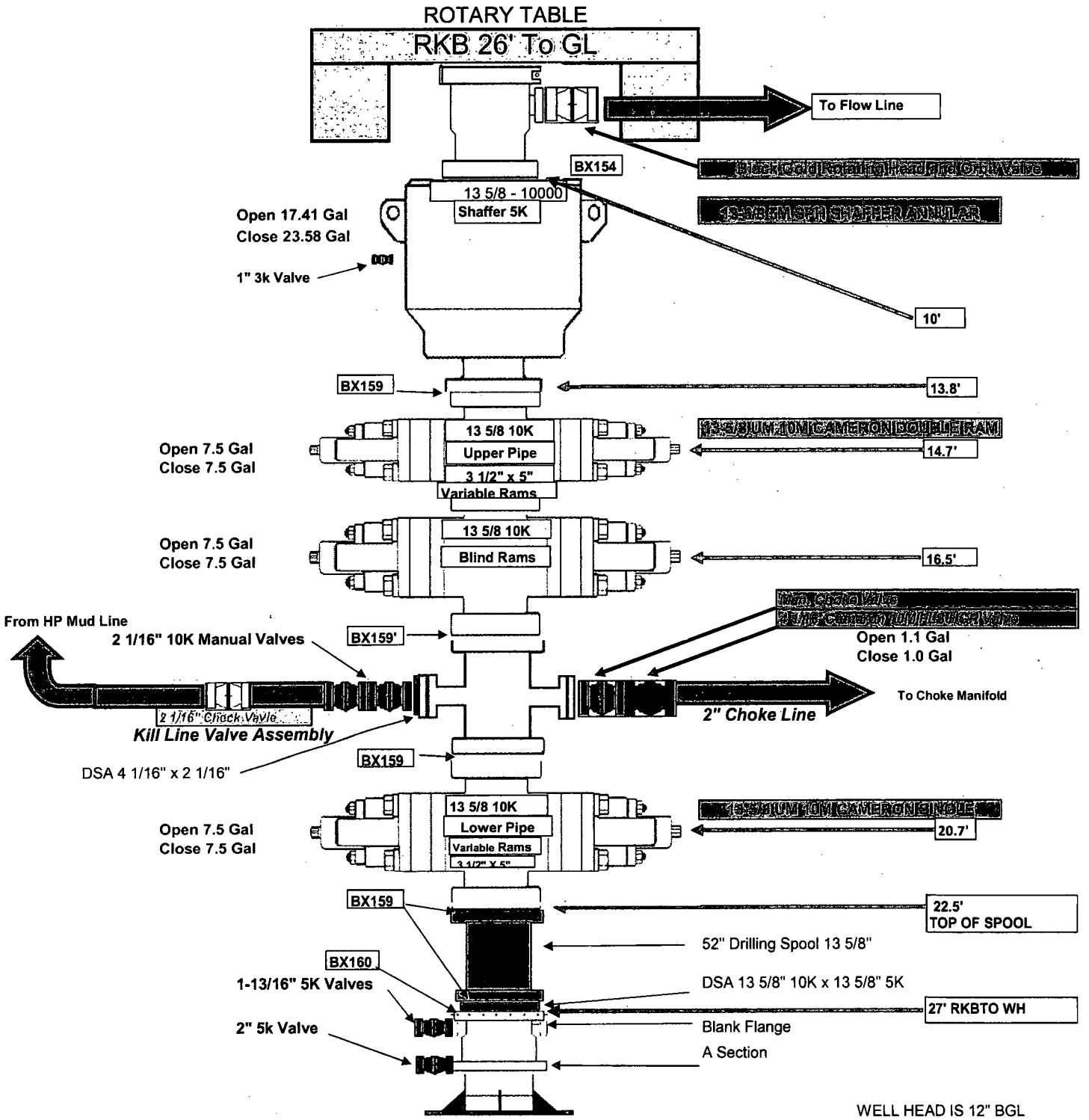
Anticipated Surface Pressure: 3080

Centennial will utilize MWD/LWD (Gamma ray logging) from intermediate hole to TD of the well.


