

MARATHON OIL COMPANY

Location: COLORADO Slot: SLOT#01 CROW VALLEY 7-62-14-2H (290°FNL & 2036°FWL, SEC.23)
Field: WELD COUNTY (NAD 83, GRID NORTH) Well: CROW VALLEY 7-62-14-2H
Facility: SEC.23-T7N-R62W Wellbore: CROW VALLEY 7-62-14-2H PWB

Well Profile Data

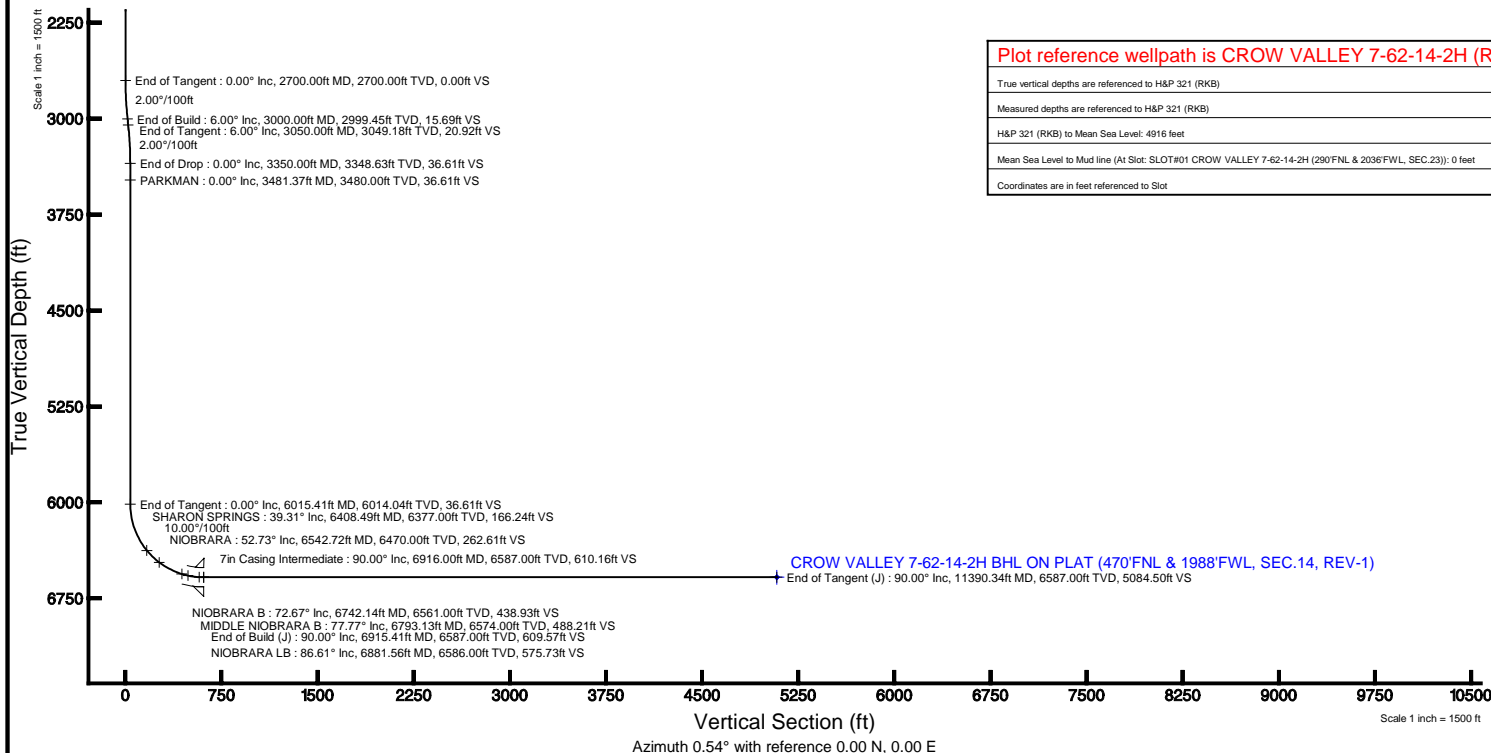
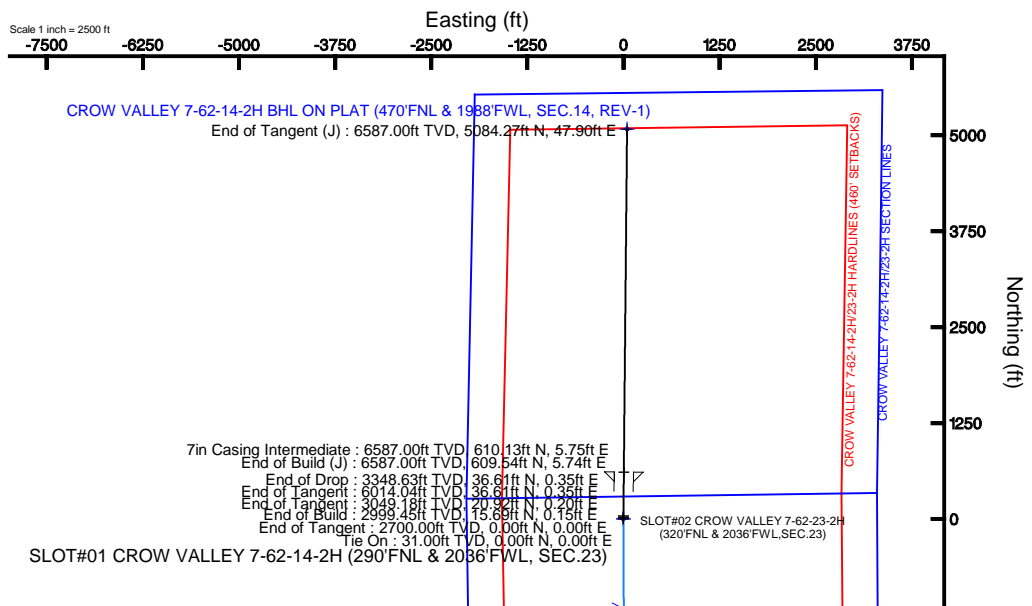
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	31.00	0.000	0.540	31.00	0.00	0.00	0.00	0.00
End of Tangent	2700.00	0.000	0.540	2700.00	0.00	0.00	0.00	0.00
End of Build	3000.00	6.000	0.540	2999.45	15.69	0.15	2.00	15.69
End of Tangent	3050.00	6.000	0.540	3049.18	20.92	0.20	0.00	20.92
End of Drop	3350.00	0.000	0.540	3348.63	36.61	0.35	2.00	36.61
End of Tangent	6015.41	0.000	0.540	6014.04	36.61	0.35	0.00	36.61
End of Build (J)	6915.41	90.000	0.540	6587.00	609.54	5.74	10.00	609.57
End of Tangent (J)	11390.34	90.000	0.540	6587.00	5084.27	47.90	0.00	5084.50

