

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
2N-67W-21 REESE 5-21HZ PAD
REESE 21-4HZ**

Plan A

Plan: Permit Rev-1

SHL Lat/Long: 40.125499/-104.903925
Survey Program: MWD+IFR+MSA

Standard Planning Report

07 December, 2017

Project: WELD-NAD83-UTMFT13N
 Site: 2N-67W-21 REESE 5-21HZ PAD
 Well: REESE 21-4HZ
 Wellbore: Plan A
 Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

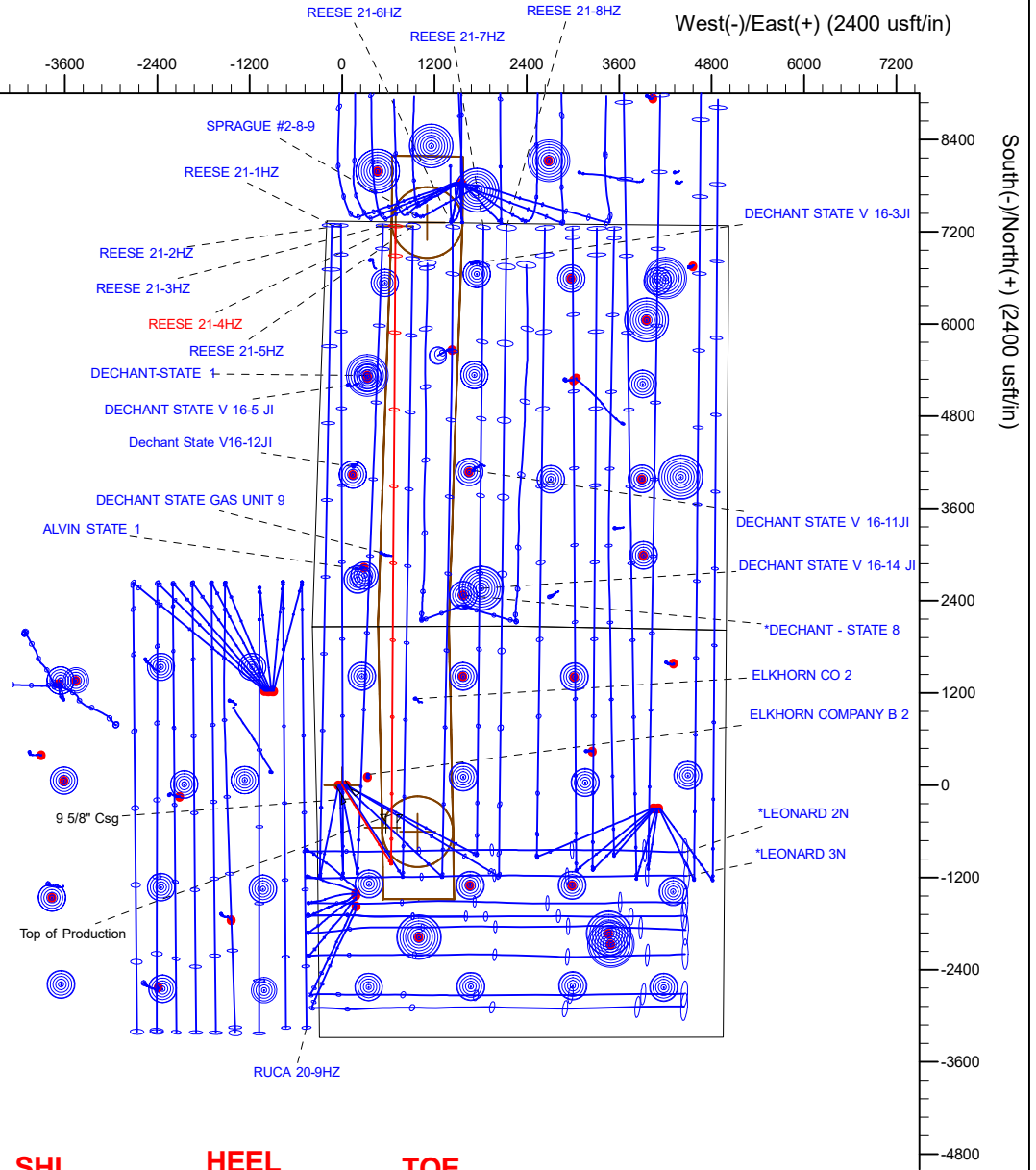
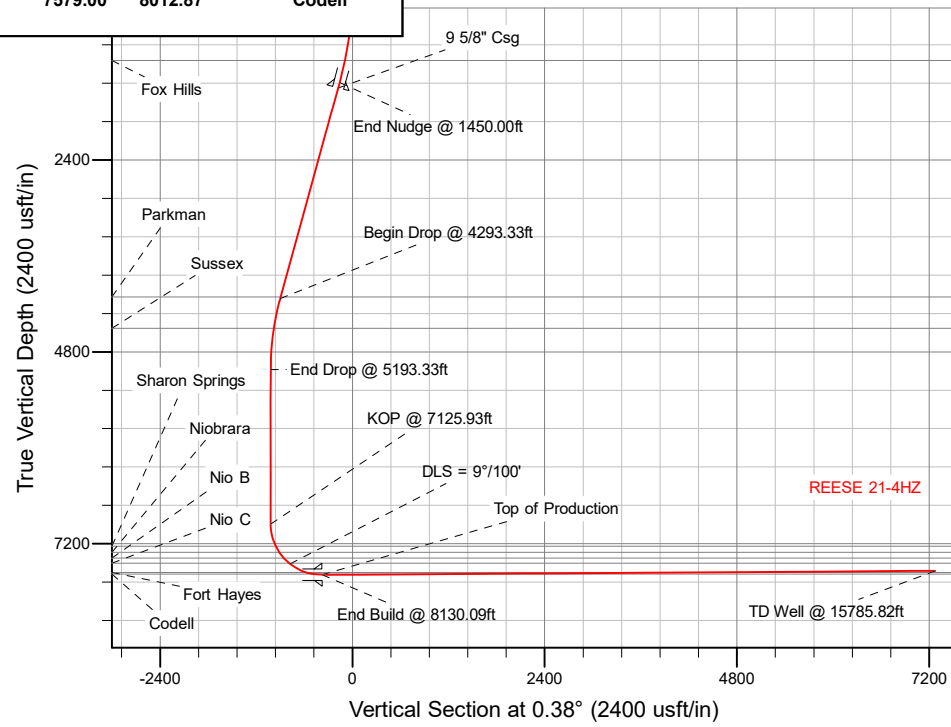
CASING DETAILS		
TVD	MD	Size
1500.00	1523.23	9-5/8
7589.00	8130.09	5-1/2

