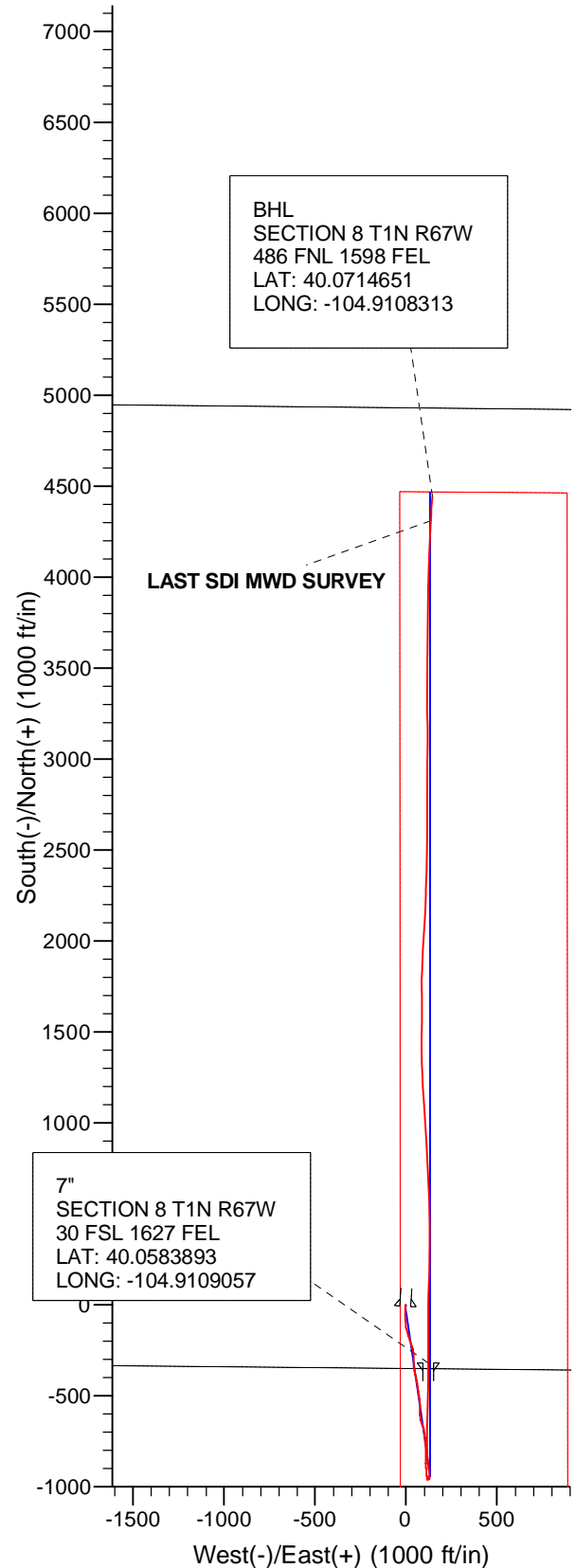
