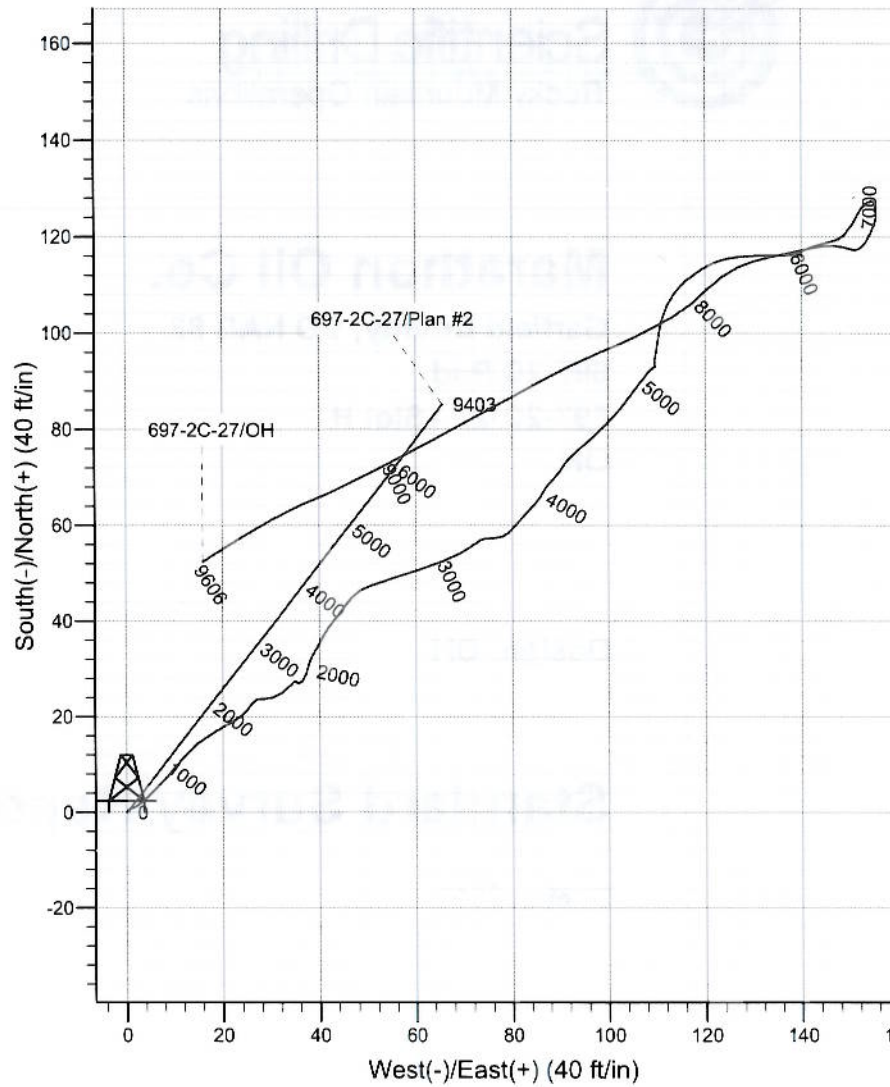
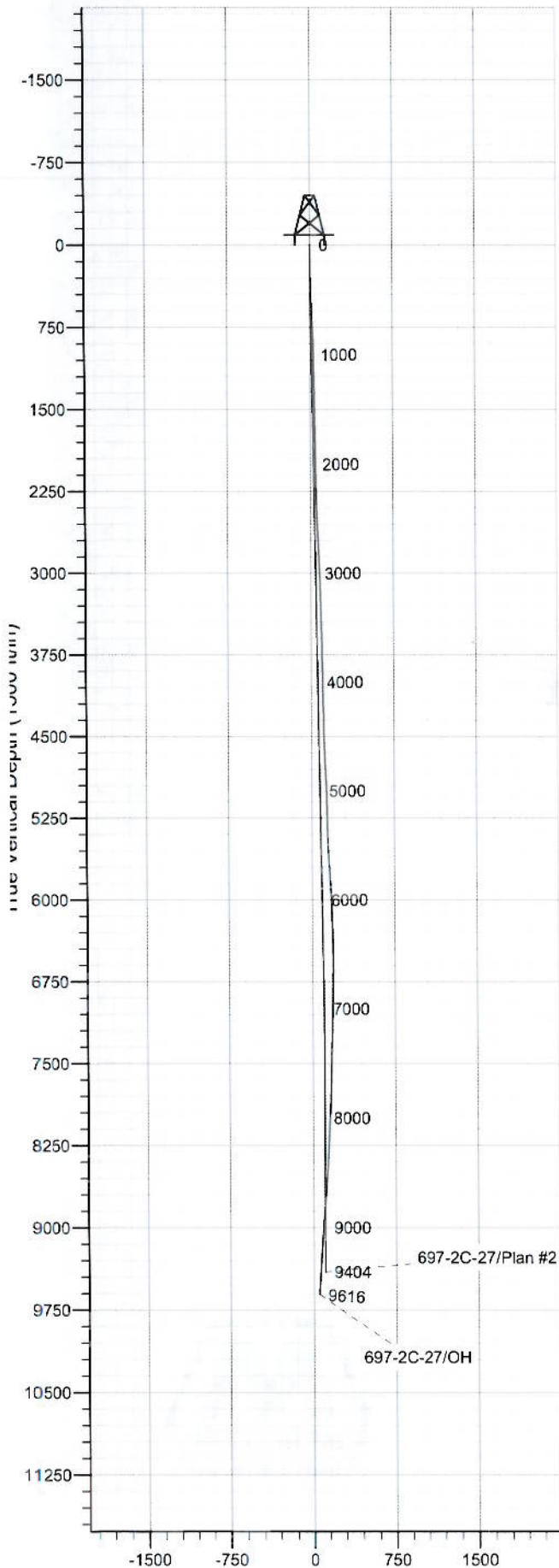




