



Project: COLORADO NORTHERN ZONE - 83
Site: RISSLER STATE 13-36HZ PAD
Well: RISSLER STATE 4N-36HZ
Wellbore: OH
Design: OH



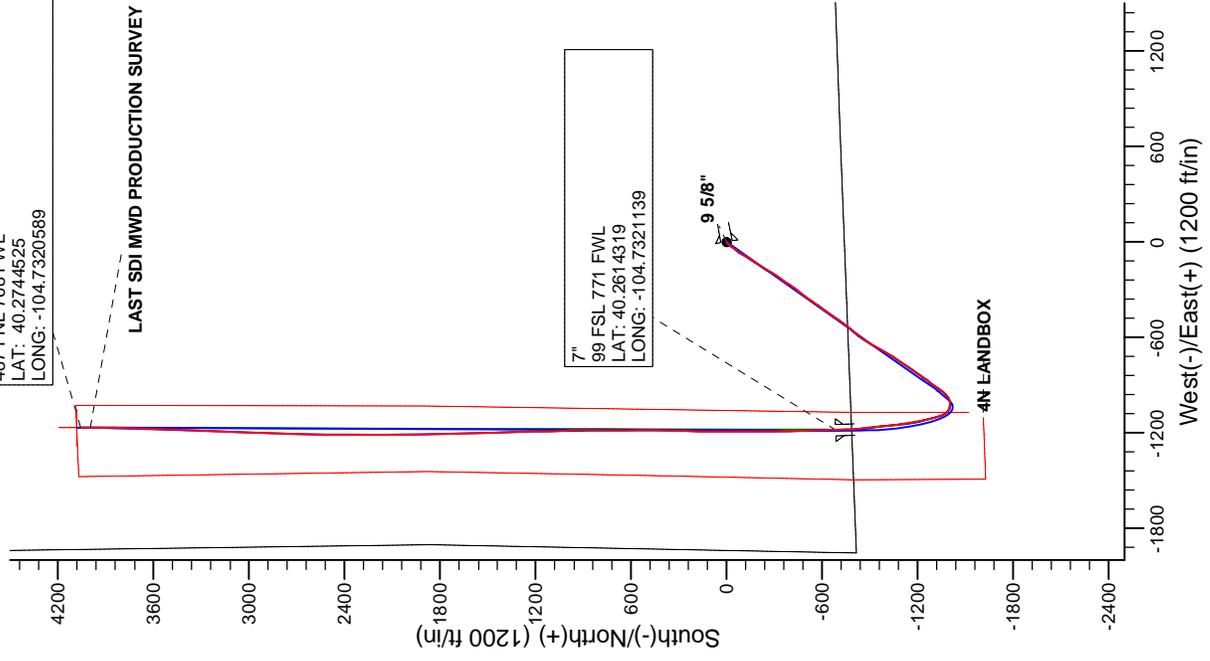
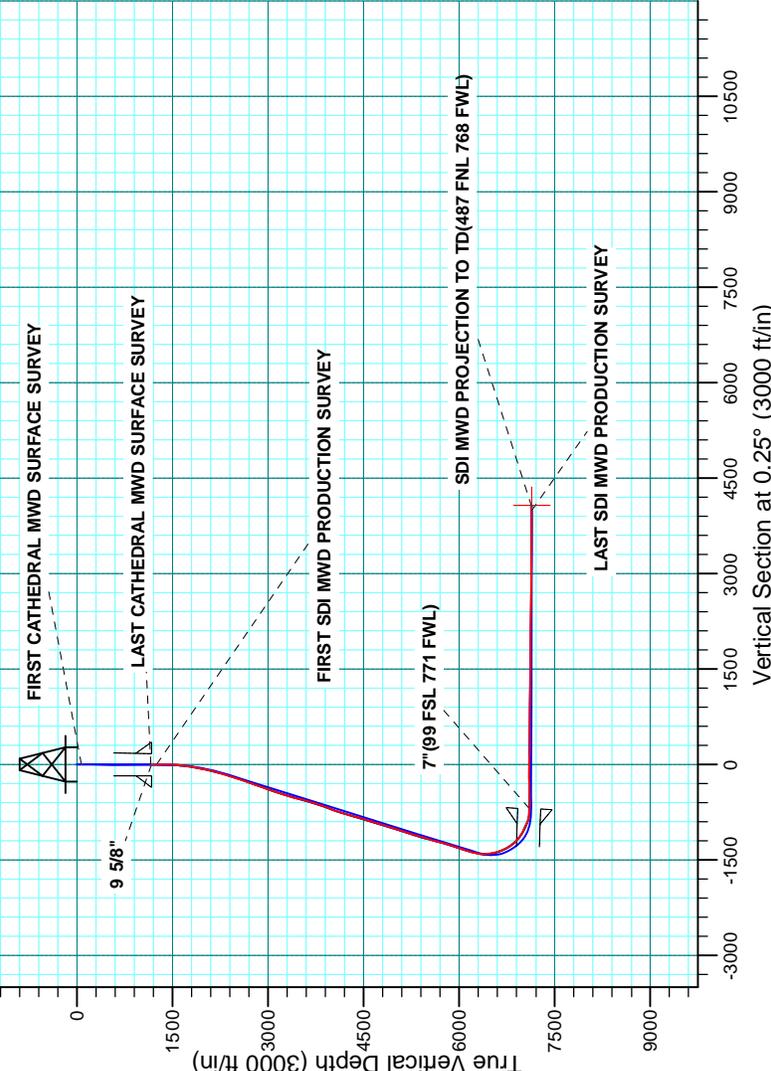
WELL DETAILS: RISSLER STATE 4N-36HZ			
GL 4860 & KB 25 @ 4885.00R (HP 311)			
+N/-S	+E/-W	Northing	Eastng
0.00	0.00	1335704.89	3215474.26
Latitude	Longitude		
40.2633139	-104.7278800		

