

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

Form C-101
August 1, 2011

Permit 274927

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address CHISHOLM ENERGY OPERATING, LLC 801 Cherry Street Fort Worth, TX 76102		2. OGRID Number 372137
4. Property Code 321291		3. API Number 30-025-46538
5. Property Name GRAMA RIDGE EAST 34 STATE COM 3BS		6. Well No. 003H

7. Surface Location

UL - Lot D	Section 34	Township 21S	Range 34E	Lot Idn D	Feet From 155	N/S Line N	Feet From 880	E/W Line W	County Lea
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8. Proposed Bottom Hole Location

UL - Lot N	Section 34	Township 21S	Range 34E	Lot Idn N	Feet From 100	N/S Line S	Feet From 1980	E/W Line W	County Lea
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9. Pool Information

GRAMA RIDGE;BONE SPRING, NE	28435
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3715
16. Multiple N	17. Proposed Depth 16299	18. Formation 3rd Bone Spring Sand	19. Contractor	20. Spud Date 2/1/2020
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	1800	1425	0
Int1	12.25	9.625	40	5700	2085	0
Prod	8.75	5.5	20	16299	1575	4500

Casing/Cement Program: Additional Comments

DV TOOL SET @ 3900; CEMENT JOB WILL BE A 2 STAGE JOB
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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	2500	2500	CAMERON
Double Ram	5000	5000	CAMERON
Pipe	5000	5000	CAMERON

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.	OIL CONSERVATION DIVISION	
Signature:		
Printed Name: Electronically filed by Jennifer Elrod	Approved By: Paul F Kautz	
Title: Sr. Regulatory Tech	Title: Geologist	
Email Address: jelrod@chisholmenergy.com	Approved Date: 11/25/2019	Expiration Date: 11/25/2021
Date: 11/20/2019	Phone: 817-953-3728	Conditions of Approval Attached

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DISTRICT IV

1226 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3480 Fax: (505) 476-3482State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

1226 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate
District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 28435	Pool Name GRAMA RIDGE; BONE SPRING, NE
Property Code	Property Name GRAMA RIDGE EAST 34 3BS STATE COM	Well Number 3H
OGRID No. 372137	Operator Name CHISHOLM ENERGY OPERATING, LLC	Elevation 3712'

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	34	21 S	34 E		155	NORTH	880	WEST	LEA

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	34	21 S	34 E		100	SOUTH	1980	WEST	LEA
Dedicated Acres 160	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

880' N: 525857.8 E: 808809.9 (NAD 83) 155' A.S.L. L.P. N: 525883.7 E: 811449.7 (NAD 83) SURFACE LOCATION Lat - N 32.442242° Long - W 103.463457° NMSPCE- N 525711.4 E 809690.8 (NAD-83) LANDING POINT 100 FNL & 1980 FWL Lat - N 32.442397° Long - W 103.459892° NMSPCE- N 525777.2 E 810790.7 (NAD-83) 34 N: 523215.0 E: 808832.6 (NAD 83) N: 523268.7 E: 814113.1 (NAD 83) BOTTOM HOLE LOCATION Lat - N 32.428414° Long - W 103.459881° NMSPCE- N 520690.1 E 810834.9 (NAD-83) N: 520568.2 E: 808855.9 (NAD 83) N: 520597.5 E: 811496.6 (NAD 83) N: 520626.5 E: 814136.3 (NAD 83) 1980' B.H. 100'	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. <i>Jennifer Elrod</i> 11/19/19 Signature Date JENNIFER ELROD Printed Name JELROD@CHISHOLMENERGY.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 supervision, and that the same is true and correct to the best of my belief. AUGUST 21 2019 Date Surveyed <i>Gary L. Jones</i> Signature & Seal of Professional Surveyor Certificate No. Gary L. Jones 7977 BASIC SURVEYS 0' 1000' 2000' 3000' 4000' SCALE: 1" = 2000' WO Num.: 34819
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Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018

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GAS CAPTURE PLAN

Date: 11/25/2019

☒ Original

Operator & OGRID No.: [372137] CHISHOLM ENERGY OPERATING, LLC

☐ Amended - Reason for
Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
GRAMA RIDGE EAST 34 STATE COM 3BS #003H	30-025-46538	D-34-21S-34E	0155N 0880W	1200	Flared	FLARED ONLY WHEN NEEDED

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to 3BEAR FIELD SERVICES, LLC and will be connected to 3BEAR FIELD SERVICES, LLC Low Pressure gathering system located in Lea County, New Mexico. It will require 50' of pipeline to connect the facility to Low Pressure gathering system. CHISHOLM ENERGY OPERATING, LLC provides (periodically) to 3BEAR FIELD SERVICES, LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, CHISHOLM ENERGY OPERATING, LLC and 3BEAR FIELD SERVICES, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at 3BEAR FIELD SERVICES, LLC Processing Plant located in Sec. 26, Twn. 20S, Rng. 34E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on 3BEAR FIELD SERVICES, LLC system at that time. Based on current information, it is CHISHOLM ENERGY OPERATING, LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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Form APD Comments

Permit 274927

PERMIT COMMENTS

Operator Name and Address: CHISHOLM ENERGY OPERATING, LLC [372137] 801 Cherry Street Fort Worth, TX 76102	API Number: 30-025-46538
	Well: GRAMA RIDGE EAST 34 STATE COM 3BS #003H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 274927

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: CHISHOLM ENERGY OPERATING, LLC [372137] 801 Cherry Street Fort Worth, TX 76102	API Number: 30-025-46538
	Well: GRAMA RIDGE EAST 34 STATE COM 3BS #003H

OCD Reviewer	Condition
pkautz	Will require a directional survey with the C-104
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
pkautz	1)- The Operator is to notify NMOC by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required.
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.



