



Survey Certification

7327 West Barton Road
Casper, WY 82604
(307)-472-6621 Fax (307) 472-5439

Operator	EnCana Oil & Gas (USA) Inc
Well Name & No.	Maier 4D-28H
County & State	Weld, CO
SDI Job No.	53595
Rig	Ensign 124
Survey Date	13-Sep-2013

I, Seth M. Burstad, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 11977 feet is true and correct as determined from all available records.

Seth Burstad
Signature

2-Oct-2013
Date

Seth M. Burstad
Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District



EnCana Oil & Gas (USA) Inc

**DJ Wattenberg
S28-T2N-R66W (Maier)
Maier 4D-28H**

Hz

Design: Hz

Standard Survey Report

02 October, 2013





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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153.00	0.21	252.75	153.00	-0.08	-0.27	-0.07	0.14	0.14	0.00
First SDI MWD Survey									
245.00	0.51	121.04	245.00	-0.34	-0.08	-0.34	0.73	0.33	-143.16
370.00	2.07	122.41	369.96	-1.84	2.30	-1.99	1.25	1.25	1.10
465.00	3.86	118.82	464.83	-4.30	6.56	-4.72	1.89	1.88	-3.78
613.00	5.98	114.12	612.28	-9.85	17.96	-11.01	1.46	1.43	-3.18
705.00	6.48	130.35	703.74	-15.17	26.29	-16.86	1.98	0.54	17.64
797.00	7.00	142.98	795.11	-23.01	33.62	-25.16	1.70	0.57	13.73

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Maier 4D-28H
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5001.00ft (Original Well Elev)
Site:	S28-T2N-R66W (Maier)	MD Reference:	WELL @ 5001.00ft (Original Well Elev)
Well:	Maier 4D-28H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Casper District

