



Job Number: SVMO-141746
 Company: BOPCO, LP
 Lease/Well: PLU CVX JV PC 19H
 Location: Eddy County, NM
 Rig Name: Lashaw #18
 RKB: 29'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 7.24°
 Grid: East To Grid North
 File name: Y:\WINSER-1\2014SU-1\BOPCO\MO\PLU\CVX\JVPC19H.SVY
 Date/Time: 31-Dec-14 / 08:56
 Curve Name: 1109' - 3751' M.D. (Rate Gyro)

30-015-414649

NM OIL CONSERVATION
 ARTESIA DISTRICT
 OCT 13 2015
 RECEIVED

MS Survey

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 84.03

Vertical Section Referenced to Wellhead

Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 1109' MD to 3751' MD is, to the best of
 our knowledge a true and accurate account of
 the well bore.
ITRAVIS PACK 12/31/14
 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 Distance FT	Direction Deg	Dogleg Severity Deg/100
-------------------------	----------------------	---------------------------	---------------------------	-----------	-----------	---------------------------	---------------------------	------------------	-------------------------------

1082.00	.19	73.35	1082.00	1.48	1.19	1.34	1.90	38.80	.00
---------	-----	-------	---------	------	------	------	------	-------	-----

Tied Rate Gyro Surveys Into Previous SRG Surveys

1109.00	.29	175.18	1109.00	1.42	1.24	1.38	1.89	41.00	1.40
1203.00	.40	161.77	1203.00	.88	1.36	1.44	1.62	57.24	.14
1297.00	.44	166.14	1297.00	.21	1.55	1.56	1.57	82.14	.05
1392.00	.37	171.55	1391.99	-.44	1.68	1.63	1.74	104.77	.08
1486.00	.37	179.04	1485.99	-1.05	1.73	1.61	2.02	121.15	.05
1580.00	.37	174.67	1579.99	-1.65	1.77	1.58	2.42	133.11	.03
1675.00	.35	169.53	1674.99	-2.24	1.85	1.60	2.91	140.54	.04

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
1769.00	.33	193.62	1768.99	-2.79	1.84	1.54	3.34	146.65	.15
1864.00	.33	187.18	1863.98	-3.33	1.74	1.38	3.75	152.43	.04
1958.00	.38	179.64	1957.98	-3.91	1.70	1.29	4.26	156.42	.07
2052.00	.35	171.93	2051.98	-4.50	1.75	1.27	4.83	158.79	.06
2147.00	.40	166.59	2146.98	-5.11	1.86	1.32	5.44	159.96	.06
2241.00	.44	165.88	2240.98	-5.78	2.03	1.42	6.13	160.66	.04
2335.00	.39	154.49	2334.97	-6.42	2.25	1.57	6.80	160.65	.10
2430.00	.40	145.10	2429.97	-6.98	2.58	1.84	7.45	159.70	.07
2524.00	.36	143.26	2523.97	-7.49	2.95	2.15	8.05	158.51	.04
2619.00	.37	138.98	2618.97	-7.96	3.33	2.48	8.63	157.31	.03
2713.00	.37	123.36	2712.97	-8.36	3.78	2.89	9.17	155.66	.11
2807.00	.32	114.48	2806.96	-8.63	4.27	3.35	9.63	153.66	.08
2902.00	.31	113.47	2901.96	-8.84	4.75	3.80	10.04	151.76	.01
2996.00	.28	105.21	2995.96	-9.01	5.21	4.24	10.40	149.97	.06
3090.00	.27	96.40	3089.96	-9.09	5.65	4.67	10.70	148.15	.05
3185.00	.32	89.00	3184.96	-9.11	6.13	5.15	10.98	146.05	.07
3279.00	.37	98.93	3278.96	-9.15	6.70	5.71	11.34	143.81	.08
3374.00	.35	94.99	3373.96	-9.23	7.29	6.29	11.76	141.69	.03
3468.00	.32	113.04	3467.95	-9.35	7.82	6.80	12.19	140.12	.12
3562.00	.32	107.35	3561.95	-9.54	8.31	7.27	12.65	138.93	.03
3657.00	.32	115.11	3656.95	-9.73	8.80	7.74	13.12	137.86	.05
Last Survey Depth Recorded									
3751.00	.30	113.02	3750.95	-9.93	9.27	8.18	13.59	136.99	.02



Job Number: SVMO-141720
Company: BOPCO, LP
Lease/Well: PLU CVX JV PC 19H
Location: Eddy County, NM
Rig Name: Latshaw #18
RKB: 29'
G.L. or M.S.L.: GL

State/Country: New Mexico/USA
Declination: 7.24°
Grid: East To Grid North
File name: S:\2014SU-1\BOPCO\MO\PLU\CVX\JVPC\19H.SVY
Date/Time: 23-Dec-14 / 09:50
Curve Name: Surface - 1082' M.D. (SRG)