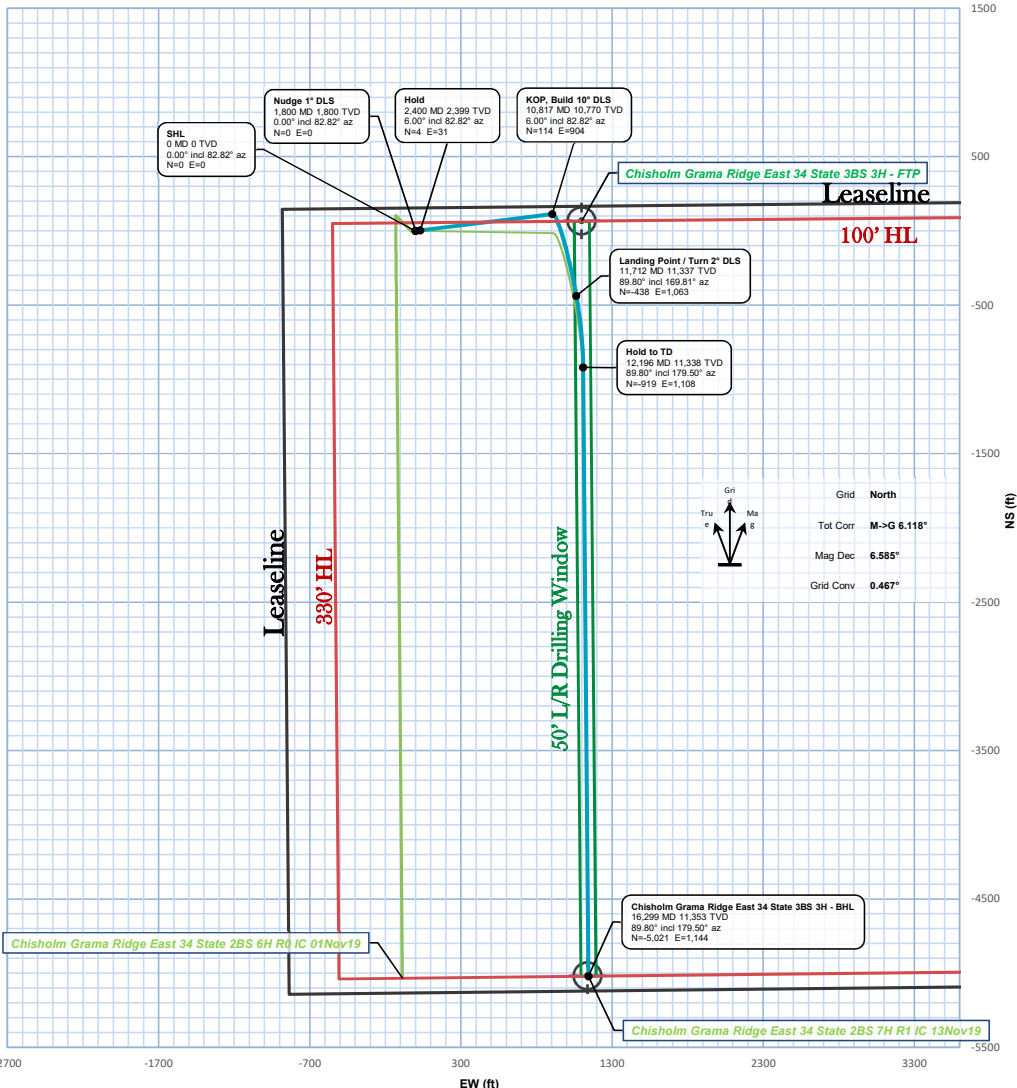
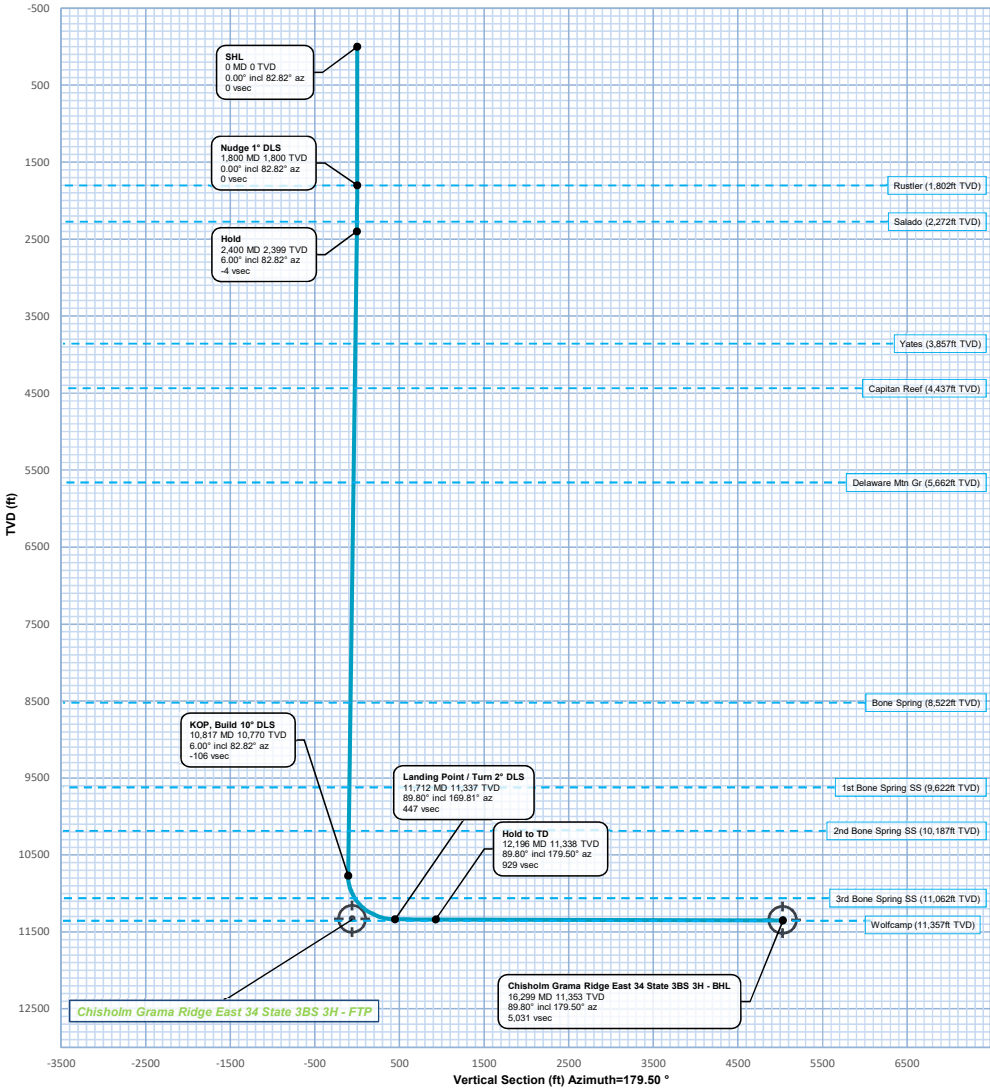
JDC 7

Rev0



BOREHOLE				WELL				FIELD		STRUCTURE			
Grama Ridge East 34 State 3BS 3H				Grama Ridge East 34 State 3BS 3H				NM Lea County (NAD 83)		Chisholm Grama Ridge East 34 State 3BS 3H			
Critical Point	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (deg/100ft)					
SHL	0.00	0.00	82.82	0.00	0.00	0.00	0.00						
Nudge 1" DLS	1,800.00	0.00	82.82	1,800.00	0.00	0.00	0.00	0.00					
Hold	2,400.00	6.00	82.82	2,398.90	-3.65	3.92	31.14	1.00					
13.375 in Casing	2,411.00	6.00	82.82	2,409.84	-3.78	4.07	32.28	0.00					
9.625 in Casing	9,944.48	6.00	82.82	9,902.05	-95.39	102.49	813.57	0.00					
KOP, Build 10" DLS	10,817.03	6.00	82.82	10,769.83	-106.00	113.89	904.06	0.00					
Landing Point / Turn 2" DLS	11,711.90	89.80	169.81	11,336.55	446.84	-437.58	1,063.41	10.00					
Hold to TD	12,196.48	89.80	179.50	11,338.24	929.09	-919.45	1,108.49	2.00					
Chisholm Grama Ridge East 34 State 3BS 3H - BHL	16,298.54	89.80	179.50	11,352.56	5,031.15	-5,021.35	1,144.21	0.00					