Scientific Drilling
Rocky Mountain Operations

Project: Garfield County, CO NAD 83
Site: 697-2C Pad
Well: 697-2C-27
Wellbore: OH
Design: OH

Marathon Oil Co.



WELL DETAILS: 697-2C-27

Ground Level: 8468' & RKB 24' @ 8492.00ft (H&P 324)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 1634942.34 2241526.31 39° 32' 45.137 N 108° 11' 24.040 W H

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well 697-2C-27 - Slot H, True North
Vertical (TVD) Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 32
Section (VS) Reference: Slot - H(0.00N, 0.00E)
Measured Depth Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 32
Calculation Method: Minimum Curvature
Local North: True
Location:

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 (697-2C-27/OH)

Created By: Rex Hall Date: 2010-05-24



Scientific Drilling
Rocky Mountain Operations

Marathon Oil Co.

Garfield County, CO NAD 83
697-2C Pad
697-2C-27 - Slot H
OH

Design: OH

Standard Survey Report

24 May, 2010



Company:	Marathon Oil Co.	Local Co-ordinate Reference:	Well 697-2C-27 - Slot H
Project:	Garfield County, CO NAD 83	TVD Reference:	GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
Site:	697-2C Pad	MD Reference:	GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
Well:	697-2C-27	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	697-2C Pad				
Site Position:		Northing:	1,634,890.86 ft	Latitude:	39° 32' 44.631 N
From:	Map	Easting:	2,241,536.61 ft	Longitude:	108° 11' 23.889 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	-1.70 °

Well	697-2C-27 - Slot H					
Well Position	+N-S	0.00 ft	Northing:	1,634,942.34 ft	Latitude:	39° 32' 45.137 N
	+E-W	0.00 ft	Easting:	2,241,526.31 ft	Longitude:	108° 11' 24.040 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,468.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2008/12/01	10.75	65.82	52,512

