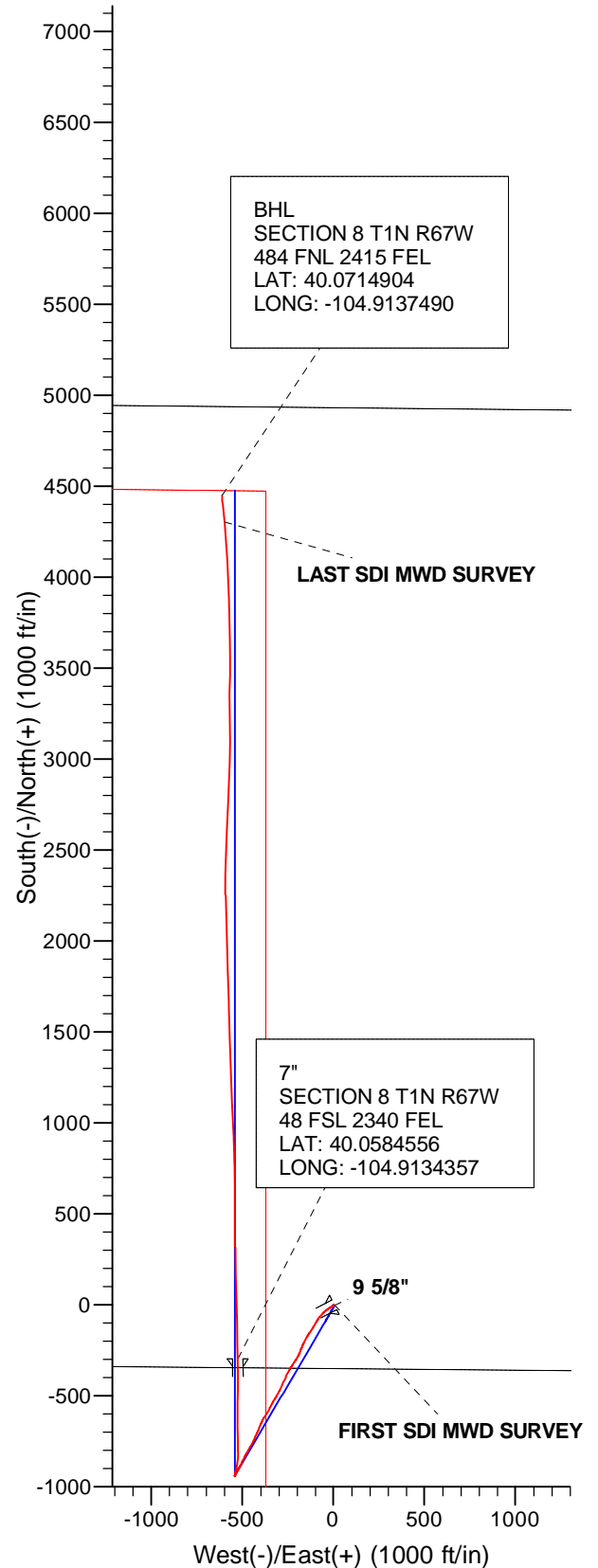