Location Information

Facility Name				Grid East (US R)	Grid North (US R)	Latitude	Longitude
SEC.23-T7N-R62W				3335869.000	1451378.230	40°33'58.132"N	104°17'27.786"W
Slot	Local N (ft)	Local E (ft)	Grid East (US R)	Grid North (US R)	Latitude	Longitude	
SLOT#01 CROW VALLEY 7-62-14-2H (290°FNL & 2036°FWL, SEC.23)	0.00	0.00	3335869.000	1451378.230	40°33'58.132"N	104°17'27.786"W	
H&P 321 (RKB) to Mud line (At Slot: SLOT#01 CROW VALLEY 7-62-14-2H (290°FNL & 2036°FWL, SEC.23))							4916ft
Mean Sea Level to Mud line (At Slot: SLOT#01 CROW VALLEY 7-62-14-2H (290°FNL & 2036°FWL, SEC.23))							0ft
H&P 321 (RKB) to Mean Sea Level							4916ft

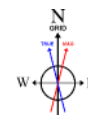
Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US R)	Grid North (US R)	Latitude	Longitude
CROW VALLEY 7-62-14-2H(23-2H) SECTION LINES		0.00	0.00	0.00	3335869.000	1451378.230	40°33'58.132"N	104°17'27.786"W
CROW VALLEY 7-62-14-2H BHL ON PLAT (470°FNL & 1988°FWL, SEC.14, REV-1)	11390.34	6587.00	5084.27	47.90	3335916.90	1456462.35	40°34'48.360"N	104°17'26.267"W
CROW VALLEY 7-62-14-2H(23-2H) HARDLINES (460' SETBACKS)		6587.00	0.00	0.00	3335869.000	1451378.230	40°33'58.132"N	104°17'27.786"W



Plot reference wellpath is CROW VALLEY 7-62-14-2H (REV-A.0) PWP

True vertical depths are referenced to H&P 321 (RKB)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
Measured depths are referenced to H&P 321 (RKB)	North Reference: Grid north
H&P 321 (RKB) to Mean Sea Level: 4916 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#01 CROW VALLEY 7-62-14-2H (290°FNL & 2036°FWL, SEC.23)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: cookdarn on 2/6/2012



