



## **END OF WELL REPORT**

**Prepared For:**

**Kerr-McGee Oil & Gas Onshore LP  
""VJ QO UGP '7/9 PAD  
VJ QO UGP 56E/3: J \  
WELD,CO**

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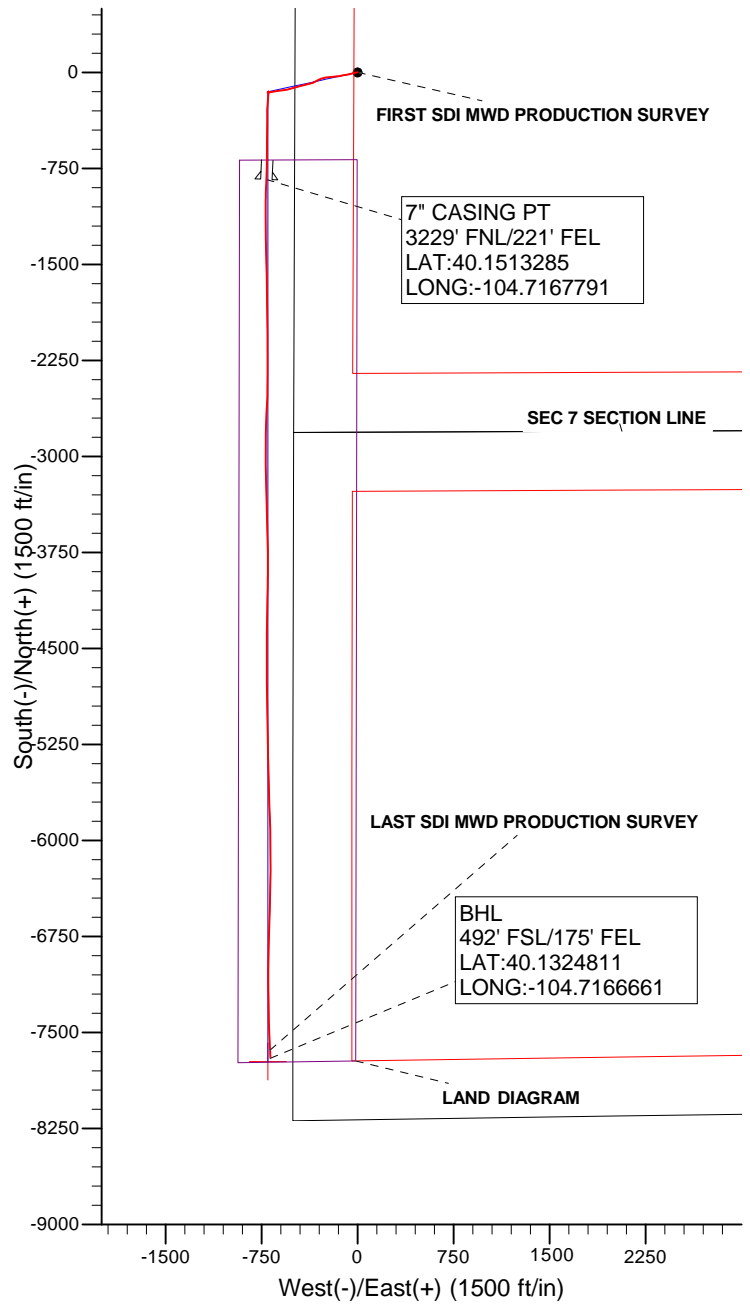
