

A Gyrodata Directional Survey

FINAL DEFINITIVE COPY

for

30-015-42479

BOPCO, LP.

Lease: BIG EDDY UNIT DI4 Well: #270, 5" DRILLPIPE
Location: LATSHAW RIG #18, EDDY COUNTY, NEW MEXICO

Job Number: MD0814GDM828

Azimuth Correction:
Gyro: -0.24000 deg to Grid North

Run Date: 18 Aug 2014

Report Generated: 26 Aug 2014 10:51

Depth Reference: Rotary Table

Surveyor: Jason Solomon

Air Gap (RKB to Ground / RKB to MSL): 30.00

Calculation Method: MINIMUM CURVATURE

Vertical Section Calculated from Well Head Location

Survey surface coordinates obtained from: Well Plan/Plot

Closure Calculated from Well Head Location

Survey Latitude: 32.607562 deg. N Longitude: 103.889579 deg. W

Horizontal Coordinates Calculated from Well Head Location

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MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. feet	AZIMUTH deg.	HORIZONTAL COORDINATES feet
0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.00 N 0.00 E
0 TO 7810 FT. RATE GYROSCOPIC MULTISHOT DROP RUN INSIDE 5" DRILLPIPE							
ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO LATSHAW RIG #18 RKB 30 FT.							
101.96	0.55	14.98	0.54	101.96	0.5	15.0	0.47 N 0.13 E
192.56	0.80	357.22	0.36	192.55	1.5	7.8	1.52 N 0.21 E
280.56	0.51	359.39	0.33	280.55	2.5	3.9	2.53 N 0.17 E
371.07	0.28	311.70	0.42	371.05	3.1	0.1	3.08 N 0.00 E
463.27	0.18	300.57	0.12	463.25	3.3	355.0	3.30 N 0.29 W
553.69	0.17	279.93	0.07	553.67	3.4	350.9	3.40 N 0.54 W
645.36	0.18	293.63	0.05	645.34	3.6	346.9	3.48 N 0.81 W
734.73	0.21	290.02	0.04	734.71	3.8	343.1	3.59 N 1.09 W
824.42	0.23	296.58	0.04	824.40	4.0	339.3	3.73 N 1.41 W
918.82	0.19	290.43	0.05	918.80	4.2	336.0	3.87 N 1.72 W
1013.22	0.19	288.90	0.01	1013.20	4.5	333.1	3.97 N 2.02 W
1107.62	0.11	300.88	0.09	1107.60	4.6	331.1	4.07 N 2.24 W
1202.02	0.37	102.81	0.50	1202.00	4.5	333.4	4.05 N 2.02 W
1296.42	0.85	112.32	0.52	1296.39	3.9	343.8	3.72 N 1.08 W
1390.82	1.69	116.35	0.89	1390.77	2.9	16.1	2.83 N 0.82 E
1485.22	2.38	116.37	0.73	1485.11	4.0	70.6	1.34 N 3.82 E
1579.62	2.71	115.06	0.35	1579.42	7.6	93.6	0.47 S 7.60 E
1674.02	2.65	114.27	0.07	1673.71	11.8	101.3	2.31 S 11.61 E
1768.42	2.60	116.36	0.11	1768.01	16.1	105.0	4.16 S 15.52 E

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MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. feet	AZIMUTH deg.	HORIZONTAL COORDINATES feet
1862.82	2.54	114.57	0.11	1862.32	20.2	107.2	5.98 S 19.34 E
1957.22	1.96	106.27	0.70	1956.65	23.9	107.8	7.30 S 22.79 E
2051.62	1.80	99.34	0.29	2051.00	27.0	107.2	8.00 S 25.80 E
2146.02	1.53	87.15	0.47	2145.36	29.7	106.0	8.18 S 28.52 E
2240.42	1.11	45.10	1.09	2239.73	31.3	103.8	7.47 S 30.43 E
2334.82	0.52	28.54	0.67	2334.12	31.9	101.6	6.45 S 31.28 E
2429.22	0.48	292.62	0.79	2428.52	31.7	100.8	5.92 S 31.12 E
2523.62	0.61	271.87	0.25	2522.92	30.8	100.8	5.75 S 30.26 E
2618.02	0.66	267.66	0.07	2617.31	29.8	101.1	5.75 S 29.21 E
2712.42	0.39	255.71	0.31	2711.71	29.0	101.7	5.86 S 28.35 E
2806.82	0.44	234.08	0.17	2806.10	28.4	102.5	6.15 S 27.75 E
2901.22	0.56	235.24	0.13	2900.50	27.9	103.7	6.62 S 27.08 E
2995.62	0.55	239.92	0.05	2994.90	27.3	105.1	7.11 S 26.31 E
3090.02	0.25	248.71	0.32	3089.29	26.8	106.1	7.42 S 25.72 E
3184.42	0.38	244.08	0.14	3183.69	26.4	106.8	7.63 S 25.25 E
3278.82	0.65	275.71	0.41	3278.09	25.6	107.5	7.71 S 24.43 E
3373.22	1.25	312.53	0.88	3372.48	24.2	106.7	6.96 S 23.14 E
3467.62	1.71	329.03	0.66	3466.84	22.2	103.1	5.06 S 21.66 E
3562.02	1.61	338.99	0.32	3561.21	20.6	97.3	2.61 S 20.46 E
3656.42	1.09	330.85	0.59	3655.58	19.6	91.7	0.59 S 19.55 E
3750.82	1.13	308.83	0.45	3749.96	18.4	87.6	0.78 N 18.38 E
3845.22	1.29	306.15	0.18	3844.34	16.9	83.2	1.99 N 16.80 E
3939.62	1.33	307.56	0.05	3938.72	15.4	77.7	3.28 N 15.07 E