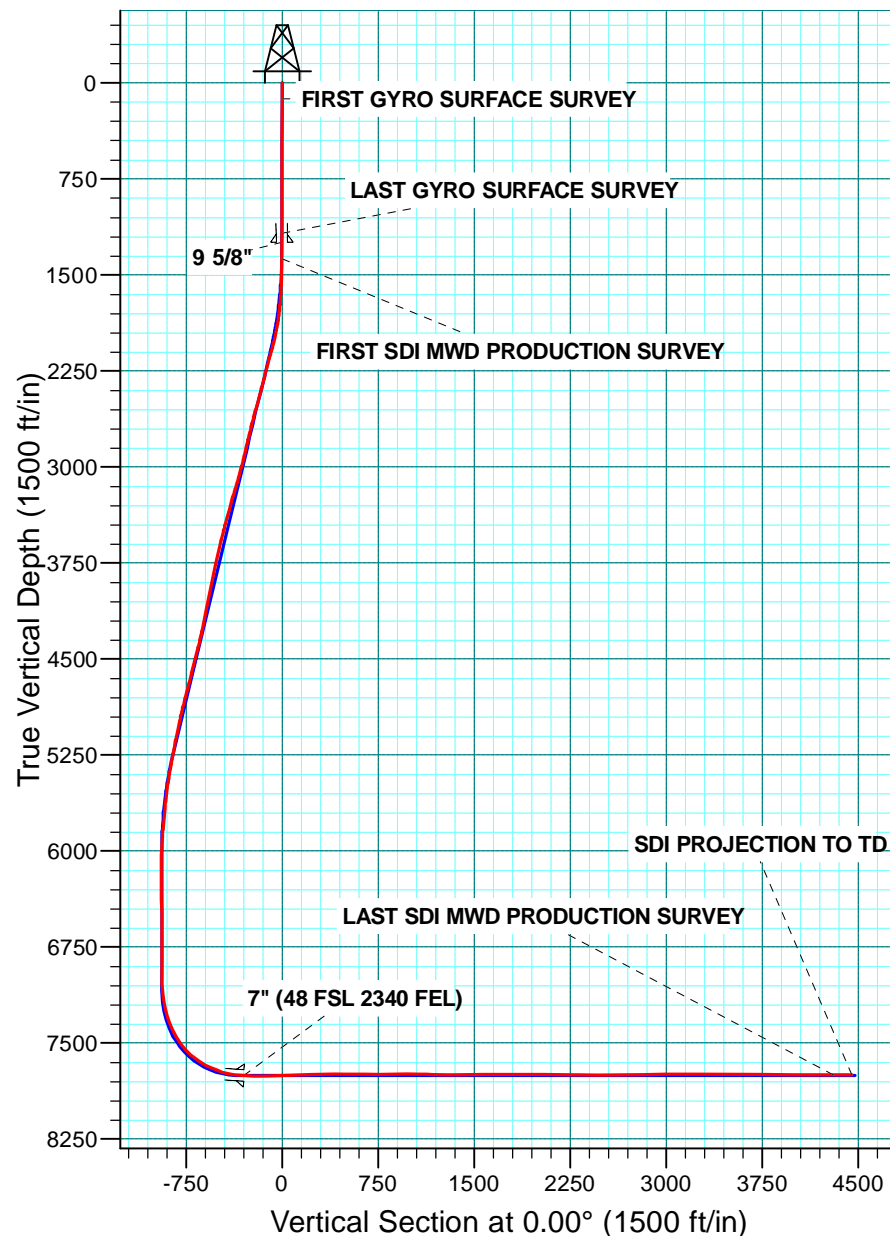