BGGM (1945.0 to 2013.0) Dip: 67.22° Field: 63195 nT
Magnetic North is 8.50 degrees East of True North (as 2012)
Grid North is 0.78 degrees East of True North
To correct azimuth from True to Grid subtract 0.78 degrees
To correct azimuth from Magnetic to Grid add 7.74 degrees
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.74 = 97.74



Planned Wellpath Report

CROW VALLEY 7-62-14-2H (REV-A.0) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	MARATHON OIL COMPANY	Slot	SLOT#01 CROW VALLEY 7-62-14-2H (290'FNL & 2036'FWL, SEC.23)
Area	COLORADO	Well	CROW VALLEY 7-62-14-2H
Field	WELD COUNTY (NAD 83, GRID NORTH)	Wellbore	CROW VALLEY 7-62-14-2H PWB
Facility	SEC.23-T7N-R62W		

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 3.0.2
North Reference	Grid	User	Cookdanm
Scale	0.999972	Report Generated	2/6/2012 at 4:26:56 PM
Convergence at slot	0.78° East	Database/Source file	WA_Denver/CROW_VALLEY_7-62-14-2H_PWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	3335869.00	1451378.23	40°33'58.132"N	104°17'27.786"W
Facility Reference Pt			3335869.00	1451378.23	40°33'58.132"N	104°17'27.786"W
Field Reference Pt			3476081.76	1512960.14	40°43'43.704"N	103°46'55.829"W

WELLPATH DATUM

Calculation method	Minimum curvature	H&P 321 (RKB) to Facility Vertical Datum	4916.00ft
Horizontal Reference Pt	Slot	H&P 321 (RKB) to Mean Sea Level	4916.00ft
Vertical Reference Pt	H&P 321 (RKB)	H&P 321 (RKB) to Mud Line at Slot (SLOT#01 CROW VALLEY 7-62-14-2H (290'FNL & 2036'FWL, SEC.23))	4916.00ft
MD Reference Pt	H&P 321 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	0.54°



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Area	COLORADO	Well	CROW VALLEY 7-62-14-2H
Field	WELD COUNTY (NAD 83, GRID NORTH)	Wellbore	CROW VALLEY 7-62-14-2H PWB
Facility	SEC.23-T7N-R62W		