ARTESIA DISTRICT
OCT 13 2015
RECEIVED

MS SURVEY

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

We hereby certify that our survey data from
Surface MD to 1082' MD is, to the best of
our knowledge a true and accurate account of
the well bore.
Daniel West 12/23/14
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	Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.29	359.52	100.00	.25	.00	.25	.25	359.52	.29
200.00	.24	33.13	200.00	.68	.11	.68	.69	9.19	.16
300.00	.14	73.14	300.00	.89	.34	.89	.96	20.95	.16
400.00	.02	191.76	400.00	.91	.45	.91	1.02	26.55	.15
500.00	.07	327.59	500.00	.95	.42	.95	1.03	23.89	.09
600.00	.05	124.61	600.00	.97	.42	.97	1.06	23.46	.12
700.00	.08	93.18	700.00	.94	.53	.94	1.08	29.21	.05
800.00	.22	62.99	800.00	1.03	.77	1.03	1.28	36.81	.16
900.00	.10	14.09	900.00	1.20	.96	1.20	1.54	38.71	.17

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
1000.00	.11	25.76	1000.00	1.37	1.02	1.37	1.71	36.77	.02
Last Survey Depth Recorded									
1082.00	.19	73.35	1082.00	1.48	1.19	1.48	1.90	38.76	.17



30-015-42669

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 13 2015

2105 MARKET STREET
MIDLAND, TX 79703
24 HR (432) 694-9517

STATE OF NEW MEXICO

RECEIVED

COUNTY OF EDDY

I, Chris Trahan, Directional Driller certify that I am employed by Baker Hughes INTEQ; did conduct
or supervise on the day(s) of 12/26/2014 through 01/23/2015 the

taking of MWD surveys from a depth of 3915 to a depth of 16773 that

the data is true, correct, complete and within the limitations of the tool as set forth by Baker Hughes INTEQ; that I am

authorized and qualified to make this report; that this survey was conducted at the request of BOPCO, LP

for the PLU CVX JV PC No. 19H Well, API No. 30-015-42669

in Eddy County, NM; and that I have reviewed this report and find that it conforms to

the principles and procedures as set forth by INTEQ.

Field Service Engineer: Chris Trahan



BOPCO, LP

Location: Eddy County, NM

Slot: No 19H

Field: Eddy County, NM (NAD 27 / Grid)

Well: No 19H

Facility: PLU CVX JV PC (19H) Sec. 21, TSP 24S, Range 30E

Wellbore: PLU CVX JV No. 19H AWP



Plot reference wellpath is PLU CVX JV No. 19H AWP

True vertical depths are referenced to Latahew 18 (KB)

Measured depths are referenced to Latahew 18 (KB)

Latahew 18 (KB) to Mean Sea Level: 3378 feet

Mean Sea Level to Mud line (At Slot: No. 19H): -3347 feet

Coordinates are in feet referenced to Slot

Grid System: NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet

North Reference: Grid north

Scale: True distance

Depths are in feet

Created by: Jenotha on 02-Feb-15

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude
PLU CVX JV PC (19H) Sec. 21, TSP 24S, Range 30E	638692.30	440509.90	32°12'37.021"N
Slot	Local N (ft)	Local E (ft)	Longitude
No. 19H	0.00	0.00	103°53'05.864"W
Latahew 18 (KB) to Mud line (At Slot: No. 19H)	638692.30	440509.90	32°12'37.021"N
Mean Sea Level to Mud line (At Slot: No. 19H)			29ft
Latahew 18 (KB) to Mean Sea Level			-3347ft

Tie-On Position

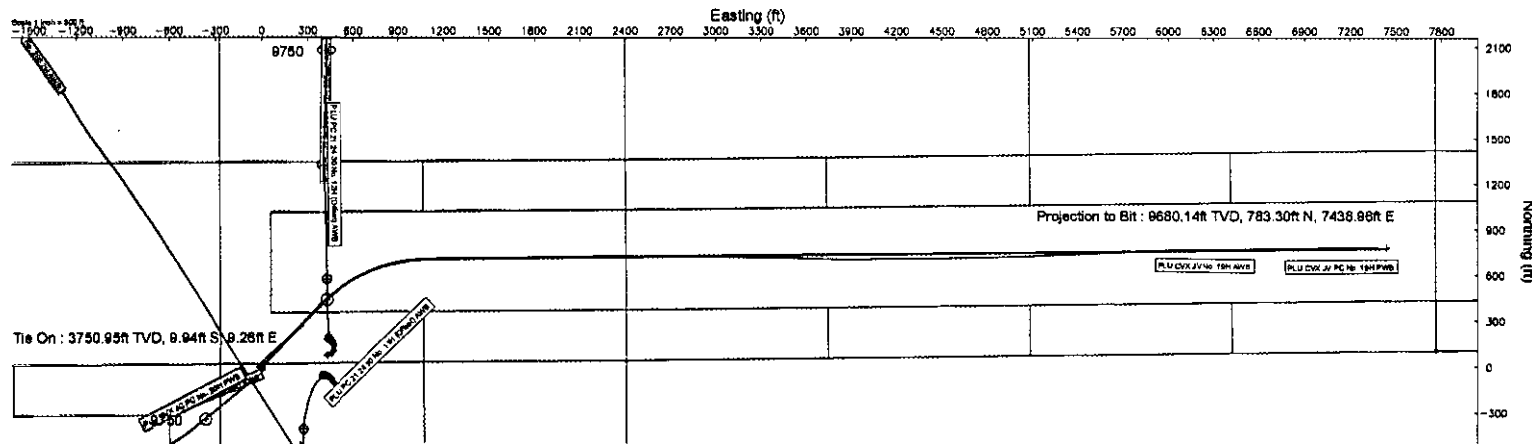
MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
0.00	0.000	33.130	0.00	0.00	0.00	638692.30	440509.90	32°12'37.021"N	103°53'05.864"W

