



Bopco L P



Project: Eddy County NM
Site: Poker Lake Unit #319H
Well: Job # 1210266
Wellbore: Latshaw #7

Plan: Plan 5 5-8-2012 (Job # 1210266/Latshaw #7)

FORMATION TOP DETAILS

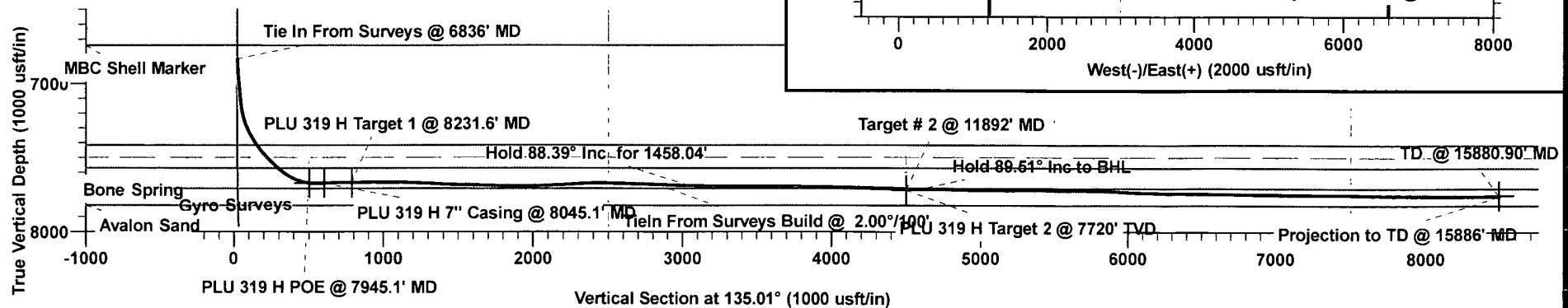
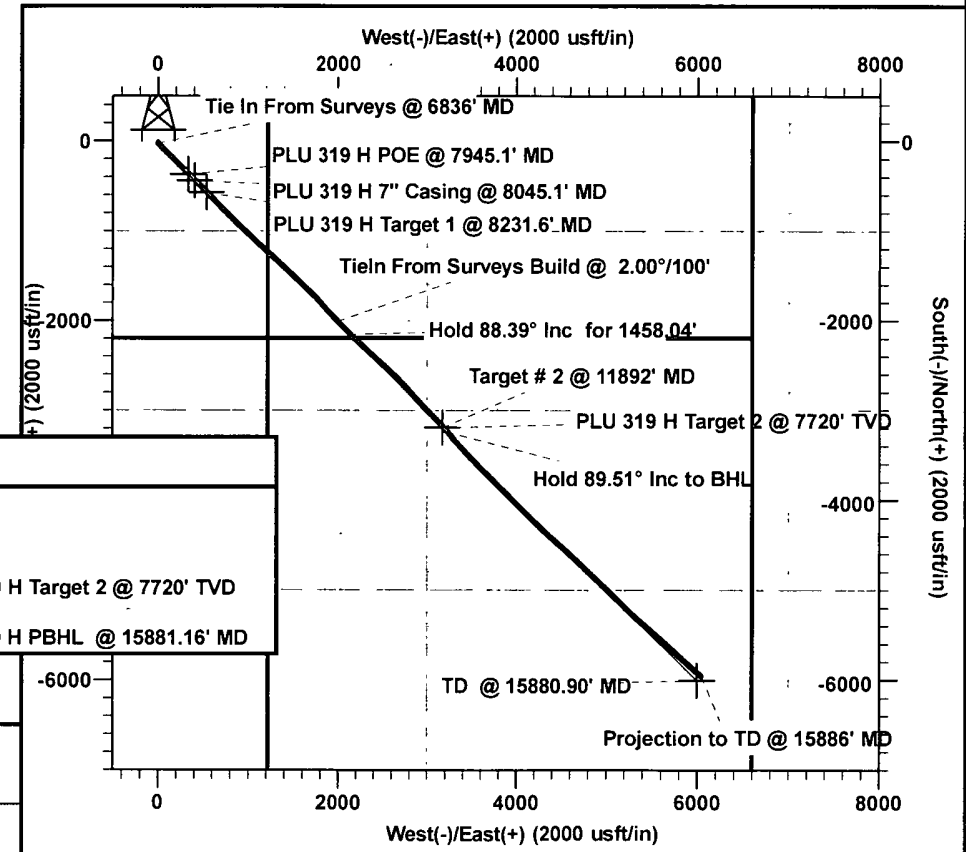
TVDPath	MDPath	Formation
7417.00	7441.34	Lower Brusy Canyon
7572.00	7652.12	LBC "Y" Sand
7709.00	11400.95	Bone Spring