PROJECT DETAILS: COLORADO NORTHERN ZONE - 83	
Geodetic System: US State Plane 1983	
Datum: North American Datum 1983	
Ellipsoid: GRS 1980	
Zone: Colorado Northern Zone	
Location: SECTION 36, T4N, R66W	
System Datum: Mean Sea Level	

CASING DETAILS		
TVD	MD	Name
1170.98	1171.00	9 5/8"
7101.84	7637.00	7"

BHL
 487 FNL 768 FWL
 LAT: 40.2744525
 LONG: -104.7320589

LAST SDI MWD PRODUCTION SURVEY





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

RISSLER STATE 13-36HZ PAD

RISSLER STATE 4N-36HZ

OH

Design: OH

Standard Survey Report

02 February, 2015

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well RISSLER STATE 4N-36HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 4860 & KB 25 @ 4885.00ft (HP 311)
Site:	RISSLER STATE 13-36HZ PAD	MD Reference:	GL 4860 & KB 25 @ 4885.00ft (HP 311)
Well:	RISSLER STATE 4N-36HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales

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	RISSLER STATE 13-36HZ PAD, SECTION 36, T4N, R66W				
Site Position:		Northing:	1,339,726.22 usft	Latitude:	40.2633730
From:	Lat/Long	Easting:	3,215,453.15 usft	Longitude:	-104.7279550
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	RISSLER STATE 4N-36HZ, 739' FSL 1938' FWL					
Well Position	+N/-S	0.00 ft	Northing:	1,339,704.89 usft	Latitude:	40.2633140
	+E/-W	0.00 ft	Easting:	3,215,474.26 usft	Longitude:	-104.7278800
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,860.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	12/8/2014	8.46	66.82	52,585

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	0.25	

Survey Program	Date	2/2/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
19.00	1,155.00	Survey #1 CATHEDRAL MWD SURFACE	MWD	MWD - Standard	
1,251.00	12,582.00	Survey #2 SDI MWD PRODUCTION (OH)	MWD+IFR+MS	MWD + IFR + Multi Station	

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	0.00
19.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71.00	0.30	82.50	71.00	0.02	0.13	0.02	0.58	0.58	0.00	0.00
FIRST CATHEDRAL MWD SURFACE SURVEY										
161.00	0.60	81.10	161.00	0.12	0.83	0.13	0.33	0.33	-1.56	
241.00	0.50	77.40	240.99	0.26	1.59	0.27	0.13	-0.13	-4.63	
340.00	0.80	100.50	339.99	0.23	2.69	0.24	0.40	0.30	23.33	
420.00	0.30	79.50	419.98	0.17	3.44	0.18	0.66	-0.63	-26.25	
500.00	0.30	223.20	499.98	0.05	3.51	0.07	0.71	0.00	179.63	
580.00	0.30	262.50	579.98	-0.13	3.16	-0.11	0.25	0.00	49.13	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well RISSLER STATE 4N-36HZ
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Site:	RISSLER STATE 13-36HZ PAD	MD Reference:	GL 4860 & KB 25 @ 4885.00ft (HP 311)
Well:	RISSLER STATE 4N-36HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales