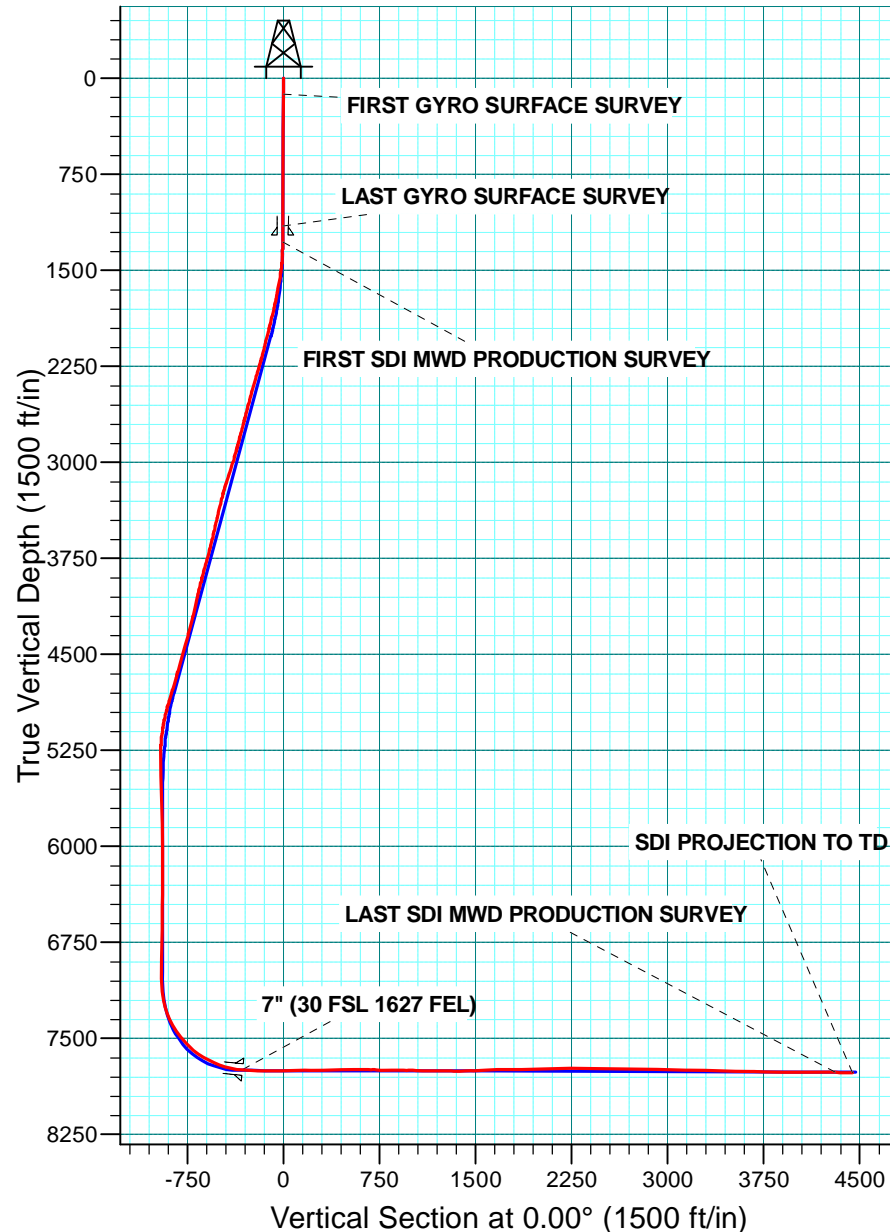