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MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. feet	AZIMUTH deg.	HORIZONTAL COORDINATES feet
4034.02	1.25	283.26	0.58	4033.09	13.9	72.4	4.19 N 13.20 E
4128.42	1.40	288.77	0.21	4127.47	12.1	66.7	4.79 N 11.11 E
4222.82	1.41	292.74	0.10	4221.84	10.6	57.9	5.61 N 8.95 E
4317.22	0.43	249.33	1.20	4316.23	9.6	51.8	5.94 N 7.54 E
4411.62	0.35	213.39	0.27	4410.62	9.0	51.7	5.57 N 7.05 E
4506.02	0.36	213.83	0.01	4505.02	8.4	52.9	5.09 N 6.73 E
4600.42	0.35	221.01	0.05	4599.42	7.9	54.1	4.62 N 6.38 E
4694.82	0.19	262.01	0.26	4693.82	7.5	54.0	4.38 N 6.03 E
4789.22	0.25	273.16	0.08	4788.22	7.2	52.4	4.37 N 5.67 E
4883.62	0.29	188.33	0.39	4882.62	6.8	52.6	4.15 N 5.43 E
4978.02	0.32	269.80	0.42	4977.02	6.5	52.7	3.91 N 5.13 E
5072.42	0.31	218.78	0.29	5071.42	6.0	51.8	3.71 N 4.71 E
5166.82	0.30	217.95	0.01	5165.81	5.5	53.0	3.32 N 4.40 E
5261.22	0.27	146.32	0.35	5260.21	5.3	56.1	2.94 N 4.37 E
5355.62	0.45	122.56	0.24	5354.61	5.4	62.0	2.55 N 4.80 E
5450.02	0.48	119.94	0.04	5449.01	5.9	68.5	2.15 N 5.46 E
5544.42	0.43	118.03	0.06	5543.41	6.4	73.7	1.79 N 6.11 E
5638.82	0.46	115.39	0.04	5637.80	6.9	77.8	1.46 N 6.77 E
5733.22	0.38	72.79	0.33	5732.20	7.5	79.4	1.39 N 7.41 E
5827.62	0.33	56.22	0.12	5826.60	8.1	78.4	1.64 N 7.94 E
5922.02	0.29	36.92	0.12	5921.00	8.5	76.6	1.98 N 8.31 E
6016.42	0.32	28.56	0.06	6015.40	8.9	74.4	2.40 N 8.57 E
6110.82	0.36	21.27	0.06	6109.79	9.3	71.7	2.91 N 8.81 E

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6205.22	0.40	22.32	0.04	6204.19	9.7	68.9	3.49 N 9.04 E
6299.62	0.44	20.17	0.05	6298.59	10.2	66.0	4.13 N 9.29 E
6394.02	0.49	13.79	0.08	6392.99	10.7	62.9	4.87 N 9.51 E
6488.42	0.51	353.57	0.19	6487.38	11.1	59.3	5.68 N 9.56 E
6582.82	0.59	348.19	0.10	6581.78	11.5	55.1	6.57 N 9.42 E
6677.22	0.67	324.53	0.29	6676.17	11.7	50.2	7.49 N 8.99 E
6771.62	0.76	344.46	0.28	6770.57	12.1	44.9	8.55 N 8.50 E
6866.02	1.00	351.10	0.28	6864.96	12.9	39.5	9.96 N 8.21 E
6960.42	0.23	84.57	1.10	6959.35	13.6	37.5	10.80 N 8.27 E
7054.82	0.64	106.57	0.46	7053.75	13.9	40.1	10.66 N 8.96 E
7149.22	0.65	90.03	0.20	7148.14	14.5	43.6	10.51 N 10.01 E
7243.62	0.77	67.18	0.32	7242.53	15.5	46.0	10.76 N 11.13 E
7338.02	0.76	79.96	0.18	7336.93	16.6	48.0	11.11 N 12.33 E
7432.42	0.53	101.95	0.35	7431.32	17.4	50.2	11.13 N 13.37 E
7526.82	0.40	141.44	0.36	7525.72	17.7	52.4	10.78 N 14.00 E
7621.22	0.16	128.01	0.26	7620.12	17.7	53.9	10.45 N 14.31 E
7715.62	0.83	1.62	0.99	7714.51	18.2	52.6	11.05 N 14.44 E
7810.02	0.63	37.29	0.51	7808.91	19.1	50.6	12.14 N 14.77 E

Final Station Closure: Distance: 19.12 ft Az: 50.57 deg.



Job Number: SVM0-140946
 Company: BOPCO, LP
 Lease/Well: Big Eddy Unit D14 270H
 Location: Eddy County, NM
 Rig Name: Latshaw #18
 RKB: 30'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 7.18°
 Grid: East To Grid North
 File name: S:\2014SU-1\BOPCO\MO\BIGEDD-1\DI4270H.SVY
 Date/Time: 15-Jul-14 / 13:50
 Curve Name: Surface - 685' M.D. (Rate Gyro)

MS SURVEY

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 685' MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.
 Harley Patterson 7/15/14
 MS Energy Services Date

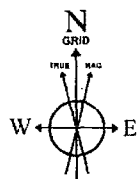
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
101.00	.72	334.29	101.00	.57	-.28	.57	.63	334.29	.71
197.00	.98	356.00	196.99	1.93	-.59	1.93	2.02	342.92	.43
294.00	.81	354.26	293.98	3.44	-.72	3.44	3.52	348.18	.18
393.00	.44	27.74	392.97	4.48	-.61	4.48	4.52	352.19	.51
490.00	.41	13.04	489.97	5.14	-.36	5.14	5.16	355.97	.12
587.00	.34	5.16	586.96	5.77	-.26	5.77	5.77	357.44	.09
Last Survey Depth Recorded									
685.00	.28	7.16	684.96	6.30	-.20	6.30	6.30	358.16	.06