WELL DETAILS: REESE 21-4HZ
 GL = 4997'
 RKB = 17' @ 5014.00usft (Drilling Rig)

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1450.00	18.00	148.00	1430.36	-158.54	99.07	1.50	148.00	-157.88	
4	4293.33	18.00	148.00	4134.53	-903.67	564.68	0.00	0.00	-899.90	
5	5193.33	0.00	0.00	5019.79	-1022.58	638.98	2.00	-180.00	-1018.32	
6	7125.93	0.00	0.00	6952.39	-1022.58	638.98	0.00	0.00	-1018.32	
7	8130.09	90.37	0.38	7589.00	-381.81	643.27	9.00	0.38	-377.54	
8	15785.82	90.37	0.38	7539.00	7273.58	694.62	0.00	0.00	7278.03	REESE 21-4HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N-S	+E-W	Latitude	Longitude
REESE 21-4HZ_SHL	0.00	0.00	0.00	40.125499	-104.903925
REESE 21-4HZ_BHL	7539.00	7273.58	694.62	40.145473	-104.901439

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1156.00	1164.72	Fox Hills
4114.00	4271.75	Parkman
4506.00	4676.74	Sussex
7230.00	7413.18	Sharon Springs
7308.00	7503.24	Niobrara
7377.00	7590.75	Nio B
7443.00	7686.06	Nio C
7559.00	7929.67	Fort Hayes
7579.00	8012.87	Codell



SHL 2065' FNL 337' FWL
HEEL 2448' FNL 972' FWL
TOE 52' FNL 897' FWL

Plan: Permit Rev-1 (REESE 21-4HZ/Plan A)
 Created By: _____ Date: 12/7/2017
 Reviewed: _____ Date: _____