Rental
Company
5K BOP
4" 10M Man Valve
4" 10M Hyd Valve
4" x 3" Cross
3 1/16" 10M Valve
3 1/16" 10M Tee
3 1/16" 10M Valve
3" 10M Valve
2" 3M Valve
Water Melon or Buffer Chamber
To Shale Shaker
To Panic Line 150'
To Gas Buster & Vent 150'

H&P 650

Lea County, NM BOP Configuration



CASING ASSUMPTIONS WORKSHEET:

Centralizer Program:

Surface: - 3 welded bow spring centralizers, one on each of the bottom 3 joints, plus one on the shoe joint (4 minimum)
- No Cement baskets will be run

Production: - 1 welded bow spring centralizer on a stop ring 6' above float shoe
- 1 centralizer every other joint to the top of the tail cement
- 1 centralizer every 4 joints to 500' below the top of the lead cement
- The actual number and placement of centralizers will be determined from hole deviation and potential production zones. Centralizers will be run for maximum practical standoff and through all potential productive zones.

- All casing strings below the conductor shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing. If pressure declines more than 10 percent in 30 minutes, corrective action will be taken.

No freshly hard banded pipe will be rotated in the surface casing

- CENTENNIAL RESOURCE DEVELOPOMENT will not employ an air-drill rig for the surface casing. The casing shoe will be tested by drilling 5'-10' out from under the shoe and pressure testing to the maximum expected mud weight equivalent as shown in the mud program listed in the drilling plan.

CENTENNIAL
RESOURCE DEVELOPMENT, INC

Centennial Resource Development, Inc.

Lea Co., NM (NAD83)
Raider Federal
301H

OH

Plan: Plan #1

Standard Planning Report

31 July, 2018

LATITUDE
ENERGY PARTNERS

CENTENNIAL

Project: Lea Co., NM (NAD83)
Site: Raider Federal
Well: 301H
Wellbore: OH
Design: Plan #1
Lat: 32.209204
Long: -103.474318
GL: 3525.00
KB: KB=25' @ 3550.00usft (H&P 650)

ALTITUDE ENERGY PARTNERS

WELL DETAILS: 301H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	440904.10	807020.00	32.209204	-103.474318

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Rader Fed 301H PBHL	10300.00	-4777.33	147.92	436128.10	807206.10	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	Build 1°/100'
3249.99	2.50	64.69	3249.91	2.33	4.93	1.00	64.69	-2.18	3503' Hold
6753.51	2.50	64.69	6750.09	67.67	143.07	0.00	0.00	-63.21	Drop 1°/100
7003.49	0.00	0.00	7000.00	70.00	148.00	1.00	180.00	-65.39	2727' Hold
9730.54	0.00	0.00	9727.04	70.00	148.00	0.00	0.00	-65.39	Build 10°/100'
10630.54	90.00	180.00	10300.00	-502.96	147.99	10.00	180.00	507.30	4274' Hold
14904.91	90.00	180.00	10300.00	-4777.33	147.92	0.00	0.00	4779.62	TD at 14904.91