GRAVITY & MAGNETICS PARAMETERS				SURFACE LOCATION		NAD83 New Mexico State Plane, Eastern Zone, US Feet					
Model	HJGM 2019 GARM	Dip	60.257°	Date	15-Oct-19	Lat	32°26'32.07"N	Northing	525,711.40 fUS	Grid Conv	0.467°
MagDec	6.585°	FS	47,997.792nT	Gravity FS	998.474mgm (9.80665 Based)	Lon	103°27'48.45"W	Easting	809,690.80 fUS	Scale Fact	0.99999156
MISCELLANEOUS											
Slot						TVD Reference RKB (3743.000 ft above MSL)					
Plan Chisholm Grama Ridge East 34 State 3BS 3H R0 IC 13Nov19						Seabed / Ground Elevation 3712.000 ft above MSL					



Schlumberger Chisholm GRAMMA RIDGE ENERGY CHISHOLM ENERGY Chisholm Gramma Ridge East 34 State 3BS 3H R0 IC 13Nov19 Proposal Geodetic Report		Report Date: November 13, 2019 - 01:47 PM (UTC R) Client: Chisholm Facility: NEC Gas County (R02-03) Structure / Site: Chisholm Gramma Ridge East 34 State 3BS 3H Well: Gramma Ridge East 34 State 3BS 3H Barcode: Gramma Ridge East 34 State 3BS 3H Unit / Area: Chisholm / Chisholm Survey Name: Chisholm Gramma Ridge East 34 State 3BS 3H R0 IC 13Nov19 Survey Date: November 13, 2019 Tool / Job / Job ID / Job Status: 2019-11-13 01:47 PM 2019-11-13 01:47 PM Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet Location Lat / Long: 37°20'23.0000N, -107°17'06.0000W Location Grid N/E T/V: N 5207111.400 N/E, E 810758.000 T/V CMS Grid Convergence Angle: 0.6607" Grid Scale Factor: 0.99999326 Vertical Photo: 2019-11-13		Survey / DLS Computation: Minimum Curvature (Lidless) Vertical Section Azimuth: 178.920 (CGED North) Vertical Section Slope: 0.000 N 0.000 E TYD Reference Datum: R02 TYD Reference Elevation: 2712.000 ft above MSL Sealant / Cement Elevation: 2712.000 ft above MSL Magnetic Declination: 0.6607" Total Gravity Field Strength: 981.47 m/s² (9.80665 m/s²) Gravity Anomaly: 0.000 Total Magnetic Field Strength: 47967.742 nT Total Magnetic Field Strength: 60.257° Declination Rate: 0.000 Magnetic Declination Model: IGSM 2010 North Reference: Grid North Grid Convergence Used: 0.6607" Total Core Mag North-Grid: 0.1207" Local Core North-Grid: 0.1207"												
Comments		MD (ft)	Incl (°)	Asyn (°)	TYD (ft)	TYDGS (ft)	VSEC (ft)	NS (ft)	EW (ft)	North (ft)	East (ft)	Latitude (°)	Longitude (°)	DLS (ft)	BS (ft)	TR (ft)
TSL		0.00	0.00	0.00	0.00	-3.743.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 1' DLS		1.000.00	0.00	0.00	0.00	1.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 2' DLS		2.000.00	0.00	0.00	0.00	2.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 3' DLS		3.000.00	0.00	0.00	0.00	3.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 4' DLS		4.000.00	0.00	0.00	0.00	4.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 5' DLS		5.000.00	0.00	0.00	0.00	5.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 6' DLS		6.000.00	0.00	0.00	0.00	6.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 7' DLS		7.000.00	0.00	0.00	0.00	7.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 8' DLS		8.000.00	0.00	0.00	0.00	8.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 9' DLS		9.000.00	0.00	0.00	0.00	9.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 10' DLS		10.000.00	0.00	0.00	0.00	10.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 11' DLS		11.000.00	0.00	0.00	0.00	11.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 12' DLS		12.000.00	0.00	0.00	0.00	12.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 13' DLS		13.000.00	0.00	0.00	0.00	13.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 14' DLS		14.000.00	0.00	0.00	0.00	14.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 15' DLS		15.000.00	0.00	0.00	0.00	15.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 16' DLS		16.000.00	0.00	0.00	0.00	16.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 17' DLS		17.000.00	0.00	0.00	0.00	17.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 18' DLS		18.000.00	0.00	0.00	0.00	18.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 19' DLS		19.000.00	0.00	0.00	0.00	19.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 20' DLS		20.000.00	0.00	0.00	0.00	20.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 21' DLS		21.000.00	0.00	0.00	0.00	21.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 22' DLS		22.000.00	0.00	0.00	0.00	22.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 23' DLS		23.000.00	0.00	0.00	0.00	23.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 24' DLS		24.000.00	0.00	0.00	0.00	24.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 25' DLS		25.000.00	0.00	0.00	0.00	25.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 26' DLS		26.000.00	0.00	0.00	0.00	26.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 27' DLS		27.000.00	0.00	0.00	0.00	27.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 28' DLS		28.000.00	0.00	0.00	0.00	28.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 29' DLS		29.000.00	0.00	0.00	0.00	29.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 30' DLS		30.000.00	0.00	0.00	0.00	30.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 31' DLS		31.000.00	0.00	0.00	0.00	31.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 32' DLS		32.000.00	0.00	0.00	0.00	32.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 33' DLS		33.000.00	0.00	0.00	0.00	33.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 34' DLS		34.000.00	0.00	0.00	0.00	34.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 35' DLS		35.000.00	0.00	0.00	0.00	35.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 36' DLS		36.000.00	0.00	0.00	0.00	36.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 37' DLS		37.000.00	0.00	0.00	0.00	37.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 38' DLS		38.000.00	0.00	0.00	0.00	38.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 39' DLS		39.000.00	0.00	0.00	0.00	39.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 40' DLS		40.000.00	0.00	0.00	0.00	40.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 41' DLS		41.000.00	0.00	0.00	0.00	41.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 42' DLS		42.000.00	0.00	0.00	0.00	42.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 43' DLS		43.000.00	0.00	0.00	0.00	43.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 44' DLS		44.000.00	0.00	0.00	0.00	44.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 45' DLS		45.000.00	0.00	0.00	0.00	45.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 46' DLS		46.000.00	0.00	0.00	0.00	46.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 47' DLS		47.000.00	0.00	0.00	0.00	47.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 48' DLS		48.000.00	0.00	0.00	0.00	48.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 49' DLS		49.000.00	0.00	0.00	0.00	49.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 50' DLS		50.000.00	0.00	0.00	0.00	50.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 51' DLS		51.000.00	0.00	0.00	0.00	51.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 52' DLS		52.000.00	0.00	0.00	0.00	52.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 53' DLS		53.000.00	0.00	0.00	0.00	53.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 54' DLS		54.000.00	0.00	0.00	0.00	54.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 55' DLS		55.000.00	0.00	0.00	0.00	55.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 56' DLS		56.000.00	0.00	0.00	0.00	56.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 57' DLS		57.000.00	0.00	0.00	0.00	57.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 58' DLS		58.000.00	0.00	0.00	0.00	58.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.00
Hedge 59' DLS		59.000.00	0.00	0.00	0.00	59.000.00	0.00	0.00	0.00	0.00	0.00	32.44	-103.49	0.00	0.00	0.