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	2N-67W-21 REESE 5-21HZ PAD				
Site Position:		Northing:	14,572,447.69 usft	Latitude:	40.125499
From:	Lat/Long	Easting:	1,667,228.23 usft	Longitude:	-104.904086
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	REESE 21-4HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,572,447.74 usft	Latitude:	40.125499
	+E/-W	45.01 usft	Easting:	1,667,273.24 usft	Longitude:	-104.903925
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,997.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	11/30/2017	8.05	66.58	52,292.05186603

Design	Permit Rev-1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	0.38	

Plan Survey Tool Program	Date	12/7/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,500.00	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:crustal field declination	
2	1,500.00	15,785.82	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWD+II Fixed:v2:Rockies, crustal dec +	

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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,450.00	18.00	148.00	1,430.36	-158.54	99.07	1.50	1.50	0.00	148.00	
4,293.33	18.00	148.00	4,134.53	-903.67	564.68	0.00	0.00	0.00	0.00	
5,193.33	0.00	0.00	5,019.79	-1,022.58	638.98	2.00	-2.00	-16.44	-180.00	
7,125.93	0.00	0.00	6,952.39	-1,022.58	638.98	0.00	0.00	0.00	0.00	
8,130.09	90.37	0.38	7,589.00	-381.81	643.27	9.00	9.00	0.04	0.38	
15,785.82	90.37	0.38	7,539.00	7,273.58	694.62	0.00	0.00	0.00	0.00	REESE 21-4HZ_BHL