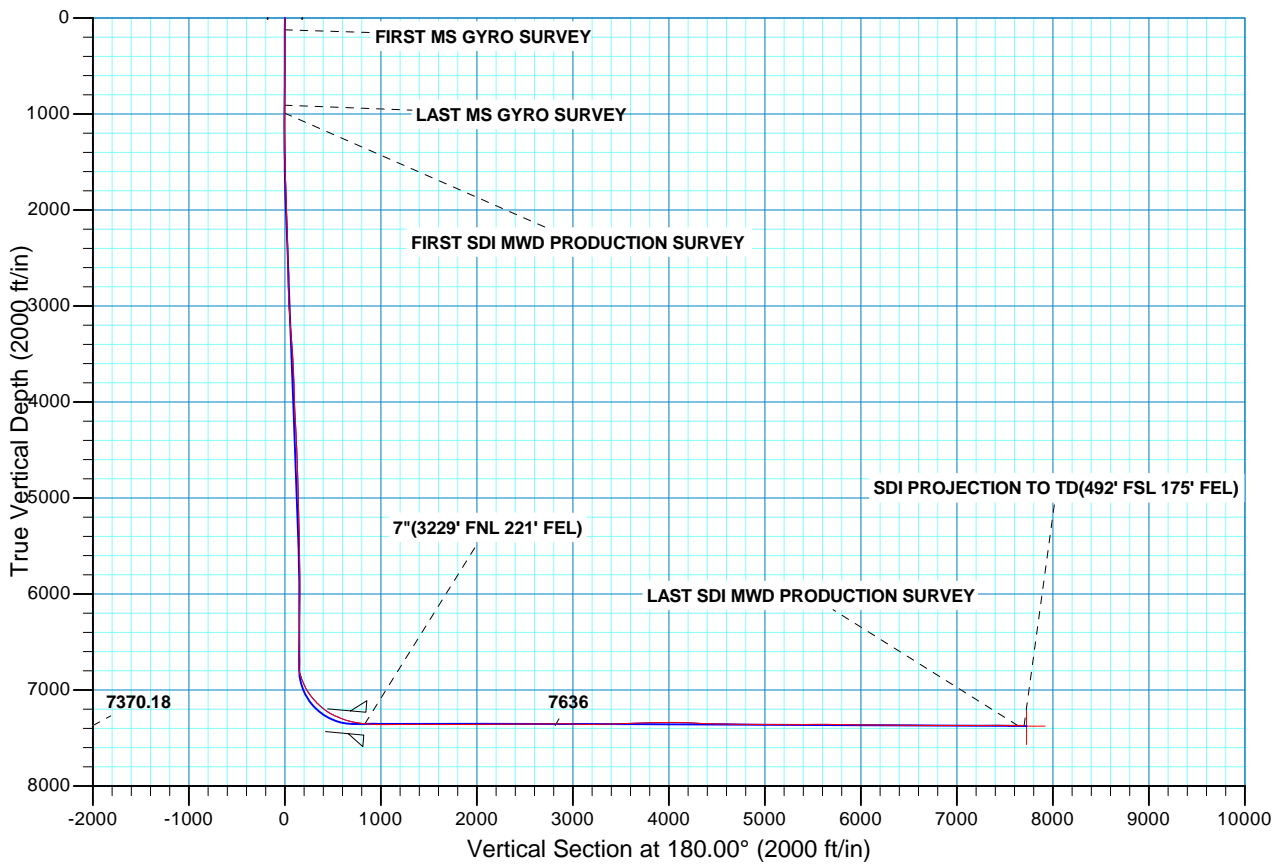
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WELL DETAILS: THOMSEN 34C-18HZ					
GL 4946' & KB 25' @ 4971.00ft (HP 311)					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1299780.55	3219637.53	40.1536209	-104.7142300