Chisholm Grama Ridge East 34 State 3BS 3H R0 IC 13Nov19 Proposal
Geodetic Report

Def Plan																												
Report Date:		November 13, 2019 - 01:47 PM (UTC 0)										Survey / DLS Computation:																
Client:		Chisholm										Minimum Curvature / Lubinski																
Field:		NM Lea County (NAD 83)										Vertical Section Azimuth:																
Structure / Shot:		Chisholm Grama Ridge East 34 State 3BS 3H										Vertical Section Origin:																
Well:		Grama Ridge East 34 State 3BS 3H										TVD Reference Datum:																
Borehole:		Grama Ridge East 34 State 3BS 3H										TVD Reference Elevation:																
UW / API#:		Unknown / Unknown										Seabed / Ground Elevation:																
Survey Name:		Chisholm Grama Ridge East 34 State 3BS 3H R0 IC 13Nov19										Magnetic Declination:																
Survey Date:		November 13, 2019										Total Gravity Field Strength:																
Tort / AHD / DGI / ERD Ratio:		105.178 / 6078.292 ft / 5.903 / 0.535										Gravity Model:																
Coordinate Reference System:		NAD83 New Mexico State Plane, Eastern Zone, US Feet										Total Magnetic Field Strength:																
Location Lat / Long:		32°26'32.06994"N, 102°27'48.44619"W										Magnetic Dip Angle:																
Location Grid NE VK:		N 525711.400 HUS, E 809090.800 HUS										Declination Date:																
CRS Grid Convergence Angle:		0.4667°										Magnetic Declination Model:																
Grid Scale Factor:		0.99999156										North Reference:																
Version / Patch:		2019.3.0.2										Grid Convergence Used:																
												Total Com Map North-Grid																
												Local Coord Referenced To:																
												Well Head																
Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	AHD (ft)	NS (ft)	EW (ft)	DeltaMD (ft)	DeltaTVD (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	GTF (°)	MTF (°)	TF (°)	Northing (ft)	Easting (ft)	Latitude (°)	Longitude (°)	Latitude (°)	Longitude (°)	Closure (ft)	Closure Azimuth (°)	Directional Difficulty Index	Tortuosity (°)	ERD Ratio
SHL	0.00	0.00	82.82	0.00	-3.743.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80	26°32.069936"N	7°48.446192"W	32.44	-103.46	0.00	0.00	0.00	0.00	0.00
Nudge 1" DLS	1,800.00	0.00	82.82	1,800.00	-1,943.00	0.00	0.00	0.00	0.00	1,800.00	1,800.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80	26°32.069936"N	7°48.446192"W	32.44	-103.46	0.00	0.00	0.00	0.00	0.00
Rustler	1,802.00	0.02	82.82	1,802.00	-1,941.00	0.00	0.00	0.00	0.00	2.00	2.00	1.00	1.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80	26°32.069937"N	7°48.446198"W	32.44	-103.46	0.00	82.82	0.00	0.02	0.00
Salado	2,272.54	4.73	82.82	2,272.00	-1,471.00	-2.27	19.47	2.43	19.32	470.54	470.00	1.00	1.00	0.00	HS	82.82	82.82M	525,713.83	809,710.12	26°32.092463"N	7°48.220507"W	32.44	-103.46	19.47	82.82	1.96	4.73	0.01
Hold	2,400.00	6.00	82.82	2,398.90	-1,344.10	-3.65	31.39	3.92	31.14	127.46	126.90	1.00	1.00	0.00	HS	82.82	82.82M	525,715.32	809,721.94	26°32.106242"N	7°48.062457"W	32.44	-103.46	31.39	82.82	2.28	6.00	0.01
13.375 in Casing	2,411.00	6.00	82.82	2,409.84	-1,333.16	-3.78	32.54	4.07	32.28	11.00	10.94	0.00	0.00	0.00	HS	82.82	82.82M	525,715.47	809,723.08	26°32.107572"N	7°48.069132"W	32.44	-103.46	32.54	82.82	2.29	6.00	0.01
Yates	3,866.13	6.00	82.82	3,857.00	114.00	-21.48	184.64	23.08	183.19	1,455.13	1,447.16	0.00	0.00	0.00	HS	82.82	82.82M	525,734.48	809,873.99	26°32.283507"N	7°46.306476"W	32.44	-103.46	184.64	82.82	3.05	6.00	0.05
Crestari Reef	4,448.32	6.00	82.82	4,437.00	694.00	-28.57	245.60	30.70	243.67	593.19	590.00	0.00	0.00	0.00	HS	82.82	82.82M	525,742.10	809,934.47	26°32.354018"N	7°45.600027"W	32.44	-103.46	245.60	82.82	3.17	6.00	0.06
Delaware Mtn Gr	5,681.07	6.00	82.82	5,662.00	1,919.00	-43.55	374.35	46.79	371.42	1,231.75	1,225.00	0.00	0.00	0.00	HS	82.82	82.82M	525,758.19	810,062.21	26°32.502937"N	7°44.107956"W	32.44	-103.46	374.35	82.82	3.35	6.00	0.07
Bone Spring	8,556.82	6.00	82.82	8,522.00	4,779.00	-78.51	674.95	84.36	669.66	2,875.75	2,860.00	0.00	0.00	0.00	HS	82.82	82.82M	525,795.76	810,360.45	26°32.850598"N	7°40.624429"W	32.44	-103.46	674.95	82.82	3.61	6.00	0.08
1st Bone Spring SS	9,662.88	6.00	82.82	9,622.00	5,979.00	-91.96	790.57	98.81	784.37	1,106.06	1,100.00	0.00	0.00	0.00	HS	82.82	82.82M	525,810.21	810,475.16	26°32.984306"N	7°39.264609"W	32.44	-103.46	790.57	82.82	3.68	6.00	0.08
9.625 in Casino	9,944.48	6.00	82.82	9,902.00	6,159.05	-95.39	820.00	102.49	813.57	281.60	280.05	0.00	0.00	0.00	HS	82.82	82.82M	525,813.89	810,504.36	26°33.018347"N	7°38.943497"W	32.44	-103.46	820.00	82.82	3.69	6.00	0.08
2nd Bone Spring SS	10,231.00	6.00	82.82	10,187.00	6,444.00	-98.87	849.95	106.23	843.28	286.52	284.95	0.00	0.00	0.00	HS	82.82	82.82M	525,817.63	810,534.08	26°33.052862"N	7°38.596428"W	32.44	-103.46	849.95	82.82	3.71	6.00	0.08
KCP, Built 10" DLS	10,817.03	6.00	82.82	10,769.63	7,026.63	-106.00	911.21	113.89	904.06	586.04	582.83	0.00	0.00	0.00	87.059	169.06	160.08M	525,825.29	810,564.85	26°33.123624"N	7°37.886029"W	32.44	-103.46	911.21	82.82	3.74	6.00	0.08
3rd Bone Spring SS	11,126.02	31.72	160.06	11,062.00	7,319.00	-29.41	1,002.35	37.69	948.89	308.98	292.17	10.00	8.33	25.00	11.45R	169.81	11.45R	525,749.09	810,639.88	26°32.366242"N	7°37.370778"W	32.44	-103.46	949.63	87.73	4.57	36.90	0.09
Landing Point / Turn 2" DLS	11,711.90	89.80	169.81	11,336.55	7,593.55	446.84	1,491.68	-437.58	1,063.41	585.88	274.55	10.00	9.91	1.66	90R	179.50	90R	525,273.83	810,754.20	26°27.854459"N	7°36.079894"W	32.44	-103.46	1,149.82	112.37	5.17	95.49	0.13
Hold to TD	12,156.46	89.80	179.50	11,338.24	7,596.24	923.09	1,978.23	-918.45	1,109.49	484.55	1.70	2.00	0.00	2.00	HS	179.50	HS	524,791.86	810,789.28	26°22.882826"N	7°35.589787"W	32.44	-103.46	1,440.18	129.67	5.35	105.18	0.17
Chisholm Grama Ridge East 34	16,298.54	89.80	179.50	11,352.56	7,609.56	5,031.15	6,078.29	-5,021.35	1,144.21	4,102.08	14.32	0.00	0.00	0.00	HS			520,690.10	810,835.00	25°42.293875"N	7°35.574357"W	32.43	-103.46	5,150.07	167.16	5.96	105.18	0.54