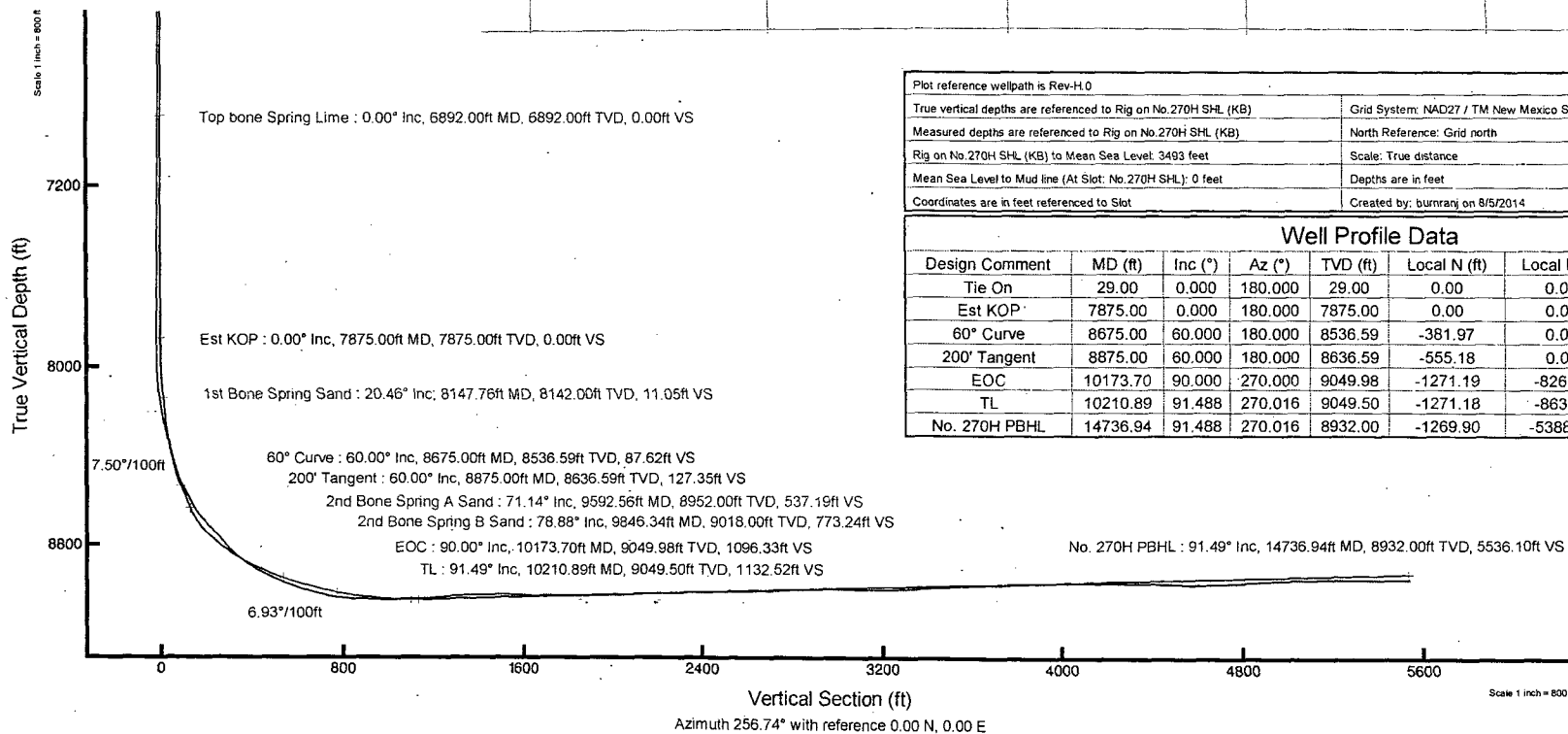
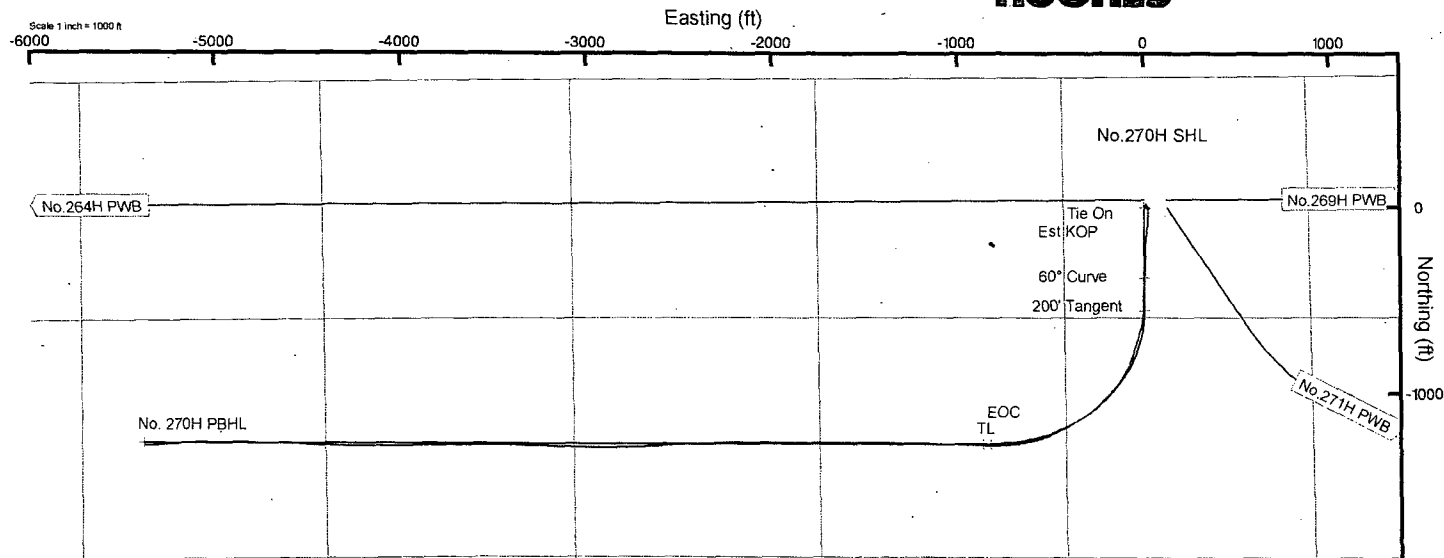
BOPCO, LP

