



WELL DETAILS: 697-26A-23

Ground Level: 8400' & RKB 24' @ 8424.00ft (H&P 324)
 +N/-S +E/-W Northing Easting Latitude Longitude
 -23.64 6.90 1617770.28 2242972.43 39° 29' 55.913 N 108° 10' 59.114 W H

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Site 697-26A Pad, True North
 Vertical (TVD) Reference: GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
 Section (VS) Reference: Slot - H(-23.64N, 6.90E)
 Measured Depth Reference: GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
 Calculation Method: Minimum Curvature
 Local North: True
 Location: Sec 26 T6S R97W

PROJECT DETAILS: Garfield County, CO NAD 83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

Design: OH (697-26A-23/OH)

Created By: Rex Hall Date: 2010-05-28



Scientific Drilling
Rocky Mountain Operations

Marathon Oil Co.

Garfield County, CO NAD 83

697-26A Pad

697-26A-23 - Slot H

OH

Design: OH

Standard Survey Report

28 May, 2010



Company:	Marathon Oil Co.	Local Co-ordinate Reference:	Site 697-26A Pad
Project:	Garfield County, CO NAD 83	TVD Reference:	GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
Site:	697-26A Pad	MD Reference:	GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
Well:	697-26A-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Multi-User Db

Project	Garfield County, CO NAD 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	697-26A Pad, Sec 26 T6S R97W				
Site Position:		Northing:	1,617,794.11 ft	Latitude:	39° 29' 56.147 N
From:	Map	Easting:	2,242,966.23 ft	Longitude:	108° 10' 59.202 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	-1.69 °

Well	697-26A-23 - Slot H, 865' FNL & 1419' FWL					
Well Position	+N/-S	-23.64 ft	Northing:	1,617,770.28 ft	Latitude:	39° 29' 55.913 N
	+E/-W	6.90 ft	Easting:	2,242,972.43 ft	Longitude:	108° 10' 59.114 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,400.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2009/12/31	10.60	65.76	52,382

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	24.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	24.00	-23.64	6.90	87.97	

Survey Program	Date	2010/05/28			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
28.67	133.65	Survey #1 - Slot H Conductor Gyro (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
154.00	2,160.00	Survey #2 - Surface MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1	
2,303.00	9,139.00	Survey #3 - Production MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Buidl Rate (°/100ft)	Turn Rate (°/100ft)	
24.00	0.00	0.00	24.00	-23.64	6.90	0.00	0.00	0.00	0.00	0.00
28.67	0.59	341.32	28.67	-23.61	6.89	-0.01	12.63	12.63	0.00	0.00
First SDI Conductor Gyro Survey										
29.00	0.59	341.12	29.00	-23.61	6.89	-0.01	0.62	0.00	-60.61	
34.00	0.57	337.79	34.00	-23.56	6.87	-0.02	0.78	-0.40	-66.60	
39.00	0.48	329.72	39.00	-23.52	6.85	-0.04	2.33	-1.80	-161.40	
44.00	0.41	309.35	44.00	-23.49	6.83	-0.07	3.44	-1.40	-407.40	
49.00	0.40	295.65	49.00	-23.47	6.80	-0.09	1.94	-0.20	-274.00	
54.00	0.39	290.10	54.00	-23.46	6.77	-0.13	0.79	-0.20	-111.00	
59.00	0.39	278.09	59.00	-23.45	6.74	-0.16	1.63	0.00	-240.20	
64.00	0.35	266.58	64.00	-23.45	6.70	-0.19	1.68	-0.80	-230.20	

Company:	Marathon Oil Co.	Local Co-ordinate Reference:	Site 697-26A Pad
Project:	Garfield County, CO NAD 83	TVD Reference:	GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
Site:	697-26A Pad	MD Reference:	GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
Well:	697-26A-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Multi-User Db