Survey Type: Def Plan

Survey Error Model: ISCWISAO 3 - D 95 % Confidence 2.7955 sigma

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	1,500.000	1/100.000	17.500			NAL_MWD_1.0_DEG	Grama Ridge East 34 State 3B:
	1	1,500.000	10,817.030	1/100.000	12.250			NAL_MWD_1.0_DEG	Grama Ridge East 34 State 3B:
	1	10,817.030	11,711.900	1/100.000	8.750			NAL_MWD_1.0_DEG	Grama Ridge East 34 State 3B:
	1	11,711.900	16,298.540	1/100.000	8.500			NAL_MWD_1.0_DEG	Grama Ridge East 34 State 3B:



Geodetic Report

Survey / DLS Compilation:	Minnow Corvase / Lubinski
Vertical Section Azimuth:	179.950 °(Grid) North
Vertical Section Dip:	0.000 N, 0.000 R
TYO Reference Elevation:	2943.000 above MSL
Standard / Ground Elevation:	2732.000 above MSL
Magnetic Declination:	6.580°
Total Gravity Field Strength:	980.670 (Earth's 9.80665 Secant)
Gravity Model:	GGM06
Total Magnetic Field Strength:	47991.792 T
Magnetic Dip Angle:	86.267°
Declination Date:	October 19, 2019
North Reference:	NGVD 2019
Grid Convergence Used:	0.4625°
Total Grid Mag North=Grid	

Survey Type:		Data Point							
Survey Error Model:		ICGWS43-3-D: 95 % Confidence 2.7935 miles							
Survey Program:									
Conception	Part	Mid From (ft)	Mid To (ft)	EDU Freq (Hz)	Hole Size (in)	Coring Diameter (in)	Expected Max. Depth (ft)	Survey Tool Type	Remarks / Survey
	1	0.000	1,500.000	1/100,000	17.500			NAL MW-0 1.0 DEG	Grande Ridge East 34 State 385
	1	1,500.000	10,817.030	1/100,000	12.250			NAL MW-0 1.0 DEG	Grande Ridge East 34 State 385
	1	10,817.030	11,711.900	1/100,000	8.750			NAL MW-0 1.0 DEG	Grande Ridge East 34 State 385
	1	11,711.900	16,268.540	1/100,000	8.500			NAL MW-0 1.0 DEG	Grande Ridge East 34 State 385

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Schlumberger

Chisholm Grama Ridge East 34 State 3BS 3H 30 IC 13Nov19 Proposal
Geodetic Report

Def Plan

Report Date: November 13, 2019 - 01:47 PM (UTC - 0)
Client: Chisholm
Field: NM Lea County (NAD 83)
Structure / Shot: Chisholm Grama Ridge East 34 State 3BS 3H
Well: Grama Ridge East 34 State 3BS 3H
Borehole: Grama Ridge East 34 State 3BS 3H
UWI / API#: Unknown
Survey Name: Chisholm Grama Ridge East 34 State 3BS 3H 30 IC 13Nov19
Survey Date: November 13, 2019
T or AHD / DGI / ERD Ratio: 105.178 / 6078.252 / 5.903 / 0.526
Coordinate Reference System: NAD83 New Mexico State Plane, Easton Zone, US Feet
Location Lat / Long: 32°26'30.0694"N, 107°27'48.44619"W
Location Grid NE VTX: N 56271.400 NUS, E 809090.800 NUS
CNS Grid Convergence Angle: 0.4667"
Grid Scale Factor: 0.99999156
Version / Patch: 2018.5.0.2