Formation Tops

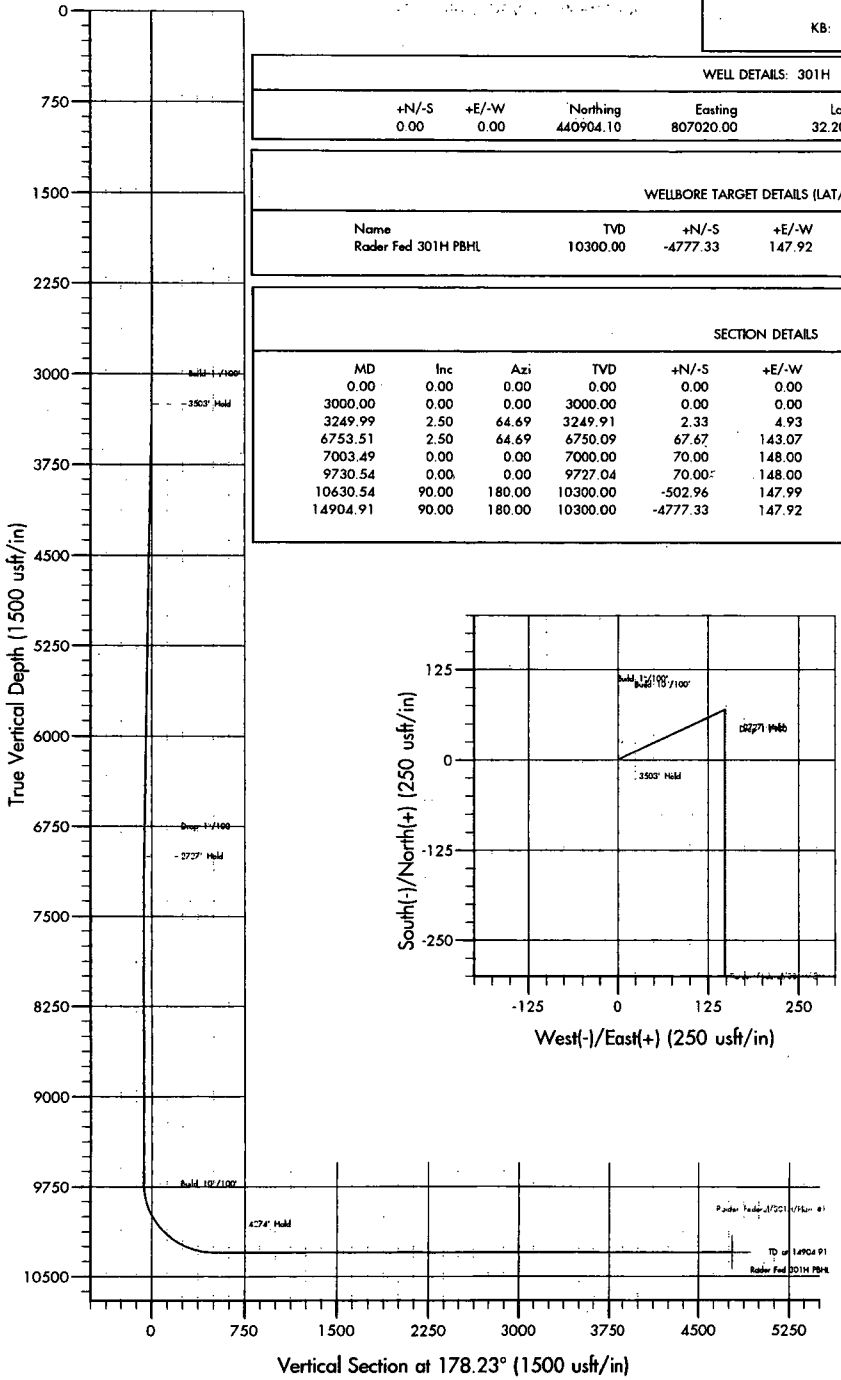
No formation data is available

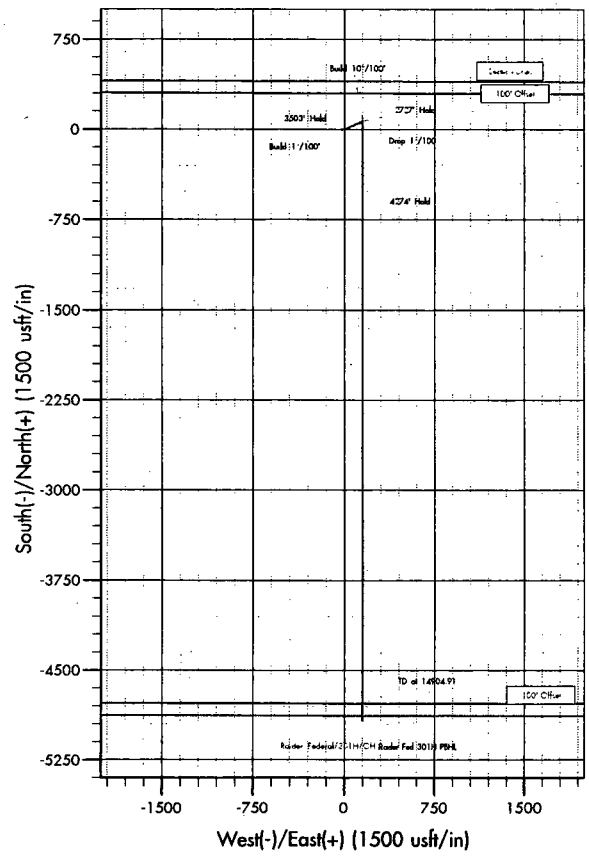
CASING DETAILS

No casing data is available

Azimuths to True North
Magnetic North: 6.79°

Magnetic Field
Strength: 47823.5snT
Dip Angle: 60.05°
Date: 07/31/2018
Model: IGRF2015





Plan: Plan #1 (301H/OH)
Created By: Dusty Moyer Date: 17:10, July 31 2018

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 301H
Company:	Centennial Resource Development, Inc.	**TVD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Project:	Lea Co., NM (NAD83)	**MD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Site:	Raider Federal	**North Reference:**	True
Well:	301H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Lea Co., NM (NAD83)		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Raider Federal				
Site Position:		**Northing:**	440,904.10 usft	**Latitude:**	32.209204
From:	Map	**Easting:**	807,020.00 usft	**Longitude:**	-103.474318
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.46 °

Well	301H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	440,904.10 usft	**Latitude:**	32.209204
	+E/-W	0.00 usft	**Easting:**	807,020.00 usft	**Longitude:**	-103.474318
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,525.00 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	07/31/18	6.79	60.05	47,823.52036090

Design	Plan #1				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	178.23	

Plan Survey Tool Program **Date** 07/31/18

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,904.91	Plan #1 (OH)	MWD+IFR1+MS	
				OWSG MWD + IFR1 + Multi-St	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,249.99	2.50	64.69	3,249.91	2.33	4.93	1.00	1.00	0.00	64.69	
6,753.51	2.50	64.69	6,750.09	67.67	143.07	0.00	0.00	0.00	0.00	
7,003.49	0.00	0.00	7,000.00	70.00	148.00	1.00	-1.00	0.00	180.00	
9,730.54	0.00	0.00	9,727.04	70.00	148.00	0.00	0.00	0.00	0.00	
10,630.54	90.00	180.00	10,300.00	-502.96	147.99	10.00	10.00	0.00	180.00	
14,904.91	90.00	180.00	10,300.00	-4,777.33	147.92	0.00	0.00	0.00	0.00	Rader Fed 301H PBH