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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 250.00ft									
300.00	0.75	148.00	300.00	-0.28	0.17	-0.28	1.50	1.50	0.00
400.00	2.25	148.00	399.96	-2.50	1.56	-2.49	1.50	1.50	0.00
500.00	3.75	148.00	499.82	-6.94	4.33	-6.91	1.50	1.50	0.00
600.00	5.25	148.00	599.51	-13.59	8.49	-13.53	1.50	1.50	0.00
700.00	6.75	148.00	698.96	-22.45	14.03	-22.36	1.50	1.50	0.00
800.00	8.25	148.00	798.10	-33.52	20.95	-33.38	1.50	1.50	0.00
900.00	9.75	148.00	896.87	-46.79	29.24	-46.59	1.50	1.50	0.00
1,000.00	11.25	148.00	995.19	-62.24	38.89	-61.98	1.50	1.50	0.00
1,100.00	12.75	148.00	1,093.00	-79.87	49.91	-79.54	1.50	1.50	0.00
1,164.72	13.72	148.00	1,156.00	-92.44	57.76	-92.05	1.50	1.50	0.00
Fox Hills									
1,200.00	14.25	148.00	1,190.24	-99.67	62.28	-99.26	1.50	1.50	0.00
1,300.00	15.75	148.00	1,286.83	-121.62	76.00	-121.11	1.50	1.50	0.00
1,400.00	17.25	148.00	1,382.71	-145.70	91.05	-145.10	1.50	1.50	0.00
1,450.00	18.00	148.00	1,430.36	-158.54	99.07	-157.88	1.50	1.50	0.00
End Nudge @ 1450.00ft									
1,500.00	18.00	148.00	1,477.91	-171.65	107.26	-170.93	0.00	0.00	0.00
1,523.23	18.00	148.00	1,500.00	-177.73	111.06	-176.99	0.00	0.00	0.00
9 5/8" Csg									
1,600.00	18.00	148.00	1,573.02	-197.85	123.63	-197.03	0.00	0.00	0.00
1,700.00	18.00	148.00	1,668.12	-224.06	140.01	-223.12	0.00	0.00	0.00
1,800.00	18.00	148.00	1,763.23	-250.26	156.38	-249.22	0.00	0.00	0.00
1,900.00	18.00	148.00	1,858.33	-276.47	172.76	-275.32	0.00	0.00	0.00
2,000.00	18.00	148.00	1,953.44	-302.68	189.13	-301.42	0.00	0.00	0.00
2,100.00	18.00	148.00	2,048.54	-328.88	205.51	-327.51	0.00	0.00	0.00
2,200.00	18.00	148.00	2,143.65	-355.09	221.88	-353.61	0.00	0.00	0.00
2,300.00	18.00	148.00	2,238.76	-381.29	238.26	-379.71	0.00	0.00	0.00
2,400.00	18.00	148.00	2,333.86	-407.50	254.63	-405.80	0.00	0.00	0.00
2,500.00	18.00	148.00	2,428.97	-433.71	271.01	-431.90	0.00	0.00	0.00
2,600.00	18.00	148.00	2,524.07	-459.91	287.39	-458.00	0.00	0.00	0.00
2,700.00	18.00	148.00	2,619.18	-486.12	303.76	-484.09	0.00	0.00	0.00
2,800.00	18.00	148.00	2,714.28	-512.33	320.14	-510.19	0.00	0.00	0.00
2,900.00	18.00	148.00	2,809.39	-538.53	336.51	-536.29	0.00	0.00	0.00
3,000.00	18.00	148.00	2,904.50	-564.74	352.89	-562.39	0.00	0.00	0.00
3,100.00	18.00	148.00	2,999.60	-590.94	369.26	-588.48	0.00	0.00	0.00
3,200.00	18.00	148.00	3,094.71	-617.15	385.64	-614.58	0.00	0.00	0.00
3,300.00	18.00	148.00	3,189.81	-643.36	402.01	-640.68	0.00	0.00	0.00
3,400.00	18.00	148.00	3,284.92	-669.56	418.39	-666.77	0.00	0.00	0.00
3,500.00	18.00	148.00	3,380.02	-695.77	434.76	-692.87	0.00	0.00	0.00
3,600.00	18.00	148.00	3,475.13	-721.97	451.14	-718.97	0.00	0.00	0.00
3,700.00	18.00	148.00	3,570.24	-748.18	467.52	-745.06	0.00	0.00	0.00
3,800.00	18.00	148.00	3,665.34	-774.39	483.89	-771.16	0.00	0.00	0.00
3,900.00	18.00	148.00	3,760.45	-800.59	500.27	-797.26	0.00	0.00	0.00
4,000.00	18.00	148.00	3,855.55	-826.80	516.64	-823.35	0.00	0.00	0.00
4,100.00	18.00	148.00	3,950.66	-853.01	533.02	-849.45	0.00	0.00	0.00
4,200.00	18.00	148.00	4,045.76	-879.21	549.39	-875.55	0.00	0.00	0.00
4,271.75	18.00	148.00	4,114.00	-898.01	561.14	-894.27	0.00	0.00	0.00
Parkman									
4,293.33	18.00	148.00	4,134.53	-903.67	564.68	-899.90	0.00	0.00	0.00
Begin Drop @ 4293.33ft									
4,300.00	17.87	148.00	4,140.87	-905.41	565.76	-901.64	2.00	-2.00	0.00
4,400.00	15.87	148.00	4,236.56	-930.02	581.14	-926.14	2.00	-2.00	0.00
4,500.00	13.87	148.00	4,333.21	-951.77	594.73	-947.81	2.00	-2.00	0.00
4,600.00	11.87	148.00	4,430.70	-970.66	606.53	-966.61	2.00	-2.00	0.00
4,676.74	10.33	148.00	4,506.00	-983.18	614.36	-979.09	2.00	-2.00	0.00
Sussex									
4,700.00	9.87	148.00	4,528.90	-986.64	616.52	-982.53	2.00	-2.00	0.00
4,800.00	7.87	148.00	4,627.70	-999.71	624.69	-995.55	2.00	-2.00	0.00
4,900.00	5.87	148.00	4,726.98	-1,009.85	631.03	-1,005.65	2.00	-2.00	0.00
5,000.00	3.87	148.00	4,826.61	-1,017.05	635.52	-1,012.81	2.00	-2.00	0.00
5,100.00	1.87	148.00	4,926.48	-1,021.29	638.17	-1,017.03	2.00	-2.00	0.00