WELL DETAILS: NRC 28C-8HZ

GL 5063 & KB 25 @ 5088.00ft (H&P 311)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1264984.63	3164709.09	40.0592720	-104.9115600



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

NRC 15-8HZ PAD

NRC 28C-8HZ

OH

Design: OH

Standard Survey Report

19 May, 2014

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 28C-8HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Site:	NRC 15-8HZ PAD	MD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Well:	NRC 28C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Project	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	NRC 15-8HZ PAD, SWSE SECTION 8 T1N R67W				
Site Position:		Northing:	1,264,984.64 usft	Latitude:	40.0592720
From:	Lat/Long	Easting:	3,164,709.09 usft	Longitude:	-104.9115600
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.38 °

Well	NRC 28C-8HZ, 350 FSL 1810 FEL					
Well Position	+N/-S	0.00 ft	Northing:	1,264,984.63 usft	Latitude:	40.0592720
	+E/-W	0.00 ft	Easting:	3,164,709.09 usft	Longitude:	-104.9115600
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,063.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	4/21/2014	8.58	66.64	52,551

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	0.00	

Survey Program	Date	5/19/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	1,175.00	Survey #1 GYRO SURFACE (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,373.00	13,002.00	Survey #2 SDI MWD PRODUCTION (OH)	SDI_MWD+CRUST_1.0	SDI MWD + Crustal anomaly, Version 1.0	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	
125.00	0.13	2.53	125.00	0.11	0.01	0.11	0.13	0.13	0.00	
FIRST GYRO SURFACE SURVEY										
225.00	0.55	219.33	225.00	-0.14	-0.29	-0.14	0.66	0.42	-143.20	
325.00	0.05	204.94	325.00	-0.56	-0.62	-0.56	0.50	-0.50	-14.39	
425.00	0.20	65.84	425.00	-0.52	-0.48	-0.52	0.24	0.15	-139.10	
525.00	0.65	136.37	524.99	-0.86	0.07	-0.86	0.61	0.45	70.53	
625.00	0.39	152.05	624.99	-1.57	0.63	-1.57	0.29	-0.26	15.68	
725.00	0.30	119.68	724.99	-2.00	1.01	-2.00	0.21	-0.09	-32.37	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 28C-8HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Site:	NRC 15-8HZ PAD	MD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Well:	NRC 28C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
825.00	0.77	85.24	824.98	-2.08	1.91	-2.08	0.55	0.47	-34.44
925.00	0.76	74.97	924.97	-1.85	3.22	-1.85	0.14	-0.01	-10.27
1,025.00	0.46	55.13	1,024.97	-1.45	4.19	-1.45	0.36	-0.30	-19.84
1,125.00	0.67	88.25	1,124.96	-1.20	5.10	-1.20	0.38	0.21	33.12
1,175.00	0.36	82.09	1,174.96	-1.17	5.55	-1.17	0.63	-0.62	-12.32