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)	
660.00	0.10	281.50	659.98	-0.14	2.88	-0.13	0.26	-0.25	23.75	
740.00	0.30	13.20	739.98	0.08	2.86	0.09	0.40	0.25	114.63	
820.00	0.40	20.50	819.98	0.54	3.01	0.56	0.14	0.13	9.13	
900.00	0.10	96.30	899.98	0.80	3.17	0.81	0.48	-0.38	94.75	
980.00	0.20	255.20	979.98	0.75	3.11	0.77	0.37	0.13	198.63	
1,060.00	0.30	278.40	1,059.98	0.75	2.76	0.76	0.18	0.13	29.00	
1,155.00	0.30	248.10	1,154.98	0.69	2.29	0.70	0.17	0.00	-31.89	
LAST CATHEDRAL MWD SURFACE SURVEY										
1,171.00	0.31	258.96	1,170.98	0.67	2.21	0.68	0.37	0.09	67.88	
9 5/8"										
1,251.00	0.50	293.38	1,250.97	0.76	1.67	0.77	0.37	0.23	43.02	
FIRST SDI MWD PRODUCTION SURVEY										
1,343.00	1.52	239.29	1,342.96	0.30	0.25	0.30	1.40	1.11	-58.79	
1,435.00	3.93	238.16	1,434.85	-1.99	-3.48	-2.00	2.62	2.62	-1.23	
1,527.00	5.85	231.97	1,526.51	-6.54	-9.85	-6.58	2.16	2.09	-6.73	
1,618.00	7.86	219.10	1,616.86	-14.23	-17.43	-14.30	2.77	2.21	-14.14	
1,710.00	9.24	216.42	1,707.84	-25.05	-25.78	-25.16	1.56	1.50	-2.91	
1,894.00	12.68	218.24	1,888.45	-52.81	-47.06	-53.01	1.88	1.87	0.99	
1,985.00	14.50	214.54	1,976.90	-70.04	-59.70	-70.30	2.22	2.00	-4.07	
2,079.00	15.83	211.17	2,067.63	-90.70	-73.01	-91.02	1.70	1.41	-3.59	
2,174.00	16.11	211.94	2,158.96	-112.98	-86.69	-113.35	0.37	0.29	0.81	
2,268.00	18.22	213.90	2,248.77	-136.24	-101.78	-136.69	2.33	2.24	2.09	
2,362.00	19.05	212.85	2,337.84	-161.33	-118.30	-161.84	0.95	0.88	-1.12	
2,456.00	20.66	213.90	2,426.25	-187.98	-135.87	-188.57	1.75	1.71	1.12	
2,551.00	21.38	212.07	2,514.93	-216.57	-154.41	-217.24	1.03	0.76	-1.93	
2,645.00	21.74	211.41	2,602.36	-245.94	-172.58	-246.69	0.46	0.38	-0.70	
2,739.00	23.12	211.16	2,689.24	-276.59	-191.21	-277.43	1.47	1.47	-0.27	
2,927.00	23.78	214.17	2,861.72	-339.54	-231.60	-340.55	0.73	0.35	1.60	
3,022.00	24.27	213.09	2,948.49	-371.75	-253.01	-372.85	0.69	0.52	-1.14	
3,116.00	22.53	214.42	3,034.76	-402.79	-273.74	-403.98	1.93	-1.85	1.41	
3,211.00	21.44	217.82	3,122.85	-431.52	-294.68	-432.80	1.76	-1.15	3.58	
3,305.00	22.48	218.89	3,210.03	-459.08	-316.49	-460.46	1.19	1.11	1.14	
3,399.00	19.87	218.03	3,297.68	-485.66	-337.62	-487.13	2.80	-2.78	-0.91	
3,493.00	19.00	214.61	3,386.32	-510.84	-356.16	-512.38	1.52	-0.93	-3.64	
3,587.00	19.21	216.56	3,475.14	-535.85	-374.06	-537.48	0.71	0.22	2.07	
3,681.00	18.80	217.17	3,564.02	-560.34	-392.42	-562.05	0.48	-0.44	0.65	
3,775.00	19.45	214.51	3,652.83	-585.31	-410.44	-587.09	1.16	0.69	-2.83	
3,870.00	20.67	215.46	3,742.07	-612.00	-429.13	-613.87	1.33	1.28	1.00	
3,964.00	22.45	214.92	3,829.49	-640.23	-449.03	-642.19	1.91	1.89	-0.57	
4,058.00	23.92	214.79	3,915.89	-670.60	-470.18	-672.65	1.56	1.56	-0.14	
4,153.00	25.08	215.16	4,002.34	-702.88	-492.76	-705.02	1.23	1.22	0.39	
4,247.00	22.65	214.75	4,088.30	-734.04	-514.56	-736.28	2.59	-2.59	-0.44	
4,341.00	20.61	218.44	4,175.68	-761.88	-535.16	-764.21	2.61	-2.17	3.93	
4,435.00	19.96	220.79	4,263.85	-786.98	-555.93	-789.40	1.11	-0.69	2.50	