**Scientific Drilling**

## **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**THOMSEN 5-7 PAD**

**THOMSEN 34C-18HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**29 April, 2013**

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well THOMSEN 34C-18HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Site:</b>	THOMSEN 5-7 PAD	<b>MD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Well:</b>	THOMSEN 34C-18HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM5000-RobertS-Local

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

<b>Site</b>	THOMSEN 5-7 PAD, SECTION 7 T2N R65W				
<b>Site Position:</b>		<b>Northing:</b>	1,299,781.83 usft	<b>Latitude:</b>	40.1536230
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,219,697.62 usft	<b>Longitude:</b>	-104.7140150
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.51 °

<b>Well</b>	THOMSEN 34C-18HZ, 2397' FNL 460' FWL					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,299,780.55 usft	<b>Latitude:</b>	40.1536210
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,219,637.53 usft	<b>Longitude:</b>	-104.7142300
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,946.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2012	2013/03/06	8.64	66.78	52,732

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.00	

<b>Survey Program</b>	<b>Date</b>	2013/04/29			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
25.00	910.00	Survey #1 MS GYRO (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
991.00	14,675.00	Survey #2 SDI MWD PRODUCTION (OH)	SDI_MWD+CRUST_1.0	SDI MWD + Crustal anomaly, Version 1.0	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
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	0.25	9.92	125.00	0.21	0.04	-0.21	0.25	0.25	0.00	
<b>FIRST MS GYRO SURVEY</b>										
225.00	0.21	338.28	225.00	0.60	0.01	-0.60	0.13	-0.04	-31.64	
325.00	0.12	305.81	325.00	0.83	-0.15	-0.83	0.13	-0.09	-32.47	
425.00	0.34	20.88	425.00	1.17	-0.12	-1.17	0.33	0.22	75.07	
525.00	0.06	32.32	525.00	1.49	0.01	-1.49	0.28	-0.28	11.44	
625.00	0.16	314.74	625.00	1.63	-0.06	-1.63	0.16	0.10	-77.58	
725.00	0.22	22.54	725.00	1.91	-0.09	-1.91	0.22	0.06	67.80	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well THOMSEN 34C-18HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Site:</b>	THOMSEN 5-7 PAD	<b>MD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Well:</b>	THOMSEN 34C-18HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM5000-RobertS-Local

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
825.00	0.10	344.49	825.00	2.17	-0.04	-2.17	0.15	-0.12	-38.05	
910.00	0.06	303.38	910.00	2.27	-0.09	-2.27	0.08	-0.05	-48.36	
<b>LAST MS GYRO SURVEY</b>										
