



Job Number: SVMO-140022
 Company: BOPCO, LP
 Lease/Well: James Ranch Unit 21 Fed SWD 1
 Location: Eddy County, NM
 Rig Name: Aquilla #8
 RKB: 25'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 7.22°
 Grid: East To Grid North
 File name: S:\2014SU-1\BOPCO\MO\JAMESR-1\21FEDS-1\1.SVY
 Date/Time: 10-Jan-14 / 12:46
 Curve Name: Surface - 518' M.D. (Rate Gyro)

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane .00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 518' MD is, to the best of
 our knowledge a true and accurate account of the
 well bore:

James Gully
 MS Energy Services

1/10/14
 Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
76.00	.05	32.07	76.00	.03	.02	.03	.03	32.08	.07
167.00	.13	10.13	167.00	.16	.06	.16	.17	19.19	.09
254.00	.48	252.62	254.00	.15	-.27	.15	.31	299.01	.63
341.00	.66	167.70	341.00	-.45	-.51	-.45	.68	229.04	.90
428.00	1.02	236.40	427.99	-1.36	-1.05	-1.36	1.72	217.65	1.14
Last Survey Depth Recorded									
518.00	.82	181.80	517.98	-2.45	-1.74	-2.45	3.01	215.37	.96

30-015-41074



Actual Wellpath Report

No.1 SWD AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	JRU 21 No.1 SWD
Area	Eddy County, NM	Well	No.1 SWD
Field	JRU NAD27	Wellbore	No.1 SWD AWB
Facility	JRU Drilling Island 1		

REPORT SETUP INFORMATION

Projection System	NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 4.0.0
North Reference	Grid	User	Janotho
Scale	0.999931	Report Generated	7/18/2014 at 2:52:08 PM
Convergence at slot	0.24° East	Database/Source file	WA_Midland/No.1_SWD_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-57.30	-104.59	638915.50	502497.80	32°22'50.442"N	103°53'00.039"W
Facility Reference Pt			639020.08	502555.10	32°22'51.004"N	103°52'58.816"W
Field Reference Pt			652495.44	494904.92	32°21'34.711"N	103°50'22.090"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on JRU 21 No.1 SWD (RT) to Facility Vertical Datum	3165.00ft
Horizontal Reference Pt	Slot	Rig on JRU 21 No.1 SWD (RT) to Mean Sea Level	3165.00ft
Vertical Reference Pt	Rig on JRU 21 No.1 SWD (RT)	Rig on JRU 21 No.1 SWD (RT) to Mud Line at Slot (JRU 21 No.1 SWD)	3165.00ft
MD Reference Pt	Rig on JRU 21 No.1 SWD (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	0.00°



Actual Wellpath Report

No.1 SWD AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	JRU 21 No.1 SWD
Area	Eddy County, NM	Well	No.1 SWD
Field	JRU NAD27	Wellbore	No.1 SWD AWB
Facility	JRU Drilling Island 1		