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 301H
Company:	Centennial Resource Development, Inc.	**TVD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Project:	Lea Co., NM (NAD83)	**MD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Site:	Raider Federal	**North Reference:**	True
Well:	301H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 1°/100'									
3,100.00	1.00	64.69	3,099.99	0.37	0.79	-0.35	1.00	1.00	0.00
3,200.00	2.00	64.69	3,199.96	1.49	3.16	-1.39	1.00	1.00	0.00
3,249.99	2.50	64.69	3,249.91	2.33	4.93	-2.18	1.00	1.00	0.00
3503' Hold									
3,300.00	2.50	64.69	3,299.87	3.26	6.90	-3.05	0.00	0.00	0.00
3,400.00	2.50	64.69	3,399.78	5.13	10.84	-4.79	0.00	0.00	0.00
3,500.00	2.50	64.69	3,499.68	6.99	14.79	-6.53	0.00	0.00	0.00
3,600.00	2.50	64.69	3,599.59	8.86	18.73	-8.27	0.00	0.00	0.00
3,700.00	2.50	64.69	3,699.49	10.72	22.67	-10.02	0.00	0.00	0.00
3,800.00	2.50	64.69	3,799.40	12.59	26.62	-11.76	0.00	0.00	0.00
3,900.00	2.50	64.69	3,899.30	14.45	30.56	-13.50	0.00	0.00	0.00
4,000.00	2.50	64.69	3,999.21	16.32	34.50	-15.24	0.00	0.00	0.00
4,100.00	2.50	64.69	4,099.11	18.18	38.44	-16.98	0.00	0.00	0.00
4,200.00	2.50	64.69	4,199.02	20.05	42.39	-18.73	0.00	0.00	0.00
4,300.00	2.50	64.69	4,298.92	21.91	46.33	-20.47	0.00	0.00	0.00
4,400.00	2.50	64.69	4,398.83	23.78	50.27	-22.21	0.00	0.00	0.00
4,500.00	2.50	64.69	4,498.73	25.64	54.22	-23.95	0.00	0.00	0.00
4,600.00	2.50	64.69	4,598.64	27.51	58.16	-25.69	0.00	0.00	0.00
4,700.00	2.50	64.69	4,698.54	29.37	62.10	-27.44	0.00	0.00	0.00
4,800.00	2.50	64.69	4,798.45	31.24	66.05	-29.18	0.00	0.00	0.00
4,900.00	2.50	64.69	4,898.35	33.10	69.99	-30.92	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 301H
Company:	Centennial Resource Development, Inc.	**TVD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Project:	Lea Co., NM (NAD83)	**MD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Site:	Raider Federal	**North Reference:**	True
Well:	301H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.00	2.50	64.69	4,998.26	34.97	73.93	-32.66	0.00	0.00	0.00
5,100.00	2.50	64.69	5,098.16	36.83	77.87	-34.40	0.00	0.00	0.00
5,200.00	2.50	64.69	5,198.07	38.70	81.82	-36.15	0.00	0.00	0.00
5,300.00	2.50	64.69	5,297.97	40.56	85.76	-37.89	0.00	0.00	0.00
5,400.00	2.50	64.69	5,397.87	42.43	89.70	-39.63	0.00	0.00	0.00
5,500.00	2.50	64.69	5,497.78	44.29	93.65	-41.37	0.00	0.00	0.00
5,600.00	2.50	64.69	5,597.68	46.16	97.59	-43.11	0.00	0.00	0.00
5,700.00	2.50	64.69	5,697.59	48.02	101.53	-44.86	0.00	0.00	0.00
5,800.00	2.50	64.69	5,797.49	49.89	105.47	-46.60	0.00	0.00	0.00
5,900.00	2.50	64.69	5,897.40	51.75	109.42	-48.34	0.00	0.00	0.00
6,000.00	2.50	64.69	5,997.30	53.62	113.36	-50.08	0.00	0.00	0.00
6,100.00	2.50	64.69	6,097.21	55.48	117.30	-51.82	0.00	0.00	0.00
6,200.00	2.50	64.69	6,197.11	57.35	121.25	-53.57	0.00	0.00	0.00
6,300.00	2.50	64.69	6,297.02	59.21	125.19	-55.31	0.00	0.00	0.00
6,400.00	2.50	64.69	6,396.92	61.08	129.13	-57.05	0.00	0.00	0.00
6,500.00	2.50	64.69	6,496.83	62.94	133.08	-58.79	0.00	0.00	0.00
6,600.00	2.50	64.69	6,596.73	64.81	137.02	-60.53	0.00	0.00	0.00
6,700.00	2.50	64.69	6,696.64	66.67	140.96	-62.28	0.00	0.00	0.00
6,753.51	2.50	64.69	6,750.09	67.67	143.07	-63.21	0.00	0.00	0.00
Drop 1°/100									
6,800.00	2.03	64.69	6,796.55	68.46	144.73	-63.94	1.00	-1.00	0.00
6,900.00	1.03	64.69	6,896.51	69.60	147.16	-65.01	1.00	-1.00	0.00
7,003.49	0.00	0.00	7,000.00	70.00	148.00	-65.39	1.00	-1.00	0.00
2727' Hold									
7,100.00	0.00	0.00	7,096.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,200.00	0.00	0.00	7,196.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,300.00	0.00	0.00	7,296.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,400.00	0.00	0.00	7,396.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,500.00	0.00	0.00	7,496.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,600.00	0.00	0.00	7,596.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,700.00	0.00	0.00	7,696.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,800.00	0.00	0.00	7,796.51	70.00	148.00	-65.39	0.00	0.00	0.00
7,900.00	0.00	0.00	7,896.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,000.00	0.00	0.00	7,996.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,100.00	0.00	0.00	8,096.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,200.00	0.00	0.00	8,196.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,300.00	0.00	0.00	8,296.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,400.00	0.00	0.00	8,396.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,500.00	0.00	0.00	8,496.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,600.00	0.00	0.00	8,596.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,700.00	0.00	0.00	8,696.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,800.00	0.00	0.00	8,796.51	70.00	148.00	-65.39	0.00	0.00	0.00
8,900.00	0.00	0.00	8,896.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,000.00	0.00	0.00	8,996.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,100.00	0.00	0.00	9,096.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,200.00	0.00	0.00	9,196.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,300.00	0.00	0.00	9,296.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,400.00	0.00	0.00	9,396.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,500.00	0.00	0.00	9,496.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,600.00	0.00	0.00	9,596.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,700.00	0.00	0.00	9,696.51	70.00	148.00	-65.39	0.00	0.00	0.00
9,730.54	0.00	0.00	9,727.04	70.00	148.00	-65.39	0.00	0.00	0.00
Build 10°/100'									