991.00	0.13	227.13	991.00	2.23	-0.20	-2.23	0.16	0.09	-94.14	
<b>FIRST SDI MWD PRODUCTION SURVEY</b>										
1,176.00	0.31	88.74	1,176.00	2.10	0.15	-2.10	0.22	0.10	-74.81	
1,360.00	4.10	258.80	1,359.85	0.83	-5.81	-0.83	2.39	2.06	92.42	
1,543.00	7.99	259.60	1,541.80	-2.74	-24.74	2.74	2.13	2.13	0.44	
1,725.00	9.57	257.01	1,721.66	-8.42	-51.93	8.42	0.89	0.87	-1.42	
1,910.00	7.54	254.50	1,904.59	-15.12	-78.61	15.12	1.12	-1.10	-1.36	
2,094.00	9.83	264.60	2,086.48	-19.83	-105.89	19.83	1.49	1.24	5.49	
2,278.00	9.44	254.22	2,267.90	-25.41	-136.05	25.41	0.97	-0.21	-5.64	
2,462.00	11.86	267.51	2,448.74	-30.34	-169.47	30.34	1.87	1.32	7.22	
2,651.00	9.68	260.86	2,634.41	-33.71	-204.56	33.71	1.33	-1.15	-3.52	
2,840.00	9.66	266.00	2,820.73	-37.34	-236.07	37.34	0.46	-0.01	2.72	
3,029.00	11.08	254.66	3,006.65	-43.25	-269.41	43.25	1.31	0.75	-6.00	
3,218.00	11.36	244.59	3,192.06	-56.04	-303.74	56.04	1.05	0.15	-5.33	
3,407.00	10.02	238.91	3,377.78	-72.52	-334.64	72.52	0.90	-0.71	-3.01	
3,596.00	8.99	253.33	3,564.21	-85.25	-362.87	85.25	1.37	-0.54	7.63	
3,786.00	9.55	258.92	3,751.73	-92.54	-392.56	92.54	0.56	0.29	2.94	
3,975.00	9.48	260.71	3,938.13	-98.06	-423.30	98.06	0.16	-0.04	0.95	
4,164.00	10.77	252.84	4,124.19	-105.79	-455.54	105.79	1.00	0.68	-4.16	
4,353.00	10.23	252.46	4,310.03	-116.05	-488.42	116.05	0.29	-0.29	-0.20	
4,542.00	9.23	251.60	4,496.31	-125.90	-518.80	125.90	0.53	-0.53	-0.46	
4,731.00	9.94	262.23	4,682.68	-132.89	-549.35	132.89	1.01	0.38	5.62	
4,920.00	9.73	262.01	4,868.91	-137.31	-581.33	137.31	0.11	-0.11	-0.12	
5,110.00	9.29	261.48	5,056.29	-141.82	-612.39	141.82	0.24	-0.23	-0.28	
5,299.00	10.56	261.35	5,242.46	-146.68	-644.60	146.68	0.67	0.67	-0.07	
5,488.00	6.47	262.94	5,429.34	-150.60	-672.31	150.60	2.17	-2.16	0.84	
5,677.00	4.39	253.91	5,617.48	-153.91	-689.83	153.91	1.19	-1.10	-4.78	
5,866.00	2.11	252.53	5,806.17	-156.96	-700.10	156.96	1.21	-1.21	-0.73	
6,055.00	0.48	357.97	5,995.12	-157.21	-703.44	157.21	1.21	-0.86	55.79	
6,245.00	0.98	43.80	6,185.11	-155.25	-702.35	155.25	0.39	0.26	24.12	
6,434.00	1.15	21.46	6,374.08	-152.31	-700.53	152.31	0.24	0.09	-11.82	
6,623.00	1.26	29.90	6,563.04	-148.75	-698.80	148.75	0.11	0.06	4.47	
6,717.00	1.24	31.01	6,657.01	-146.98	-697.77	146.98	0.03	-0.02	1.18	
6,811.00	1.21	97.50	6,751.00	-146.24	-696.26	146.24	1.43	-0.03	70.73	
6,842.00	5.66	168.78	6,781.94	-147.78	-695.64	147.78	17.40	14.35	229.94	
6,874.00	12.57	176.28	6,813.52	-152.81	-695.10	152.81	21.87	21.59	23.44	
6,906.00	18.51	183.48	6,844.34	-161.36	-695.18	161.36	19.48	18.56	22.50	
6,937.00	20.47	185.97	6,873.56	-171.67	-696.05	171.67	6.87	6.32	8.03	
6,969.00	21.53	186.81	6,903.43	-183.06	-697.32	183.06	3.44	3.31	2.63	
7,000.00	23.67	186.34	6,932.05	-194.90	-698.69	194.90	6.93	6.90	-1.52	