WELLPATH DATA (73 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	32.070	0.00	0.00	0.00	0.00	638915.50	502497.80	32°22'50.442"N	103°53'00.039"W	0.00	
76.00	0.050	32.070	76.00	0.03	0.03	0.02	638915.52	502497.83	32°22'50.442"N	103°53'00.038"W	0.07	
167.00	0.130	10.130	167.00	0.16	0.16	0.06	638915.56	502497.96	32°22'50.443"N	103°53'00.038"W	0.09	
254.00	0.480	252.620	254.00	0.15	0.15	-0.27	638915.23	502497.95	32°22'50.443"N	103°53'00.042"W	0.63	
341.00	0.660	167.700	341.00	-0.45	-0.45	-0.51	638914.99	502497.35	32°22'50.437"N	103°53'00.045"W	0.90	
428.00	1.020	236.400	427.99	-1.36	-1.36	-1.05	638914.45	502496.44	32°22'50.428"N	103°53'00.051"W	1.14	
518.00	0.820	181.800	517.98	-2.45	-2.45	-1.74	638913.76	502495.35	32°22'50.417"N	103°53'00.059"W	0.96	
896.00	0.900	188.000	895.94	-8.10	-8.10	-2.24	638913.26	502489.71	32°22'50.362"N	103°53'00.065"W	0.03	
1359.00	0.800	181.500	1358.88	-14.93	-14.93	-2.83	638912.67	502482.87	32°22'50.294"N	103°53'00.072"W	0.03	
1828.00	0.500	167.400	1827.85	-20.20	-20.20	-2.47	638913.03	502477.60	32°22'50.242"N	103°53'00.068"W	0.07	
2298.00	0.300	223.500	2297.84	-23.09	-23.09	-2.87	638912.63	502474.71	32°22'50.213"N	103°53'00.073"W	0.09	
2770.00	0.380	160.660	2769.84	-25.46	-25.46	-3.20	638912.30	502472.34	32°22'50.190"N	103°53'00.077"W	0.08	
3241.00	0.700	109.830	3240.82	-27.91	-27.91	0.02	638915.52	502469.89	32°22'50.165"N	103°53'00.040"W	0.12	
3473.00	0.580	103.800	3472.80	-28.68	-28.68	2.50	638918.00	502469.13	32°22'50.158"N	103°53'00.011"W	0.06	
3713.00	0.500	105.700	3712.79	-29.25	-29.25	4.68	638920.18	502468.55	32°22'50.152"N	103°52'59.985"W	0.03	
3902.00	0.600	97.600	3901.78	-29.60	-29.60	6.46	638921.96	502468.20	32°22'50.148"N	103°52'59.965"W	0.07	
4090.00	0.500	95.500	4089.78	-29.81	-29.81	8.25	638923.75	502467.99	32°22'50.146"N	103°52'59.944"W	0.05	
4278.00	0.500	80.400	4277.77	-29.75	-29.75	9.88	638925.38	502468.05	32°22'50.147"N	103°52'59.925"W	0.07	
4466.00	0.280	106.300	4465.76	-29.74	-29.74	11.13	638926.63	502468.06	32°22'50.147"N	103°52'59.910"W	0.15	
4652.00	0.300	58.500	4651.76	-29.62	-29.62	11.98	638927.48	502468.18	32°22'50.148"N	103°52'59.900"W	0.13	
4841.00	0.500	66.100	4840.76	-29.03	-29.03	13.15	638928.65	502468.78	32°22'50.154"N	103°52'59.887"W	0.11	
5029.00	0.300	91.500	5028.75	-28.71	-28.71	14.40	638929.89	502469.10	32°22'50.157"N	103°52'59.872"W	0.14	
5218.00	0.400	90.900	5217.75	-28.73	-28.73	15.55	638931.05	502469.07	32°22'50.157"N	103°52'59.859"W	0.05	