Survey / DLS Computation: 179.500 (2020) / Lubinski
Vertical Section Azimuth: 0.000 R, 0.000 S
Vertical Section Origin: 0.000 R, 0.000 S
TYD Reference Datum: RUS
TYD Reference Elevation: 0.000 R, 0.000 S
Seabed / Ground Elevation: 3712.000 R above MSL
Magnetic Declination: 6.589"
Total Gravity Field Strength: 986.473mg (g: 80665.800m/s)
Gravity Model: GARM
Total Magnetic Field Strength: 47997.792 nT
Magnetic Dip Angle: 67.921"
Declination Date: October 15, 2019
Magnetic Declination Model: HCOM 2019
North Reference: 0.4667"
Grid Convergence Use: 0.4667"
Total Com Map North-Grid: 0.4667"
Local Coord Reference To: Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TYD (ft)	TYDSS (ft)	VSEC (ft)	AHD (ft)	NS (ft)	EW (ft)	DeltaMD (ft)	DeltaTYD (ft)	DLS (°/1000)	BR (°/1000)	TR (°/1000)	CTP (ft)	MTF (°)	TF (°)	Northing (RUS)	Easting (RUS)	Latitude (° °')	Longitude (° °')	Latitude (°)	Longitude (°)	Closure (ft)	Closure Azimuth (°)	Directional Difficulty Index	Tortuosity (°)	ERD Ratio
SHL	0.00	0.00	82.82	0.00	-3.743.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	100.00	0.00	82.82	100.00	-3.643.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	200.00	0.00	82.82	200.00	-3.543.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	300.00	0.00	82.82	300.00	-3.443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	400.00	0.00	82.82	400.00	-3.343.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	500.00	0.00	82.82	500.00	-3.243.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	600.00	0.00	82.82	600.00	-3.143.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	700.00	0.00	82.82	700.00	-3.043.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	800.00	0.00	82.82	800.00	-2.943.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	900.00	0.00	82.82	900.00	-2.843.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,000.00	0.00	82.82	1,000.00	-2.743.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,100.00	0.00	82.82	1,100.00	-2.643.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,200.00	0.00	82.82	1,200.00	-2.543.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,300.00	0.00	82.82	1,300.00	-2.443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,400.00	0.00	82.82	1,400.00	-2.343.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,500.00	0.00	82.82	1,500.00	-2.243.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,600.00	0.00	82.82	1,600.00	-2.143.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
	1,700.00	0.00	82.82	1,700.00	-2.043.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
Nudge 1st DLS	1,800.00	0.00	82.82	1,800.00	-1.943.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	0.00	0.00	0.00	0.00	0.00
Rustler	1,800.00	0.02	82.82	1,800.00	-1.941.00	0.00	0.00	1.00	2.00	1.00	1.00	0.00	0.00	0.00	HS	82.82	82.82M	525,711.40	809,690.80 26.32 069936"N	7°48'44.6192"W	32.44	-103.46	-103.46	2.00	82.82	0.02	0.00	0.00
	1,900.00	1.00	82.82	1,899.99	-1.843.01	-0.10	0.87	0.11	0.87	98.00	97.99	1.00	1.00	0.00	HS	82.82	82.82M	525,711.51	809,691.07 26.32 070497"N	7°48'43.6079"W	32.44	-103.46	-103.46	0.87	82.82	0.00	1.00	0.00
	2,000.00	3.00	82.82	1,999.96	-1.743.00	0.00	3.46	0.00	0.00	99.96	99.96	1.00	1.00	0.00	HS	82.82	82.82M	525,711.84	809,694.26 26.32 072674"N	7°48'40.5744"W	32.44	-103.46	-103.46	3.46	82.82	0.00	2.00	0.00
	2,100.00	3.00	82.82	2,099.96	-1.643.14	-0.91	7.85	0.98	7.79	100.00	99.99	1.00	0.00	0.00	HS	82.82	82.82M	525,712.38	809,698.59 26.32 073019"N	7°48'35.5136"W	32.44	-103.46	-103.46	7.85	82.82	1.37	3.00	0.00
	2,200.00	4.00	82.82	2,199.98	-1.543.32	-1.62	13.96	1.74	13.85	100.00	99.81	1.00	1.00	0.00	HS	82.82	82.82M	525,713.14	809,704.65 26.32 080601"N	7°48'24.8450"W	32.44	-103.46	-103.46	13.96	82.82	1.75	4.00	0.01
	2,272.54	0.00	82.82	2,272.54	-1.471.00	0.00	22.43	1.92	22.54	100.00	99.72	1.00	0.00	0.00	HS	82.82	82.82M	525,713.83	809,710.12 26.32 082403"N	7°48'20.9507"W	32.44	-103.46	-103.46	22.43	82.82	1.96	4.73	0.00
	2,300.00	5.00	82.82	2,299.37	-1.443.63	-2.54	21.80	2.73	21.63	27.46	27.37	1.00	0.00	0.00	HS	82.82	82.82M	525,714.13	809,721.42 26.32 093156"N	7°48'19.9328"W	32.44	-103.46	-103.46	21.80	82.82	2.04	5.00	0.01
	2,400.00	0.00	82.82	2,398.90	-1.344.10	-3.65	31.39	3.92	31.14	100.00	99.54	1.00	0.00	0.00	HS	82.82	82.82M	525,715.32	809,721.46 26.32 102427"N	7°48'04.0457"W	32.44	-103.46	-103.46	31.39	82.82	2.28	6.00	0.00
Hold	2,411.00	0.00	82.82	2,409.94	-1.243.16	-3.78	32.08	4.14	31.88	100.00	99.45	1.00	0.00	0.00	HS	82.82	82.82M	525,715.82	809,721.46 26.32 107727"N	7°48'00.6913"W	32.44	-103.46	-103.46	32.08	82.82	2.29	6.00	0.01
	2,500.00	6.00	82.82	2,498.36	-1.244.64	-4.87	41.84	5.23	41.51	89.00	88.51	1.00	0.00	0.00	HS	82.82	82.82M	525,716.63	809,723.21 26.32 118333"N	7°47'56.1327"W	32.44	-103.46	-103.46	41.84	82.82	2.40	6.00	0.02
	2,600.00	0.00	82.82	2,597.81	-1.145.46	-6.08	52.29	6.54	51.95	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525,717.54	809,742.80 26.32 130424"N	7°47'44.0018"W	32.44	-103.46	-103.46	52.29	82.82	2.50	6.00	0.00
	2,700.00	0.00	82.82	2,697.26	-1.045.74	-7.30	7.84	6.24	7.50	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525,718.62	809,753.65 26.32 143515"N	7°47'31.8805"W	32.44	-103.46	-103.46	62.26	82.82	2.58	6.00	0.02
	2,800.00	6.00	82.82	2,796.71	-946.29	-8.51	73.20	8.15	72.82	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525,720.55	809,763.62 26.32 154067"N	7°47'15.97921"W	32.44	-103.46	-103.46	73.20	82.82	2.64	6.00	0.03
	2,900.00	6.00	82.82	2,896.16	-846.52	-9.72	83.46	9.00	83.16	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525,721.86	809,779.92 26.32 166859"N	7°47'01.67071"W	32.44	-103.46	-103.46	83.46	82.82	2.70	6.00	0.03
	3,000.00	6.00	82.82	2,995.62	-747.38	-10.95	94.10	11.37	93.77	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525,723.16	809,784.17 26.32 178787"N	7°47'35.5562"W	32.44	-103.46	-103.46	94.10	82.82	2.75	6.00	0.03
	3,100.00	6.00	82.82	3,095.07	-647.93	-12.16	104.56	13.07	103.70	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525,724.47	809,794.54 26.32 190678"N	7°47'23.4518"W	32.44	-103.46	-103.46	104.56	82.82	2.80	6.00	0.03
	3,200.00	6.00	82.82	3,194.52	-548.46	-13.47																						