WELL DETAILS: Job # 1210266

Ground Level:	3425.00		
Northing	Easting	Latitude	Longitude
453299.81	639840.89	32° 14' 43.5429 N	103° 52' 51.6686 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
10228.00	88.03	135.78	7682.50	-2008.88	2001.89	0.00	0.00	2836.04	
10268.31	88.72	135.37	7683.65	-2037.65	2030.10	2.00	-31.13	2876.33	
11892.39	88.72	135.37	7720.00	-3193.07	3170.85	0.00	0.00	4499.98	PLU 319 H Target 2 @ 7720' TVD
11941.05	89.50	134.79	7720.76	-3227.52	3205.21	2.00	-36.28	4548.63	
15880.63	89.50	134.79	7755.00	-6002.89	6001.00	0.00	0.00	8488.03	PLU 319 H PBHL @ 15881.16' MD



30-015-39834



PHOENIX
TECHNOLOGY SERVICES

Bopco L P

Eddy County NM
Poker Lake Unit #319H
Job # 1210266
Latshaw #7

Design: Latshaw #7

Bopco LP, Survey Report

17 May, 2012



Bopco LP, Survey Report



Company:	Bopco LP	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451 00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451 00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grid
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000
Project:	Eddy County NM	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Poker Lake Unit #319H	Northing:	453,299.81 usft	Latitude:	32° 14' 43.5429 N
Site Position:		Easting:	639,840.89 usft	Longitude:	103° 52' 51.6686 W
From:	Map	Slot Radius:	13.3/16 "	Grid Convergence:	0.24 °
Position Uncertainty:	0.00 usft				

Well:	Job # 1210266	Northing:	453,299.81 usft	Latitude:	32° 14' 43.5429 N
Well Position		Easting:	639,840.89 usft	Longitude:	103° 52' 51.6686 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	26.00 usft	Ground Level:	3,425.00 usft

Wellbore	Latshaw #7
Magnetics	Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)
	IGRF2010_14 04/24/12 7.62 60.13 48,509

Design	Latshaw #7
Audit Notes:	Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft) +N/S (usft) +E/W (usft) Direction (°)
	0.00 0.00 0.00 135.01



Bopco LP, Survey Report



Company:	Bopco L P	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451 00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451 00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grid
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000

Survey Program		Date	05/17/12		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
169 86	6,836 00	Gyro Surveys (Latshaw #7)	MWD	MWD - Standard	
6,836 00	15,886 00	Phoenix MWD Surveys (Latshaw #7)	MWD	MWD - Standard	

Survey	MD (usft)	Inc (")	Azi (azimuth) (")	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg ("/100usft)	Northing (usft)	Easting (usft)
	0 00	0.00	0 00	3,451 00	0 00	0 00	0 00	0 00	0 00	453,299 81	639,840 89
	169.86	0 16	156.66	3,281.14	169 86	-0 22	0 09	0.22	0 09	453,299 59	639,840 98
	263 75	0 16	337 30	3,187 25	263 75	-0 22	0 10	0.22	0 34	453,299 59	639,840 99
	357 64	0 25	263 99	3,093 36	357 64	-0 12	-0 16	-0 03	0 27	453,299 69	639,840 73
	451 53	0 41	299 68	2,999 47	451 53	0 03	-0 65	-0 48	0 27	453,299 84	639,840 24
	545 42	0 34	215 73	2,905 58	545 42	-0 03	-1 11	-0 76	0 54	453,299 78	639,839 78
	639 31	0 29	218 05	2,811 70	639 30	-0 45	-1 42	-0 69	0 05	453,299 37	639,839 47
	733.20	0 36	242.55	2,717 81	733.19	-0 77	-1 83	-0 75	0 16	453,299 04	639,839 06
	827 09	0 32	194 07	2,623 92	827 08	-1 16	-2 15	-0 70	0 30	453,298 65	639,838 74
	920 98	0 13	234 11	2,530 03	920 97	-1 48	-2 30	-0 58	0 25	453,298 34	639,838 59
	1,014 87	0 37	227 91	2,436 14	1,014.86	-1 74	-2 61	-0 62	0 26	453,298 07	639,838 28
	1,108.76	0 26	242.42	2,342 25	1,108 75	-2 04	-3 03	-0 69	0 14	453,297 77	639,837 86
	1,202.65	0 30	261 17	2,248 36	1,202 64	-2 18	-3 46	-0 90	0 11	453,297 63	639,837 43
	1,296 54	0 12	8 67	2,154 47	1,296 53	-2 12	-3 69	-1 11	0 38	453,297 69	639,837 20
	1,390 43	0 30	152.57	2,060 58	1,390 42	-2 24	-3 56	-0 93	0 43	453,297 57	639,837 33
	1,484 32	0 16	321.00	1,966 69	1,484 31	-2 36	-3 53	-0 83	0 49	453,297 45	639,837 36
	1,578 21	0 20	318.24	1,872.80	1,578 20	-2 13	-3 72	-1 12	0 04	453,297 68	639,837 17
	1,672 10	0 16	310.51	1,778.91	1,672 09	-1 93	-3 93	-1 42	0 05	453,297 89	639,836 96
	1,765.99	0 22	358.41	1,685.02	1,765 98	-1 66	-4 03	-1 68	0 17	453,298 15	639,836 86
	1,859 88	0 37	358.61	1,591.14	1,859 86	-1 18	-4 05	-2 03	0 16	453,298 63	639,836 84
	1,953 77	0 39	5 31	1,497.25	1,953 75	-0 56	-4 02	-2 45	0 05	453,299 26	639,836 87