Targets

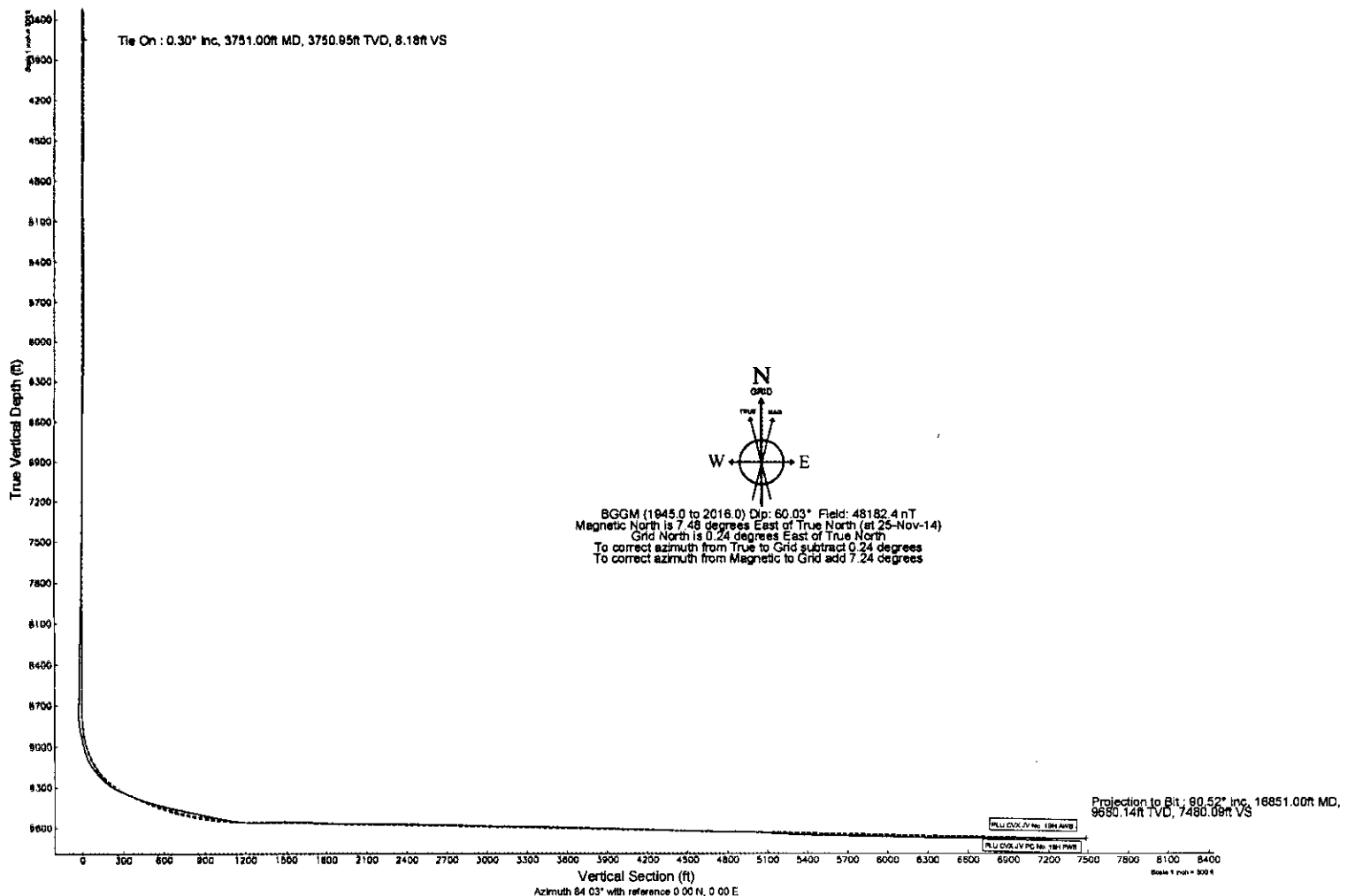
Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
PLU CVX JC PC No. 19H PB-HL Run-2	9684.00	778.18	7439.20	8481.31.00	441288.00	32°12'44.405"N	103°51'39.043"W	

Bottom Hole Location

MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
16851.00	80.520	80.840	9680.14	783.30	7438.98	648130.74	441283.15	32°12'44.456"N	103°51'39.045"W



Tie On : 0.30° Inc, 3751.00ft MD, 3750.95ft TVD, 8.18ft VS



BGGM (1945.0 to 2016.0) Dip: 60.03° Field: 48182.4 nT
Magnetic North is 7.48 degrees East of True North (at 25-Nov-14)
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 7.24 degrees

Projection to Bit: 80.52° Inc, 16851.00ft MD, 9680.14ft TVD, 7480.08ft VS

Azimuth 84.03° with reference 0.00 N, 0.00 E



Actual Wellpath Report

PLU CVX JV No. 19H AWP

Page 1 of 5



REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No. 19H
Area	Eddy County, NM	Well	No. 19H
Field	Eddy County, NM (NAD 27 / Grid)	Wellbore	PLU CVX JV No. 19H AWP
Facility	PLU CVX JV PC {19H} Sec. 21, TSP 24S, Rnge 30E		