Comments	MD (ft)	Incl (°)	Adm (ft)	TVD (ft)	TVDSS (ft)	VSEC (ft)	AHD (ft)	NS (ft)	EW (ft)	DeltaMD (ft)	DeltaTVD (ft)	DLS (ft/1000)	BSR (ft/100)	TR (ft/1000)	GTF (°)	MFT (°)	TF (°)	Northing (m)	Easting (m)	Latitude (°)	Longitude (°)	Latitude (°)	Longitude (°)	Closure (ft)	Closure Azimuth	Directional Difficulty Index	Tortuosity (%)	EPD Ratio			
1st Bone Spring SS	9.000.00	6.00	82.82	8.862.75	5.219.75	-83.90	721.28	90.15	715.82	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.801.55	810.406.41	28.32	90.4127N	73.40.087589W	32.44	-103.46	721.28	82.82	3.64	6.00	0.08		
	9.100.00	6.00	82.82	9.060.20	5.319.20	-85.12	731.73	91.46	725.99	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.802.86	810.416.78	28.32	91.6261N	73.39.966455W	32.44	-103.46	731.73	82.82	3.64	6.00	0.08		
	9.200.00	6.00	82.82	9.161.65	5.418.65	-86.33	742.18	92.68	736.36	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.804.16	810.427.15	28.32	92.8262N	73.38.936307W	32.44	-103.46	742.18	82.82	3.65	6.00	0.08		
	9.300.00	6.00	82.82	9.261.11	5.518.11	-87.55	752.63	94.07	747.13	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.805.47	810.437.52	28.32	94.0439N	73.39.724185W	32.44	-103.46	752.63	82.82	3.66	6.00	0.08		
	9.400.00	6.00	82.82	9.360.56	5.617.56	-88.77	763.09	95.38	757.70	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.806.77	810.447.89	28.32	95.2527N	73.39.603051W	32.44	-103.46	763.09	82.82	3.66	6.00	0.08		
	9.500.00	6.00	82.82	9.460.01	5.717.01	-89.98	773.54	96.68	767.47	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.808.08	810.458.27	28.32	96.4616N	73.38.481818W	32.44	-103.46	773.54	82.82	3.67	6.00	0.08		
	9.600.00	6.00	82.82	9.559.46	5.816.46	-91.20	783.99	97.99	777.84	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.809.39	810.468.64	28.32	97.6704N	73.39.360781W	32.44	-103.46	783.99	82.82	3.67	6.00	0.08		
	9.662.88	6.00	82.82	9.622.30	5.879.30	-91.96	790.57	98.81	784.37	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.810.71	810.475.16	28.32	98.8420N	73.39.246650W	32.44	-103.46	790.57	82.82	3.68	6.00	0.08		
	9.700.00	6.00	82.82	9.656.91	5.915.91	-92.41	794.45	99.30	788.22	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.810.69	810.479.61	28.32	98.8793N	73.39.239647W	32.44	-103.46	794.45	82.82	3.68	6.00	0.08		
	9.800.00	6.00	82.82	9.798.37	6.015.37	-93.63	804.90	100.60	798.59	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.812.00	810.489.38	28.32	99.0062N	73.39.118512W	32.44	-103.46	804.90	82.82	3.69	6.00	0.08		
9.825 in Casing	9.800.00	6.00	82.82	9.857.82	6.114.82	-94.19	809.45	101.19	803.26	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.811.31	810.493.83	28.32	99.0370N	73.38.997771W	32.44	-103.46	809.45	82.82	3.70	6.00	0.08		
	9.944.48	6.00	82.82	9.902.05	6.159.05	-95.39	820.00	102.49	813.57	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.813.89	810.504.36	28.32	99.0347N	73.38.943497W	32.44	-103.46	820.00	82.82	3.69	6.00	0.08		
	10.000.00	6.00	82.82	9.957.27	6.214.27	-96.06	825.80	103.21	819.33	55.52	55.22	0.00	0.00	0.00	HS	82.82	82.82M	525.814.61	810.510.12	28.32	99.0599W	73.38.876243W	32.44	-103.46	825.80	82.82	3.70	6.00	0.08		
	10.100.00	6.00	82.82	10.056.72	6.313.72	-96.78	836.26	104.52	829.70	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.815.92	810.520.48	28.32	99.0714W	73.38.765108W	32.44	-103.46	836.26	82.82	3.70	6.00	0.08		
	10.200.00	6.00	82.82	10.156.17	6.413.17	-98.49	846.71	105.83	840.07	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.817.23	810.536.86	28.32	99.0425W	73.38.633973W	32.44	-103.46	846.71	82.82	3.71	6.00	0.08		
	10.231.00	6.00	82.82	10.187.00	6.444.00	-98.87	849.95	106.23	843.28	31.00	30.83	0.00	0.00	0.00	HS	82.82	82.82M	525.817.63	810.534.06	28.32	99.0282W	73.38.596420W	32.44	-103.46	849.95	82.82	3.71	6.00	0.08		
	10.300.00	6.00	82.82	10.255.63	6.512.63	-99.71	857.16	107.13	850.44	69.00	68.63	0.00	0.00	0.00	HS	82.82	82.82M	525.818.93	810.541.23	28.32	99.0334W	73.38.512837W	32.44	-103.46	857.16	82.82	3.71	6.00	0.08		
	10.400.00	6.00	82.82	10.355.08	6.612.08	-100.92	867.61	108.44	860.81	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.819.84	810.551.60	28.32	99.0341W	73.38.391704W	32.44	-103.46	867.61	82.82	3.72	6.00	0.08		
	10.500.00	6.00	82.82	10.454.53	6.711.53	-102.14	878.07	109.75	871.18	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.821.15	810.561.97	28.32	99.0350W	73.38.270597W	32.44	-103.46	878.07	82.82	3.72	6.00	0.08		
	10.600.00	6.00	82.82	10.553.98	6.810.98	-103.36	888.52	111.05	881.55	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.822.45	810.572.35	28.32	99.0378W	73.38.148434W	32.44	-103.46	888.52	82.82	3.73	6.00	0.08		
2nd Bone Sorino SS	10.700.00	6.00	82.82	10.653.44	6.910.44	-104.57	898.97	112.36	891.92	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.823.76	810.582.71	28.32	99.0397W	73.38.028300W	32.44	-103.46	898.97	82.82	3.73	6.00	0.08		
	10.800.00	6.00	82.82	10.752.89	7.009.89	-105.79	909.43	113.67	902.29	100.00	99.45	0.00	0.00	0.00	HS	82.82	82.82M	525.825.07	810.593.09	28.32	99.0417W	73.37.907185W	32.44	-103.46	909.43	82.82	3.74	6.00	0.08		
	10.817.03	6.00	82.82	10.769.83	7.026.83	-106.00	911.21	113.89	904.06	13.23	16.84	0.00	0.00	87.03W	HS	82.82	82.82M	525.825.29	810.594.85	28.32	99.0334W	73.37.886529W	32.44	-103.46	911.21	82.82	3.74	6.00	0.08		
	10.900.00	10.48	135.24	10.852.02	7.109.02	-101.09	922.35	109.07	919.69	87.57	82.19	10.00	5.39	63.19	35.04R	HS	82.82	82.82M	525.820.47	810.604.48	28.32	99.0330W	73.37.774830W	32.44	-103.46	920.18	83.19	4.12	14.30	0.08	
	11.000.00	19.52	152.61	10.948.56	7.205.56	-79.63	948.02	87.73	927.81	90.54	90.54	10.00	9.04	17.36	18.21R	HS	82.82	82.82M	525.799.12	810.618.60	28.32	99.0329W	73.37.611807W	32.44	-103.46	931.95	84.60	4.36	24.30	0.09	
	11.126.00	31.78	159.00	11.039.57	7.296.57	-41.80	989.17	50.04	944.28	100.00	91.01	10.00	6.39	12.36R	16.00R	HS	82.82	82.82M	525.761.44	810.625.97	28.32	99.0342W	73.37.423380W	32.44	-103.46	945.60	86.97	4.53	34.30	0.09	
	11.126.02	31.72	160.06	11.062.00	7.319.00	-29.41	1.002.35	37.69	948.89	26.02	22.43	10.00	9.79	47.11R	162.38	HS	82.82	82.82M	525.749.09	810.639.68	28.32	99.0324W	73.37.370778W	32.44	-103.46	949.63	87.73	4.57	36.30	0.09	
	11.200.38	39.12	162.38	11.122.30	7.379.30	-1.043.15	1.043.15	23.84	959.80	60.30	9.83	10.00	8.83	9.56R	164.57	HS	82.82	82.82M	525.731.37	810.647.93	28.32	99.0341W	73.37.214781W	32.44	-103.46	959.80	89.67	4.49	44.10	0.09	
	11.300.00	48.88	164.57	11.144.22	7.451.22	-77.88	1.114.22	-69.31	982.18	100.00	71.92	10.00	9.88	1.19	7.96R	166.19	HS	82.82	82.82M	525.642.09	810.672.97	28.32	99.0346W	73.36.952532W	32.44	-103.46	984.62	94.79	54.30	0.10	
	11.400.00	58.80	166.19	11.253.15	7.510.15	-156.09	1.195.07	-147.35	1.002.46	100.00	58.83	10.00	9.82	1.61	7.01R	170.19	HS	82.82	82.82M	525.564.05	810.683.26	28.32	99.0344W	73.36.763313W	32.44	-103.46	1.013.23	96.04	4.89	64.30	0.11
Landino Point / Turn 2 DLS	11.500.00	68.73	167.49	11.397.30	7.584.30	-284.91	1.284.66	-284.91	1.002.82	100.00	44.15	10.00	9.83	1.30	6.43R	176.81	HS	82.82	82.82M	525.476.81	810.713.61	28.32	99.0366W	73.35.534114W	32.44	-103.46	1.093.62	1.029	4.99	74.30	0.11
	11.600.00	78.67	168.63	11.325.33	7.582.33	-337.47	1.380.52	-338.38	1.042.63	100.00	28.03	10.00	9.94	1.14	6.11R	169.69	HS	82.82	82.82M	525.383.02	810.732.42	28.32	99.0369W	73.36.311891W	32.44	-103.46	1.093.12	1.07	5.08	84.30	0.12
	11.700.00	88.62	169.69	11.336.38	7.593.38	-425.11	1.479.78	-425.87	1.061.29	100.00	11.06	10.00	9.84	1.08	5.99R	169.81	HS	82.82	82.82M	525.295.54	810.752.06	28.32	99.0371W	73.36.103399W	32.44	-103.46	1.141.35	1.11	5.16	111.86	0.13
	11.711.90	88.60	169.69	11.336.55	7.593.55	-468.84	1.491.68	-467.58	1.063.41	11.90	0.16	10.00	9.95	1.17	90.02R	175.57	HS	82.82	82.82M	525.273.83	810.754.20	28.32	99.0372W	73.36.079804W	32.44	-103.46	1.149.92	1.17	5.17	95.49	0.10
	11.800.00	89.80	171.57	11.336.86	7.593.86	-533.90	1.579.78	-524.51	1.077.66	88.10	0.31	2.00	2.00	90.01R	173.57	HS	82.82	82.82M	525.186.89	810.768.45	28.32	99.0373W	73.35.921828W	32.44	-103.46	1.198.53	1.15	5.20	97.25	0.14	
	11.900.00	89.80	172.57	11.337.21	7.594.21	-633.16	1.679.78	-623																							