WELLPATH DATA (129 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
0.00†	0.000	0.540	0.00	0.00	0.00	0.00	0.00	
31.00	0.000	0.540	31.00	0.00	0.00	0.00	0.00	Tie On
131.00†	0.000	0.540	131.00	0.00	0.00	0.00	0.00	
231.00†	0.000	0.540	231.00	0.00	0.00	0.00	0.00	
331.00†	0.000	0.540	331.00	0.00	0.00	0.00	0.00	
431.00†	0.000	0.540	431.00	0.00	0.00	0.00	0.00	
442.00†	0.000	0.540	442.00	0.00	0.00	0.00	0.00	PIERRE
531.00†	0.000	0.540	531.00	0.00	0.00	0.00	0.00	
631.00†	0.000	0.540	631.00	0.00	0.00	0.00	0.00	
731.00†	0.000	0.540	731.00	0.00	0.00	0.00	0.00	
831.00†	0.000	0.540	831.00	0.00	0.00	0.00	0.00	
931.00†	0.000	0.540	931.00	0.00	0.00	0.00	0.00	
1031.00†	0.000	0.540	1031.00	0.00	0.00	0.00	0.00	
1131.00†	0.000	0.540	1131.00	0.00	0.00	0.00	0.00	
1231.00†	0.000	0.540	1231.00	0.00	0.00	0.00	0.00	
1331.00†	0.000	0.540	1331.00	0.00	0.00	0.00	0.00	
1431.00†	0.000	0.540	1431.00	0.00	0.00	0.00	0.00	
1531.00†	0.000	0.540	1531.00	0.00	0.00	0.00	0.00	
1631.00†	0.000	0.540	1631.00	0.00	0.00	0.00	0.00	
1731.00†	0.000	0.540	1731.00	0.00	0.00	0.00	0.00	
1831.00†	0.000	0.540	1831.00	0.00	0.00	0.00	0.00	
1931.00†	0.000	0.540	1931.00	0.00	0.00	0.00	0.00	
2031.00†	0.000	0.540	2031.00	0.00	0.00	0.00	0.00	
2131.00†	0.000	0.540	2131.00	0.00	0.00	0.00	0.00	
2231.00†	0.000	0.540	2231.00	0.00	0.00	0.00	0.00	
2331.00†	0.000	0.540	2331.00	0.00	0.00	0.00	0.00	
2431.00†	0.000	0.540	2431.00	0.00	0.00	0.00	0.00	
2531.00†	0.000	0.540	2531.00	0.00	0.00	0.00	0.00	
2631.00†	0.000	0.540	2631.00	0.00	0.00	0.00	0.00	
2700.00	0.000	0.540	2700.00	0.00	0.00	0.00	0.00	End of Tangent
2731.00†	0.620	0.540	2731.00	0.17	0.17	0.00	2.00	
2831.00†	2.620	0.540	2830.95	2.99	2.99	0.03	2.00	
2931.00†	4.620	0.540	2930.75	9.31	9.31	0.09	2.00	
3000.00	6.000	0.540	2999.45	15.69	15.69	0.15	2.00	End of Build
3031.00†	6.000	0.540	3030.28	18.93	18.93	0.18	0.00	
3050.00	6.000	0.540	3049.18	20.92	20.92	0.20	0.00	End of Tangent
3131.00†	4.380	0.540	3129.84	28.25	28.25	0.27	2.00	
3231.00†	2.380	0.540	3229.66	34.14	34.14	0.32	2.00	
3331.00†	0.380	0.540	3329.63	36.55	36.55	0.34	2.00	
3350.00	0.000	0.540	3348.63	36.61	36.61	0.35	2.00	End of Drop
3431.00†	0.000	0.540	3429.63	36.61	36.61	0.35	0.00	
3481.37†	0.000	0.540	3480.00	36.61	36.61	0.35	0.00	PARKMAN
3531.00†	0.000	0.540	3529.63	36.61	36.61	0.35	0.00	
3631.00†	0.000	0.540	3629.63	36.61	36.61	0.35	0.00	
3731.00†	0.000	0.540	3729.63	36.61	36.61	0.35	0.00	



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REFERENCE WELLPATH IDENTIFICATION

Operator	MARATHON OIL COMPANY	Slot	SLOT#01 CROW VALLEY 7-62-14-2H (290'FNL & 2036'FWL, SEC.23)
Area	COLORADO	Well	CROW VALLEY 7-62-14-2H
Field	WELD COUNTY (NAD 83, GRID NORTH)	Wellbore	CROW VALLEY 7-62-14-2H PWB
Facility	SEC.23-T7N-R62W		