REPORT SETUP INFORMATION

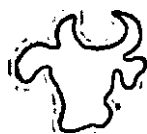
Projection System	NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 4.0.0
North Reference	Grid	User	Janotho
Scale	0.999931	Report Generated	02-Feb-15 at 8:13:53 AM
Convergence at slot	0.24° East	Database/Source file	WA_Midland/PLU_CVX_JV_No._19H_AWP.xml

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	638692.30	440509.90	32°12'37.021"N	103°53'05.664"W
Facility Reference Pt			638692.30	440509.90	32°12'37.021"N	103°53'05.664"W
Field Reference Pt			510280.10	534700.83	32°28'12.000"N	104°18'00.000"W

WELLPATH DATUM

Calculation method	Minimum curvature	Latshaw 18 (KB) to Facility Vertical Datum	29.00ft
Horizontal Reference Pt	Slot	Latshaw 18 (KB) to Mean Sea Level	3376.00ft
Vertical Reference Pt	Latshaw 18 (KB)	Latshaw 18 (KB) to Mud Line at Slot (No. 19H)	29.00ft
MD Reference Pt	Latshaw 18 (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	84.03°



Actual Wellpath Report

PLU CVX JV No. 19H AWP

Page 2 of 5



REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No. 19H
Area	Eddy County, NM	Well	No. 19H
Field	Eddy County, NM (NAD 27 / Grid)	Wellbore	PLU CVX JV No. 19H AWP
Facility	PLU CVX JV PC {19H} Sec. 21, TSP 24S, Rnge 30E		

