



Gyro Survey Certification

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

RE:	OXY USA RMAT	Operator
	Cascade Creek 697-15-03B	Well Name & No.
	Garfield County, CO	County & State
	42DEF10101060	SDI Job No.

I, Rex Hall, having personal knowledge of all the facts, hereby certify that the attached Gyro survey run from a measured depth of 0 feet to a measured depth of 9130 feet is true and correct as determined from all available records.


Signature

2-Dec-10
Date

Rex Hall
Drilling Engineer
Scientific Drilling - Rocky Mountain District

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-15-01 Pad
CC 697-15-03B - Slot H**

OH

Design: OH

Standard Survey Report

29 November, 2010

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-15-03B - Slot H
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-15-03B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

Project	Garfield County, CO NAD27		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site	Cascade Creek 697-15-01 Pad, Sec 15 T6S R97W		
Site Position:		Northing:	629,156.97 usft
From:	Map	Easting:	1,234,961.93 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	39° 31' 46.180 N
		Longitude:	108° 12' 45.350 W
		Grid Convergence:	-1.71 °

Well	CC 697-15-03B - Slot H, 252' FNI 672' FWL		
Well Position	+N/-S	0.00 ft	Northing: 629,196.69 usft
	+E/-W	0.00 ft	Easting: 1,235,044.06 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	39° 31' 46.597 N
		Longitude:	108° 12' 44.317 W
		Ground Level:	8,348.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	9/24/2008	10.78	65.81	52,519

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	112.85	

Survey Program	Date	11/29/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
342.00	2,695.00	Survey #1 - Surface (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,789.00	9,130.00	Survey #2 - Production MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	

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	
342.00	3.57	115.77	341.78	-4.63	9.59	10.64	1.04	1.04	0.00	
First SDI MWD Survey										
434.00	4.83	108.01	433.53	-7.07	15.86	17.36	1.50	1.37	-8.43	
526.00	5.60	113.36	525.15	-10.05	23.66	25.71	0.99	0.84	5.82	
618.00	7.89	111.30	616.51	-14.13	33.66	36.51	2.50	2.49	-2.24	
712.00	10.12	111.20	709.34	-19.46	47.38	51.21	2.37	2.37	-0.11	
804.00	12.48	110.12	799.55	-25.80	64.25	69.23	2.58	2.57	-1.17	
899.00	14.13	110.24	892.00	-33.34	84.77	91.06	1.74	1.74	0.13	
993.00	14.00	107.65	983.18	-40.76	106.37	113.85	0.68	-0.14	-2.76	