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	37.59	

Survey Program	Date	2010/05/24			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
29.00	134.42	Survey #1 - Conductor Gyro (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
186.00	2,189.00	Survey #2 - Surface MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1	
2,308.00	9,616.00	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)	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	
29.00	0.17	60.13	29.00	0.02	0.04	0.04	0.59	0.59	0.00	
34.00	0.34	60.13	34.00	0.03	0.06	0.06	3.40	3.40	0.00	
39.00	0.51	60.13	39.00	0.05	0.09	0.09	3.40	3.40	0.00	
44.00	0.65	59.63	44.00	0.08	0.13	0.14	2.80	2.80	-10.00	
49.00	0.63	56.56	49.00	0.11	0.18	0.19	0.79	-0.40	-61.40	
54.00	0.63	55.20	54.00	0.14	0.23	0.25	0.30	0.00	-27.20	
59.00	0.57	50.06	59.00	0.17	0.27	0.30	1.61	-1.20	-102.80	
64.00	0.49	46.31	64.00	0.20	0.30	0.34	1.74	-1.60	-75.00	
69.00	0.48	44.92	69.00	0.23	0.33	0.38	0.31	-0.20	-27.80	
74.00	0.46	36.53	74.00	0.26	0.36	0.42	1.43	-0.40	-167.80	