WELLPATH DATA (133 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
3751.00	0.300	113.020	3750.95	8.18	-9.94	9.26	638701.56	440499.97	32°12'36.922"N	103°53'05.557"W	0.02	Tie On
3915.00	0.220	295.020	3914.95	8.29	-9.97	9.37	638701.67	440499.93	32°12'36.922"N	103°53'05.556"W	0.32	
4103.00	0.290	255.850	4102.94	7.51	-9.93	8.59	638700.89	440499.97	32°12'36.922"N	103°53'05.565"W	0.10	
4291.00	0.220	133.120	4290.94	7.27	-10.30	8.39	638700.69	440499.60	32°12'36.918"N	103°53'05.567"W	0.24	
4478.00	0.310	192.260	4477.94	7.35	-11.04	8.54	638700.84	440498.86	32°12'36.911"N	103°53'05.565"W	0.15	
4666.00	0.400	211.820	4665.94	6.79	-12.09	8.09	638700.39	440497.81	32°12'36.901"N	103°53'05.571"W	0.08	
4856.00	0.440	8.710	4855.94	6.57	-11.93	7.85	638700.15	440497.97	32°12'36.902"N	103°53'05.573"W	0.43	
5044.00	0.900	355.990	5043.92	6.80	-9.75	7.86	638700.15	440500.15	32°12'36.924"N	103°53'05.573"W	0.26	
5231.00	0.890	20.560	5230.90	7.50	-6.92	8.26	638700.56	440502.98	32°12'36.952"N	103°53'05.568"W	0.20	
5417.00	0.670	1.200	5416.88	8.28	-4.48	8.79	638701.09	440505.42	32°12'36.976"N	103°53'05.562"W	0.18	
5606.00	0.700	355.260	5605.87	8.44	-2.23	8.72	638701.02	440507.67	32°12'36.998"N	103°53'05.563"W	0.04	
5794.00	0.800	349.260	5793.85	8.36	0.21	8.38	638700.68	440510.11	32°12'37.022"N	103°53'05.567"W	0.07	
5983.00	1.170	347.360	5982.83	8.02	3.39	7.71	638700.01	440513.29	32°12'37.054"N	103°53'05.574"W	0.20	
6173.00	1.010	316.060	6172.79	6.77	6.48	6.13	638698.43	440516.38	32°12'37.085"N	103°53'05.593"W	0.32	
6362.00	1.150	318.410	6361.76	4.64	9.10	3.71	638696.01	440519.00	32°12'37.111"N	103°53'05.621"W	0.08	
6549.00	0.800	314.030	6548.73	2.71	11.41	1.53	638693.83	440521.31	32°12'37.134"N	103°53'05.646"W	0.19	
6738.00	0.290	291.570	6737.72	1.43	12.51	0.13	638692.43	440522.41	32°12'37.144"N	103°53'05.662"W	0.29	
6928.00	0.190	275.250	6927.72	0.70	12.71	-0.63	638691.67	440522.61	32°12'37.147"N	103°53'05.671"W	0.06	
7117.00	0.310	177.450	7116.72	0.36	12.23	-0.92	638691.38	440522.13	32°12'37.142"N	103°53'05.674"W	0.20	
7305.00	0.320	180.870	7304.72	0.27	11.20	-0.90	638691.40	440521.10	32°12'37.132"N	103°53'05.674"W	0.01	
7493.00	0.920	231.730	7492.71	-1.07	9.74	-2.09	638690.21	440519.64	32°12'37.117"N	103°53'05.688"W	0.40	
7681.00	1.120	255.540	7680.68	-4.16	8.34	-5.06	638687.24	440518.24	32°12'37.103"N	103°53'05.723"W	0.25	
7870.00	0.770	284.790	7869.65	-7.18	8.21	-8.08	638684.23	440518.11	32°12'37.102"N	103°53'05.758"W	0.31	
8058.00	2.310	275.950	8057.58	-12.07	8.92	-13.07	638679.24	440518.82	32°12'37.110"N	103°53'05.816"W	0.83	
8219.00	1.260	257.790	8218.50	-17.00	8.88	-18.02	638674.28	440518.78	32°12'37.109"N	103°53'05.874"W	0.73	
8358.00	0.720	235.550	8357.48	-19.29	8.07	-20.24	638672.06	440517.97	32°12'37.101"N	103°53'05.899"W	0.47	
8547.00	1.150	258.630	8546.45	-22.22	7.02	-23.08	638669.23	440516.92	32°12'37.091"N	103°53'05.932"W	0.30	
8736.00	1.420	266.980	8735.41	-26.45	6.52	-27.27	638665.03	440516.42	32°12'37.086"N	103°53'05.981"W	0.17	
8768.00	1.480	7.920	8767.40	-26.74	6.91	-27.61	638664.69	440516.81	32°12'37.090"N	103°53'05.985"W	6.99	
8801.00	5.260	42.670	8800.34	-25.51	8.45	-26.53	638665.77	440518.35	32°12'37.105"N	103°53'05.973"W	12.52	
8832.00	8.010	46.590	8831.13	-22.72	10.98	-24.00	638668.31	440520.88	32°12'37.130"N	103°53'05.943"W	8.99	
8864.00	10.740	47.780	8862.70	-18.55	14.51	-20.17	638672.13	440524.41	32°12'37.165"N	103°53'05.898"W	8.55	
8895.00	13.660	46.810	8893.00	-13.30	18.96	-15.36	638676.94	440528.86	32°12'37.209"N	103°53'05.842"W	9.44	
8927.00	15.650	45.550	8923.95	-6.91	24.57	-9.52	638682.78	440534.47	32°12'37.264"N	103°53'05.774"W	6.30	
8958.00	16.040	43.540	8953.77	-0.38	30.60	-3.59	638688.71	440540.50	32°12'37.324"N	103°53'05.704"W	2.17	
8989.00	17.780	41.230	8983.43	6.35	37.27	2.48	638694.78	440547.16	32°12'37.389"N	103°53'05.633"W	6.02	
9021.00	19.720	41.650	9013.73	13.92	44.98	9.29	638701.59	440554.87	32°12'37.465"N	103°53'05.554"W	6.08	
9052.00	22.690	43.940	9042.63	22.36	53.19	16.92	638709.22	440563.09	32°12'37.546"N	103°53'05.465"W	9.94	
9084.00	26.720	44.810	9071.70	32.66	62.74	26.28	638718.57	440572.64	32°12'37.640"N	103°53'05.355"W	12.64	
9115.00	31.210	45.850	9098.81	44.38	73.29	36.96	638729.25	440583.18	32°12'37.744"N	103°53'05.231"W	14.57	
9147.00	36.380	46.310	9125.40	58.41	85.63	49.78	638742.07	440595.52	32°12'37.866"N	103°53'05.081"W	16.18	
9178.00	40.790	46.800	9149.62	73.76	98.92	63.81	638756.11	440608.81	32°12'37.997"N	103°53'04.917"W	14.26	
9210.00	44.080	47.990	9173.24	91.08	113.52	79.71	638772.00	440623.42	32°12'38.141"N	103°53'04.731"W	10.58	
9241.00	46.880	48.820	9194.97	109.05	128.19	96.24	638788.53	440638.08	32°12'38.285"N	103°53'04.538"W	9.23	
9273.00	48.580	48.210	9216.50	128.32	143.88	113.97	638806.27	440653.77	32°12'38.440"N	103°53'04.331"W	5.50	



Actual Wellpath Report

PLU CVX JV No. 19H AWP

Page 3 of 5



REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No. 19H
Area	Eddy County, NM	Well	No. 19H
Field	Eddy County, NM (NAD 27 / Grid)	Wellbore	PLU CVX JV No. 19H AWP
Facility	PLU CVX JV PC {19H} Sec. 21, TSP 24S, Rnge 30E		