Location: Eddy County, NM
Field: Big Eddy
Facility: Big Eddy Unit DI-4

Slot: No.270H SHL
Well: No.270H
Wellbore: No.270H PWB



BGGM (1945.0 to 2016.0) Dip: 60.40° Field: 48464.5 nT
Magnetic North is 7.55 degrees East of True North (at 7/18/2014)
Grid North is 0.24 degrees East of True North
To correct azimuth from True to Grid subtract 0.24 degrees
To correct azimuth from Magnetic to Grid add 7.31 degrees



Plot reference wellpath is Rev-H.0								
True vertical depths are referenced to Rig on No.270H SHL (KB)				Grid System: NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet				
Measured depths are referenced to Rig on No.270H SHL (KB)				North Reference: Grid north				
Rig on No.270H SHL (KB) to Mean Sea Level: 3493 feet				Scale: True distance				
Mean Sea Level to Mud line (At Slot: No.270H SHL): 0 feet				Depths are in feet				
Coordinates are in feet referenced to Slot				Created by: burnranj on 8/5/2014				
Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	29.00	0.000	180.000	29.00	0.00	0.00	0.00	0.00
Est KOP	7875.00	0.000	180.000	7875.00	0.00	0.00	0.00	0.00
60° Curve	8675.00	60.000	180.000	8536.59	-381.97	0.00	7.50	87.62
200' Tangent	8875.00	60.000	180.000	8636.59	-555.18	0.00	0.00	127.35
EOC	10173.70	90.000	270.000	9049.98	-1271.19	-826.78	6.93	1096.33
TL	10210.89	91.488	270.016	9049.50	-1271.18	-863.97	4.00	1132.52
No. 270H PBHL	14736.94	91.488	270.016	8932.00	-1269.90	-5388.49	0.00	5536.10

Rev - H.0



Actual Wellpath Report

AWP - Final

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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No.270H SHL
Area	Eddy County, NM	Well	No.270H
Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

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	Burnranj
Scale	0.99993	Report Generated	10/14/2014 at 9:52:24 AM
Convergence at slot	0.24° East	Database/Source file	WA_MIDLAND/C:\Users\burnranj\AppData\Roaming\Well Explorer\temp\BOPCO, LP No.270H SHL_Final Surveys.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-47.40	-616.54	636647.40	585027.70	32°36'27.223"N	103°53'22.483"W
Facility Reference Pt			637263.90	585075.10	32°36'27.666"N	103°53'15.274"W
Field Reference Pt			610823.03	524402.80	32°26'28.262"N	103°58'26.774"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No.270H SHL (KB) to Facility Vertical Datum	3493.00ft
Horizontal Reference Pt	Slot	Rig on No.270H SHL (KB) to Mean Sea Level	3493.00ft
Vertical Reference Pt	Rig on No.270H SHL (KB)	Rig on No.270H SHL (KB) to Mud Line at Slot (No.270H SHL)	3493.00ft
MD Reference Pt	Rig on No.270H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	256.74°



Actual Wellpath Report

AWP - Final

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Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

WELLPATH DATA (210 stations) = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	DLS [°/100ft]	Comments
0.00†	0.000	14.980	0.00	0.00	0.00	0.00	636647.40	585027.70	0.00	
29.00	0.000	14.980	29.00	0.00	0.00	0.00	636647.40	585027.70	0.00	
102.00	0.550	14.980	102.00	-0.17	0.34	0.09	636647.49	585028.04	0.75	
192.60	0.800	357.220	192.59	-0.49	1.39	0.17	636647.57	585029.09	0.36	
280.60	0.510	359.390	280.59	-0.68	2.40	0.14	636647.54	585030.10	0.33	
371.10	0.280	311.700	371.08	-0.65	2.95	-0.03	636647.37	585030.65	0.42	
463.30	0.180	300.570	463.28	-0.41	3.17	-0.32	636647.08	585030.87	0.12	
553.70	0.170	279.930	553.68	-0.19	3.26	-0.58	636646.82	585030.96	0.07	
645.40	0.180	293.630	645.38	0.05	3.35	-0.84	636646.56	585031.05	0.05	
734.70	0.210	290.020	734.68	-0.30	3.46	-1.13	636646.27	585031.16	0.04	
824.40	0.230	296.580	824.38	0.58	3.59	-1.44	636645.96	585031.29	0.04	
918.80	0.190	290.430	918.78	0.85	3.73	-1.76	636645.64	585031.43	0.05	
1013.20	0.190	288.900	1013.18	1.12	3.84	-2.05	636645.35	585031.54	0.01	
1107.60	0.110	300.880	1107.58	1.32	3.94	-2.28	636645.12	585031.64	0.09	
1202.00	0.370	102.810	1201.98	1.11	3.92	-2.06	636645.34	585031.62	0.50	
1296.40	0.850	112.320	1296.37	0.26	3.58	-1.11	636646.29	585031.28	0.52	
1390.80	1.690	116.350	1390.75	-1.38	2.70	0.78	636648.18	585030.40	0.89	
1485.20	2.380	116.370	1485.09	-3.96	1.21	3.78	636651.18	585028.91	0.73	
1579.60	2.710	115.060	1579.40	-7.22	-0.61	7.56	636654.96	585027.09	0.35	
1674.00	2.650	114.270	1673.69	-10.70	-2.45	11.57	636658.97	585025.25	0.07	
1768.40	2.600	116.360	1767.99	-14.08	-4.30	15.48	636662.88	585023.40	0.11	
1862.80	2.540	114.570	1862.30	-17.38	-6.12	19.30	636666.70	585021.58	0.11	
1957.20	1.960	106.270	1956.63	-20.44	-7.44	22.75	636670.15	585020.26	0.70	
2051.60	1.800	99.340	2050.98	-23.21	-8.13	25.77	636673.16	585019.57	0.29	
2146.00	1.530	87.150	2145.34	-25.82	-8.31	28.49	636675.89	585019.39	0.47	
2240.40	1.110	45.100	2239.71	-27.84	-7.60	30.39	636677.79	585020.10	1.09	
2334.80	0.520	28.540	2334.10	-28.90	-6.58	31.25	636678.64	585021.12	0.67	
2429.20	0.480	292.620	2428.50	-28.87	-6.05	31.09	636678.48	585021.65	0.79	
2523.60	0.610	271.870	2522.90	-28.06	-5.88	30.22	636677.62	585021.82	0.25	
2618.00	0.660	267.660	2617.29	-27.05	-5.89	29.17	636676.57	585021.81	0.07	
2712.40	0.390	255.710	2711.69	-26.19	-5.99	28.32	636675.72	585021.71	0.31	
2806.80	0.440	234.080	2806.08	-25.53	-6.28	27.71	636675.11	585021.42	0.17	
2901.20	0.560	235.240	2900.48	-24.77	-6.76	27.04	636674.44	585020.94	0.13	
2995.60	0.550	239.920	2994.88	-23.91	-7.25	26.27	636673.67	585020.45	0.05	