WELL DETAILS: NRC 27C-8HZ

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

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1264984.30	3164769.00	40.0592700	-104.9113460



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

NRC 15-8HZ PAD

NRC 27C-8HZ

OH

Design: OH

Standard Survey Report

05 June, 2014

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 27C-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 27C-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
From:	Lat/Long	Easting:	3,164,709.09 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	40.0592720
		Longitude:	-104.9115600
		Grid Convergence:	0.38 °

Well	NRC 27C-8HZ, 350 FSL 1750 FEL		
Well Position	+N/-S	0.00 ft	Northing: 1,264,984.30 usft
	+E/-W	0.00 ft	Easting: 3,164,769.00 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Latitude:	40.0592700
		Longitude:	-104.9113460
		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	6/5/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	1,155.00	Survey #1 SURFACE GYRO (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,280.00	12,980.00	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	0.68	210.49	125.00	-0.51	-0.30	-0.51	0.68	0.68	0.00	
FIRST GYRO SURFACE SURVEY										
225.00	0.69	214.56	224.99	-1.52	-0.94	-1.52	0.05	0.01	4.07	
325.00	0.60	204.66	324.98	-2.49	-1.50	-2.49	0.14	-0.09	-9.90	
425.00	0.60	200.76	424.98	-3.46	-1.91	-3.46	0.04	0.00	-3.90	
525.00	0.60	209.23	524.97	-4.40	-2.35	-4.40	0.09	0.00	8.47	
625.00	0.53	209.37	624.97	-5.26	-2.83	-5.26	0.07	-0.07	0.14	
725.00	0.30	200.60	724.97	-5.91	-3.15	-5.91	0.24	-0.23	-8.77	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 27C-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 27C-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	0.27	172.93	824.96	-6.39	-3.21	-6.39	0.14	-0.03	-27.67
925.00	0.27	173.36	924.96	-6.86	-3.16	-6.86	0.00	0.00	0.43
1,025.00	0.29	171.97	1,024.96	-7.34	-3.09	-7.34	0.02	0.02	-1.39
1,125.00	0.16	180.73	1,124.96	-7.73	-3.06	-7.73	0.13	-0.13	8.76
1,155.00	0.21	188.88	1,154.96	-7.83	-3.07	-7.83	0.19	0.17	27.17
LAST GYRO SURFACE SURVEY									
1,224.00	0.06	183.70	1,223.96	-7.99	-3.09	-7.99	0.22	-0.22	-7.51
9 5/8"									
1,280.00	0.07	16.40	1,279.96	-7.98	-3.08	-7.98	0.22	0.02	-298.75
FIRST SDI MWD PRODUCTION SURVEY									