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)
5,193.33	0.00	0.00	5,019.79	-1,022.58	638.98	-1,018.32	2.00	-2.00	-158.58
End Drop @ 5193.33ft									
5,200.00	0.00	0.00	5,026.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,300.00	0.00	0.00	5,126.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,400.00	0.00	0.00	5,226.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,500.00	0.00	0.00	5,326.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,600.00	0.00	0.00	5,426.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,700.00	0.00	0.00	5,526.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,800.00	0.00	0.00	5,626.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
5,900.00	0.00	0.00	5,726.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,000.00	0.00	0.00	5,826.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,100.00	0.00	0.00	5,926.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,200.00	0.00	0.00	6,026.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,300.00	0.00	0.00	6,126.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,400.00	0.00	0.00	6,226.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,500.00	0.00	0.00	6,326.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,600.00	0.00	0.00	6,426.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,700.00	0.00	0.00	6,526.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,800.00	0.00	0.00	6,626.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
6,900.00	0.00	0.00	6,726.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
7,000.00	0.00	0.00	6,826.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
7,100.00	0.00	0.00	6,926.46	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
7,125.93	0.00	0.00	6,952.39	-1,022.58	638.98	-1,018.32	0.00	0.00	0.00
KOP @ 7125.93ft									
7,200.00	6.67	0.38	7,026.30	-1,018.27	639.01	-1,014.01	9.00	9.00	0.52
7,300.00	15.67	0.38	7,124.30	-998.93	639.14	-994.67	9.00	9.00	0.00
7,400.00	24.67	0.38	7,218.08	-964.49	639.37	-960.23	9.00	9.00	0.00
7,413.18	25.85	0.38	7,230.00	-958.86	639.40	-954.60	9.00	9.00	0.00
Sharon Springs									
7,500.00	33.67	0.38	7,305.31	-915.81	639.69	-911.54	9.00	9.00	0.00
7,503.24	33.96	0.38	7,308.00	-914.00	639.71	-909.74	9.00	9.00	0.00
Niobrara									
7,590.75	41.83	0.38	7,377.00	-860.30	640.07	-856.03	9.00	9.00	0.00
Nio B									
7,600.00	42.67	0.38	7,383.85	-854.08	640.11	-849.81	9.00	9.00	0.00
7,686.06	50.41	0.38	7,443.00	-791.66	640.53	-787.39	9.00	9.00	0.00
Nio C									
7,700.00	51.67	0.38	7,451.77	-780.82	640.60	-776.55	9.00	9.00	0.00
DLS = 9°/100'									
7,800.00	60.67	0.38	7,507.39	-697.84	641.15	-693.57	9.00	9.00	0.00
7,900.00	69.67	0.38	7,549.34	-607.18	641.76	-602.91	9.00	9.00	0.00
7,929.67	72.34	0.38	7,559.00	-579.13	641.95	-574.86	9.00	9.00	0.00
Fort Hayes									
8,000.00	78.67	0.38	7,576.60	-511.08	642.41	-506.81	9.00	9.00	0.00
8,012.87	79.82	0.38	7,579.00	-498.44	642.49	-494.17	9.00	9.00	0.00
Codell									
8,100.00	87.67	0.38	7,588.49	-411.89	643.07	-407.62	9.00	9.00	0.00
8,130.09	90.37	0.38	7,589.00	-381.81	643.27	-377.54	9.00	9.00	0.00
End Build @ 8130.09ft - Top of Production									
8,200.00	90.37	0.38	7,588.54	-311.90	643.74	-307.63	0.00	0.00	0.00
8,300.00	90.37	0.38	7,587.89	-211.91	644.41	-207.63	0.00	0.00	0.00
8,400.00	90.37	0.38	7,587.24	-111.91	645.08	-107.63	0.00	0.00	0.00
8,500.00	90.37	0.38	7,586.58	-11.92	645.76	-7.63	0.00	0.00	0.00
8,600.00	90.37	0.38	7,585.93	88.08	646.43	92.36	0.00	0.00	0.00
8,700.00	90.37	0.38	7,585.28	188.07	647.10	192.36	0.00	0.00	0.00
8,800.00	90.37	0.38	7,584.63	288.07	647.77	292.36	0.00	0.00	0.00
8,900.00	90.37	0.38	7,583.97	388.06	648.44	392.36	0.00	0.00	0.00
9,000.00	90.37	0.38	7,583.32	488.06	649.11	492.35	0.00	0.00	0.00
9,100.00	90.37	0.38	7,582.67	588.06	649.78	592.35	0.00	0.00	0.00
9,200.00	90.37	0.38	7,582.01	688.05	650.45	692.35	0.00	0.00	0.00
9,300.00	90.37	0.38	7,581.36	788.05	651.12	792.35	0.00	0.00	0.00
9,400.00	90.37	0.38	7,580.71	888.04	651.79	892.35	0.00	0.00	0.00
9,500.00	90.37	0.38	7,580.05	988.04	652.46	992.34	0.00	0.00	0.00
9,600.00	90.37	0.38	7,579.40	1,088.03	653.13	1,092.34	0.00	0.00	0.00
9,700.00	90.37	0.38	7,578.75	1,188.03	653.80	1,192.34	0.00	0.00	0.00