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<b>Site:</b>	THOMSEN 5-7 PAD	<b>MD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Well:</b>	THOMSEN 34C-18HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM5000-RobertS-Local

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,032.00	26.19	186.59	6,961.07	-208.30	-700.21	208.30	7.88	7.88	0.78	
7,063.00	28.93	185.16	6,988.55	-222.56	-701.67	222.56	9.09	8.84	-4.61	
7,095.00	31.17	183.15	7,016.25	-238.54	-702.82	238.54	7.67	7.00	-6.28	
7,126.00	35.76	182.47	7,042.10	-255.61	-703.65	255.61	14.86	14.81	-2.19	
7,158.00	39.09	182.84	7,067.51	-275.04	-704.55	275.04	10.43	10.41	1.16	
7,189.00	39.97	182.18	7,091.42	-294.75	-705.42	294.75	3.15	2.84	-2.13	
7,221.00	42.15	181.05	7,115.55	-315.76	-706.00	315.76	7.20	6.81	-3.53	
7,252.00	44.95	180.19	7,138.01	-337.11	-706.23	337.11	9.23	9.03	-2.77	
7,284.00	47.89	178.96	7,160.07	-360.29	-706.05	360.29	9.60	9.19	-3.84	
7,315.00	50.43	180.48	7,180.34	-383.74	-705.94	383.74	8.99	8.19	4.90	
7,347.00	51.78	181.09	7,200.43	-408.64	-706.29	408.64	4.47	4.22	1.91	
7,378.00	53.99	180.72	7,219.14	-433.36	-706.68	433.36	7.19	7.13	-1.19	
7,410.00	58.77	180.28	7,236.85	-459.99	-706.90	459.99	14.98	14.94	-1.38	
7,441.00	62.77	179.89	7,251.99	-487.04	-706.94	487.04	12.95	12.90	-1.26	
7,473.00	64.83	180.74	7,266.11	-515.75	-707.10	515.75	6.86	6.44	2.66	
7,504.00	66.01	180.67	7,279.01	-543.94	-707.45	543.94	3.81	3.81	-0.23	
7,536.00	67.70	179.78	7,291.59	-573.36	-707.56	573.36	5.87	5.28	-2.78	
7,567.00	69.01	179.97	7,303.02	-602.18	-707.50	602.18	4.26	4.23	0.61	
7,599.00	71.19	179.57	7,313.91	-632.26	-707.38	632.26	6.91	6.81	-1.25	
7,630.00	74.48	180.21	7,323.06	-661.88	-707.32	661.88	10.79	10.61	2.06	
7,662.00	77.18	180.50	7,330.89	-692.90	-707.52	692.90	8.48	8.44	0.91	
7,693.00	78.65	181.85	7,337.38	-723.21	-708.14	723.21	6.37	4.74	4.35	
7,725.00	81.01	181.37	7,343.03	-754.69	-709.02	754.69	7.52	7.38	-1.50	
7,756.00	83.64	182.93	7,347.17	-785.39	-710.18	785.39	9.84	8.48	5.03	
7,806.00	84.90	182.58	7,352.16	-835.08	-712.57	835.08	2.62	2.52	-0.71	
<b>7"(3229' FNL 221' FEL)</b>										
7,903.00	87.35	181.89	7,358.72	-931.77	-716.34	931.77	2.62	2.52	-0.71	
8,086.00	90.80	179.78	7,361.67	-1,114.69	-719.00	1,114.69	2.21	1.89	-1.15	
8,269.00	90.74	179.04	7,359.21	-1,297.67	-717.12	1,297.67	0.41	-0.03	-0.40	
8,452.00	88.79	178.20	7,359.96	-1,480.60	-712.71	1,480.60	1.16	-1.07	-0.46	
8,636.00	90.81	179.74	7,360.61	-1,664.55	-709.40	1,664.55	1.38	1.10	0.84	
8,820.00	90.40	178.59	7,358.66	-1,848.52	-706.72	1,848.52	0.66	-0.22	-0.63	
9,004.00	90.24	179.08	7,357.64	-2,032.48	-702.98	2,032.48	0.28	-0.09	0.27	
9,191.00	90.50	180.90	7,356.43	-2,219.47	-702.95	2,219.47	0.98	0.14	0.97	
9,380.00	88.76	179.80	7,357.65	-2,408.45	-704.10	2,408.45	1.09	-0.92	-0.58	
9,569.00	92.46	182.60	7,355.64	-2,597.35	-708.06	2,597.35	2.45	1.96	1.48	
9,758.00	89.83	181.62	7,351.86	-2,786.16	-715.01	2,786.16	1.48	-1.39	-0.52	
9,947.00	88.29	180.39	7,354.96	-2,975.10	-718.33	2,975.10	1.04	-0.81	-0.65	
10,136.00	89.60	178.21	7,358.44	-3,164.04	-716.02	3,164.04	1.35	0.69	-1.15	
10,325.00	91.10	178.52	7,357.29	-3,352.95	-710.63	3,352.95	0.81	0.79	0.16	
10,514.00	92.92	177.99	7,350.66	-3,541.74	-704.87	3,541.74	1.00	0.96	-0.28	
10,703.00	92.25	179.68	7,342.13	-3,730.50	-701.04	3,730.50	0.96	-0.35	0.89	
10,893.00	89.87	180.23	7,338.62	-3,920.45	-700.89	3,920.45	1.29	-1.25	0.29	
10,987.00	90.27	181.44	7,338.50	-4,014.44	-702.26	4,014.44	1.36	0.43	1.29	

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<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Site:</b>	THOMSEN 5-7 PAD	<b>MD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Well:</b>	THOMSEN 34C-18HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM5000-RobertS-Local