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-15-03B - Slot H
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-15-03B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)
1,088.00	12.75	109.84	1,075.60	-47.80	127.18	135.76	1.42	-1.32	2.31
1,182.00	13.28	109.31	1,167.19	-54.89	147.13	156.90	0.58	0.56	-0.56
1,277.00	14.42	109.31	1,259.43	-62.41	168.59	179.60	1.20	1.20	0.00
1,372.00	12.93	112.83	1,351.73	-70.45	189.55	202.03	1.80	-1.57	3.71
1,466.00	12.40	112.83	1,443.44	-78.44	208.55	222.64	0.56	-0.56	0.00
1,561.00	12.66	113.88	1,536.18	-86.62	227.47	243.25	0.36	0.27	1.11
1,655.00	12.49	114.59	1,627.93	-95.02	246.13	263.71	0.24	-0.18	0.76
1,750.00	12.84	113.62	1,720.62	-103.52	265.14	284.53	0.43	0.37	-1.02
1,844.00	12.57	114.06	1,812.31	-111.88	284.05	305.20	0.31	-0.29	0.47
1,939.00	12.57	114.94	1,905.04	-120.45	302.86	325.87	0.20	0.00	0.93
2,033.00	13.10	116.78	1,996.69	-129.56	321.65	346.72	0.71	0.56	1.96
2,128.00	12.57	115.38	2,089.31	-138.84	340.60	367.79	0.65	-0.56	-1.47
2,222.00	12.40	115.55	2,181.09	-147.58	358.95	388.09	0.19	-0.18	0.18
2,317.00	12.05	118.01	2,273.94	-156.64	376.90	408.15	0.66	-0.37	2.59
2,411.00	13.28	116.61	2,365.65	-166.08	395.22	428.70	1.35	1.31	-1.49
2,506.00	13.45	113.80	2,458.08	-175.43	415.08	450.63	0.71	0.18	-2.96
2,600.00	13.63	115.11	2,549.46	-184.54	435.12	472.63	0.38	0.19	1.39
2,695.00	13.81	113.62	2,641.75	-193.83	455.64	495.15	0.42	0.19	-1.57
Last Survey in 14 3/4" Hole									
2,789.00	13.25	115.63	2,733.15	-202.99	475.63	517.13	0.78	-0.60	2.14
First SDI Production MWD Survey									
2,883.00	12.57	109.99	2,824.77	-211.14	494.96	538.11	1.52	-0.72	-6.00
2,978.00	11.96	105.07	2,917.61	-217.24	514.18	558.18	1.27	-0.64	-5.18
3,072.00	10.55	102.08	3,009.80	-221.57	532.00	576.29	1.62	-1.50	-3.18
3,167.00	11.26	106.57	3,103.08	-226.04	549.39	594.05	1.16	0.75	4.73
3,261.00	11.08	105.95	3,195.30	-231.14	566.87	612.14	0.23	-0.19	-0.66
3,356.00	10.90	102.08	3,288.56	-235.52	584.43	630.03	0.80	-0.19	-4.07
3,450.00	10.38	101.47	3,380.94	-239.07	601.42	647.06	0.57	-0.55	-0.65
3,544.00	10.29	108.24	3,473.42	-243.38	617.70	663.73	1.29	-0.10	7.20
3,639.00	9.50	108.06	3,567.01	-248.47	633.21	680.00	0.83	-0.83	-0.19
3,733.00	9.76	110.79	3,659.69	-253.70	648.03	695.70	0.56	0.28	2.90
3,828.00	10.11	112.19	3,753.26	-259.71	663.28	712.08	0.45	0.37	1.47
3,923.00	10.73	110.35	3,846.69	-265.93	679.30	729.25	0.74	0.65	-1.94
4,017.00	10.11	110.61	3,939.14	-271.88	695.22	746.24	0.66	-0.66	0.28
4,112.00	10.55	112.54	4,032.60	-278.15	711.06	763.27	0.59	0.46	2.03
4,206.00	11.61	111.05	4,124.85	-284.84	727.84	781.33	1.17	1.13	-1.59
4,301.00	10.99	108.94	4,218.01	-291.22	745.32	799.92	0.78	-0.65	-2.22
4,395.00	10.02	108.06	4,310.43	-296.66	761.57	817.01	1.05	-1.03	-0.94
4,490.00	10.82	107.80	4,403.86	-301.95	777.92	834.13	0.84	0.84	-0.27
4,584.00	10.29	104.28	4,496.27	-306.72	794.46	851.22	0.89	-0.56	-3.74
4,679.00	9.58	109.20	4,589.85	-311.41	810.15	867.50	1.16	-0.75	5.18
4,774.00	10.02	109.03	4,683.46	-316.70	825.42	883.63	0.46	0.46	-0.18
4,868.00	9.32	103.14	4,776.13	-321.10	840.57	899.29	1.29	-0.74	-6.27