LAST GYRO SURFACE SURVEY									
1,243.00	0.14	62.90	1,242.96	-1.10	5.83	-1.10	0.35	-0.33	-28.22
9 5/8"									
1,373.00	0.34	284.61	1,372.96	-0.94	5.60	-0.94	0.35	0.16	-106.38
FIRST SDI MWD PRODUCTION SURVEY									
1,464.00	2.22	233.18	1,463.94	-1.93	3.93	-1.93	2.23	2.07	-56.52
1,573.00	4.84	237.34	1,572.72	-5.67	-1.64	-5.67	2.41	2.40	3.82
1,665.00	8.01	240.38	1,664.13	-10.94	-10.48	-10.94	3.46	3.45	3.30
1,757.00	10.13	237.93	1,754.98	-18.40	-22.91	-18.40	2.34	2.30	-2.66
1,849.00	14.07	233.28	1,844.92	-29.39	-38.73	-29.39	4.41	4.28	-5.05
1,941.00	16.42	224.04	1,933.69	-45.43	-56.74	-45.43	3.67	2.55	-10.04
2,032.00	16.59	219.56	2,020.94	-64.69	-73.96	-64.69	1.41	0.19	-4.92
2,123.00	18.38	210.56	2,107.75	-87.06	-89.53	-87.06	3.56	1.97	-9.89
2,215.00	17.42	210.09	2,195.29	-111.47	-103.81	-111.47	1.06	-1.04	-0.51
2,397.00	16.99	215.46	2,369.16	-156.70	-132.90	-156.70	0.90	-0.24	2.95
2,488.00	18.37	207.69	2,455.87	-180.23	-147.28	-180.23	3.00	1.52	-8.54
2,580.00	17.20	207.60	2,543.47	-205.13	-160.31	-205.13	1.27	-1.27	-0.10
2,763.00	13.92	198.78	2,719.77	-249.96	-179.94	-249.96	2.21	-1.79	-4.82
2,854.00	14.54	205.73	2,807.98	-270.62	-188.43	-270.62	2.00	0.68	7.64
3,037.00	17.23	214.53	2,984.00	-313.66	-213.77	-313.66	1.97	1.47	4.81
3,129.00	18.67	212.62	3,071.52	-337.28	-229.44	-337.28	1.69	1.57	-2.08
3,220.00	18.47	206.11	3,157.79	-362.50	-243.63	-362.50	2.29	-0.22	-7.15
3,312.00	17.22	206.16	3,245.37	-387.81	-256.05	-387.81	1.36	-1.36	0.05
3,406.00	17.52	206.93	3,335.08	-412.91	-268.59	-412.91	0.40	0.32	0.82
3,501.00	17.00	204.06	3,425.80	-438.34	-280.73	-438.34	1.05	-0.55	-3.02
3,595.00	14.62	204.10	3,516.24	-461.72	-291.18	-461.72	2.53	-2.53	0.04
3,690.00	15.60	208.92	3,607.96	-483.85	-302.25	-483.85	1.68	1.03	5.07
3,878.00	14.03	211.10	3,789.70	-525.49	-326.25	-525.49	0.89	-0.84	1.16
3,973.00	14.06	208.00	3,881.87	-545.54	-337.62	-545.54	0.79	0.03	-3.26
4,162.00	12.74	212.02	4,065.72	-583.48	-359.44	-583.48	0.85	-0.70	2.13
4,350.00	13.37	210.94	4,248.86	-619.70	-381.61	-619.70	0.36	0.34	-0.57
4,445.00	14.07	203.39	4,341.16	-639.72	-391.84	-639.72	2.02	0.74	-7.95
4,539.00	15.84	204.38	4,431.97	-661.90	-401.68	-661.90	1.90	1.88	1.05
4,633.00	15.60	201.36	4,522.46	-685.35	-411.58	-685.35	0.91	-0.26	-3.21
4,728.00	14.45	205.11	4,614.21	-707.98	-421.26	-707.98	1.58	-1.21	3.95
4,822.00	15.72	201.75	4,704.97	-730.43	-430.95	-730.43	1.64	1.35	-3.57
4,917.00	16.75	208.68	4,796.19	-754.40	-442.29	-754.40	2.31	1.08	7.29
5,011.00	15.36	208.59	4,886.52	-777.21	-454.75	-777.21	1.48	-1.48	-0.10
5,199.00	13.89	210.47	5,068.42	-818.53	-478.11	-818.53	0.82	-0.78	1.00