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)
889.00	7.89	153.76	886.34	-33.15	39.79	-35.68	1.80	0.97	11.72
981.00	7.87	159.81	977.47	-44.73	44.75	-47.55	0.90	-0.02	6.58
1,029.00	7.55	162.75	1,025.04	-50.82	46.82	-53.77	1.06	-0.67	6.13
1,176.00	6.65	181.70	1,170.93	-68.56	49.43	-71.64	1.70	-0.61	12.89
1,268.00	7.88	211.77	1,262.22	-79.25	45.96	-82.08	4.29	1.34	32.68
1,360.00	7.77	210.20	1,353.37	-89.99	39.51	-92.37	0.26	-0.12	-1.71
1,452.00	8.09	210.46	1,444.49	-100.94	33.10	-102.88	0.35	0.35	0.28
1,544.00	8.44	206.94	1,535.53	-112.54	26.76	-114.04	0.67	0.38	-3.83
1,636.00	8.71	217.93	1,626.51	-124.05	19.41	-125.06	1.80	0.29	11.95
1,728.00	9.76	218.11	1,717.31	-135.68	10.32	-136.07	1.14	1.14	0.20
1,820.00	9.76	215.56	1,807.98	-148.16	0.97	-147.91	0.47	0.00	-2.77
2,007.00	10.20	225.40	1,992.17	-172.69	-20.04	-171.01	0.94	0.24	5.26
2,197.00	9.41	228.92	2,179.39	-194.70	-43.72	-191.44	0.52	-0.42	1.85
2,387.00	8.79	224.87	2,367.00	-215.20	-65.67	-210.46	0.47	-0.33	-2.13
2,576.00	10.02	225.31	2,553.46	-237.00	-87.55	-230.78	0.65	0.65	0.23
2,766.00	10.82	222.76	2,740.32	-261.72	-111.41	-253.89	0.49	0.42	-1.34
2,956.00	7.91	227.86	2,927.77	-283.59	-133.22	-274.30	1.59	-1.53	2.68
3,146.00	10.82	221.80	3,115.23	-305.66	-154.81	-294.91	1.62	1.53	-3.19
3,336.00	12.93	221.80	3,301.15	-334.80	-180.86	-322.30	1.11	1.11	0.00
3,525.00	10.73	221.27	3,486.12	-363.80	-206.57	-349.55	1.17	-1.16	-0.28
3,715.00	8.53	224.43	3,673.44	-387.15	-228.10	-371.46	1.19	-1.16	1.66
3,905.00	8.18	232.61	3,861.43	-405.43	-248.70	-388.34	0.65	-0.18	4.31
4,095.00	6.42	219.51	4,049.89	-421.83	-266.20	-403.57	1.27	-0.93	-6.89
4,285.00	6.95	224.43	4,238.60	-438.24	-281.01	-418.98	0.41	0.28	2.59
4,475.00	6.33	223.82	4,427.33	-454.00	-296.31	-433.71	0.33	-0.33	-0.32
4,665.00	4.75	210.20	4,616.44	-468.36	-307.52	-447.31	1.08	-0.83	-7.17
4,855.00	1.23	181.46	4,806.16	-477.20	-311.53	-455.87	1.96	-1.85	-15.13
5,044.00	0.70	98.84	4,995.14	-479.41	-310.44	-458.14	0.71	-0.28	-43.71
5,234.00	1.85	155.35	5,185.09	-482.37	-308.02	-461.26	0.83	0.61	29.74
5,424.00	0.97	115.54	5,375.04	-485.85	-305.29	-464.91	0.67	-0.46	-20.95
5,614.00	0.44	81.44	5,565.02	-486.44	-303.11	-465.64	0.34	-0.28	-17.95
5,803.00	0.62	179.52	5,754.02	-487.35	-302.39	-466.60	0.43	0.10	51.89
5,992.00	1.23	203.43	5,942.99	-490.24	-303.18	-469.42	0.38	0.32	12.65
6,182.00	0.79	285.69	6,132.97	-491.75	-305.26	-470.80	0.72	-0.23	43.29
6,372.00	0.62	226.54	6,322.96	-492.11	-307.26	-471.02	0.37	-0.09	-31.13
6,562.00	0.79	207.47	6,512.95	-493.98	-308.61	-472.80	0.15	0.09	-10.04
6,752.00	0.97	324.45	6,702.93	-493.83	-310.15	-472.55	0.79	0.09	61.57
6,784.00	1.14	316.02	6,734.93	-493.38	-310.53	-472.08	0.72	0.53	-26.34
6,815.00	2.90	348.27	6,765.91	-492.39	-310.91	-471.07	6.55	5.68	104.03
6,847.00	5.01	4.09	6,797.83	-490.20	-310.97	-468.88	7.36	6.59	49.44
6,879.00	7.56	11.83	6,829.64	-486.75	-310.44	-465.47	8.38	7.97	24.19
6,910.00	9.50	11.29	6,860.29	-482.24	-309.52	-461.03	6.26	6.26	-1.74
6,942.00	12.66	8.40	6,891.69	-476.18	-308.49	-455.05	10.02	9.88	-9.03

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Well:	Maier 4D-28H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Casper District