WELLPATH DATA (133 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
9305.00	50.430	47.440	9237.27	147.96	160.22	132.01	638824.30	440670.11	32°12'38.601"N	103°53'04.120"W	6.06	
9336.00	54.040	46.480	9256.26	167.51	176.94	149.91	638842.20	440686.83	32°12'38.765"N	103°53'03.911"W	11.90	
9368.00	57.710	45.510	9274.21	188.36	195.35	168.96	638861.25	440705.23	32°12'38.947"N	103°53'03.688"W	11.74	
9399.00	61.440	44.890	9289.90	209.18	214.18	187.92	638880.21	440724.07	32°12'39.132"N	103°53'03.467"W	12.16	
9430.00	65.470	44.530	9303.75	230.63	233.89	207.42	638899.71	440743.77	32°12'39.327"N	103°53'03.239"W	13.04	
9462.00	68.220	44.080	9316.34	253.26	254.94	227.97	638920.26	440764.82	32°12'39.534"N	103°53'02.999"W	8.69	
9493.00	70.410	43.910	9327.28	275.46	275.80	248.12	638940.40	440785.69	32°12'39.740"N	103°53'02.763"W	7.08	
9525.00	71.760	43.790	9337.66	298.59	297.64	269.09	638961.37	440807.51	32°12'39.955"N	103°53'02.518"W	4.23	
9556.00	72.100	43.820	9347.27	321.09	318.90	289.49	638981.77	440828.78	32°12'40.164"N	103°53'02.279"W	1.10	
9588.00	72.340	43.630	9357.04	344.33	340.92	310.55	639002.83	440850.80	32°12'40.381"N	103°53'02.033"W	0.94	
9620.00	72.220	43.710	9366.78	367.56	362.97	331.60	639023.87	440872.85	32°12'40.599"N	103°53'01.787"W	0.44	
9651.00	72.400	43.690	9376.20	390.07	384.33	352.00	639044.28	440894.20	32°12'40.809"N	103°53'01.549"W	0.58	
9682.00	72.800	43.570	9385.47	412.60	405.74	372.41	639064.69	440915.61	32°12'41.020"N	103°53'01.310"W	1.34	
9714.00	73.840	44.600	9394.66	436.10	427.75	393.74	639086.01	440937.62	32°12'41.237"N	103°53'01.061"W	4.48	
9746.00	74.930	46.760	9403.27	460.27	449.28	415.79	639108.06	440959.15	32°12'41.449"N	103°53'00.803"W	7.34	
9777.00	75.620	49.490	9411.15	484.56	469.29	438.11	639130.38	440979.16	32°12'41.646"N	103°53'00.542"W	8.80	
9809.00	76.540	51.740	9418.85	510.48	489.00	462.12	639154.38	440998.87	32°12'41.840"N	103°53'00.262"W	7.41	
9840.00	77.020	53.880	9425.94	536.29	507.24	486.16	639178.42	441017.10	32°12'42.020"N	103°52'59.981"W	6.90	
9872.00	77.210	55.990	9433.08	563.54	525.16	511.69	639203.95	441035.02	32°12'42.196"N	103°52'59.683"W	6.46	
9903.00	77.530	57.520	9439.86	590.43	541.74	536.98	639229.25	441051.60	32°12'42.359"N	103°52'59.388"W	4.93	
9935.00	77.610	59.200	9446.75	618.60	558.13	563.59	639255.85	441068.00	32°12'42.520"N	103°52'59.078"W	5.13	
9966.00	77.810	60.600	9453.35	646.24	573.32	589.79	639282.05	441083.18	32°12'42.670"N	103°52'58.772"W	4.46	
9998.00	78.670	62.100	9459.87	675.14	588.34	617.28	639309.54	441098.20	32°12'42.817"N	103°52'58.451"W	5.32	
10030.00	78.700	63.990	9466.15	704.44	602.57	645.25	639337.51	441112.42	32°12'42.957"N	103°52'58.125"W	5.79	
10061.00	78.340	66.230	9472.32	733.18	615.35	672.81	639365.06	441125.21	32°12'43.082"N	103°52'57.804"W	7.18	
10092.00	78.680	68.690	9478.49	762.29	627.00	700.86	639393.11	441136.85	32°12'43.196"N	103°52'57.477"W	7.85	
10124.00	78.920	70.390	9484.71	792.68	637.97	730.27	639422.52	441147.82	32°12'43.303"N	103°52'57.134"W	5.27	
10155.00	79.210	71.990	9490.59	822.36	647.78	759.08	639451.33	441157.64	32°12'43.399"N	103°52'56.798"W	5.15	
10186.00	78.590	74.320	9496.56	852.23	656.60	788.20	639480.44	441166.45	32°12'43.485"N	103°52'56.459"W	7.64	
10217.00	78.610	75.820	9502.69	882.24	664.43	817.56	639509.80	441174.28	32°12'43.562"N	103°52'56.117"W	4.74	
10248.00	78.270	77.310	9508.90	912.36	671.48	847.10	639539.34	441181.33	32°12'43.630"N	103°52'55.772"W	4.83	
10279.00	78.310	78.330	9515.19	942.53	677.89	876.77	639569.01	441187.74	32°12'43.692"N	103°52'55.427"W	3.22	
10311.00	78.380	79.500	9521.66	973.75	683.91	907.52	639599.76	441193.76	32°12'43.751"N	103°52'55.068"W	3.59	
10342.00	78.420	80.560	9527.89	1004.04	689.17	937.43	639629.66	441199.02	32°12'43.801"N	103°52'54.720"W	3.35	
10373.00	78.910	81.670	9533.98	1034.40	693.86	967.46	639659.69	441203.71	32°12'43.847"N	103°52'54.370"W	3.85	
10405.00	80.350	82.470	9539.74	1065.85	698.21	998.64	639690.87	441208.06	32°12'43.888"N	103°52'54.007"W	5.13	
10436.00	80.840	83.930	9544.81	1096.43	701.83	1029.00	639721.23	441211.68	32°12'43.923"N	103°52'53.654"W	4.91	
10468.00	82.620	84.890	9549.41	1128.10	704.91	1060.52	639752.74	441214.76	32°12'43.952"N	103°52'53.287"W	6.31	
10499.00	84.510	86.500	9552.89	1158.89	707.22	1091.23	639783.46	441217.07	32°12'43.974"N	103°52'52.929"W	7.99	
10531.00	86.080	88.220	9555.51	1190.72	708.69	1123.09	639815.31	441218.54	32°12'43.987"N	103°52'52.558"W	7.26	
10563.00	87.810	89.360	9557.22	1222.57	709.36	1155.04	639847.25	441219.21	32°12'43.992"N	103°52'52.186"W	6.47	
10594.00	88.830	90.490	9558.13	1253.39	709.41	1186.02	639878.24	441219.25	32°12'43.991"N	103°52'51.826"W	4.91	
10625.00	89.570	90.760	9558.56	1284.18	709.07	1217.02	639909.23	441218.92	32°12'43.987"N	103°52'51.465"W	2.54	
10719.00	92.650	90.110	9556.74	1377.56	708.35	1310.98	640003.19	441218.20	32°12'43.976"N	103°52'50.371"W	3.35	
10826.00	92.070	87.490	9552.33	1484.09	710.59	1417.86	640110.06	441220.44	32°12'43.993"N	103°52'49.127"W	2.51	