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)	
69.00	0.33	261.80	69.00	-23.45	6.67	-0.22	0.69	-0.40	-95.60	
74.00	0.42	259.31	74.00	-23.46	6.64	-0.25	1.83	1.80	-49.80	
79.00	0.44	260.01	79.00	-23.47	6.61	-0.29	0.41	0.40	14.00	
84.00	0.45	261.53	84.00	-23.47	6.57	-0.33	0.31	0.20	30.40	
89.00	0.47	262.29	89.00	-23.48	6.53	-0.37	0.42	0.40	15.20	
94.00	0.48	263.70	94.00	-23.48	6.49	-0.41	0.31	0.20	28.20	
99.00	0.49	261.59	99.00	-23.49	6.44	-0.45	0.41	0.20	-42.20	
104.00	0.46	255.90	104.00	-23.50	6.40	-0.49	1.12	-0.60	-113.80	
109.00	0.49	250.52	109.00	-23.51	6.36	-0.53	1.07	0.60	-107.60	
114.00	0.50	249.52	114.00	-23.52	6.32	-0.57	0.26	0.20	-20.00	
119.00	0.50	249.48	119.00	-23.54	6.28	-0.61	0.01	0.00	-0.80	
124.00	0.58	243.23	124.00	-23.56	6.24	-0.66	1.98	1.60	-125.00	
129.00	0.65	237.64	129.00	-23.58	6.19	-0.71	1.84	1.40	-111.80	
133.65	0.56	238.53	133.65	-23.61	6.15	-0.75	1.95	-1.94	19.14	
Last SDI Conductor Gyro Survey										
154.00	0.26	200.16	154.00	-23.71	6.05	-0.85	1.92	-1.47	-188.55	
First SDI Surface MWD Survey										
186.00	0.62	235.58	185.99	-23.87	5.88	-1.03	1.36	1.12	110.69	
217.00	0.26	261.51	216.99	-23.98	5.67	-1.24	1.30	-1.16	83.65	
248.00	0.44	67.71	247.99	-23.94	5.72	-1.20	2.24	0.58	536.13	
279.00	1.06	84.76	278.99	-23.87	6.11	-0.80	2.10	2.00	55.00	
309.00	1.85	75.70	308.98	-23.73	6.86	-0.05	2.73	2.63	-30.20	
340.00	2.46	78.08	339.96	-23.46	7.99	1.10	1.99	1.97	7.68	
370.00	3.08	80.19	369.92	-23.19	9.42	2.53	2.09	2.07	7.03	
401.00	3.96	77.81	400.87	-22.83	11.28	4.41	2.88	2.84	-7.68	
431.00	4.92	79.48	430.77	-22.37	13.56	6.70	3.23	3.20	5.57	
462.00	5.45	83.88	461.65	-21.97	16.33	9.48	2.14	1.71	14.19	
523.00	6.33	83.79	522.33	-21.30	22.56	15.73	1.44	1.44	-0.15	
614.00	6.86	86.08	612.72	-20.39	32.96	26.16	0.65	0.58	2.52	
705.00	7.56	83.18	703.00	-19.30	44.33	37.56	0.87	0.77	-3.19	
796.00	7.12	88.54	793.26	-18.45	55.91	49.16	0.89	-0.48	5.89	
888.00	7.39	92.58	884.52	-18.57	67.52	60.76	0.63	0.29	4.39	
980.00	7.65	94.34	975.73	-19.30	79.54	72.75	0.38	0.28	1.91	
1,071.00	8.35	93.72	1,065.84	-20.19	92.17	85.34	0.78	0.77	-0.68	
1,165.00	8.97	94.87	1,158.77	-21.25	106.29	99.41	0.68	0.66	1.22	
1,260.00	7.47	91.88	1,252.79	-22.08	119.84	112.92	1.64	-1.58	-3.15	
1,353.00	7.65	87.39	1,344.99	-22.00	132.06	125.14	0.66	0.19	-4.83	
1,448.00	8.00	89.33	1,439.10	-21.63	144.99	138.07	0.46	0.37	2.04	
1,542.00	7.83	89.59	1,532.21	-21.51	157.93	151.01	0.18	-0.18	0.28	
1,636.00	6.95	88.54	1,625.43	-21.32	170.02	163.10	0.95	-0.94	-1.12	
1,730.00	7.30	86.87	1,718.70	-20.85	181.67	174.76	0.43	0.37	-1.78	
1,823.00	7.30	87.31	1,810.95	-20.25	193.47	186.57	0.06	0.00	0.47	
1,918.00	7.21	83.18	1,905.19	-19.26	205.42	198.55	0.56	-0.09	-4.35	
2,012.00	8.00	82.30	1,998.36	-17.68	217.76	210.94	0.85	0.84	-0.94	
2,106.00	7.83	84.32	2,091.46	-16.17	230.61	223.84	0.35	-0.18	2.15	
2,160.00	7.47	80.98	2,144.98	-15.26	237.74	230.99	1.06	-0.67	-6.19	
Last SDI Surface MWD Survey										
2,303.00	7.12	72.72	2,286.83	-11.17	255.38	248.77	0.77	-0.24	-5.78	
First SDI Production MWD Survey										
2,398.00	7.65	87.22	2,381.05	-9.11	267.32	260.77	2.03	0.56	15.26	
2,492.00	10.11	84.67	2,473.91	-8.04	281.79	275.27	2.65	2.62	-2.71	
2,587.00	9.76	83.53	2,567.49	-6.36	298.09	291.62	0.42	-0.37	-1.20	
2,682.00	9.06	80.45	2,661.21	-4.21	313.47	307.07	0.91	-0.74	-3.24	
2,775.00	8.71	83.79	2,753.10	-2.24	327.69	321.35	0.67	-0.38	3.59	