1,372.00	2.37	175.02	1,371.94	-9.82	-2.90	-9.82	2.65	2.50	172.41
1,555.00	9.92	186.64	1,553.76	-29.28	-4.40	-29.28	4.16	4.13	6.35
1,646.00	10.01	182.20	1,643.39	-44.97	-5.61	-44.97	0.85	0.10	-4.88
1,738.00	11.96	175.86	1,733.70	-62.47	-5.23	-62.47	2.49	2.12	-6.89
1,829.00	13.04	177.56	1,822.54	-82.13	-4.11	-82.13	1.25	1.19	1.87
1,920.00	14.11	175.34	1,911.00	-103.44	-2.77	-103.44	1.31	1.18	-2.44
2,011.00	14.27	166.55	1,999.23	-125.41	0.74	-125.41	2.37	0.18	-9.66
2,103.00	14.72	164.21	2,088.30	-147.68	6.56	-147.68	0.80	0.49	-2.54
2,194.00	15.39	161.50	2,176.18	-170.26	13.53	-170.26	1.07	0.74	-2.98
2,286.00	17.82	162.86	2,264.34	-195.29	21.56	-195.29	2.67	2.64	1.48
2,377.00	17.35	161.12	2,351.09	-221.44	30.05	-221.44	0.77	-0.52	-1.91
2,469.00	15.88	164.64	2,439.24	-246.56	37.83	-246.56	1.94	-1.60	3.83
2,652.00	14.50	186.42	2,615.99	-293.50	41.90	-293.50	3.19	-0.75	11.90
2,743.00	15.05	175.88	2,704.00	-316.61	41.47	-316.61	3.01	0.60	-11.58
2,838.00	14.32	175.84	2,795.89	-340.63	43.21	-340.63	0.77	-0.77	-0.04
2,932.00	15.32	168.09	2,886.77	-364.38	46.62	-364.38	2.36	1.06	-8.24
3,026.00	18.08	166.40	2,976.80	-390.71	52.61	-390.71	2.98	2.94	-1.80
3,121.00	17.71	168.49	3,067.21	-419.20	58.96	-419.20	0.78	-0.39	2.20
3,215.00	18.09	172.27	3,156.66	-447.67	63.78	-447.67	1.30	0.40	4.02
3,404.00	13.03	171.16	3,338.67	-497.84	71.00	-497.84	2.68	-2.68	-0.59
3,498.00	13.61	170.02	3,430.14	-519.20	74.55	-519.20	0.68	0.62	-1.21
3,687.00	13.08	184.41	3,614.09	-562.44	76.76	-562.44	1.77	-0.28	7.61
3,781.00	14.49	181.12	3,705.38	-584.80	75.71	-584.80	1.72	1.50	-3.50
3,876.00	16.09	173.34	3,797.03	-609.76	77.01	-609.76	2.74	1.68	-8.19
4,065.00	14.48	158.65	3,979.41	-657.81	88.65	-657.81	2.21	-0.85	-7.77
4,159.00	13.31	164.83	4,070.66	-679.20	95.76	-679.20	2.01	-1.24	6.57
4,347.00	13.95	174.05	4,253.38	-722.63	103.77	-722.63	1.20	0.34	4.90
4,442.00	15.40	175.30	4,345.28	-746.59	106.00	-746.59	1.56	1.53	1.32
4,536.00	16.65	179.42	4,435.63	-772.50	107.15	-772.50	1.80	1.33	4.38
4,725.00	14.49	180.43	4,617.69	-823.22	107.25	-823.22	1.15	-1.14	0.53
4,914.00	18.00	175.70	4,799.12	-876.01	109.26	-876.01	1.98	1.86	-2.50
5,103.00	13.18	175.99	4,981.11	-926.65	112.96	-926.65	2.55	-2.55	0.15
5,197.00	9.03	173.89	5,073.33	-944.68	114.50	-944.68	4.44	-4.41	-2.23
5,386.00	1.95	145.31	5,261.37	-962.10	117.91	-962.10	3.90	-3.75	-15.12