Grama Ridge East 34 State Com 3BS 3H

API # 30-025-xxxxx

Updated: 11/15/2019

TVD		Geological		Wellbore Sketch		Hole Size		Casing		Drilling Fluids		Cement		OH Evaluation/Logs	
ft-RKB		Tops													
2,000	1,795	Rustler		1,800'	DV Tool & ECP @ 3,900'	17-1/2"	Surface: 13-3/8" 54.5# J55 BTC	FW Spud Mud 8.4 - 9.4 ppg 32 - 34 Vis	Top of Lead: Surface 12.8 ppg 2.01 cuft/sk 900 sks - 100% XS Top of Tail: 1,300' 14.8 ppg 1.33 cuft/sk 525 sks - 100% XS						
	2,265	Salado													
4,000	3,850	Yates		5,700'	12-1/4"	Intermediate: 9-5/8" 40# J55 LTC	Brine 10.0 ppg 28 Vis	Stage 1 Top of Lead: 3,900' 11.5 ppg 2.43 cuft/sk 340 sks - 100% XS Top of Tail: 5,200' 14.8 ppg 1.33 cuft/sk 235 sks - 100% XS Stage 2 Top of Lead: Surface 11.5 ppg 2.43 cuft/sk 1,510 sks - 200% XS							
	4,430	Capitan Reef													
5,000	5,655	Delaware Mtn Grp			8-3/4" 8-1/2" Lateral	Production: 5-1/2" 20# P110 BTC	Curve & Lateral OBM 8.9 - 9.1 ppg 50 - 70 Vis 75/25 OWR	Scavenger: Surface 10.5 ppg 2.01 cuft/sk 625 sks - 10% XS Top of Lead: 4,500' 11.3 ppg 2.62 cuft/sk 545 sks - 10% XS Top of Tail: 9,600' 13.2 ppg 1.82 cuft/sk 1,030 sks - 10% XS							
6,000															
7,000															
8,000	8,515	Bone Spring													
9,000	9,615	1st Bone Spring SS													
	10,000	10,180								2nd Bone Spring SS					
11,000	11,055	3rd Bone Spring SS													
	11,350	Wolfcamp													
12,000															
										16,299' MD 11,353' TVD					