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)
6,974.00	15.04	7.52	6,922.76	-468.60	-307.44	-447.55	7.47	7.44	-2.75
7,005.00	17.94	9.01	6,952.48	-459.89	-306.16	-438.95	9.45	9.35	4.81
7,037.00	20.58	7.26	6,982.69	-449.44	-304.68	-428.62	8.44	8.25	-5.47
7,068.00	24.80	3.39	7,011.28	-437.54	-303.60	-416.81	14.43	13.61	-12.48
7,100.00	29.19	0.93	7,039.79	-423.03	-303.08	-402.37	14.15	13.72	-7.69
7,132.00	31.74	359.96	7,067.37	-406.81	-302.96	-386.19	8.12	7.97	-3.03
7,164.00	32.80	1.37	7,094.43	-389.73	-302.76	-369.15	4.06	3.31	4.41
7,195.00	33.59	4.00	7,120.37	-372.78	-301.96	-352.29	5.30	2.55	8.48
7,227.00	36.67	5.32	7,146.54	-354.43	-300.46	-334.08	9.91	9.63	4.13
7,259.00	38.87	5.59	7,171.83	-334.92	-298.59	-314.73	6.89	6.88	0.84
7,290.00	41.77	3.57	7,195.47	-314.93	-297.00	-294.89	10.26	9.35	-6.52
7,322.00	44.76	1.02	7,218.77	-293.02	-296.14	-273.08	10.82	9.34	-7.97
7,354.00	46.78	359.26	7,241.09	-270.09	-296.09	-250.21	7.44	6.31	-5.50
7,385.00	48.63	358.20	7,261.95	-247.17	-296.60	-227.30	6.48	5.97	-3.42
7,417.00	50.83	357.76	7,282.63	-222.77	-297.46	-202.90	6.95	6.88	-1.38
7,449.00	53.02	358.20	7,302.37	-197.60	-298.35	-177.72	6.93	6.84	1.38
7,480.00	54.61	359.87	7,320.67	-172.58	-298.76	-152.73	6.72	5.13	5.39
7,512.00	56.45	0.66	7,338.78	-146.20	-298.64	-126.42	6.10	5.75	2.47
7,543.00	58.56	0.93	7,355.43	-120.06	-298.28	-100.35	6.85	6.81	0.87
7,575.00	60.32	1.10	7,371.70	-92.51	-297.79	-72.89	5.52	5.50	0.53
7,607.00	62.61	0.93	7,386.99	-64.40	-297.29	-44.88	7.17	7.16	-0.53
7,638.00	65.33	0.93	7,400.59	-36.56	-296.84	-17.12	8.77	8.77	0.00
7,670.00	67.71	0.93	7,413.34	-7.21	-296.36	12.13	7.44	7.44	0.00
7,702.00	69.91	0.31	7,424.91	22.62	-296.04	41.88	7.11	6.88	-1.94
7,734.00	71.58	0.58	7,435.46	52.83	-295.81	72.01	5.28	5.22	0.84
7,765.00	73.42	0.58	7,444.78	82.39	-295.51	101.49	5.94	5.94	0.00
7,797.00	74.83	0.75	7,453.53	113.17	-295.15	132.18	4.44	4.41	0.53
7,829.00	76.68	0.66	7,461.41	144.18	-294.77	163.10	5.79	5.78	-0.28
7,860.00	78.44	0.49	7,468.08	174.45	-294.46	193.28	5.70	5.68	-0.55
Last Survey in 8 3/4" Hole									
8,001.00	88.12	357.76	7,484.57	314.28	-296.63	332.96	7.13	6.87	-1.94
First Survey in 6" Hole									
8,096.00	89.40	359.37	7,486.62	409.23	-299.01	427.86	2.16	1.35	1.69
8,190.00	91.21	1.05	7,486.12	503.22	-298.67	521.62	2.63	1.93	1.79
8,286.00	91.01	1.66	7,484.26	599.17	-296.40	617.23	0.67	-0.21	0.64
8,380.00	88.83	1.25	7,484.39	693.14	-294.01	710.83	2.36	-2.32	-0.44
8,475.00	88.26	358.77	7,486.81	788.10	-293.99	805.59	2.68	-0.60	-2.61
8,571.00	88.69	1.38	7,489.36	884.06	-293.87	901.34	2.75	0.45	2.72
8,666.00	88.99	1.01	7,491.29	979.02	-291.89	995.97	0.50	0.32	-0.39
8,761.00	88.15	359.10	7,493.66	1,073.98	-291.79	1,090.72	2.20	-0.88	-2.01
8,856.00	87.42	359.18	7,497.33	1,168.90	-293.22	1,185.53	0.77	-0.77	0.08
8,951.00	88.86	359.92	7,500.41	1,263.84	-293.96	1,280.32	1.70	1.52	0.78
9,045.00	89.70	359.59	7,501.59	1,357.83	-294.37	1,374.14	0.96	0.89	-0.35
9,140.00	88.96	358.77	7,502.70	1,452.82	-295.73	1,469.01	1.16	-0.78	-0.86

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Site:	S28-T2N-R66W (Maier)	MD Reference:	WELL @ 5001.00ft (Original Well Elev)
Well:	Maier 4D-28H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Casper District