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 301H
Company:	Centennial Resource Development, Inc.	**TVD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Project:	Lea Co., NM (NAD83)	**MD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Site:	Raider Federal	**North Reference:**	True
Well:	301H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,750.00	1.95	180.00	9,746.50	69.67	148.00	-65.06	10.00	10.00	0.00
9,800.00	6.95	180.00	9,796.34	65.79	148.00	-61.18	10.00	10.00	0.00
9,850.00	11.95	180.00	9,845.64	57.59	148.00	-52.98	10.00	10.00	0.00
9,900.00	16.95	180.00	9,894.05	45.12	148.00	-40.52	10.00	10.00	0.00
9,950.00	21.95	180.00	9,941.18	28.48	148.00	-23.89	10.00	10.00	0.00
10,000.00	26.95	180.00	9,986.68	7.79	148.00	-3.21	10.00	10.00	0.00
10,050.00	31.95	180.00	10,030.21	-16.78	148.00	21.35	10.00	10.00	0.00
10,100.00	36.95	180.00	10,071.43	-45.05	148.00	49.61	10.00	10.00	0.00
10,150.00	41.95	180.00	10,110.03	-76.81	148.00	81.35	10.00	10.00	0.00
10,200.00	46.95	180.00	10,145.71	-111.81	148.00	116.34	10.00	10.00	0.00
10,250.00	51.95	180.00	10,178.21	-149.79	148.00	154.30	10.00	10.00	0.00
10,300.00	56.95	180.00	10,207.27	-190.45	148.00	194.94	10.00	10.00	0.00
10,350.00	61.95	180.00	10,232.68	-233.50	148.00	237.97	10.00	10.00	0.00
10,400.00	66.95	180.00	10,254.24	-278.59	147.99	283.04	10.00	10.00	0.00
10,450.00	71.95	180.00	10,271.79	-325.40	147.99	329.82	10.00	10.00	0.00
10,500.00	76.95	180.00	10,285.19	-373.55	147.99	377.95	10.00	10.00	0.00
10,550.00	81.95	180.00	10,294.35	-422.69	147.99	427.07	10.00	10.00	0.00
10,600.00	86.95	180.00	10,299.19	-472.44	147.99	476.79	10.00	10.00	0.00
10,630.54	90.00	180.00	10,300.00	-502.96	147.99	507.30	10.00	10.00	0.00
4274' Hold									
10,700.00	90.00	180.00	10,300.00	-572.42	147.99	576.73	0.00	0.00	0.00
10,800.00	90.00	180.00	10,300.00	-672.42	147.99	676.68	0.00	0.00	0.00
10,900.00	90.00	180.00	10,300.00	-772.42	147.99	776.63	0.00	0.00	0.00
11,000.00	90.00	180.00	10,300.00	-872.42	147.99	876.58	0.00	0.00	0.00
11,100.00	90.00	180.00	10,300.00	-972.42	147.98	976.54	0.00	0.00	0.00
11,200.00	90.00	180.00	10,300.00	-1,072.42	147.98	1,076.49	0.00	0.00	0.00
11,300.00	90.00	180.00	10,300.00	-1,172.42	147.98	1,176.44	0.00	0.00	0.00
11,400.00	90.00	180.00	10,300.00	-1,272.42	147.98	1,276.39	0.00	0.00	0.00
11,500.00	90.00	180.00	10,300.00	-1,372.42	147.98	1,376.35	0.00	0.00	0.00
11,600.00	90.00	180.00	10,300.00	-1,472.42	147.98	1,476.30	0.00	0.00	0.00
11,700.00	90.00	180.00	10,300.00	-1,572.42	147.97	1,576.25	0.00	0.00	0.00
11,800.00	90.00	180.00	10,300.00	-1,672.42	147.97	1,676.20	0.00	0.00	0.00
11,900.00	90.00	180.00	10,300.00	-1,772.42	147.97	1,776.15	0.00	0.00	0.00
12,000.00	90.00	180.00	10,300.00	-1,872.42	147.97	1,876.11	0.00	0.00	0.00