Actual Wellpath Report

PLU CVX JV No. 19H AWP

Page 4 of 5



BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	BOPCO, LP	Slot	No. 19H
Area	Eddy County, NM	Well	No. 19H
Field	Eddy County, NM (NAD 27 / Grid)	Wellbore	PLU CVX JV No. 19H AWP
Facility	PLU CVX JV PC {19H} Sec. 21, TSP 24S, Rnge 30E		

WELLPATH DATA (133 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
10920.00	87.900	87.750	9552.36	1577.89	714.50	1511.76	640203.95	441224.34	32°12'44.028"N	103°52'48.034"W	4.44	
11013.00	86.330	88.900	9557.04	1670.50	717.21	1604.60	640296.78	441227.06	32°12'44.051"N	103°52'46.954"W	2.09	
11107.00	86.420	88.200	9562.98	1764.02	719.58	1698.38	640390.56	441229.43	32°12'44.071"N	103°52'45.862"W	0.75	
11201.00	88.210	88.820	9567.38	1857.63	722.03	1792.24	640484.41	441231.87	32°12'44.091"N	103°52'44.770"W	2.02	
11296.00	89.110	89.520	9569.61	1952.22	723.40	1887.20	640579.37	441233.25	32°12'44.101"N	103°52'43.664"W	1.20	
11390.00	89.630	89.680	9570.64	2045.77	724.06	1981.19	640673.35	441233.91	32°12'44.103"N	103°52'42.570"W	0.58	
11484.00	90.310	88.590	9570.69	2139.39	725.48	2075.18	640767.33	441235.33	32°12'44.113"N	103°52'41.476"W	1.37	
11577.00	90.250	88.410	9570.23	2232.11	727.91	2168.15	640860.29	441237.76	32°12'44.133"N	103°52'40.394"W	0.20	
11672.00	89.750	89.800	9570.23	2326.73	729.39	2263.13	640955.27	441239.24	32°12'44.144"N	103°52'39.289"W	1.55	
11765.00	88.900	90.910	9571.33	2419.16	728.82	2356.12	641048.26	441238.67	32°12'44.135"N	103°52'38.206"W	1.50	
11859.00	88.500	91.090	9573.46	2512.44	727.18	2450.08	641142.21	441237.03	32°12'44.114"N	103°52'37.113"W	0.47	
11952.00	89.140	90.340	9575.38	2604.79	726.02	2543.06	641235.17	441235.87	32°12'44.099"N	103°52'36.031"W	1.06	
12044.00	89.380	89.580	9576.57	2696.29	726.08	2635.05	641327.16	441235.93	32°12'44.096"N	103°52'34.960"W	0.87	
12138.00	88.830	89.810	9578.03	2789.81	726.58	2729.03	641421.14	441236.43	32°12'44.097"N	103°52'33.866"W	0.63	
12233.00	87.630	90.600	9580.97	2884.22	726.24	2823.99	641516.08	441236.09	32°12'44.089"N	103°52'32.761"W	1.51	
12327.00	87.590	90.770	9584.89	2977.50	725.12	2917.90	641609.99	441234.97	32°12'44.074"N	103°52'31.668"W	0.19	
12421.00	88.770	90.430	9587.87	3070.83	724.14	3011.84	641703.93	441233.99	32°12'44.061"N	103°52'30.575"W	1.31	
12516.00	89.970	90.120	9588.92	3165.26	723.68	3106.83	641798.91	441233.53	32°12'44.052"N	103°52'29.469"W	1.30	
12611.00	89.230	90.250	9589.58	3259.71	723.37	3201.83	641893.90	441233.22	32°12'44.045"N	103°52'28.364"W	0.79	
12705.00	89.040	89.900	9591.00	3353.18	723.25	3295.82	641987.89	441233.10	32°12'44.040"N	103°52'27.270"W	0.42	
12889.00	88.550	91.890	9594.87	3535.81	720.38	3479.75	642171.80	441230.23	32°12'44.004"N	103°52'25.129"W	1.11	
13079.00	88.580	92.020	9599.63	3723.93	713.90	3669.58	642361.62	441223.75	32°12'43.932"N	103°52'22.920"W	0.07	
13267.00	88.640	90.030	9604.19	3910.47	710.54	3857.48	642549.51	441220.39	32°12'43.890"N	103°52'20.733"W	1.06	
13455.00	88.150	89.450	9609.45	4097.46	711.39	4045.40	642737.42	441221.24	32°12'43.891"N	103°52'18.546"W	0.40	
13643.00	88.060	89.340	9615.67	4284.53	713.37	4233.29	642925.29	441223.22	32°12'43.902"N	103°52'16.359"W	0.08	
13833.00	88.150	89.240	9621.95	4473.63	715.73	4423.17	643115.16	441225.58	32°12'43.918"N	103°52'14.149"W	0.07	
14022.00	88.800	88.880	9626.98	4661.83	718.83	4612.08	643304.05	441228.68	32°12'43.940"N	103°52'11.950"W	0.39	
14211.00	89.810	88.390	9629.28	4850.21	723.33	4801.01	643492.97	441233.18	32°12'43.977"N	103°52'09.751"W	0.59	
14399.00	87.010	88.740	9634.49	5037.53	728.03	4988.86	643680.80	441237.88	32°12'44.015"N	103°52'07.565"W	1.50	
14588.00	86.760	87.010	9644.76	5225.82	735.03	5177.44	643869.37	441244.88	32°12'44.076"N	103°52'05.369"W	0.92	
14777.00	88.640	87.960	9652.35	5414.31	743.32	5366.10	644058.02	441253.16	32°12'44.150"N	103°52'03.173"W	1.11	
14964.00	88.610	87.660	9656.84	5600.85	750.46	5552.91	644244.81	441260.31	32°12'44.213"N	103°52'00.999"W	0.16	
15151.00	88.860	87.230	9660.96	5787.47	758.79	5739.67	644431.57	441268.64	32°12'44.287"N	103°51'58.824"W	0.27	
15339.00	89.170	87.030	9664.20	5975.17	768.21	5927.41	644619.29	441278.05	32°12'44.372"N	103°51'56.639"W	0.20	
15527.00	88.150	90.530	9668.59	6162.44	772.21	6115.28	644807.15	441282.05	32°12'44.404"N	103°51'54.452"W	1.94	
15715.00	89.570	89.600	9672.33	6349.35	772.00	6303.24	644995.09	441281.84	32°12'44.394"N	103°51'52.264"W	0.90	
15903.00	89.970	88.160	9673.09	6536.67	775.67	6491.20	645183.04	441285.52	32°12'44.422"N	103°51'50.077"W	0.79	
16092.00	90.090	89.800	9672.99	6724.96	779.03	6680.16	645371.99	441288.88	32°12'44.447"N	103°51'47.877"W	0.87	
16281.00	89.010	88.250	9674.47	6913.23	782.25	6869.12	645560.93	441292.09	32°12'44.471"N	103°51'45.678"W	1.00	
16472.00	88.580	89.120	9678.49	7103.55	786.63	7060.02	645751.82	441296.48	32°12'44.506"N	103°51'43.456"W	0.51	
16664.00	89.820	91.090	9681.17	7294.44	786.28	7251.99	645943.78	441296.12	32°12'44.494"N	103°51'41.221"W	1.21	
16773.00	90.520	90.840	9680.85	7402.64	784.44	7360.98	646052.75	441294.29	32°12'44.471"N	103°51'39.953"W	0.68	
16851.00	90.520	90.840	9680.14	7480.09	783.30	7438.96	646130.74	441293.15	32°12'44.456"N	103°51'39.045"W	0.00	Projection to Bit