3090.00	0.250	248.710	3089.27	-23.27	-7.55	25.69	636673.08	585020.15	0.32
3184.40	0.380	244.080	3183.67	-22.76	-7.76	25.21	636672.61	585019.94	0.14
3278.80	0.650	275.710	3278.07	-21.95	-7.84	24.40	636671.80	585019.86	0.41
3373.20	1.250	312.530	3372.46	-20.86	-7.10	23.11	636670.51	585020.61	0.88
3467.60	1.710	329.030	3466.83	-19.86	-5.19	21.62	636669.02	585022.51	0.66
3562.00	1.610	338.990	3561.19	-19.25	-2.75	20.42	636667.82	585024.95	0.32
3656.40	1.090	330.850	3655.56	-18.82	-0.72	19.51	636666.91	585026.98	0.59
3750.80	1.130	308.830	3749.94	-18.01	0.64	18.35	636665.75	585028.34	0.45
3845.20	1.290	306.150	3844.32	-16.74	1.85	16.77	636664.16	585029.55	0.18
3939.60	1.330	307.560	3938.70	-15.36	3.15	15.04	636662.44	585030.85	0.05
4034.00	1.250	283.260	4033.07	-13.75	4.05	13.17	636660.57	585031.75	0.58



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REFERENCE WELLPATH IDENTIFICATION			
Operator	BOPCO, LP	Slot	No.270H SHL
Area	Eddy County, NM	Well	No.270H
Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

WELLPATH DATA (210 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	DLS [°/100ft]	Comments
4128.40	1.400	288.770	4127.45	-11.85	4.66	11.07	636658.47	585032.36	0.21	
4222.80	1.410	292.740	4221.82	-9.93	5.48	8.91	636656.31	585033.18	0.10	
4317.20	0.430	249.330	4316.21	-8.64	5.80	7.51	636654.91	585033.50	1.20	
4411.60	0.350	213.390	4410.60	-8.08	5.44	7.02	636654.42	585033.14	0.27	
4506.00	0.360	213.830	4505.00	-7.65	4.95	6.69	636654.09	585032.65	0.01	
4600.40	0.350	221.010	4599.40	-7.20	4.49	6.34	636653.74	585032.19	0.05	
4694.80	0.190	262.010	4693.80	-6.81	4.25	6.00	636653.40	585031.95	0.26	
4789.20	0.250	273.160	4788.20	-6.46	4.24	5.64	636653.03	585031.94	0.08	
4883.60	0.290	188.330	4882.60	-6.17	4.01	5.39	636652.79	585031.71	0.39	
4978.00	0.320	269.800	4977.00	-5.83	3.78	5.10	636652.50	585031.48	0.42	
5072.40	0.310	218.780	5071.40	-5.37	3.58	4.67	636652.07	585031.28	0.29	
5166.80	0.300	217.950	5165.80	-4.97	3.18	4.36	636651.76	585030.88	0.01	
5261.20	0.270	146.320	5260.19	-4.86	2.80	4.33	636651.73	585030.50	0.35	
5355.60	0.450	122.560	5354.59	-5.20	2.42	4.77	636652.17	585030.12	0.24	
5450.00	0.480	119.940	5448.99	-5.74	2.02	5.42	636652.82	585029.72	0.04	
5544.40	0.430	118.030	5543.39	-6.30	1.66	6.08	636653.48	585029.36	0.06	
5638.80	0.460	115.390	5637.78	-6.86	1.33	6.73	636654.13	585029.03	0.04	
5733.20	0.380	72.790	5732.18	-7.47	1.26	7.38	636654.77	585028.96	0.33	
5827.60	0.330	56.220	5826.58	-8.03	1.50	7.90	636655.30	585029.20	0.12	
5922.00	0.290	36.920	5920.98	-8.47	1.84	8.27	636655.67	585029.54	0.12	
6016.40	0.320	28.560	6015.38	-8.83	2.27	8.54	636655.94	585029.97	0.06	
6110.80	0.360	21.270	6109.78	-9.18	2.77	8.77	636656.17	585030.47	0.06	
6205.20	0.400	22.320	6204.17	-9.53	3.35	9.01	636656.40	585031.05	0.04	
6299.60	0.440	20.170	6298.57	-9.93	4.00	9.26	636656.65	585031.70	0.05	
6394.00	0.490	13.790	6392.97	-10.31	4.73	9.48	636656.88	585032.43	0.08	
6488.40	0.510	353.570	6487.36	-10.54	5.54	9.53	636656.93	585033.24	0.19	
6582.80	0.590	348.190	6581.76	-10.61	6.43	9.38	636656.78	585034.13	0.10	
6677.20	0.670	324.530	6676.15	-10.41	7.36	8.96	636656.36	585035.06	0.29	
6771.60	0.760	344.460	6770.55	-10.18	8.41	8.47	636655.87	585036.11	0.28	
6866.00	1.000	351.100	6864.94	-10.21	9.83	8.18	636655.58	585037.53	0.28	
6960.40	0.230	84.570	6959.33	-10.46	10.66	8.24	636655.64	585038.36	1.10	
7054.80	0.640	106.570	7053.73	-11.11	10.53	8.93	636656.33	585038.23	0.46	
7149.20	0.650	90.030	7148.12	-12.09	10.38	9.97	636657.37	585038.08	0.20	
7243.60	0.770	67.180	7242.51	-13.23	10.62	11.09	636658.49	585038.32	0.32	