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)
9,800.00	90.37	0.38	7,578.09	1,288.03	654.47	1,292.34	0.00	0.00	0.00
9,900.00	90.37	0.38	7,577.44	1,388.02	655.14	1,392.34	0.00	0.00	0.00
10,000.00	90.37	0.38	7,576.79	1,488.02	655.82	1,492.33	0.00	0.00	0.00
10,100.00	90.37	0.38	7,576.13	1,588.01	656.49	1,592.33	0.00	0.00	0.00
10,200.00	90.37	0.38	7,575.48	1,688.01	657.16	1,692.33	0.00	0.00	0.00
10,300.00	90.37	0.38	7,574.83	1,788.00	657.83	1,792.33	0.00	0.00	0.00
10,400.00	90.37	0.38	7,574.18	1,888.00	658.50	1,892.33	0.00	0.00	0.00
10,500.00	90.37	0.38	7,573.52	1,987.99	659.17	1,992.32	0.00	0.00	0.00
10,600.00	90.37	0.38	7,572.87	2,087.99	659.84	2,092.32	0.00	0.00	0.00
10,700.00	90.37	0.38	7,572.22	2,187.99	660.51	2,192.32	0.00	0.00	0.00
10,800.00	90.37	0.38	7,571.56	2,287.98	661.18	2,292.32	0.00	0.00	0.00
10,900.00	90.37	0.38	7,570.91	2,387.98	661.85	2,392.31	0.00	0.00	0.00
11,000.00	90.37	0.38	7,570.26	2,487.97	662.52	2,492.31	0.00	0.00	0.00
11,100.00	90.37	0.38	7,569.60	2,587.97	663.19	2,592.31	0.00	0.00	0.00
11,200.00	90.37	0.38	7,568.95	2,687.96	663.86	2,692.31	0.00	0.00	0.00
11,300.00	90.37	0.38	7,568.30	2,787.96	664.53	2,792.31	0.00	0.00	0.00
11,400.00	90.37	0.38	7,567.64	2,887.96	665.21	2,892.30	0.00	0.00	0.00
11,500.00	90.37	0.38	7,566.99	2,987.95	665.88	2,992.30	0.00	0.00	0.00
11,600.00	90.37	0.38	7,566.34	3,087.95	666.55	3,092.30	0.00	0.00	0.00
11,700.00	90.37	0.38	7,565.68	3,187.94	667.22	3,192.30	0.00	0.00	0.00
11,800.00	90.37	0.38	7,565.03	3,287.94	667.89	3,292.30	0.00	0.00	0.00
11,900.00	90.37	0.38	7,564.38	3,387.93	668.56	3,392.29	0.00	0.00	0.00
12,000.00	90.37	0.38	7,563.73	3,487.93	669.23	3,492.29	0.00	0.00	0.00
12,100.00	90.37	0.38	7,563.07	3,587.92	669.90	3,592.29	0.00	0.00	0.00
12,200.00	90.37	0.38	7,562.42	3,687.92	670.57	3,692.29	0.00	0.00	0.00
12,300.00	90.37	0.38	7,561.77	3,787.92	671.24	3,792.28	0.00	0.00	0.00
12,400.00	90.37	0.38	7,561.11	3,887.91	671.91	3,892.28	0.00	0.00	0.00
12,500.00	90.37	0.38	7,560.46	3,987.91	672.58	3,992.28	0.00	0.00	0.00
12,600.00	90.37	0.38	7,559.81	4,087.90	673.25	4,092.28	0.00	0.00	0.00
12,700.00	90.37	0.38	7,559.15	4,187.90	673.92	4,192.28	0.00	0.00	0.00
12,800.00	90.37	0.38	7,558.50	4,287.89	674.59	4,292.27	0.00	0.00	0.00
12,900.00	90.37	0.38	7,557.85	4,387.89	675.27	4,392.27	0.00	0.00	0.00
13,000.00	90.37	0.38	7,557.19	4,487.89	675.94	4,492.27	0.00	0.00	0.00
13,100.00	90.37	0.38	7,556.54	4,587.88	676.61	4,592.27	0.00	0.00	0.00
13,200.00	90.37	0.38	7,555.89	4,687.88	677.28	4,692.27	0.00	0.00	0.00
13,300.00	90.37	0.38	7,555.24	4,787.87	677.95	4,792.26	0.00	0.00	0.00