Actual Wellpath Report

PLU CVX JV No. 19H AWP

Page 5 of 5



REFERENCE WELLPATH IDENTIFICATION			
Operator	BOPCO, LP	Slot	No. 19H
Area	Eddy County, NM	Well	No. 19H
Field	Eddy County, NM (NAD 27 / Grid)	Wellbore	PLU CVX JV No. 19H AWP
Facility	PLU CVX JV PC {19H} Sec. 21, TSP 24S, Rnge 30E		

HOLE & CASING SECTIONS - Ref Wellbore: PLU CVX JV No. 19H AWP Ref Wellpath: PLU CVX JV No. 19H AWP									
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]
8.75in Open Hole	0.00	21000.00	21000.00	0.00	NA	0.00	0.00	NA	NA
9.625in Casing Intermediate	0.00	3836.00	3836.00	0.00	3835.95	0.00	0.00	-10.03	9.49

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
PLU CVX JC PC No. 19H PBHL Rev-2		9684.00	778.16	7439.23	646131.00	441288.00	32°12'44.405"N	103°51'39.043"W	point

WELLPATH COMPOSITION - Ref Wellbore: PLU CVX JV No. 19H AWP Ref Wellpath: PLU CVX JV No. 19H AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1082.00	Generic gyro - northseeking (Standard)	MS Gyro <100-1082>	PLU CVX JV No. 19H AWP
1082.00	3751.00	Generic gyro - northseeking (Standard)	MS Gyro 12.25" Csg <1109-3751>	PLU CVX JV No. 19H AWP
3751.00	16773.00	NaviTrak (Standard)	BHI NaviTrak X" Csg <3915'-XXXXX>	PLU CVX JV No. 19H AWP
16773.00	16851.00	Blind Drilling (std)	Projection to bit	PLU CVX JV No. 19H AWP