12,100.00	90.00	180.00	10,300.00	-1,972.42	147.97	1,976.06	0.00	0.00	0.00
12,200.00	90.00	180.00	10,300.00	-2,072.42	147.97	2,076.01	0.00	0.00	0.00
12,300.00	90.00	180.00	10,300.00	-2,172.42	147.96	2,175.96	0.00	0.00	0.00
12,400.00	90.00	180.00	10,300.00	-2,272.42	147.96	2,275.91	0.00	0.00	0.00
12,500.00	90.00	180.00	10,300.00	-2,372.42	147.96	2,375.87	0.00	0.00	0.00
12,600.00	90.00	180.00	10,300.00	-2,472.42	147.96	2,475.82	0.00	0.00	0.00
12,700.00	90.00	180.00	10,300.00	-2,572.42	147.96	2,575.77	0.00	0.00	0.00
12,800.00	90.00	180.00	10,300.00	-2,672.42	147.96	2,675.72	0.00	0.00	0.00
12,900.00	90.00	180.00	10,300.00	-2,772.42	147.95	2,775.67	0.00	0.00	0.00
13,000.00	90.00	180.00	10,300.00	-2,872.42	147.95	2,875.63	0.00	0.00	0.00
13,100.00	90.00	180.00	10,300.00	-2,972.42	147.95	2,975.58	0.00	0.00	0.00
13,200.00	90.00	180.00	10,300.00	-3,072.42	147.95	3,075.53	0.00	0.00	0.00
13,300.00	90.00	180.00	10,300.00	-3,172.42	147.95	3,175.48	0.00	0.00	0.00
13,400.00	90.00	180.00	10,300.00	-3,272.42	147.95	3,275.43	0.00	0.00	0.00
13,500.00	90.00	180.00	10,300.00	-3,372.42	147.95	3,375.39	0.00	0.00	0.00
13,600.00	90.00	180.00	10,300.00	-3,472.42	147.94	3,475.34	0.00	0.00	0.00
13,700.00	90.00	180.00	10,300.00	-3,572.42	147.94	3,575.29	0.00	0.00	0.00
13,800.00	90.00	180.00	10,300.00	-3,672.42	147.94	3,675.24	0.00	0.00	0.00
13,900.00	90.00	180.00	10,300.00	-3,772.42	147.94	3,775.19	0.00	0.00	0.00
14,000.00	90.00	180.00	10,300.00	-3,872.42	147.94	3,875.15	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well 301H
Company:	Centennial Resource Development, Inc.	**TVD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Project:	Lea Co., NM (NAD83)	**MD Reference:**	KB=25' @ 3550.00usft (H&P 650)
Site:	Raider Federal	**North Reference:**	True
Well:	301H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,100.00	90.00	180.00	10,300.00	-3,972.42	147.94	3,975.10	0.00	0.00	0.00
14,200.00	90.00	180.00	10,300.00	-4,072.42	147.93	4,075.05	0.00	0.00	0.00
14,300.00	90.00	180.00	10,300.00	-4,172.42	147.93	4,175.00	0.00	0.00	0.00
14,400.00	90.00	180.00	10,300.00	-4,272.42	147.93	4,274.95	0.00	0.00	0.00
14,500.00	90.00	180.00	10,300.00	-4,372.42	147.93	4,374.91	0.00	0.00	0.00
14,600.00	90.00	180.00	10,300.00	-4,472.42	147.93	4,474.86	0.00	0.00	0.00
14,700.00	90.00	180.00	10,300.00	-4,572.42	147.93	4,574.81	0.00	0.00	0.00
14,800.00	90.00	180.00	10,300.00	-4,672.42	147.92	4,674.76	0.00	0.00	0.00
14,904.91	90.00	180.00	10,300.00	-4,777.33	147.92	4,779.62	0.00	0.00	0.00
TD at 14904.91									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Rader Fed 301H PBHL - plan hits target center - Point	0.00	0.00	10,300.00	-4,777.33	147.92	436,128.10	807,206.10	32.196073	-103.473840