WELLPATH DATA (129 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
3831.00†	0.000	0.540	3829.63	36.61	36.61	0.35	0.00	
3931.00†	0.000	0.540	3929.63	36.61	36.61	0.35	0.00	
4031.00†	0.000	0.540	4029.63	36.61	36.61	0.35	0.00	
4131.00†	0.000	0.540	4129.63	36.61	36.61	0.35	0.00	
4231.00†	0.000	0.540	4229.63	36.61	36.61	0.35	0.00	
4331.00†	0.000	0.540	4329.63	36.61	36.61	0.35	0.00	
4431.00†	0.000	0.540	4429.63	36.61	36.61	0.35	0.00	
4531.00†	0.000	0.540	4529.63	36.61	36.61	0.35	0.00	
4631.00†	0.000	0.540	4629.63	36.61	36.61	0.35	0.00	
4731.00†	0.000	0.540	4729.63	36.61	36.61	0.35	0.00	
4831.00†	0.000	0.540	4829.63	36.61	36.61	0.35	0.00	
4931.00†	0.000	0.540	4929.63	36.61	36.61	0.35	0.00	
5031.00†	0.000	0.540	5029.63	36.61	36.61	0.35	0.00	
5131.00†	0.000	0.540	5129.63	36.61	36.61	0.35	0.00	
5231.00†	0.000	0.540	5229.63	36.61	36.61	0.35	0.00	
5331.00†	0.000	0.540	5329.63	36.61	36.61	0.35	0.00	
5431.00†	0.000	0.540	5429.63	36.61	36.61	0.35	0.00	
5531.00†	0.000	0.540	5529.63	36.61	36.61	0.35	0.00	
5631.00†	0.000	0.540	5629.63	36.61	36.61	0.35	0.00	
5731.00†	0.000	0.540	5729.63	36.61	36.61	0.35	0.00	
5831.00†	0.000	0.540	5829.63	36.61	36.61	0.35	0.00	
5931.00†	0.000	0.540	5929.63	36.61	36.61	0.35	0.00	
6015.41	0.000	0.540	6014.04	36.61	36.61	0.35	0.00	End of Tangent
6031.00†	1.559	0.540	6029.63	36.83	36.82	0.35	10.00	
6131.00†	11.559	0.540	6128.85	48.23	48.23	0.45	10.00	
6231.00†	21.559	0.540	6224.58	76.70	76.69	0.72	10.00	
6331.00†	31.559	0.540	6313.91	121.35	121.35	1.14	10.00	
6408.49†	39.307	0.540	6377.00	166.24	166.23	1.57	10.00	SHARON SPRINGS
6431.00†	41.559	0.540	6394.14	180.84	180.83	1.70	10.00	
6531.00†	51.559	0.540	6462.81	253.36	253.35	2.39	10.00	
6542.72†	52.731	0.540	6470.00	262.61	262.60	2.47	10.00	NIOBRARA
6631.00†	61.559	0.540	6517.85	336.70	336.68	3.17	10.00	
6731.00†	71.559	0.540	6557.58	428.33	428.31	4.04	10.00	
6742.14†	72.673	0.540	6561.00	438.93	438.91	4.14	10.00	NIOBRARA B
6793.13†	77.772	0.540	6574.00	488.21	488.19	4.60	10.00	MIDDLE NIOBRARA B
6831.00†	81.559	0.540	6580.79	525.46	525.44	4.95	10.00	
6881.56†	86.614	0.540	6586.00	575.73	575.71	5.42	10.00	NIOBRARA LB
6915.41	90.000	0.540	6587.00	609.57	609.54	5.74	10.00	End of Build (J)
6931.00†	90.000	0.540	6587.00	625.16	625.13	5.89	0.00	
7031.00†	90.000	0.540	6587.00	725.16	725.13	6.83	0.00	
7131.00†	90.000	0.540	6587.00	825.16	825.12	7.77	0.00	
7231.00†	90.000	0.540	6587.00	925.16	925.12	8.72	0.00	
7331.00†	90.000	0.540	6587.00	1025.16	1025.11	9.66	0.00	
7431.00†	90.000	0.540	6587.00	1125.16	1125.11	10.60	0.00	
7531.00†	90.000	0.540	6587.00	1225.16	1225.10	11.54	0.00	



Planned Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
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Area	COLORADO	Well	CROW VALLEY 7-62-14-2H
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Facility	SEC.23-T7N-R62W		

WELLPATH DATA (129 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
7631.00†	90.000	0.540	6587.00	1325.16	1325.10	12.48	0.00	
7731.00†	90.000	0.540	6587.00	1425.16	1425.10	13.43	0.00	
7831.00†	90.000	0.540	6587.00	1525.16	1525.09	14.37	0.00	
7931.00†	90.000	0.540	6587.00	1625.16	1625.09	15.31	0.00	
8031.00†	90.000	0.540	6587.00	1725.16	1725.08	16.25	0.00	
8131.00†	90.000	0.540	6587.00	1825.16	1825.08	17.20	0.00	
8231.00†	90.000	0.540	6587.00	1925.16	1925.07	18.14	0.00	
8331.00†	90.000	0.540	6587.00	2025.16	2025.07	19.08	0.00	
8431.00†	90.000	0.540	6587.00	2125.16	2125.07	20.02	0.00	
8531.00†	90.000	0.540	6587.00	2225.16	2225.06	20.96	0.00	
8631.00†	90.000	0.540	6587.00	2325.16	2325.06	21.91	0.00	
8731.00†	90.000	0.540	6587.00	2425.16	2425.05	22.85	0.00	
8831.00†	90.000	0.540	6587.00	2525.16	2525.05	23.79	0.00	
8931.00†	90.000	0.540	6587.00	2625.16	2625.04	24.73	0.00	
9031.00†	90.000	0.540	6587.00	2725.16	2725.04	25.67	0.00	
9131.00†	90.000	0.540	6587.00	2825.16	2825.03	26.62	0.00	
9231.00†	90.000	0.540	6587.00	2925.16	2925.03	27.56	0.00	
9331.00†	90.000	0.540	6587.00	3025.16	3025.03	28.50	0.00	
9431.00†	90.000	0.540	6587.00	3125.16	3125.02	29.44	0.00	
9531.00†	90.000	0.540	6587.00	3225.16	3225.02	30.38	0.00	
9631.00†	90.000	0.540	6587.00	3325.16	3325.01	31.33	0.00	
9731.00†	90.000	0.540	6587.00	3425.16	3425.01	32.27	0.00	
9831.00†	90.000	0.540	6587.00	3525.16	3525.00	33.21	0.00	
9931.00†	90.000	0.540	6587.00	3625.16	3625.00	34.15	0.00	
10031.00†	90.000	0.540	6587.00	3725.16	3724.99	35.10	0.00	
10131.00†	90.000	0.540	6587.00	3825.16	3824.99	36.04	0.00	
10231.00†	90.000	0.540	6587.00	3925.16	3924.99	36.98	0.00	
10331.00†	90.000	0.540	6587.00	4025.16	4024.98	37.92	0.00	
10431.00†	90.000	0.540	6587.00	4125.16	4124.98	38.86	0.00	
10531.00†	90.000	0.540	6587.00	4225.16	4224.97	39.81	0.00	
10631.00†	90.000	0.540	6587.00	4325.16	4324.97	40.75	0.00	
10731.00†	90.000	0.540	6587.00	4425.16	4424.96	41.69	0.00	
10831.00†	90.000	0.540	6587.00	4525.16	4524.96	42.63	0.00	
10931.00†	90.000	0.540	6587.00	4625.16	4624.95	43.57	0.00	
11031.00†	90.000	0.540	6587.00	4725.16	4724.95	44.52	0.00	
11131.00†	90.000	0.540	6587.00	4825.16	4824.95	45.46	0.00	
11231.00†	90.000	0.540	6587.00	4925.16	4924.94	46.40	0.00	
11331.00†	90.000	0.540	6587.00	5025.16	5024.94	47.34	0.00	
11390.34	90.000	0.540	6587.00 ¹	5084.50	5084.27	47.90	0.00	End of Tangent (J)