5405.00	0.400	109.600	5404.74	-28.96	-28.96	16.82	638932.32	502468.84	32°22'50.154"N	103°52'59.844"W	0.07	
5594.00	0.500	137.800	5593.74	-29.79	-29.79	17.99	638933.49	502468.01	32°22'50.146"N	103°52'59.830"W	0.13	
5781.00	0.400	146.500	5780.73	-30.94	-30.94	18.90	638934.40	502466.86	32°22'50.135"N	103°52'59.820"W	0.06	
5968.00	0.200	163.600	5967.73	-31.80	-31.80	19.35	638934.85	502466.01	32°22'50.126"N	103°52'59.815"W	0.12	
6157.00	0.300	183.400	6156.73	-32.61	-32.61	19.42	638934.92	502465.20	32°22'50.118"N	103°52'59.814"W	0.07	
6344.00	0.400	186.100	6343.73	-33.75	-33.75	19.32	638934.82	502464.06	32°22'50.107"N	103°52'59.815"W	0.05	
6533.00	0.300	192.900	6532.72	-34.88	-34.88	19.14	638934.64	502462.92	32°22'50.096"N	103°52'59.817"W	0.06	
6722.00	0.500	172.200	6721.72	-36.18	-36.18	19.14	638934.64	502461.62	32°22'50.083"N	103°52'59.817"W	0.13	
6911.00	0.700	195.800	6910.71	-38.11	-38.11	18.94	638934.44	502459.69	32°22'50.064"N	103°52'59.820"W	0.17	
7099.00	0.800	207.400	7098.69	-40.38	-40.38	18.02	638933.52	502457.42	32°22'50.041"N	103°52'59.831"W	0.10	
7288.00	1.000	207.400	7287.67	-43.02	-43.02	16.66	638932.15	502454.79	32°22'50.015"N	103°52'59.847"W	0.11	
7475.00	0.900	200.100	7474.64	-45.84	-45.84	15.40	638930.90	502451.96	32°22'49.987"N	103°52'59.861"W	0.08	
7662.00	0.800	219.700	7661.62	-48.23	-48.23	14.06	638929.56	502449.58	32°22'49.964"N	103°52'59.877"W	0.16	
7847.00	1.100	207.800	7846.60	-50.79	-50.79	12.41	638927.91	502447.01	32°22'49.938"N	103°52'59.896"W	0.19	
8035.00	0.800	147.000	8034.57	-53.49	-53.49	12.28	638927.78	502444.31	32°22'49.912"N	103°52'59.898"W	0.53	
8222.00	1.600	135.700	8221.53	-56.45	-56.45	14.82	638930.31	502441.35	32°22'49.882"N	103°52'59.869"W	0.44	
8410.00	1.700	143.100	8409.45	-60.56	-60.56	18.32	638933.82	502437.24	32°22'49.842"N	103°52'59.828"W	0.13	
8599.00	1.400	130.800	8598.39	-64.31	-64.31	21.75	638937.25	502433.49	32°22'49.804"N	103°52'59.788"W	0.24	
8788.00	0.900	164.700	8787.35	-67.25	-67.25	23.89	638939.39	502430.55	32°22'49.775"N	103°52'59.763"W	0.44	
8976.00	1.300	165.300	8975.31	-70.74	-70.74	24.82	638940.32	502427.07	32°22'49.741"N	103°52'59.753"W	0.21	
9165.00	1.500	165.100	9164.26	-75.20	-75.20	26.00	638941.50	502422.60	32°22'49.696"N	103°52'59.739"W	0.11	
9353.00	1.100	175.100	9352.21	-79.38	-79.38	26.79	638942.29	502418.43	32°22'49.655"N	103°52'59.730"W	0.24	