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 27C-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 27C-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)
5,574.00	2.80	22.94	5,449.28	-960.50	121.52	-960.50	2.22	0.45	-65.09
5,669.00	2.69	31.60	5,544.17	-956.46	123.60	-956.46	0.45	-0.12	9.12
5,763.00	2.21	27.42	5,638.09	-952.98	125.59	-952.98	0.54	-0.51	-4.45
5,952.00	0.48	298.82	5,827.04	-949.36	126.57	-949.36	1.19	-0.92	-46.88
6,046.00	0.68	342.68	5,921.03	-948.64	126.06	-948.64	0.50	0.21	46.66
6,140.00	0.31	288.14	6,015.03	-948.02	125.65	-948.02	0.60	-0.39	-58.02
6,234.00	0.71	296.44	6,109.03	-947.69	124.89	-947.69	0.43	0.43	8.83
6,329.00	0.58	348.43	6,204.02	-946.95	124.27	-946.95	0.61	-0.14	54.73
6,423.00	1.00	253.21	6,298.02	-946.72	123.38	-946.72	1.28	0.45	-101.30
6,518.00	1.74	135.38	6,393.00	-947.99	123.60	-947.99	2.50	0.78	-124.03
6,612.00	0.88	141.23	6,486.97	-949.57	125.06	-949.57	0.92	-0.91	6.22
6,706.00	0.23	262.30	6,580.97	-950.16	125.32	-950.16	1.08	-0.69	128.80
6,801.00	0.03	69.22	6,675.97	-950.17	125.16	-950.17	0.27	-0.21	175.71
6,895.00	2.02	141.59	6,769.95	-951.46	126.21	-951.46	2.14	2.12	76.99
6,989.00	1.80	170.45	6,863.90	-954.22	127.48	-954.22	1.04	-0.23	30.70
7,084.00	0.69	107.84	6,958.88	-955.86	128.28	-955.86	1.69	-1.17	-65.91
7,178.00	0.34	305.23	7,052.88	-955.88	128.59	-955.88	1.08	-0.37	-172.99
7,225.00	4.57	358.18	7,099.83	-953.92	128.41	-953.92	9.31	9.00	112.66
7,273.00	8.98	0.43	7,147.48	-948.26	128.38	-948.26	9.20	9.19	4.69
7,320.00	10.80	2.45	7,193.78	-940.20	128.60	-940.20	3.94	3.87	4.30
7,367.00	13.55	358.49	7,239.72	-930.29	128.64	-930.29	6.11	5.85	-8.43
7,414.00	17.58	352.26	7,284.99	-917.75	127.54	-917.75	9.27	8.57	-13.26
7,461.00	23.37	349.87	7,329.00	-901.52	124.94	-901.52	12.44	12.32	-5.09
7,508.00	28.19	352.13	7,371.31	-881.34	121.78	-881.34	10.46	10.26	4.81
7,556.00	32.20	355.63	7,412.79	-857.34	119.25	-857.34	9.12	8.35	7.29
7,603.00	34.36	356.57	7,452.08	-831.61	117.50	-831.61	4.72	4.60	2.00
7,650.00	38.26	358.07	7,489.95	-803.82	116.22	-803.82	8.51	8.30	3.19
7,697.00	43.32	359.00	7,525.52	-773.14	115.45	-773.14	10.84	10.77	1.98
7,744.00	45.13	358.86	7,559.20	-740.36	114.83	-740.36	3.86	3.85	-0.30
7,791.00	49.00	1.38	7,591.22	-705.96	114.93	-705.96	9.12	8.23	5.36
7,839.00	53.81	1.96	7,621.15	-668.48	116.03	-668.48	10.07	10.02	1.21
7,886.00	58.29	1.69	7,647.39	-629.52	117.27	-629.52	9.54	9.53	-0.57
7,933.00	63.14	1.52	7,670.37	-588.55	118.41	-588.55	10.32	10.32	-0.36
7,980.00	66.86	1.35	7,690.23	-545.98	119.48	-545.98	7.92	7.91	-0.36
8,027.00	70.58	1.98	7,707.29	-502.21	120.76	-502.21	8.01	7.91	1.34
8,074.00	74.35	0.74	7,721.45	-457.41	121.81	-457.41	8.41	8.02	-2.64
8,122.00	77.95	1.08	7,732.94	-410.82	122.56	-410.82	7.53	7.50	0.71
8,169.00	82.43	0.30	7,740.94	-364.53	123.11	-364.53	9.67	9.53	-1.66
8,213.00	84.23	0.05	7,746.05	-320.83	123.24	-320.83	4.12	4.08	-0.56
7" (30 FSL 1627 FEL)									
8,328.00	88.92	359.41	7,752.93	-206.06	122.70	-206.06	4.12	4.08	-0.56
8,422.00	89.63	0.54	7,754.12	-112.07	122.66	-112.07	1.42	0.76	1.20
8,516.00	90.47	0.63	7,754.03	-18.08	123.62	-18.08	0.90	0.89	0.10