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Site:	RISSLER STATE 13-36HZ PAD	MD Reference:	GL 4860 & KB 25 @ 4885.00ft (HP 311)
Well:	RISSLER STATE 4N-36HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales

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)
4,530.00	21.34	218.60	4,352.74	-812.77	-577.31	-815.28	1.66	1.45	-2.31
4,718.00	18.32	214.48	4,529.58	-863.87	-615.38	-866.55	1.77	-1.61	-2.19
4,812.00	19.15	213.41	4,618.60	-888.92	-632.24	-891.67	0.96	0.88	-1.14
4,906.00	20.01	209.97	4,707.17	-915.73	-648.76	-918.55	1.53	0.91	-3.66
5,001.00	19.02	208.46	4,796.71	-943.42	-664.26	-946.31	1.17	-1.04	-1.59
5,095.00	20.76	210.39	4,885.10	-971.26	-679.99	-974.21	1.98	1.85	2.05
5,189.00	21.22	210.40	4,972.86	-1,000.30	-697.02	-1,003.33	0.49	0.49	0.01
5,283.00	21.52	210.40	5,060.40	-1,029.84	-714.36	-1,032.95	0.32	0.32	0.00
5,377.00	21.79	213.46	5,147.77	-1,059.27	-732.70	-1,062.46	1.23	0.29	3.26
5,471.00	20.19	215.68	5,235.53	-1,087.00	-751.78	-1,090.27	1.90	-1.70	2.36
5,566.00	19.09	213.32	5,325.00	-1,113.30	-769.88	-1,116.65	1.43	-1.16	-2.48
5,660.00	18.82	213.78	5,413.91	-1,138.75	-786.75	-1,142.17	0.33	-0.29	0.49
5,754.00	17.59	214.52	5,503.20	-1,163.06	-803.23	-1,166.55	1.33	-1.31	0.79
5,849.00	18.67	212.11	5,593.48	-1,187.76	-819.45	-1,191.33	1.38	1.14	-2.54
5,943.00	16.83	213.55	5,683.00	-1,211.85	-834.97	-1,215.48	2.01	-1.96	1.53
6,037.00	19.52	217.16	5,772.31	-1,235.71	-851.98	-1,239.42	3.10	2.86	3.84
6,131.00	20.06	216.35	5,860.76	-1,261.21	-871.02	-1,265.00	0.64	0.57	-0.86
6,225.00	24.61	217.42	5,947.68	-1,289.76	-892.48	-1,293.64	4.86	4.84	1.14
6,320.00	24.06	216.20	6,034.24	-1,321.09	-915.94	-1,325.08	0.78	-0.58	-1.28
6,414.00	22.38	217.55	6,120.63	-1,350.75	-938.17	-1,354.83	1.87	-1.79	1.44
6,508.00	19.22	223.81	6,208.50	-1,376.11	-959.79	-1,380.28	4.11	-3.36	6.66
6,603.00	19.16	241.47	6,298.30	-1,394.86	-984.33	-1,399.14	6.09	-0.06	18.59
6,697.00	22.92	266.40	6,386.19	-1,403.39	-1,016.23	-1,407.81	10.23	4.00	26.52
6,791.00	20.67	292.85	6,473.68	-1,398.09	-1,049.87	-1,402.65	10.63	-2.39	28.14
6,885.00	19.76	323.64	6,562.13	-1,378.79	-1,074.65	-1,383.47	11.24	-0.97	32.76
6,980.00	23.10	339.78	6,650.63	-1,348.34	-1,090.63	-1,353.08	7.10	3.52	16.99
7,074.00	28.58	345.52	6,735.21	-1,309.23	-1,102.64	-1,314.03	6.40	5.83	6.11
7,168.00	35.79	346.83	6,814.72	-1,260.63	-1,114.54	-1,265.48	7.71	7.67	1.39
7,262.00	46.09	348.01	6,885.63	-1,200.58	-1,127.87	-1,205.49	10.99	10.96	1.26
7,356.00	53.72	351.76	6,946.14	-1,129.84	-1,140.35	-1,134.81	8.67	8.12	3.99
7,450.00	59.29	354.35	6,998.00	-1,052.06	-1,149.77	-1,057.07	6.35	5.93	2.76
7,545.00	66.18	353.42	7,041.49	-968.15	-1,158.78	-973.20	7.30	7.25	-0.98
7,639.00	73.98	353.60	7,073.50	-880.41	-1,168.76	-885.50	8.30	8.30	0.19
7,733.00	81.04	355.48	7,093.81	-789.11	-1,177.47	-794.24	7.76	7.51	2.00
7,782.00	86.64	358.29	7,099.07	-740.49	-1,180.11	-745.63	12.77	11.43	5.73
7,837.00	87.59	358.58	7,101.84	-685.58	-1,181.61	-690.73	1.80	1.72	0.52
7"(99 FSL 771 FWL)									
7,944.00	89.43	359.13	7,104.62	-578.65	-1,183.75	-583.81	1.80	1.72	0.52
8,039.00	89.90	358.72	7,105.18	-483.66	-1,185.53	-488.83	0.66	0.49	-0.43
8,133.00	90.91	358.27	7,104.52	-389.70	-1,188.00	-394.88	1.18	1.07	-0.48
8,227.00	91.07	359.14	7,102.89	-295.74	-1,190.12	-300.93	0.94	0.17	0.93
8,322.00	90.94	359.86	7,101.23	-200.76	-1,190.95	-205.95	0.77	-0.14	0.76
8,416.00	89.73	0.24	7,100.68	-106.76	-1,190.87	-111.96	1.35	-1.29	0.40