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Site:	697-26A Pad	MD Reference:	GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
Well:	697-26A-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Multi-User Db

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)	
2,868.00	9.76	84.32	2,844.89	-0.69	342.54	336.24	1.13	1.13	0.57	
2,963.00	8.71	76.76	2,938.66	1.75	357.55	351.33	1.69	-1.11	-7.96	
3,057.00	9.41	84.76	3,031.49	4.08	372.13	365.99	1.53	0.74	8.51	
3,151.00	8.27	87.92	3,124.37	5.03	386.54	380.42	1.32	-1.21	3.36	
3,245.00	10.55	87.75	3,217.10	5.61	401.90	395.79	2.43	2.43	-0.18	
3,338.00	10.20	83.70	3,308.58	6.85	418.59	412.51	0.87	-0.38	-4.35	
3,433.00	10.02	87.66	3,402.11	8.11	435.21	429.17	0.76	-0.19	4.17	
3,528.00	9.50	85.55	3,495.73	9.06	451.28	445.26	0.66	-0.55	-2.22	
3,623.00	9.15	82.30	3,589.48	10.68	466.59	460.61	0.67	-0.37	-3.42	
3,716.00	8.71	85.55	3,681.35	12.22	480.93	475.01	0.72	-0.47	3.49	
3,810.00	7.91	83.88	3,774.36	13.46	494.46	488.57	0.89	-0.85	-1.78	
3,904.00	8.79	87.83	3,867.37	14.42	508.07	502.20	1.12	0.94	4.20	
3,998.00	8.09	87.75	3,960.35	14.95	521.86	516.00	0.74	-0.74	-0.09	
4,092.00	7.30	86.78	4,053.50	15.55	534.43	528.58	0.85	-0.84	-1.03	
4,186.00	8.18	84.93	4,146.64	16.47	547.05	541.23	0.97	0.94	-1.97	
4,280.00	7.91	82.65	4,239.72	17.89	560.13	554.35	0.44	-0.29	-2.43	
4,373.00	9.15	85.11	4,331.69	19.34	573.84	568.11	1.39	1.33	2.65	
4,468.00	8.35	81.24	4,425.58	21.03	588.19	582.50	1.05	-0.84	-4.07	
4,562.00	9.50	83.62	4,518.44	22.94	602.64	597.02	1.28	1.22	2.53	
4,657.00	9.50	83.97	4,612.14	24.63	618.23	612.66	0.06	0.00	0.37	
4,752.00	8.97	83.53	4,705.91	26.29	633.38	627.86	0.56	-0.56	-0.46	
4,846.00	8.00	80.98	4,798.88	28.14	647.13	641.66	1.11	-1.03	-2.71	
4,941.00	8.18	82.65	4,892.94	30.04	660.36	654.95	0.31	0.19	1.76	
5,035.00	7.21	73.42	4,986.09	32.58	672.65	667.32	1.67	-1.03	-9.82	
5,130.00	9.15	89.42	5,080.13	34.36	685.92	680.64	3.13	2.04	16.84	
5,224.00	9.23	92.84	5,172.93	34.06	700.92	695.63	0.59	0.09	3.64	
5,318.00	8.88	91.17	5,265.76	33.54	715.70	710.38	0.47	-0.37	-1.78	
5,413.00	7.91	92.05	5,359.74	33.15	729.57	724.22	1.03	-1.02	0.93	
5,507.00	8.27	87.92	5,452.80	33.17	742.79	737.44	0.73	0.38	-4.39	
5,601.00	7.91	88.54	5,545.87	33.58	756.01	750.66	0.39	-0.38	0.66	
5,696.00	7.39	87.66	5,640.02	33.99	768.65	763.31	0.56	-0.55	-0.93	
5,791.00	7.21	86.87	5,734.25	34.57	780.70	775.38	0.22	-0.19	-0.83	
5,886.00	7.83	85.55	5,828.43	35.40	793.11	787.81	0.68	0.65	-1.39	
5,981.00	6.33	88.19	5,922.71	36.06	804.79	799.51	1.62	-1.58	2.78	
6,075.00	5.45	85.99	6,016.21	36.54	814.43	809.15	0.97	-0.94	-2.34	
6,169.00	4.31	87.66	6,109.87	37.00	822.41	817.15	1.22	-1.21	1.78	
6,264.00	3.25	90.47	6,204.66	37.12	828.67	823.41	1.13	-1.12	2.96	
6,359.00	2.99	92.93	6,299.52	36.97	833.84	828.57	0.31	-0.27	2.59	
6,453.00	2.02	96.80	6,393.43	36.65	837.93	832.65	1.05	-1.03	4.12	
6,546.00	0.88	112.09	6,486.40	36.19	840.22	834.92	1.28	-1.23	16.44	
6,640.00	0.53	169.92	6,580.39	35.49	840.96	835.64	0.80	-0.37	61.52	
6,734.00	0.70	178.54	6,674.38	34.49	841.06	835.69	0.21	0.18	9.17	
6,829.00	0.62	217.38	6,769.38	33.50	840.76	835.36	0.47	-0.08	40.88	
6,924.00	0.88	227.05	6,864.37	32.59	839.91	834.48	0.30	0.27	10.18	
7,018.00	1.76	230.13	6,958.34	31.17	838.28	832.80	0.94	0.94	3.28	
7,113.00	1.14	264.05	7,053.31	30.14	836.22	830.70	1.09	-0.65	35.71	
7,207.00	1.67	274.95	7,147.29	30.16	833.92	828.41	0.63	0.56	11.60	
7,302.00	1.41	302.20	7,242.25	30.91	831.55	826.07	0.81	-0.27	28.68	
7,396.00	1.32	281.54	7,336.23	31.74	829.51	824.06	0.53	-0.10	-21.98	
7,491.00	1.67	261.95	7,431.20	31.76	827.07	821.62	0.65	0.37	-20.62	
7,585.00	2.20	261.33	7,525.14	31.30	823.93	818.46	0.56	0.56	-0.66	
7,679.00	2.46	258.69	7,619.06	30.63	820.17	814.68	0.30	0.28	-2.81	
7,774.00	2.55	257.99	7,713.97	29.79	816.10	810.59	0.10	0.09	-0.74	
7,868.00	3.08	253.95	7,807.86	28.66	811.63	806.08	0.60	0.56	-4.30	
7,963.00	2.46	254.56	7,902.75	27.41	807.21	801.62	0.65	-0.65	0.64	