7338.00	0.760	79.960	7336.91	-14.48	10.98	12.29	636659.69	585038.68	0.18	
7432.40	0.530	101.950	7431.30	-15.50	11.00	13.34	636660.74	585038.70	0.35	
7526.80	0.400	141.440	7525.70	-16.04	10.65	13.97	636661.37	585038.35	0.36	
7621.20	0.160	128.010	7620.10	-16.26	10.31	14.28	636661.68	585038.01	0.26	
7715.60	0.830	1.620	7714.49	-16.52	10.91	14.40	636661.80	585038.61	0.99	
7810.00	0.630	37.290	7808.89	-17.10	12.01	14.74	636662.15	585039.71	0.51	
7816.00	0.570	23.000	7814.89	-17.14	12.06	14.77	636662.17	585039.76	2.68	
7848.00	2.030	162.830	7846.88	-17.27	11.67	15.00	636662.40	585039.37	7.79	
7879.00	4.380	164.480	7877.83	-17.36	10.00	15.48	636662.87	585037.70	7.59	
7911.00	6.990	171.200	7909.67	-17.25	6.90	16.10	636663.50	585034.60	8.40	
7942.00	9.670	171.260	7940.34	-16.90	2.46	16.79	636664.18	585030.16	8.65	



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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No.270H SHL
Area	Eddy County, NM	Well	No.270H
Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	DLS [°/100ft]	Comments
7974.00	12.410	174.660	7971.74	-16.22	-3.62	17.51	636664.91	585024.08	8.80	
8005.00	14.630	173.930	8001.88	-15.27	-10.83	18.24	636665.64	585016.87	7.18	
8036.00	16.890	176.590	8031.72	-14.01	-19.22	18.92	636666.32	585008.48	7.65	
8068.00	19.160	179.570	8062.15	-12.05	-29.11	19.24	636666.63	584998.59	7.65	
8098.00	20.560	180.430	8090.36	-9.71	-39.30	19.23	636666.63	584988.40	4.77	
8129.00	21.790	182.640	8119.27	-6.84	-50.49	18.93	636666.33	584977.21	4.73	
8160.00	23.570	183.420	8147.87	-3.48	-62.43	18.29	636665.69	584965.28	5.82	
8192.00	26.540	183.660	8176.85	0.43	-75.95	17.45	636664.85	584951.75	9.29	
8223.00	29.650	183.730	8204.20	4.69	-90.52	16.51	636663.91	584937.19	10.03	
8254.00	32.290	184.340	8230.78	9.44	-106.43	15.39	636662.79	584921.28	8.58	
8286.00	33.930	184.950	8257.58	14.81	-123.85	13.97	636661.37	584903.86	5.23	
8318.00	35.850	184.440	8283.83	20.45	-142.09	12.47	636659.87	584885.62	6.07	
8350.00	37.490	184.280	8309.49	26.24	-161.15	11.02	636658.42	584866.56	5.13	
8381.00	40.010	184.520	8333.67	32.12	-180.49	9.53	636656.93	584847.22	8.14	
8412.00	40.950	183.950	8357.25	38.17	-200.56	8.05	636655.45	584827.15	3.26	
8444.00	41.560	183.200	8381.30	44.28	-221.62	6.73	636654.13	584806.09	2.45	
8475.00	43.110	181.950	8404.22	49.98	-242.48	5.80	636653.20	584785.24	5.69	
8506.00	46.190	181.300	8426.27	55.57	-264.25	5.18	636652.58	584763.47	10.04	
8538.00	48.500	181.320	8447.95	61.49	-287.78	4.64	636652.04	584739.94	7.22	
8570.00	51.320	181.360	8468.56	67.66	-312.25	4.07	636651.47	584715.47	8.81	
8601.00	53.820	181.730	8487.40	73.95	-336.86	3.41	636650.81	584690.87	8.12	
8632.00	56.880	181.710	8505.02	80.54	-362.34	2.64	636650.04	584665.38	9.87	
8664.00	59.840	182.210	8521.81	87.70	-389.57	1.71	636649.11	584638.16	9.35	
8694.00	60.770	182.460	8536.67	94.70	-415.61	0.65	636648.05	584612.12	3.18	
8726.00	60.860	182.940	8552.27	102.39	-443.51	-0.67	636646.73	584584.22	1.34	
8757.00	60.810	183.090	8567.38	109.97	-470.55	-2.09	636645.31	584557.19	0.45	
8789.00	60.630	182.860	8583.03	117.78	-498.42	-3.54	636643.86	584529.32	0.84	
8820.00	60.580	183.460	8598.24	125.41	-525.39	-5.03	636642.37	584502.35	1.69	
8851.00	60.530	183.080	8613.48	133.09	-552.34	-6.57	636640.83	584475.40	1.08	
8883.00	60.730	185.440	8629.18	141.49	-580.15	-8.64	636638.76	584447.60	6.46	
8914.00	61.060	188.760	8644.26	150.91	-607.02	-11.99	636635.41	584420.72	9.42	
8946.00	61.220	191.830	8659.71	162.11	-634.59	-17.00	636630.40	584393.16	8.42	
8977.00	61.090	193.430	8674.67	173.97	-661.08	-22.94	636624.47	584366.66	4.54	
9009.00	61.100	194.470	8690.13	186.78	-688.27	-29.69	636617.71	584339.48	2.85	