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,082.00	88.09	181.52	7,339.86	-4,109.39	-704.71	4,109.39	2.30	-2.29	0.08	
11,176.00	88.05	180.87	7,343.03	-4,203.32	-706.67	4,203.32	0.69	-0.04	-0.69	
11,271.00	86.47	180.60	7,347.57	-4,298.20	-707.89	4,298.20	1.69	-1.66	-0.28	
11,460.00	88.96	180.02	7,355.10	-4,487.03	-708.91	4,487.03	1.35	1.32	-0.31	
11,555.00	90.77	179.52	7,355.33	-4,582.02	-708.53	4,582.02	1.98	1.91	-0.53	
11,744.00	87.21	179.98	7,358.66	-4,770.96	-707.70	4,770.96	1.90	-1.88	0.24	
11,933.00	90.57	179.47	7,362.32	-4,959.90	-706.79	4,959.90	1.80	1.78	-0.27	
12,122.00	90.54	178.92	7,360.49	-5,148.87	-704.14	5,148.87	0.29	-0.02	-0.29	
12,311.00	90.30	178.15	7,359.10	-5,337.80	-699.31	5,337.80	0.43	-0.13	-0.41	
12,500.00	90.27	179.23	7,358.16	-5,526.75	-694.99	5,526.75	0.57	-0.02	0.57	
12,689.00	88.46	177.44	7,360.26	-5,715.64	-689.50	5,715.64	1.35	-0.96	-0.95	
12,878.00	90.13	178.36	7,362.58	-5,904.49	-682.57	5,904.49	1.01	0.88	0.49	
13,067.00	89.23	180.19	7,363.64	-6,093.46	-680.18	6,093.46	1.08	-0.48	0.97	
13,256.00	88.56	180.80	7,367.28	-6,282.42	-681.81	6,282.42	0.48	-0.35	0.32	
13,446.00	89.16	180.81	7,371.06	-6,472.36	-684.48	6,472.36	0.32	0.32	0.01	
13,634.00	90.13	181.88	7,372.23	-6,660.30	-688.89	6,660.30	0.77	0.52	0.57	
13,823.00	91.54	182.05	7,369.47	-6,849.16	-695.37	6,849.16	0.75	0.75	0.09	
13,918.00	90.03	180.21	7,368.17	-6,944.13	-697.25	6,944.13	2.51	-1.59	-1.94	
14,012.00	89.03	179.57	7,368.94	-7,038.12	-697.07	7,038.12	1.26	-1.06	-0.68	
14,201.00	90.17	179.98	7,370.26	-7,227.11	-696.32	7,227.11	0.64	0.60	0.22	
14,390.00	90.13	177.78	7,369.77	-7,416.07	-692.63	7,416.07	1.16	-0.02	-1.16	
14,579.00	89.70	177.47	7,370.05	-7,604.90	-684.80	7,604.90	0.28	-0.23	-0.16	
14,610.00	89.83	177.89	7,370.18	-7,635.88	-683.54	7,635.88	1.42	0.42	1.35	
<b>LAST SDI MWD PRODUCTION SURVEY</b>										
14,675.00	89.83	177.89	7,370.37	-7,700.83	-681.15	7,700.83	0.00	0.00	0.00	
<b>SDI PROJECTION TO TD(492' FSL 175' FEL)</b>										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
7,806.00	7,352.16	7"(3229' FNL 221' 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	0.21	0.04	FIRST MS GYRO SURVEY	
910.00	910.00	2.27	-0.09	LAST MS GYRO SURVEY	
991.00	991.00	2.23	-0.20	FIRST SDI MWD PRODUCTION SURVEY	
14,610.00	7,370.18	-7,635.88	-683.54	LAST SDI MWD PRODUCTION SURVEY	
14,675.00	7,370.37	-7,700.83	-681.15	SDI PROJECTION TO TD(492' FSL 175' FEL)	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well THOMSEN 34C-18HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Site:</b>	THOMSEN 5-7 PAD	<b>MD Reference:</b>	GL 4946' & KB 25' @ 4971.00ft (HP 311)
<b>Well:</b>	THOMSEN 34C-18HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM5000-RobertS-Local

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_