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 27C-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 27C-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)
8,697.00	91.27	1.43	7,751.29	162.87	126.88	162.87	0.63	0.44	0.44
8,791.00	90.91	0.76	7,749.50	256.83	128.67	256.83	0.81	-0.38	-0.71
8,886.00	91.95	0.23	7,747.13	351.80	129.49	351.80	1.23	1.09	-0.56
8,980.00	91.75	359.75	7,744.09	445.75	129.48	445.75	0.55	-0.21	-0.51
9,075.00	90.61	358.90	7,742.14	540.72	128.36	540.72	1.50	-1.20	-0.89
9,169.00	87.25	356.86	7,743.89	634.62	124.88	634.62	4.18	-3.57	-2.17
9,263.00	88.86	357.79	7,747.08	728.46	120.50	728.46	1.98	1.71	0.99
9,357.00	90.84	357.64	7,747.33	822.38	116.75	822.38	2.11	2.11	-0.16
9,452.00	87.62	355.13	7,748.60	917.16	110.76	917.16	4.30	-3.39	-2.64
9,546.00	89.09	356.12	7,751.30	1,010.85	103.60	1,010.85	1.89	1.56	1.05
9,641.00	87.68	356.32	7,753.98	1,105.60	97.34	1,105.60	1.50	-1.48	0.21
9,735.00	91.38	358.48	7,754.75	1,199.48	93.07	1,199.48	4.56	3.94	2.30
9,829.00	87.95	356.61	7,755.30	1,293.37	89.05	1,293.37	4.16	-3.65	-1.99
9,923.00	91.08	359.47	7,756.10	1,387.29	85.83	1,387.29	4.51	3.33	3.04
10,017.00	92.56	1.33	7,753.11	1,481.23	86.49	1,481.23	2.53	1.57	1.98
10,111.00	92.32	359.46	7,749.11	1,575.14	87.14	1,575.14	2.00	-0.26	-1.99
10,206.00	91.72	359.34	7,745.76	1,670.08	86.14	1,670.08	0.64	-0.63	-0.13
10,300.00	91.44	0.33	7,743.17	1,764.04	85.87	1,764.04	1.09	-0.30	1.05
10,394.00	90.24	2.75	7,741.79	1,857.99	88.40	1,857.99	2.87	-1.28	2.57
10,583.00	91.65	3.32	7,738.67	2,046.69	98.40	2,046.69	0.80	0.75	0.30
10,772.00	90.34	2.02	7,735.39	2,235.45	107.21	2,235.45	0.98	-0.69	-0.69
10,866.00	89.03	1.89	7,735.91	2,329.39	110.41	2,329.39	1.40	-1.39	-0.14
11,054.00	89.33	0.88	7,738.60	2,517.31	114.96	2,517.31	0.56	0.16	-0.54
11,149.00	89.29	359.97	7,739.74	2,612.30	115.66	2,612.30	0.96	-0.04	-0.96
11,338.00	89.50	359.78	7,741.74	2,801.29	115.25	2,801.29	0.15	0.11	-0.10
11,432.00	88.35	0.66	7,743.50	2,895.27	115.61	2,895.27	1.54	-1.22	0.94
11,526.00	89.93	1.29	7,744.91	2,989.25	117.21	2,989.25	1.81	1.68	0.67
11,620.00	88.52	0.08	7,746.18	3,083.23	118.33	3,083.23	1.98	-1.50	-1.29
11,715.00	88.92	359.23	7,748.31	3,178.20	117.76	3,178.20	0.99	0.42	-0.89
11,809.00	89.36	359.80	7,749.72	3,272.19	116.96	3,272.19	0.77	0.47	0.61
11,903.00	87.82	0.24	7,752.03	3,366.15	117.00	3,366.15	1.70	-1.64	0.47
11,998.00	88.52	0.30	7,755.06	3,461.10	117.44	3,461.10	0.74	0.74	0.06
12,092.00	88.25	0.48	7,757.71	3,555.06	118.08	3,555.06	0.35	-0.29	0.19
12,187.00	88.05	0.43	7,760.78	3,650.01	118.84	3,650.01	0.22	-0.21	-0.05
12,376.00	89.66	0.88	7,764.56	3,838.95	121.00	3,838.95	0.88	0.85	0.24
12,470.00	89.29	0.64	7,765.42	3,932.94	122.24	3,932.94	0.47	-0.39	-0.26
12,659.00	90.77	2.55	7,765.32	4,121.86	127.51	4,121.86	1.28	0.78	1.01
12,848.00	88.73	3.17	7,766.14	4,310.61	136.93	4,310.61	1.13	-1.08	0.33
LAST SDI MWD PRODUCTION SURVEY									
12,980.00	89.00	3.00	7,768.76	4,442.39	144.04	4,442.39	0.24	0.20	-0.13
SDI PROJECTION TO TD									

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well NRC 27C-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 27C-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)
1,224.00	1,223.96	9 5/8"		9.625	12.250
8,213.00	7,746.05	7" (30 FSL 1627 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	-0.51	-0.30	FIRST GYRO SURFACE SURVEY	
1,155.00	1,154.96	-7.83	-3.07	LAST GYRO SURFACE SURVEY	
1,280.00	1,279.96	-7.98	-3.08	FIRST SDI MWD PRODUCTION SURVEY	
12,848.00	7,766.14	4,310.61	136.93	LAST SDI MWD PRODUCTION SURVEY	
12,980.00	7,768.76	4,442.39	144.04	SDI PROJECTION TO TD	

Checked By: _____ Approved By: _____ Date: _____