Company: Marathon Oil Co.
Project: Garfield County, CO NAD 83
Site: 697-2C Pad
Well: 697-2C-27
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 697-2C-27 - Slot H
TVD Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
MD Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
North Reference: True
Survey Calculation Method: Minimum Curvature
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)
79.00	0.42	36.76	79.00	0.29	0.38	0.46	0.80	-0.80	4.60
84.00	0.39	40.95	84.00	0.32	0.40	0.50	0.84	-0.60	83.80
89.00	0.32	44.24	89.00	0.34	0.42	0.53	1.46	-1.40	65.80
94.00	0.29	40.53	94.00	0.36	0.44	0.56	0.72	-0.60	-74.20
99.00	0.29	40.49	99.00	0.38	0.46	0.58	0.00	0.00	-0.80
104.00	0.32	44.09	104.00	0.40	0.48	0.61	0.71	0.60	72.00
109.00	0.33	57.06	109.00	0.42	0.50	0.63	1.48	0.20	259.40
114.00	0.35	52.57	114.00	0.43	0.52	0.66	0.67	0.40	-89.80
119.00	0.36	46.64	119.00	0.45	0.55	0.69	0.76	0.20	-118.60
124.00	0.40	23.77	124.00	0.48	0.56	0.73	3.11	0.80	-457.40
129.00	0.55	358.31	129.00	0.52	0.57	0.76	5.11	3.00	-509.20
134.00	0.38	31.53	134.00	0.56	0.58	0.80	6.24	-3.40	664.40
134.42	0.38	32.11	134.42	0.56	0.58	0.80	0.92	0.00	138.10
Last Gyro In Conductor									
186.00	0.78	71.15	186.00	0.82	1.00	1.26	1.05	0.78	75.69
First SDI Surface MWD Survey									
216.00	0.85	70.01	216.00	0.96	1.41	1.62	0.24	0.23	-3.80
247.00	0.88	61.66	247.00	1.15	1.83	2.03	0.42	0.10	-26.94
278.00	1.06	48.13	278.00	1.46	2.25	2.53	0.94	0.58	-43.65
308.00	1.32	52.00	308.00	1.86	2.73	3.14	0.91	0.87	12.90
339.00	1.76	48.04	339.00	2.39	3.37	3.95	1.46	1.42	-12.77
370.00	2.02	47.34	370.00	3.08	4.12	4.96	0.84	0.84	-2.26
401.00	2.20	45.67	401.00	3.87	4.95	6.09	0.61	0.58	-5.39
431.00	2.46	46.02	431.00	4.72	5.83	7.29	0.87	0.87	1.17
522.00	2.81	42.68	522.00	7.71	8.74	11.45	0.42	0.38	-3.67
614.00	2.99	38.02	614.00	11.26	11.75	16.09	0.32	0.20	-5.07
705.00	2.64	51.38	705.00	14.44	14.85	20.50	0.81	-0.38	14.68
797.00	2.81	60.26	797.00	16.88	18.46	24.64	0.49	0.18	9.65
889.00	2.46	58.50	889.00	19.03	22.11	28.57	0.39	-0.38	-1.91
980.00	1.58	42.06	980.00	20.98	24.61	31.64	1.15	-0.97	-18.07
1,072.00	1.14	31.96	1,072.00	22.70	25.95	33.82	0.54	-0.48	-10.98
1,167.00	0.70	77.75	1,167.00	23.63	27.01	35.20	0.87	-0.46	48.20
1,261.00	1.06	92.07	1,261.00	23.72	28.44	36.14	0.45	0.38	15.23
1,355.00	1.14	71.60	1,355.00	23.98	30.20	37.42	0.42	0.09	-21.78
1,449.00	1.49	56.65	1,449.00	24.95	32.11	39.36	0.52	0.37	-15.90
1,543.00	1.67	41.80	1,543.00	26.64	34.04	41.88	0.47	0.19	-15.80
1,637.00	0.35	158.26	1,637.00	27.40	35.06	43.10	1.97	-1.40	123.89
1,732.00	0.53	106.05	1,732.00	27.00	35.59	43.11	0.44	0.19	-54.96
1,826.00	0.88	38.02	1,826.00	27.45	36.45	43.99	0.89	0.37	-72.37
1,920.00	1.32	18.86	1,920.00	29.05	37.25	45.74	0.60	0.47	-20.38
2,015.00	1.06	12.53	2,015.00	30.94	37.79	47.57	0.31	-0.27	-6.66
2,109.00	1.41	28.09	2,109.00	32.81	38.53	49.50	0.51	0.37	16.55
2,189.00	1.41	33.36	2,189.00	34.50	39.53	51.45	0.16	0.00	6.59
Last SDI Surface MWD Survey									
2,308.00	0.97	17.89	2,308.00	36.68	40.64	53.86	0.45	-0.37	-13.00
First SDI Production MWD Survey									
2,403.00	1.76	40.39	2,403.00	38.56	41.84	56.07	0.99	0.83	23.68
2,497.00	2.46	35.21	2,497.00	41.30	43.94	59.53	0.77	0.74	-5.51
2,591.00	2.73	38.20	2,591.00	44.71	46.48	63.78	0.32	0.29	3.18
2,686.00	3.25	71.24	2,686.00	47.36	50.43	68.29	1.86	0.55	34.78
2,781.00	3.34	71.42	2,781.00	49.10	55.60	72.83	0.10	0.09	0.19
2,874.00	3.43	73.18	2,874.00	50.77	60.84	77.34	0.15	0.10	1.89
2,968.00	2.73	66.59	2,968.00	52.47	65.58	81.59	0.83	-0.74	-7.01
3,063.00	2.37	64.48	3,063.00	54.22	69.43	85.32	0.39	-0.38	-2.22