9040.00	60.830	195.670	8705.18	199.64	-714.44	-36.74	636610.67	584313.31	3.49	
9072.00	60.420	198.160	8720.88	213.65	-741.12	-44.85	636602.56	584286.64	6.90	
9103.00	59.950	199.950	8736.29	228.03	-766.54	-53.63	636593.78	584261.22	5.23	
9135.00	58.890	200.300	8752.57	243.19	-792.41	-63.11	636584.30	584235.35	3.44	
9167.00	56.510	199.920	8769.67	258.07	-817.80	-72.41	636575.00	584209.95	7.50	
9198.00	54.620	201.260	8787.20	272.30	-841.74	-81.39	636566.01	584186.02	7.06	
9228.00	54.430	204.560	8804.61	286.72	-864.24	-90.90	636556.51	584163.53	8.98	
9261.00	55.340	208.080	8823.60	303.92	-888.42	-102.87	636544.54	584139.34	9.15	
9292.00	56.650	211.300	8840.94	321.43	-910.74	-115.60	636531.81	584117.02	9.59	
9323.00	58.410	213.790	8857.58	340.18	-932.78	-129.67	636517.74	584094.99	8.84	
9355.00	60.820	216.310	8873.77	360.80	-955.37	-145.53	636501.88	584072.40	10.14	



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REFERENCE WELLPATH IDENTIFICATION			
Operator	BOPCO, LP	Slot	No.270H SHL
Area	Eddy County, NM	Well	No.270H
Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

WELLPATH DATA (210 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	DLS [°/100ft]	Comments
9386.00	62.090	219.090	8888.59	381.95	-976.91	-162.18	636485.23	584050.86	8.88	
9418.00	62.790	221.750	8903.39	404.80	-998.50	-180.58	636466.84	584029.27	7.69	
9449.00	63.860	224.550	8917.31	427.88	-1018.71	-199.52	636447.89	584009.06	8.78	
9481.00	64.530	226.780	8931.24	452.55	-1038.84	-220.13	636427.29	583988.94	6.61	
9513.00	65.730	228.400	8944.70	477.90	-1058.42	-241.56	636405.86	583969.36	5.93	
9544.00	67.560	229.970	8956.99	503.14	-1077.01	-263.10	636384.32	583950.76	7.51	
9575.00	69.260	232.000	8968.40	529.10	-1095.16	-285.50	636361.92	583932.62	8.19	
9607.00	70.280	233.780	8979.46	556.56	-1113.27	-309.44	636337.98	583914.51	6.12	
9638.00	71.450	236.420	8989.63	583.78	-1130.02	-333.46	636313.96	583897.76	8.89	
9670.00	72.490	238.300	8999.53	612.48	-1146.43	-359.08	636288.34	583881.35	6.46	
9701.00	73.640	240.060	9008.56	640.75	-1161.62	-384.55	636262.88	583866.16	6.58	
9732.00	74.740	241.340	9017.01	669.42	-1176.22	-410.56	636236.87	583851.56	5.33	
9764.00	76.010	242.510	9025.09	699.35	-1190.79	-437.88	636209.55	583836.99	5.32	
9795.00	78.060	243.970	9032.04	728.73	-1204.39	-464.85	636182.58	583823.40	8.05	
9827.00	80.320	245.770	9038.05	759.48	-1217.74	-493.31	636154.13	583810.05	8.97	
9858.00	83.740	248.120	9042.34	789.73	-1229.75	-521.55	636125.89	583798.04	13.34	
9889.00	86.460	251.070	9044.99	820.37	-1240.52	-550.49	636096.95	583787.27	12.92	
9921.00	88.030	253.880	9046.53	852.24	-1250.14	-580.97	636066.47	583777.65	10.05	
9952.00	88.800	256.700	9047.39	883.22	-1258.01	-610.94	636036.51	583769.78	9.43	
9983.00	89.010	259.020	9047.98	914.20	-1264.53	-641.24	636006.21	583763.26	7.51	
10015.00	89.510	261.720	9048.39	946.13	-1269.88	-672.78	635974.67	583757.91	8.58	
10046.00	89.910	263.890	9048.55	976.96	-1273.76	-703.53	635943.92	583754.03	7.12	
10078.00	90.190	265.990	9048.52	1008.63	-1276.58	-735.41	635912.05	583751.21	6.62	
10108.00	90.520	268.490	9048.34	1038.12	-1278.03	-765.37	635882.09	583749.76	8.41	
10141.00	91.420	270.780	9047.78	1070.28	-1278.24	-798.36	635849.10	583749.55	7.46	
10172.00	92.040	271.620	9046.84	1100.29	-1277.59	-829.34	635818.12	583750.20	3.37	
10265.00	94.480	271.390	9041.55	1190.06	-1275.15	-922.15	635725.32	583752.64	2.64	
10360.00	94.470	272.040	9034.14	1281.55	-1272.32	-1016.82	635630.66	583755.48	0.68	
10454.00	91.820	270.950	9028.98	1372.31	-1269.87	-1110.63	635536.85	583757.92	3.05	
10548.00	91.200	270.660	9026.51	1463.46	-1268.55	-1204.59	635442.89	583759.24	0.73	
10642.00	87.590	271.260	9027.50	1554.56	-1266.97	-1298.56	635348.94	583760.82	3.89	
10735.00	89.940	270.610	9029.50	1644.69	-1265.46	-1391.52	635255.98	583762.33	2.62	
10829.00	89.750	270.490	9029.76	1735.97	-1264.55	-1485.51	635161.99	583763.24	0.24	
10924.00	89.170	269.780	9030.65	1828.38	-1264.33	-1580.51	635067.01	583763.46	0.97	