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,000.00	3,000.00	0.00	0.00	Build 1°/100'
3,249.99	3,249.91	2.33	4.93	3503' Hold
6,753.51	6,750.09	67.67	143.07	Drop 1°/100
7,003.49	7,000.00	70.00	148.00	2727' Hold
9,730.54	9,727.04	70.00	148.00	Build 10°/100'
10,630.54	10,300.00	-502.96	147.99	4274' Hold
14,904.91	10,300.00	-4,777.33	147.92	TD at 14904.91

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**CENTENNIAL RESOURCE**
LEASE NO.:	**NMNM126971**
WELL NAME & NO.:	**RAIDER FEDERAL 301H**
SURFACE HOLE FOOTAGE:	**400' FNL & 2460' FEL**
BOTTOM HOLE FOOTAGE	**100' FSL & 2310' FEL**
LOCATION:	**Section 21, T. 24 S., R 34 E., NMPM**
COUNTY:	**Lea County, New Mexico**

COA

All previous COAs still apply expcept the followin

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. Hydrogen Sulfide

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1300** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
   - Cement to surface. If cement does not circulate 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 **5-1/2** inch production casing is:
   - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

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)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ 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)

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 (one log per well pad is acceptable) 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. 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.

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. The results of the test shall be reported to the appropriate BLM office.

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. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.

g. 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.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

In a Lesser Prairie-Chicken section.

13 3/8	surface csg in a	17 1/2	inch hole.		Design Factors		SURFACE	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	54.50	J 55	BUTT	12.04	1.76	0.98	1,300	70,850
"B"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,344			Tail Cmt	does not	circ to sfc.	Totals:	1,300	70,850

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	1320	2083	957	118	9.50	1599	2M	1.56

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

9 5/8	casing inside the	13 3/8			Design Factors		INTERMEDIATE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	40.00	J 55	LT&C	2.43	0.93	0.74	5,340	213,600
"B"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	5,340	213,600

The cement volume(s) are intended to achieve a top of 0 ft from surface or a 1300 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	1133	3409	1756	94	10.00	3085	5M	0.81

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.74, b, c, d
All > 0.70, OK.

ALT. COLLAPSE SF: 0.93*1.5= 1.39

5 1/2	casing inside the	9 5/8			Design Factors		PRODUCTION	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	20.00	P 110	DQX	3.11	2.2	2.35	9,731	194,620
"B"	20.00	P 110	DQX	7.94	1.87	2.35	5,103	102,060
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,141						Totals:	14,834	296,680

B would be: 56.33 2.07 if it were a vertical wellbore.

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	14834	10300	10300	9731	90	10	10631

The cement volume(s) are intended to achieve a top of 5140 ft from surface or a 200 overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 1/2	0.2291	2036	4453	2232	99	10.00			1.23

Class 'H' tail cmt yld > 1.20