Company: Marathon Oil Co.
Project: Garfield County, CO NAD 83
Site: 697-2C Pad
Well: 697-2C-27
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 697-2C-27 - Slot H
TVD Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
MD Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
North Reference: True
Survey Calculation Method: Minimum Curvature
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)
3,157.00	1.93	48.66	3,155.14	56.10	72.37	88.61	0.78	-0.47	-16.83
3,251.00	0.88	86.62	3,249.11	57.19	74.28	90.63	1.44	-1.12	40.38
3,345.00	1.93	84.95	3,343.08	57.37	76.58	92.18	1.12	1.12	-1.78
3,439.00	1.49	47.07	3,437.04	58.34	79.05	94.46	1.26	-0.47	-40.30
3,586.00	1.41	40.31	3,584.00	61.03	81.62	98.15	0.13	-0.05	-4.60
3,627.00	1.41	45.32	3,624.98	61.77	82.31	99.15	0.30	0.00	12.22
3,720.00	1.06	37.23	3,717.96	63.25	83.64	101.15	0.42	-0.38	-8.70
3,814.00	0.97	47.78	3,811.95	64.48	84.76	102.80	0.22	-0.10	11.22
3,908.00	0.97	31.96	3,905.93	65.69	85.77	104.37	0.28	0.00	-16.83
4,002.00	1.06	30.11	3,999.92	67.12	86.62	106.03	0.10	0.10	-1.97
4,097.00	1.06	40.39	4,094.90	68.55	87.63	107.78	0.20	0.00	10.82
4,191.00	0.97	47.07	4,188.89	69.75	88.78	109.43	0.16	-0.10	7.11
4,286.00	1.06	35.21	4,283.87	71.02	89.87	111.10	0.24	0.09	-12.48
4,380.00	0.53	25.80	4,377.87	72.12	90.56	112.39	0.58	-0.56	-10.01
4,475.00	2.11	40.83	4,472.84	73.84	91.90	114.57	1.69	1.66	15.82
4,570.00	2.11	51.73	4,567.77	76.24	94.42	118.01	0.42	0.00	11.47
4,664.00	2.02	46.46	4,661.71	78.46	96.98	121.33	0.22	-0.10	-5.61
4,759.00	2.55	44.00	4,756.64	81.13	99.66	125.08	0.57	0.56	-2.59
4,852.00	2.90	39.43	4,849.53	84.44	102.59	129.49	0.44	0.38	-4.91
4,947.00	3.08	33.98	4,944.40	88.41	105.54	134.44	0.35	0.19	-5.74
5,041.00	2.29	44.61	5,038.30	91.84	108.27	138.82	0.99	-0.84	11.31
5,135.00	0.26	150.61	5,132.27	92.99	109.70	140.60	2.53	-2.16	112.77
5,229.00	0.88	349.68	5,226.27	93.52	109.67	141.00	1.20	0.66	-171.20
5,324.00	2.29	12.71	5,321.23	96.09	109.96	143.22	1.60	1.48	24.24
5,417.00	1.85	5.41	5,414.17	99.39	110.51	146.17	0.55	-0.47	-7.85
5,511.00	3.17	15.78	5,508.08	103.40	111.36	149.87	1.48	1.40	11.03
5,605.00	3.87	36.44	5,601.91	108.46	113.95	155.45	1.53	0.74	21.98
5,699.00	5.01	56.65	5,695.63	113.27	119.26	162.50	2.04	1.21	21.50
5,793.00	5.19	85.04	5,789.27	115.89	126.93	169.26	2.66	0.19	30.20
5,887.00	3.96	92.25	5,882.97	116.13	134.41	174.01	1.44	-1.31	7.67
5,982.00	2.29	66.15	5,977.83	116.77	139.42	177.58	2.27	-1.76	-27.47
6,076.00	2.11	70.10	6,071.76	118.12	142.77	180.69	0.25	-0.19	4.20
6,171.00	2.02	79.86	6,166.70	119.01	146.06	183.40	0.38	-0.09	10.27
6,265.00	1.85	44.35	6,260.65	120.38	148.75	186.14	1.27	-0.18	-37.78
6,359.00	1.67	29.76	6,354.61	122.66	150.49	189.00	0.51	-0.19	-15.52
6,453.00	1.76	26.07	6,448.56	125.14	151.81	191.77	0.15	0.10	-3.93
6,547.00	1.67	60.61	6,542.52	127.11	153.63	194.45	1.09	-0.10	36.74
6,641.00	1.58	160.98	6,636.50	126.56	155.25	194.99	2.66	-0.10	106.78
6,735.00	1.58	192.09	6,730.47	124.07	155.40	193.11	0.90	0.00	33.10
6,830.00	2.55	204.66	6,825.40	120.87	154.24	189.87	1.12	1.02	13.23
6,924.00	1.58	224.26	6,919.34	118.04	152.47	186.54	1.26	-1.03	20.85
7,019.00	0.97	284.03	7,014.32	117.30	150.77	184.92	1.45	-0.64	62.92
7,113.00	1.23	286.49	7,108.31	117.77	149.03	184.24	0.28	0.28	2.62
7,208.00	1.58	273.48	7,203.28	118.14	146.75	183.14	0.50	0.37	-13.69
7,302.00	1.85	262.05	7,297.24	118.01	143.95	181.33	0.46	0.29	-12.16
7,396.00	2.20	255.99	7,391.18	117.37	140.70	178.83	0.44	0.37	-6.45
7,491.00	2.37	257.66	7,486.10	116.50	137.01	175.90	0.19	0.18	1.76
7,585.00	2.20	260.30	7,580.03	115.78	133.33	173.08	0.21	-0.18	2.81
7,680.00	2.11	251.33	7,674.96	114.92	129.88	170.29	0.37	-0.09	-9.44
7,774.00	2.20	247.02	7,768.89	113.66	126.58	167.28	0.20	0.10	-4.59
7,868.00	2.55	230.41	7,862.81	111.62	123.31	163.67	0.82	0.37	-17.67
7,963.00	2.64	227.16	7,957.72	108.79	120.07	159.45	0.18	0.09	-3.42
8,057.00	2.64	227.25	8,051.62	105.85	116.90	155.18	0.00	0.00	0.10
8,151.00	2.37	242.81	8,145.53	103.49	113.58	151.29	0.78	-0.29	16.55