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 28C-8HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Site:	NRC 15-8HZ PAD	MD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Well:	NRC 28C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,293.00	11.62	206.52	5,160.10	-836.73	-488.06	-836.73	2.59	-2.41	-4.20
5,388.00	12.04	208.24	5,253.08	-854.02	-497.02	-854.02	0.58	0.44	1.81
5,482.00	10.46	203.30	5,345.28	-870.49	-505.04	-870.49	1.97	-1.68	-5.26
5,576.00	10.63	209.53	5,437.69	-885.87	-512.69	-885.87	1.23	0.18	6.63
5,671.00	8.53	208.86	5,531.36	-899.67	-520.41	-899.67	2.21	-2.21	-0.71
5,860.00	6.26	209.23	5,718.78	-920.94	-532.20	-920.94	1.20	-1.20	0.20
5,954.00	5.27	201.73	5,812.30	-929.42	-536.31	-929.42	1.32	-1.05	-7.98
6,048.00	3.56	187.18	5,906.02	-936.33	-538.27	-936.33	2.16	-1.82	-15.48
6,143.00	1.71	204.44	6,000.92	-940.55	-539.22	-940.55	2.10	-1.95	18.17
6,237.00	1.98	184.10	6,094.87	-943.44	-539.92	-943.44	0.75	0.29	-21.64
6,332.00	1.41	328.76	6,189.85	-944.08	-540.64	-944.08	3.40	-0.60	152.27
6,426.00	1.10	318.72	6,283.83	-942.41	-541.84	-942.41	0.40	-0.33	-10.68
6,520.00	0.75	303.87	6,377.82	-941.39	-542.95	-941.39	0.45	-0.37	-15.80
6,614.00	0.98	337.26	6,471.81	-940.31	-543.77	-940.31	0.58	0.24	35.52
6,709.00	0.42	326.40	6,566.80	-939.27	-544.27	-939.27	0.60	-0.59	-11.43
6,803.00	0.78	96.70	6,660.80	-939.06	-543.83	-939.06	1.17	0.38	138.62
6,898.00	0.33	92.27	6,755.79	-939.14	-542.91	-939.14	0.48	-0.47	-4.66
6,992.00	0.55	42.44	6,849.79	-938.82	-542.34	-938.82	0.45	0.23	-53.01
7,086.00	0.76	352.87	6,943.79	-937.87	-542.11	-937.87	0.62	0.22	-52.73
7,132.00	0.47	65.64	6,989.78	-937.49	-541.98	-937.49	1.67	-0.63	158.20
7,181.00	1.34	38.68	7,038.78	-936.96	-541.44	-936.96	1.93	1.78	-55.02
7,228.00	3.84	13.56	7,085.73	-935.00	-540.72	-935.00	5.72	5.32	-53.45
7,275.00	7.01	7.38	7,132.51	-930.62	-539.99	-930.62	6.85	6.74	-13.15
7,322.00	9.61	8.45	7,179.01	-923.90	-539.04	-923.90	5.54	5.53	2.28
7,369.00	13.63	10.63	7,225.04	-914.57	-537.44	-914.57	8.60	8.55	4.64
7,414.00	16.65	13.09	7,268.47	-903.08	-535.00	-903.08	6.86	6.71	5.47
7,464.00	18.89	12.69	7,316.09	-888.20	-531.60	-888.20	4.49	4.48	-0.80
7,511.00	21.96	10.86	7,360.13	-872.15	-528.27	-872.15	6.67	6.53	-3.89
7,558.00	26.47	6.35	7,402.98	-853.09	-525.46	-853.09	10.37	9.60	-9.60
7,605.00	30.23	2.34	7,444.34	-830.85	-523.82	-830.85	8.96	8.00	-8.53
7,653.00	32.88	359.59	7,485.24	-805.74	-523.42	-805.74	6.28	5.52	-5.73
7,700.00	37.81	357.98	7,523.57	-778.57	-524.02	-778.57	10.67	10.49	-3.43
7,747.00	42.31	358.66	7,559.53	-748.34	-524.89	-748.34	9.62	9.57	1.45
7,794.00	47.95	359.23	7,592.68	-715.05	-525.50	-715.05	12.03	12.00	1.21
7,888.00	58.85	359.95	7,648.64	-639.71	-526.00	-639.71	11.61	11.60	0.77
7,936.00	62.87	0.39	7,672.01	-597.79	-525.88	-597.79	8.41	8.38	0.92
7,983.00	65.88	1.09	7,692.33	-555.42	-525.33	-555.42	6.54	6.40	1.49
8,030.00	68.98	1.31	7,710.37	-512.04	-524.42	-512.04	6.61	6.60	0.47
8,077.00	72.59	1.06	7,725.83	-467.67	-523.50	-467.67	7.70	7.68	-0.53
8,124.00	77.26	359.70	7,738.06	-422.30	-523.21	-422.30	10.32	9.94	-2.89
8,171.00	82.98	359.03	7,746.12	-376.02	-523.72	-376.02	12.25	12.17	-1.43
8,250.00	86.30	359.05	7,753.50	-297.39	-525.04	-297.39	4.20	4.20	0.03
7" (48 FSL 2340 FEL)									