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-15-03B - Slot H
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-15-03B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)	
4,962.00	9.94	100.41	4,868.81	-324.30	855.96	914.72	0.82	0.66	-2.90	
5,057.00	10.55	102.96	4,962.29	-327.73	872.50	931.30	0.80	0.64	2.68	
5,151.00	10.20	109.20	5,054.76	-332.40	888.75	948.08	1.25	-0.37	6.64	
5,246.00	8.71	113.86	5,148.47	-338.07	903.27	963.67	1.76	-1.57	4.91	
5,341.00	8.18	113.25	5,242.44	-343.65	916.06	977.62	0.57	-0.56	-0.64	
5,435.00	7.83	114.83	5,335.52	-348.98	928.01	990.70	0.44	-0.37	1.68	
5,530.00	7.65	114.21	5,429.65	-354.29	939.65	1,003.49	0.21	-0.19	-0.65	
5,624.00	6.95	114.74	5,522.89	-359.23	950.52	1,015.43	0.75	-0.74	0.56	
5,718.00	6.51	118.78	5,616.24	-364.18	960.36	1,026.42	0.69	-0.47	4.30	
5,813.00	5.89	119.93	5,710.69	-369.20	969.30	1,036.61	0.67	-0.65	1.21	
5,907.00	5.98	118.43	5,804.18	-373.94	977.79	1,046.27	0.19	0.10	-1.60	
6,002.00	4.75	109.47	5,898.77	-377.61	985.85	1,055.12	1.56	-1.29	-9.43	
6,097.00	3.17	103.84	5,993.54	-379.55	992.11	1,061.64	1.71	-1.66	-5.93	
6,191.00	2.02	85.12	6,087.44	-380.03	996.29	1,065.68	1.50	-1.22	-19.91	
6,286.00	1.41	103.40	6,182.40	-380.16	999.09	1,068.31	0.85	-0.64	19.24	
6,380.00	1.32	112.72	6,276.37	-380.84	1,001.21	1,070.53	0.25	-0.10	9.91	
6,475.00	0.97	132.76	6,371.35	-381.81	1,002.81	1,072.39	0.55	-0.37	21.09	
6,569.00	0.79	135.66	6,465.34	-382.82	1,003.85	1,073.73	0.20	-0.19	3.09	
6,664.00	0.88	177.76	6,560.33	-384.01	1,004.34	1,074.64	0.64	0.09	44.32	
6,758.00	0.97	170.29	6,654.32	-385.52	1,004.50	1,075.38	0.16	0.10	-7.95	
6,853.00	1.23	195.42	6,749.30	-387.30	1,004.36	1,075.94	0.57	0.27	26.45	
6,948.00	1.23	211.42	6,844.28	-389.15	1,003.56	1,075.92	0.36	0.00	16.84	
7,042.00	2.29	234.89	6,938.24	-391.09	1,001.50	1,074.78	1.34	1.13	24.97	
7,137.00	1.06	237.17	7,033.20	-392.66	999.21	1,073.27	1.30	-1.29	2.40	
7,231.00	0.62	308.10	7,127.19	-392.81	998.08	1,072.29	1.10	-0.47	75.46	
7,326.00	0.44	26.15	7,222.18	-392.17	997.83	1,071.82	0.72	-0.19	82.16	
7,420.00	0.44	7.43	7,316.18	-391.49	998.04	1,071.74	0.15	0.00	-19.91	
7,515.00	0.62	331.21	7,411.18	-390.68	997.84	1,071.24	0.39	0.19	-38.13	
7,609.00	0.53	292.81	7,505.17	-390.06	997.19	1,070.41	0.41	-0.10	-40.85	
7,704.00	0.44	233.13	7,600.17	-390.11	996.50	1,069.79	0.51	-0.09	-62.82	
7,799.00	0.53	272.15	7,695.17	-390.31	995.77	1,069.19	0.35	0.09	41.07	
7,893.00	0.35	258.09	7,789.16	-390.36	995.05	1,068.55	0.22	-0.19	-14.96	
7,988.00	0.35	263.80	7,884.16	-390.45	994.48	1,068.06	0.04	0.00	6.01	
8,082.00	1.14	263.19	7,978.15	-390.59	993.26	1,066.99	0.84	0.84	-0.65	
8,177.00	1.49	249.65	8,073.13	-391.13	991.17	1,065.27	0.49	0.37	-14.25	
8,271.00	2.64	241.65	8,167.07	-392.58	988.12	1,063.02	1.26	1.22	-8.51	
8,366.00	3.69	234.54	8,261.92	-395.40	983.70	1,060.05	1.18	1.11	-7.48	
8,460.00	4.13	234.45	8,355.70	-399.12	978.48	1,056.68	0.47	0.47	-0.10	
8,555.00	4.22	236.21	8,450.45	-403.05	972.79	1,052.97	0.16	0.09	1.85	
8,649.00	4.84	241.48	8,544.16	-406.87	966.44	1,048.59	0.79	0.66	5.61	
8,744.00	5.45	241.74	8,638.77	-410.92	958.94	1,043.25	0.64	0.64	0.27	
8,839.00	5.80	238.31	8,733.32	-415.58	950.88	1,037.64	0.51	0.37	-3.61	
8,933.00	6.16	238.67	8,826.80	-420.69	942.53	1,031.93	0.39	0.38	0.38	
9,028.00	6.33	238.40	8,921.24	-426.09	933.72	1,025.90	0.18	0.18	-0.28	

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-15-03B - Slot H
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Site:	Cascade Creek 697-15-01 Pad	MD Reference:	GL 8348' & RKB 30' @ 8378.00ft
Well:	CC 697-15-03B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)	
9,073.00	6.16	239.81	8,965.97	-428.60	929.52	1,023.01	0.51	-0.38	3.13	
Last SDI Production MWD Survey										
9,130.00	6.16	239.81	9,022.64	-431.68	924.23	1,019.33	0.00	0.00	0.00	
Projection To TD - BHL = 628737.62, 1235954.99										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
342.00	341.78	-4.63	9.59	First SDI MWD Survey	
2,695.00	2,641.75	-193.83	455.64	Last Survey in 14 3/4" Hole	
2,789.00	2,733.15	-202.99	475.63	First SDI Production MWD Survey	
9,073.00	8,965.97	-428.60	929.52	Last SDI Production MWD Survey	
9,130.00	9,022.64	-431.68	924.23	Projection To TD	
9,130.00	9,022.64	-431.68	924.23	BHL = 628737.62, 1235954.99	

Checked By: _____ Approved By: _____ Date: _____