Actual Wellpath Report

No.1 SWD AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	JRU 21 No.1 SWD
Area	Eddy County, NM	Well	No.1 SWD
Field	JRU NAD27	Wellbore	No.1 SWD AWB
Facility	JRU Drilling Island 1		

WELLPATH DATA (73 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
9542.00	0.900	199.300	9541.18	-82.59	-82.59	26.46	638941.95	502415.22	32°22'49.623"N	103°52'59.734"W	0.24	
9731.00	0.500	342.900	9730.17	-83.20	-83.20	25.72	638941.22	502414.61	32°22'49.617"N	103°52'59.743"W	0.71	
9911.00	1.700	84.400	9910.15	-82.19	-82.19	28.15	638943.65	502415.62	32°22'49.627"N	103°52'59.714"W	1.04	
10109.00	1.400	137.200	10108.08	-83.68	-83.68	32.72	638948.21	502414.13	32°22'49.612"N	103°52'59.661"W	0.71	
10299.00	0.700	151.900	10298.05	-86.40	-86.40	34.84	638950.34	502411.40	32°22'49.585"N	103°52'59.637"W	0.39	
10488.00	0.600	215.800	10487.04	-88.23	-88.23	34.80	638950.30	502409.58	32°22'49.567"N	103°52'59.637"W	0.37	
10693.00	0.400	257.400	10692.03	-89.25	-89.25	33.48	638948.98	502408.55	32°22'49.557"N	103°52'59.653"W	0.20	
10882.00	0.300	44.400	10881.03	-89.04	-89.04	33.18	638948.68	502408.76	32°22'49.559"N	103°52'59.656"W	0.36	
11070.00	0.600	62.300	11069.03	-88.23	-88.23	34.40	638949.89	502409.57	32°22'49.567"N	103°52'59.642"W	0.17	
11163.00	0.400	74.900	11162.02	-87.92	-87.92	35.14	638950.64	502409.88	32°22'49.570"N	103°52'59.633"W	0.24	
11350.00	0.500	175.700	11349.02	-88.57	-88.57	35.83	638951.33	502409.24	32°22'49.564"N	103°52'59.625"W	0.37	
11540.00	0.600	213.000	11539.01	-90.23	-90.23	35.35	638950.85	502407.58	32°22'49.547"N	103°52'59.631"W	0.19	
11728.00	0.300	215.900	11727.01	-91.45	-91.45	34.53	638950.03	502406.36	32°22'49.535"N	103°52'59.641"W	0.16	
11916.00	0.500	311.700	11915.00	-91.30	-91.30	33.63	638949.12	502406.50	32°22'49.537"N	103°52'59.651"W	0.32	
12104.00	0.800	306.100	12102.99	-89.99	-89.99	31.95	638947.45	502407.82	32°22'49.550"N	103°52'59.670"W	0.16	
12293.00	1.000	304.200	12291.97	-88.28	-88.28	29.52	638945.02	502409.53	32°22'49.567"N	103°52'59.699"W	0.11	
12482.00	1.400	311.400	12480.92	-85.83	-85.83	26.43	638941.93	502411.98	32°22'49.591"N	103°52'59.735"W	0.23	
12671.00	1.400	323.700	12669.87	-82.44	-82.44	23.33	638938.83	502415.37	32°22'49.625"N	103°52'59.771"W	0.16	
12859.00	1.300	324.900	12857.82	-78.84	-78.84	20.74	638936.24	502418.96	32°22'49.660"N	103°52'59.801"W	0.06	
13047.00	1.100	335.100	13045.78	-75.46	-75.46	18.76	638934.26	502422.34	32°22'49.694"N	103°52'59.824"W	0.16	
13235.00	1.400	322.500	13233.73	-72.00	-72.00	16.60	638932.10	502425.80	32°22'49.728"N	103°52'59.849"W	0.22	
13425.00	1.400	305.200	13423.68	-68.82	-68.82	13.29	638928.79	502428.98	32°22'49.760"N	103°52'59.887"W	0.22	
13614.00	1.400	294.300	13612.62	-66.54	-66.54	9.30	638924.80	502431.26	32°22'49.783"N	103°52'59.934"W	0.14	
13802.00	1.400	292.100	13800.56	-64.73	-64.73	5.08	638920.58	502433.07	32°22'49.801"N	103°52'59.983"W	0.03	
13991.00	1.700	311.000	13989.49	-62.03	-62.03	0.82	638916.32	502435.78	32°22'49.828"N	103°53'00.032"W	0.31	
14180.00	1.900	307.200	14178.40	-58.29	-58.29	-3.79	638911.71	502439.51	32°22'49.865"N	103°53'00.086"W	0.12	
14292.00	1.700	303.100	14290.35	-56.26	-56.26	-6.66	638908.84	502441.54	32°22'49.885"N	103°53'00.119"W	0.21	
14345.00	1.700	303.100	14343.32	-55.40	-55.40	-7.98	638907.52	502442.40	32°22'49.894"N	103°53'00.134"W	0.00	

WELLPATH COMPOSITION - Ref Wellbore: No.1 SWD AWB - Ref Wellpath: No.1 SWD AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	518.00	Generic gyro - northseeking (Standard)	MS Gyro <76-518>	No.1 SWD AWB
518.00	14292.00	NaviTrak (Standard)	BHI MWD NaviTrak <896-14292>	No.1 SWD AWB
14292.00	14345.00	Blind Drilling (std)	Projection to bit	No.1 SWD AWB