Planned Wellpath Report

CROW VALLEY 7-62-14-2H (REV-A.0) PWP

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REFERENCE WELLPATH IDENTIFICATION

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Field	WELD COUNTY (NAD 83, GRID NORTH)	Wellbore	CROW VALLEY 7-62-14-2H PWB
Facility	SEC.23-T7N-R62W		

HOLE & CASING SECTIONS - Ref Wellbore: CROW VALLEY 7-62-14-2H PWB Ref Wellpath: CROW VALLEY 7-62-14-2H (REV-A.0) PWP

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
7in Casing Intermediate	31.00	6916.00	6885.00	31.00	6587.00	0.00	0.00	610.13	5.75

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
CROW VALLEY 7-62-14-2H/23-2H SECTION LINES		0.00	0.00	0.00	3335869.00	1451378.23	40°33'58.132"N	104°17'27.786"W	polygon
1) CROW VALLEY 7-62-14-2H BHL ON PLAT (470'FNL & 1988'FWL, SEC.14, REV-1)	11390.34	6587.00	5084.27	47.90	3335916.90	1456462.35	40°34'48.360"N	104°17'26.267"W	point
CROW VALLEY 7-62-14-2H/23-2H HARDLINES (460' SETBACKS)		6587.00	0.00	0.00	3335869.00	1451378.23	40°33'58.132"N	104°17'27.786"W	polygon

SURVEY PROGRAM - Ref Wellbore: CROW VALLEY 7-62-14-2H PWB Ref Wellpath: CROW VALLEY 7-62-14-2H (REV-A.0) PWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
31.00	11390.34	NaviTrak (Standard)		CROW VALLEY 7-62-14-2H PWB



Planned Wellpath Report

CROW VALLEY 7-62-14-2H (REV-A.0) PWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	MARATHON OIL COMPANY	Slot	SLOT#01 CROW VALLEY 7-62-14-2H (290'FNL & 2036'FWL, SEC.23)
Area	COLORADO	Well	CROW VALLEY 7-62-14-2H
Field	WELD COUNTY (NAD 83, GRID NORTH)	Wellbore	CROW VALLEY 7-62-14-2H PWB
Facility	SEC.23-T7N-R62W		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
442.00	0.000	0.540	442.00	PIERRE
3481.37	0.000	0.540	3480.00	PARKMAN
6408.49	39.307	0.540	6377.00	SHARON SPRINGS
6542.72	52.731	0.540	6470.00	NIOBRARA
6742.14	72.673	0.540	6561.00	NIOBRARA B
6793.13	77.772	0.540	6574.00	MIDDLE NIOBRARA B
6881.56	86.614	0.540	6586.00	NIOBRARA LB