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Site:	697-26A Pad	MD Reference:	GL 8400' & RKB 24' @ 8424.00ft (H&P 324)
Well:	697-26A-23	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 2003.16 Multi-User Db

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)
8,057.00	2.55	254.56	7,996.66	26.32	803.25	797.62	0.10	0.10	0.00
8,152.00	2.90	266.78	8,091.55	25.62	798.82	793.16	0.71	0.37	12.86
8,247.00	3.08	258.17	8,186.42	24.96	793.92	788.25	0.51	0.19	-9.06
8,341.00	4.22	255.88	8,280.23	23.60	788.09	782.38	1.22	1.21	-2.44
8,436.00	4.75	256.58	8,374.94	21.83	780.88	775.10	0.56	0.56	0.74
8,530.00	4.57	254.04	8,468.63	19.90	773.49	767.65	0.29	-0.19	-2.70
8,624.00	4.92	254.74	8,562.31	17.81	766.00	760.09	0.38	0.37	0.74
8,718.00	6.07	253.24	8,655.87	15.32	757.35	751.36	1.23	1.22	-1.60
8,813.00	6.16	253.68	8,750.33	12.44	747.65	741.57	0.11	0.09	0.46
8,907.00	5.54	249.29	8,843.84	9.41	738.57	732.38	0.81	-0.66	-4.67
9,000.00	5.28	249.99	8,936.43	6.36	730.35	724.06	0.29	-0.28	0.75
9,085.00	5.10	246.74	9,021.08	3.53	723.20	716.81	0.41	-0.21	-3.82
Last SDI Production MWD Survey									
9,139.00	5.10	246.74	9,074.87	1.64	718.79	712.34	0.00	0.00	0.00
Projection To TD									

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
697-26A-23 PBHL	0.00	0.00	9,110.00	2.91	766.04	1,617,774.40	2,243,732.02	39° 29' 56.175 N	108° 10' 49.429 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 58.89ft at 9139.00ft MD (9074.87 TVD, 1.64 N, 718.79 E)									
- Rectangle (sides W100.00 H200.00 D0.00)									

Checked By: _____ Approved By: _____ Date: _____