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8,510.00	89.60	359.76	7,101.23	-12.76	-1,190.87	-17.96	0.53	-0.14	-0.51	
8,605.00	89.60	0.51	7,101.89	82.23	-1,190.65	77.04	0.79	0.00	0.79	
8,699.00	89.26	1.06	7,102.82	176.22	-1,189.36	171.03	0.69	-0.36	0.59	
8,793.00	89.56	1.39	7,103.79	270.19	-1,187.35	265.01	0.47	0.32	0.35	
8,887.00	89.73	1.75	7,104.37	364.15	-1,184.77	358.98	0.42	0.18	0.38	
8,981.00	91.17	0.76	7,103.64	458.13	-1,182.72	452.96	1.86	1.53	-1.05	
9,076.00	90.23	359.49	7,102.48	553.12	-1,182.51	547.95	1.66	-0.99	-1.34	
9,170.00	90.23	358.69	7,102.10	647.10	-1,184.00	641.93	0.85	0.00	-0.85	
9,264.00	88.79	359.84	7,102.90	741.09	-1,185.21	735.91	1.96	-1.53	1.22	
9,358.00	89.90	0.45	7,103.98	835.08	-1,184.97	829.90	1.35	1.18	0.65	
9,453.00	89.16	359.90	7,104.76	930.07	-1,184.68	924.90	0.97	-0.78	-0.58	
9,547.00	89.23	358.60	7,106.08	1,024.05	-1,185.91	1,018.87	1.38	0.07	-1.38	
9,641.00	88.69	357.78	7,107.78	1,117.99	-1,188.88	1,112.79	1.04	-0.57	-0.87	
9,735.00	89.06	358.86	7,109.63	1,211.93	-1,191.63	1,206.72	1.21	0.39	1.15	
9,830.00	88.52	358.43	7,111.63	1,306.88	-1,193.88	1,301.66	0.73	-0.57	-0.45	
9,924.00	88.32	358.19	7,114.23	1,400.81	-1,196.65	1,395.57	0.33	-0.21	-0.26	
10,018.00	90.44	358.56	7,115.24	1,494.76	-1,199.32	1,489.51	2.29	2.26	0.39	
10,112.00	89.93	358.70	7,114.94	1,588.73	-1,201.56	1,583.47	0.56	-0.54	0.15	
10,206.00	89.63	357.74	7,115.30	1,682.68	-1,204.48	1,677.41	1.07	-0.32	-1.02	
10,301.00	89.66	358.70	7,115.89	1,777.63	-1,207.43	1,772.35	1.01	0.03	1.01	
10,395.00	89.23	359.71	7,116.80	1,871.62	-1,208.74	1,866.33	1.17	-0.46	1.07	
10,489.00	90.27	359.53	7,117.21	1,965.61	-1,209.36	1,960.32	1.12	1.11	-0.19	
10,583.00	89.80	0.13	7,117.15	2,059.61	-1,209.64	2,054.31	0.81	-0.50	0.64	
10,678.00	89.80	359.60	7,117.48	2,154.61	-1,209.86	2,149.31	0.56	0.00	-0.56	
10,772.00	87.95	359.89	7,119.33	2,248.59	-1,210.28	2,243.29	1.99	-1.97	0.31	
10,867.00	88.26	0.40	7,122.47	2,343.54	-1,210.04	2,338.23	0.63	0.33	0.54	
10,961.00	88.76	359.57	7,124.92	2,437.50	-1,210.07	2,432.20	1.03	0.53	-0.88	
11,055.00	90.07	0.46	7,125.88	2,531.49	-1,210.04	2,526.19	1.68	1.39	0.95	
11,149.00	89.57	1.05	7,126.17	2,625.49	-1,208.80	2,620.19	0.82	-0.53	0.63	
11,244.00	88.76	2.05	7,127.55	2,720.44	-1,206.23	2,715.15	1.35	-0.85	1.05	
11,432.00	89.26	1.79	7,130.80	2,908.30	-1,199.94	2,903.04	0.30	0.27	-0.14	
11,526.00	89.66	2.21	7,131.69	3,002.24	-1,196.66	2,996.99	0.62	0.43	0.45	
11,620.00	90.54	1.63	7,131.52	3,096.19	-1,193.51	3,090.95	1.12	0.94	-0.62	
11,715.00	89.36	2.45	7,131.61	3,191.13	-1,190.13	3,185.90	1.51	-1.24	0.86	
11,809.00	89.36	2.01	7,132.66	3,285.05	-1,186.47	3,279.84	0.47	0.00	-0.47	
11,903.00	89.23	1.78	7,133.81	3,378.99	-1,183.36	3,373.79	0.28	-0.14	-0.24	
11,997.00	89.16	1.86	7,135.14	3,472.93	-1,180.37	3,467.75	0.11	-0.07	0.09	
12,091.00	89.56	2.10	7,136.18	3,566.87	-1,177.13	3,561.70	0.50	0.43	0.26	
12,186.00	89.93	1.84	7,136.61	3,661.81	-1,173.86	3,656.66	0.48	0.39	-0.27	
12,280.00	90.34	1.96	7,136.39	3,755.76	-1,170.74	3,750.62	0.45	0.44	0.13	
12,374.00	90.80	0.89	7,135.45	3,849.73	-1,168.41	3,844.59	1.24	0.49	-1.14	
12,468.00	91.24	1.01	7,133.78	3,943.70	-1,166.85	3,938.57	0.49	0.47	0.13	
12,521.00	91.41	0.23	7,132.55	3,996.68	-1,166.28	3,991.55	1.51	0.32	-1.47	