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 28C-8HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Site:	NRC 15-8HZ PAD	MD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Well:	NRC 28C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,327.00	89.53	359.07	7,756.30	-220.46	-526.30	-220.46	4.20	4.20	0.03	
8,421.00	91.04	358.53	7,755.83	-126.49	-528.27	-126.49	1.71	1.61	-0.57	
8,610.00	92.29	358.31	7,750.34	62.36	-533.48	62.36	0.67	0.66	-0.12	
8,798.00	91.64	358.93	7,743.90	250.19	-538.00	250.19	0.48	-0.35	0.33	
8,987.00	90.10	0.27	7,741.03	439.15	-539.32	439.15	1.08	-0.81	0.71	
9,175.00	88.96	359.14	7,742.57	627.14	-540.29	627.14	0.85	-0.61	-0.60	
9,270.00	90.24	359.06	7,743.23	722.12	-541.78	722.12	1.35	1.35	-0.08	
9,364.00	90.50	357.78	7,742.62	816.08	-544.37	816.08	1.39	0.28	-1.36	
9,459.00	90.57	357.73	7,741.74	911.01	-548.09	911.01	0.09	0.07	-0.05	
9,741.00	88.03	357.50	7,745.18	1,192.72	-559.83	1,192.72	0.90	-0.90	-0.08	
9,835.00	88.83	358.09	7,747.76	1,286.61	-563.44	1,286.61	1.06	0.85	0.63	
9,929.00	90.17	358.46	7,748.58	1,380.56	-566.27	1,380.56	1.48	1.43	0.39	
10,023.00	90.74	359.09	7,747.83	1,474.54	-568.28	1,474.54	0.90	0.61	0.67	
10,117.00	90.84	358.14	7,746.54	1,568.50	-570.55	1,568.50	1.02	0.11	-1.01	
10,211.00	89.97	357.58	7,745.87	1,662.43	-574.06	1,662.43	1.10	-0.93	-0.60	
10,400.00	90.50	357.65	7,745.10	1,851.27	-581.93	1,851.27	0.28	0.28	0.04	
10,494.00	89.80	359.00	7,744.85	1,945.22	-584.67	1,945.22	1.62	-0.74	1.44	
10,589.00	89.93	358.30	7,745.07	2,040.20	-586.91	2,040.20	0.75	0.14	-0.74	
10,683.00	89.77	358.10	7,745.32	2,134.15	-589.87	2,134.15	0.27	-0.17	-0.21	
10,778.00	89.70	358.72	7,745.76	2,229.11	-592.50	2,229.11	0.66	-0.07	0.65	
10,873.00	89.40	0.00	7,746.51	2,324.10	-593.56	2,324.10	1.38	-0.32	1.35	
10,968.00	88.93	1.94	7,747.89	2,419.07	-591.95	2,419.07	2.10	-0.49	2.04	
11,157.00	90.47	1.93	7,748.88	2,607.96	-585.57	2,607.96	0.81	0.81	-0.01	
11,251.00	91.61	3.07	7,747.17	2,701.85	-581.47	2,701.85	1.71	1.21	1.21	
11,440.00	90.34	2.52	7,743.96	2,890.59	-572.26	2,890.59	0.73	-0.67	-0.29	
11,534.00	89.40	1.20	7,744.17	2,984.54	-569.21	2,984.54	1.72	-1.00	-1.40	
11,628.00	90.13	359.99	7,744.56	3,078.53	-568.23	3,078.53	1.50	0.78	-1.29	
11,722.00	90.37	359.09	7,744.15	3,172.52	-568.99	3,172.52	0.99	0.26	-0.96	
11,817.00	89.66	0.25	7,744.12	3,267.52	-569.53	3,267.52	1.43	-0.75	1.22	
11,911.00	90.10	0.29	7,744.32	3,361.52	-569.09	3,361.52	0.47	0.47	0.04	
12,006.00	90.40	0.64	7,743.90	3,456.51	-568.32	3,456.51	0.49	0.32	0.37	
12,100.00	90.13	0.03	7,743.47	3,550.51	-567.77	3,550.51	0.71	-0.29	-0.65	
12,195.00	88.86	359.36	7,744.31	3,645.50	-568.28	3,645.50	1.51	-1.34	-0.71	
12,383.00	89.16	358.23	7,747.55	3,833.43	-572.23	3,833.43	0.62	0.16	-0.60	
12,478.00	89.67	358.06	7,748.52	3,928.38	-575.30	3,928.38	0.57	0.54	-0.18	
12,572.00	90.03	357.60	7,748.77	4,022.31	-578.86	4,022.31	0.62	0.38	-0.49	
12,666.00	90.27	356.72	7,748.52	4,116.19	-583.52	4,116.19	0.97	0.26	-0.94	
12,761.00	90.13	355.85	7,748.19	4,210.99	-589.68	4,210.99	0.93	-0.15	-0.92	
12,855.00	90.07	354.54	7,748.03	4,304.66	-597.55	4,304.66	1.40	-0.06	-1.39	
LAST SDI MWD PRODUCTION SURVEY										
13,002.00	90.25	353.70	7,747.62	4,450.88	-612.61	4,450.88	0.58	0.12	-0.57	
SDI PROJECTION TO TD										

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 28C-8HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Site:	NRC 15-8HZ PAD	MD Reference:	GL 5063 & KB 25 @ 5088.00ft (H&P 311)
Well:	NRC 28C-8HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales Office

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (in)	Hole Diameter (in)
1,243.00	1,242.96	9 5/8"		9.625	12.250
8,250.00	7,753.50	7" (48 FSL 2340 FEL)		7.000	7.500

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
125.00	125.00	0.11	0.01	FIRST GYRO SURFACE SURVEY	
1,175.00	1,174.96	-1.17	5.55	LAST GYRO SURFACE SURVEY	
1,373.00	1,372.96	-0.94	5.60	FIRST SDI MWD PRODUCTION SURVEY	
12,855.00	7,748.03	4,304.66	-597.55	LAST SDI MWD PRODUCTION SURVEY	
13,002.00	7,747.62	4,450.88	-612.61	SDI PROJECTION TO TD	

Checked By: _____ Approved By: _____ Date: _____