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)	
9,235.00	90.37	359.69	7,503.26	1,547.80	-297.00	1,563.88	1.77	1.48	0.97	
9,330.00	91.04	359.29	7,502.09	1,642.79	-297.85	1,658.72	0.82	0.71	-0.42	
9,424.00	91.14	0.19	7,500.30	1,736.77	-298.27	1,752.53	0.96	0.11	0.96	
9,519.00	90.37	358.67	7,499.05	1,831.75	-299.22	1,847.37	1.79	-0.81	-1.60	
9,614.00	90.70	359.36	7,498.16	1,926.74	-300.85	1,942.25	0.81	0.35	0.73	
9,709.00	91.91	359.43	7,496.00	2,021.70	-301.86	2,037.09	1.28	1.27	0.07	
9,804.00	91.58	358.51	7,493.11	2,116.64	-303.56	2,131.93	1.03	-0.35	-0.97	
9,899.00	91.07	359.54	7,490.91	2,211.60	-305.18	2,226.80	1.21	-0.54	1.08	
9,994.00	90.71	1.06	7,489.43	2,306.59	-304.68	2,321.55	1.64	-0.38	1.60	
10,089.00	90.37	1.88	7,488.54	2,401.55	-302.24	2,416.15	0.93	-0.36	0.86	
10,184.00	89.03	2.59	7,489.04	2,496.47	-298.54	2,510.63	1.60	-1.41	0.75	
10,278.00	89.03	1.58	7,490.63	2,590.40	-295.12	2,604.13	1.07	0.00	-1.07	
10,373.00	89.06	0.53	7,492.21	2,685.37	-293.37	2,698.78	1.11	0.03	-1.11	
10,468.00	88.83	0.52	7,493.96	2,780.35	-292.50	2,793.50	0.24	-0.24	-0.01	
10,563.00	89.26	0.15	7,495.54	2,875.33	-291.95	2,888.25	0.60	0.45	-0.39	
10,657.00	90.10	0.37	7,496.07	2,969.33	-291.52	2,982.02	0.92	0.89	0.23	
10,752.00	90.34	359.36	7,495.70	3,064.33	-291.74	3,076.83	1.09	0.25	-1.06	
10,847.00	92.35	1.04	7,493.47	3,159.29	-291.41	3,171.57	2.76	2.12	1.77	
10,942.00	92.05	2.38	7,489.83	3,254.18	-288.58	3,266.07	1.44	-0.32	1.41	
11,037.00	89.60	3.55	7,488.46	3,349.03	-283.67	3,360.40	2.86	-2.58	1.23	
11,132.00	88.39	0.66	7,490.13	3,443.94	-280.18	3,454.88	3.30	-1.27	-3.04	
11,227.00	88.89	359.85	7,492.38	3,538.91	-279.75	3,549.62	1.00	0.53	-0.85	
11,322.00	90.13	359.28	7,493.19	3,633.90	-280.48	3,644.46	1.44	1.31	-0.60	
11,417.00	89.40	0.18	7,493.58	3,728.90	-280.92	3,739.28	1.22	-0.77	0.95	
11,512.00	90.17	0.40	7,493.94	3,823.90	-280.44	3,834.04	0.84	0.81	0.23	
11,607.00	89.66	0.08	7,494.08	3,918.89	-280.04	3,928.82	0.63	-0.54	-0.34	
11,702.00	90.77	359.99	7,493.72	4,013.89	-279.99	4,023.61	1.17	1.17	-0.09	
11,797.00	90.44	0.54	7,492.72	4,108.89	-279.55	4,118.37	0.68	-0.35	0.58	
11,918.00	90.17	359.37	7,492.08	4,229.88	-279.64	4,239.11	0.99	-0.22	-0.97	
Last SDI MWD Survey										
11,977.00	90.17	359.37	7,491.90	4,288.88	-280.29	4,298.03	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
153.00	153.00	-0.08	-0.27	First SDI MWD Survey	
7,860.00	7,468.08	174.45	-294.46	Last Survey in 8 3/4" Hole	
8,001.00	7,484.57	314.28	-296.63	First Survey in 6" Hole	
11,918.00	7,492.08	4,229.88	-279.64	Last SDI MWD Survey	
11,977.00	7,491.90	4,288.88	-280.29	Projection to TD	



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Well:	Maier 4D-28H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Hz	Database:	Casper District

Checked By: _____ Approved By: _____ Date: _____