LAST SDI MWD PRODUCTION SURVEY

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well RISSLER STATE 4N-36HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	GL 4860 & KB 25 @ 4885.00ft (HP 311)
Site:	RISSLER STATE 13-36HZ PAD	MD Reference:	GL 4860 & KB 25 @ 4885.00ft (HP 311)
Well:	RISSLER STATE 4N-36HZ	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Denver Sales

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)
12,582.00	91.41	0.23	7,131.05	4,057.66	-1,166.03	4,052.53	0.00	0.00	0.00
SDI MWD PROJECTION TO TD(487 FNL 768 FWL)									

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,171.00	1,170.98	9 5/8"	9.625	13.500
7,837.00	7,101.84	7"(99 FSL 771 FWL)	7.000	8.750

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
71.00	71.00	0.02	0.13	FIRST CATHEDRAL MWD SURFACE SURVEY
1,155.00	1,154.98	0.69	2.29	LAST CATHEDRAL MWD SURFACE SURVEY
1,251.00	1,250.97	0.76	1.67	FIRST SDI MWD PRODUCTION SURVEY
12,521.00	7,132.55	3,996.68	-1,166.28	LAST SDI MWD PRODUCTION SURVEY
12,582.00	7,131.05	4,057.66	-1,166.03	SDI MWD PROJECTION TO TD(487 FNL 768 FWL)

Checked By: _____ Approved By: _____ Date: _____