Company: Marathon Oil Co.
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Local Co-ordinate Reference: Well 697-2C-27 - Slot H
TVD Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
MD Reference: GL 8468' & RKB 24' @ 8492.00ft (H&P 324)
North Reference: True
Survey Calculation Method: Minimum Curvature
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)
8,245.00	3.08	240.96	8,239.42	101.37	109.64	147.21	0.76	0.76	-1.97
8,340.00	3.52	244.48	8,334.26	98.88	104.78	142.27	0.51	0.46	3.71
8,435.00	4.57	247.29	8,429.02	96.16	98.66	136.38	1.12	1.11	2.96
8,530.00	4.48	243.33	8,523.73	93.04	91.85	129.75	0.34	-0.09	-4.17
8,624.00	5.19	241.66	8,617.39	89.37	84.83	122.56	0.77	0.76	-1.78
8,718.00	5.01	241.58	8,711.02	85.40	77.47	114.93	0.19	-0.19	-0.09
8,812.00	5.10	240.52	8,804.66	81.39	70.23	107.33	0.14	0.10	-1.13
8,907.00	5.01	241.84	8,899.29	77.35	62.89	99.66	0.15	-0.09	1.39
9,002.00	4.75	244.04	8,993.94	73.67	55.70	92.36	0.34	-0.27	2.32
9,096.00	4.66	241.14	9,087.63	70.13	48.86	85.37	0.27	-0.10	-3.09
9,191.00	4.13	245.97	9,182.35	66.87	42.35	78.82	0.68	-0.56	5.08
9,285.00	3.96	247.02	9,276.11	64.22	36.27	73.02	0.20	-0.18	1.12
9,379.00	4.22	240.78	9,369.87	61.27	30.27	67.01	0.55	0.28	-6.64
9,473.00	3.96	237.71	9,463.63	57.85	24.50	60.78	0.36	-0.28	-3.27
9,567.00	4.13	237.18	9,557.40	54.28	18.92	54.55	0.19	0.18	-0.56

Last SDI Production MWD Survey

9,616.00 4.13 237.18 9,606.27 52.37 15.95 51.22 0.00 0.00 0.00

Projection To TD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
697-2C-27 PBHL	0.00	0.00	9,403.00	85.21	65.61	1,635,025.57	2,241,594.41	39° 32' 45.979 N	108° 11' 23.203 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 44.98ft at 9409.00ft MD (9399.80 TVD, 60.19 N, 28.37 E)									
- Rectangle (sides W100.00 H200.00 D0.00)									

Checked By: _____ Approved By: _____ Date: _____

BHL - 433 FSL
 + 52 N

 485 FSL

1912 FWL
 + 16 E

 1928 FWL

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