13,400.00	90.37	0.38	7,554.58	4,887.87	678.62	4,892.26	0.00	0.00	0.00
13,500.00	90.37	0.38	7,553.93	4,987.86	679.29	4,992.26	0.00	0.00	0.00
13,600.00	90.37	0.38	7,553.28	5,087.86	679.96	5,092.26	0.00	0.00	0.00
13,700.00	90.37	0.38	7,552.62	5,187.85	680.63	5,192.25	0.00	0.00	0.00
13,800.00	90.37	0.38	7,551.97	5,287.85	681.30	5,292.25	0.00	0.00	0.00
13,900.00	90.37	0.38	7,551.32	5,387.85	681.97	5,392.25	0.00	0.00	0.00
14,000.00	90.37	0.38	7,550.66	5,487.84	682.64	5,492.25	0.00	0.00	0.00
14,100.00	90.37	0.38	7,550.01	5,587.84	683.31	5,592.25	0.00	0.00	0.00
14,200.00	90.37	0.38	7,549.36	5,687.83	683.98	5,692.24	0.00	0.00	0.00
14,300.00	90.37	0.38	7,548.70	5,787.83	684.65	5,792.24	0.00	0.00	0.00
14,400.00	90.37	0.38	7,548.05	5,887.82	685.33	5,892.24	0.00	0.00	0.00
14,500.00	90.37	0.38	7,547.40	5,987.82	686.00	5,992.24	0.00	0.00	0.00
14,600.00	90.37	0.38	7,546.74	6,087.82	686.67	6,092.24	0.00	0.00	0.00
14,700.00	90.37	0.38	7,546.09	6,187.81	687.34	6,192.23	0.00	0.00	0.00
14,800.00	90.37	0.38	7,545.44	6,287.81	688.01	6,292.23	0.00	0.00	0.00
14,900.00	90.37	0.38	7,544.79	6,387.80	688.68	6,392.23	0.00	0.00	0.00
15,000.00	90.37	0.38	7,544.13	6,487.80	689.35	6,492.23	0.00	0.00	0.00
15,100.00	90.37	0.38	7,543.48	6,587.79	690.02	6,592.22	0.00	0.00	0.00
15,200.00	90.37	0.38	7,542.83	6,687.79	690.69	6,692.22	0.00	0.00	0.00
15,300.00	90.37	0.38	7,542.17	6,787.78	691.36	6,792.22	0.00	0.00	0.00
15,400.00	90.37	0.38	7,541.52	6,887.78	692.03	6,892.22	0.00	0.00	0.00
15,500.00	90.37	0.38	7,540.87	6,987.78	692.70	6,992.22	0.00	0.00	0.00
15,600.00	90.37	0.38	7,540.21	7,087.77	693.37	7,092.21	0.00	0.00	0.00
15,700.00	90.37	0.38	7,539.56	7,187.77	694.04	7,192.21	0.00	0.00	0.00
15,785.82	90.37	0.38	7,539.00	7,273.58	694.62	7,278.03	0.00	0.00	0.00

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,523.23	1,500.00	9 5/8" Csg	9-5/8	13-1/2	
8,130.09	7,589.00	Top of Production	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,164.72	1,156.00	Fox Hills			
4,271.75	4,114.00	Parkman			
4,676.74	4,506.00	Sussex			
7,413.18	7,230.00	Sharon Springs			
7,503.24	7,308.00	Niobrara			
7,590.75	7,377.00	Nio B			
7,686.06	7,443.00	Nio C			
7,929.67	7,559.00	Fort Hayes			
8,012.87	7,579.00	Codell			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft	
1,450.00	1,430.36	-158.54	99.07	End Nudge @ 1450.00ft	
4,293.33	4,134.53	-903.67	564.68	Begin Drop @ 4293.33ft	
5,193.33	5,019.79	-1,022.58	638.98	End Drop @ 5193.33ft	
7,125.93	6,952.39	-1,022.58	638.98	KOP @ 7125.93ft	
7,700.00	7,451.77	-780.82	640.60	DLS = 9°/100'	
8,130.09	7,589.00	-381.81	643.27	End Build @ 8130.09ft	
15,785.82	7,539.00	7,273.58	694.62	TD Well @ 15785.82ft	