11019.00	91.050	269.250	9030.47	1921.02	-1265.13	-1675.50	634972.02	583762.66	2.06	
11113.00	92.160	270.320	9027.84	2012.56	-1265.49	-1769.46	634878.07	583762.30	1.64	
11206.00	91.880	270.650	9024.56	2102.84	-1264.70	-1862.40	634785.14	583763.09	0.47	
11301.00	91.420	270.400	9021.83	2195.06	-1263.83	-1957.35	634690.19	583763.96	0.55	
11395.00	91.260	269.570	9019.63	2286.54	-1263.86	-2051.33	634596.22	583763.93	0.90	
11489.00	91.420	269.230	9017.43	2378.23	-1264.84	-2145.29	634502.26	583762.95	0.40	
11583.00	91.110	269.240	9015.35	2469.98	-1266.09	-2239.26	634408.30	583761.70	0.33	
11678.00	90.620	268.420	9013.92	2562.86	-1268.03	-2334.23	634313.34	583759.76	1.01	
11772.00	90.740	267.920	9012.80	2654.99	-1271.04	-2428.18	634219.40	583756.76	0.55	
11867.00	93.020	266.760	9009.69	2748.31	-1275.44	-2523.02	634124.57	583752.35	2.69	
11962.00	91.690	266.330	9005.78	2841.84	-1281.16	-2617.76	634029.83	583746.63	1.47	



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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No.270H SHL
Area	Eddy County, NM	Well	No.270H
Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

WELLPATH DATA (210 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	DLS [°/100ft]	Comments
12057.00	90.180	266.970	9004.23	2935.41	-1286.71	-2712.58	633935.01	583741.08	1.73	
12152.00	89.380	268.810	9004.60	3028.61	-1290.21	-2807.51	633840.09	583737.58	2.11	
12246.00	89.440	269.940	9005.57	3120.32	-1291.23	-2901.50	633746.11	583736.56	1.20	
12341.00	90.560	271.760	9005.57	3212.45	-1289.83	-2996.48	633651.13	583737.97	2.25	
12436.00	92.620	272.010	9002.93	3304.11	-1286.70	-3091.39	633556.23	583741.09	2.18	
12531.00	93.360	271.620	8997.98	3395.72	-1283.70	-3186.21	633461.41	583744.09	0.88	
12626.00	93.820	271.290	8992.03	3487.42	-1281.29	-3281.00	633366.64	583746.50	0.60	
12719.00	92.560	270.710	8986.85	3577.41	-1279.67	-3373.84	633273.81	583748.12	1.49	
12811.00	91.320	270.750	8983.74	3666.63	-1278.50	-3465.77	633181.87	583749.29	1.35	
12905.00	91.570	269.900	8981.37	3757.97	-1277.96	-3559.74	633087.91	583749.83	0.94	
13000.00	92.010	268.680	8978.40	3850.65	-1279.14	-3654.69	632992.98	583748.65	1.36	
13094.00	91.640	268.570	8975.41	3942.59	-1281.40	-3748.61	632899.06	583746.40	0.41	
13188.00	90.930	269.870	8973.30	4034.34	-1282.67	-3842.58	632805.10	583745.12	1.58	
13283.00	89.450	269.890	8972.98	4126.85	-1282.87	-3937.57	632710.11	583744.92	1.56	
13378.00	89.510	269.220	8973.84	4219.48	-1283.61	-4032.56	632615.12	583744.18	0.71	
13472.00	90.030	269.110	8974.22	4311.28	-1284.98	-4126.55	632521.14	583742.81	0.57	
13567.00	88.330	269.620	8975.58	4403.97	-1286.03	-4221.53	632426.17	583741.76	1.87	
13662.00	88.830	271.320	8977.94	4496.22	-1285.25	-4316.50	632331.21	583742.54	1.86	
13757.00	89.820	272.390	8979.05	4587.92	-1282.18	-4411.44	632236.28	583745.61	1.53	
13851.00	91.790	272.840	8977.73	4678.33	-1277.89	-4505.33	632142.40	583749.90	2.15	
13944.00	93.150	272.400	8973.73	4767.69	-1273.64	-4598.14	632049.59	583754.15	1.54	
14037.00	93.480	271.340	8968.35	4857.31	-1270.61	-4690.93	631956.80	583757.18	1.19	
14131.00	92.990	269.890	8963.04	4948.42	-1269.61	-4784.78	631862.97	583758.18	1.63	
14224.00	91.580	271.320	8959.34	5038.64	-1268.63	-4877.69	631770.06	583759.16	2.16	
14319.00	91.320	270.230	8956.93	5130.77	-1267.34	-4972.65	631675.10	583760.45	1.18	
14412.00	90.340	268.650	8955.58	5221.48	-1268.25	-5065.63	631582.13	583759.54	2.00	
14507.00	90.400	267.180	8954.97	5314.67	-1271.71	-5160.57	631487.20	583756.08	1.55	
14602.00	89.600	266.510	8954.97	5408.20	-1276.94	-5255.42	631392.35	583750.86	1.10	
14657.00	89.750	265.860	8955.28	5462.45	-1280.59	-5310.30	631337.48	583747.20	1.21	
14732.00	89.750	265.860	8955.61	5536.50	-1286.01	-5385.10	631262.68	583741.78	0.00	



Actual Wellpath Report

AWP - Final

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REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No.270H SHL
Area	Eddy County, NM	Well	No.270H
Field	Big Eddy	Wellbore	No.270H AWP
Facility	Big Eddy Unit DI-4		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
BEU No.270H PBHL		8931.00	-1339.90	-5388.49	631259.30	583687.90	32°36'14.183"N	103°54'25.536"W	point

WELLPATH COMPOSITION - Ref Wellbore: No.270H AWP - Ref Wellpath: AWP - Final

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
29.00	7810.00	Generic gyro - northseeking (Standard)	Gyrodata Gyro Surveys <102 - 7810>	No.270H AWP
7810.00	14657.00	NaviTrak (Standard)	BHI NaviTrak <7848-14657>	No.270H AWP
14657.00	14732.00	Blind Drilling (std)	Projection to bit	No.270H AWP