Company: Bopco L P
Project: Eddy County NM
Site: Poker Lake Unit #319H
Well: Job # 1210266
Wellbore: Latshaw #7
Design: Latshaw #7

Local Co-ordinate Reference: Well Job # 1210266
TVD Reference: WELL @ 3451 00usft (Latshaw #7)
MD Reference: WELL @ 3451 00usft (Latshaw #7)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
2,047.66	0.31	10.52	1,403.36	2,047.64	0.01	-3.95	-2.80	0.09	453,299.82	639,836.94	
2,141.55	0.45	20.39	1,309.47	2,141.53	0.61	-3.77	-3.10	0.16	453,300.42	639,837.12	
2,235.44	0.54	28.35	1,215.59	2,235.41	1.34	-3.43	-3.38	0.12	453,301.15	639,837.46	
2,329.33	1.01	17.10	1,121.70	2,329.30	2.52	-2.98	-3.89	0.52	453,302.33	639,837.91	
2,423.22	0.92	23.16	1,027.83	2,423.17	4.01	-2.44	-4.56	0.14	453,303.82	639,838.45	
2,517.11	0.33	49.98	933.94	2,517.06	4.87	-1.94	-4.82	0.68	453,304.69	639,838.95	
2,611.00	0.63	51.83	840.06	2,610.94	5.37	-1.32	-4.73	0.32	453,305.18	639,839.57	
2,704.89	0.42	76.61	746.17	2,704.83	5.76	-0.58	-4.49	0.32	453,305.58	639,840.31	
2,798.78	0.47	91.52	652.28	2,798.72	5.83	0.14	-4.03	0.13	453,305.65	639,841.03	
2,892.67	0.22	311.13	558.39	2,892.61	5.94	0.39	-3.93	0.70	453,305.75	639,841.28	
2,986.56	0.22	344.75	464.51	2,986.49	6.23	0.20	-4.27	0.14	453,306.05	639,841.09	
3,080.45	0.18	330.79	370.62	3,080.38	6.54	0.08	-4.57	0.07	453,306.35	639,840.97	
3,174.34	0.10	27.23	276.73	3,174.27	6.74	0.05	-4.73	0.16	453,306.55	639,840.94	
3,268.23	0.35	104.73	182.84	3,268.16	6.74	0.36	-4.51	0.36	453,306.55	639,841.25	
3,362.12	0.76	108.17	88.95	3,362.05	6.47	1.23	-3.71	0.44	453,306.28	639,842.12	
3,456.01	0.91	135.21	-4.93	3,455.93	5.75	2.35	-2.41	0.44	453,305.56	639,843.24	
3,549.90	1.10	145.01	-98.80	3,549.80	4.48	3.39	-0.77	0.27	453,304.29	639,844.28	
3,643.79	1.35	145.04	-192.67	3,643.67	2.84	4.54	1.20	0.27	453,302.65	639,845.43	
3,737.68	1.59	136.60	-286.53	3,737.53	0.98	6.07	3.60	0.34	453,300.80	639,846.96	
3,831.57	1.36	134.67	-380.39	3,831.39	-0.75	7.76	6.01	0.25	453,299.07	639,848.65	
3,925.46	1.18	135.41	-474.26	3,925.26	-2.22	9.23	8.09	0.19	453,297.59	639,850.12	
4,019.35	0.91	142.76	-568.13	4,019.13	-3.50	10.36	9.80	0.32	453,296.31	639,851.25	
4,113.24	1.12	168.06	-662.01	4,113.01	-4.99	11.00	11.31	0.52	453,294.82	639,851.89	
4,207.13	1.07	133.75	-755.88	4,206.88	-6.50	11.82	12.95	0.69	453,293.32	639,852.71	
4,301.02	1.02	145.33	-849.76	4,300.76	-7.79	12.93	14.65	0.23	453,292.02	639,853.82	
4,394.91	0.77	141.36	-943.63	4,394.63	-8.97	13.80	16.10	0.27	453,290.84	639,854.69	
4,488.80	0.59	125.53	-1,037.52	4,488.52	-9.74	14.59	17.20	0.28	453,290.07	639,855.48	



Bopco LP, Survey Report



Company:	Bopco L P	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451 00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451 00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grid
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
4,582.69	0.29	164.26	-1,131.41	4,582.41	-10.25	15.05	17.89	0.43	453,289.56	639,855.94	
4,676.58	0.32	187.56	-1,225.29	4,676.29	-10.74	15.08	18.25	0.13	453,289.07	639,855.97	
4,770.47	0.49	199.83	-1,319.18	4,770.18	-11.38	14.91	18.58	0.20	453,288.43	639,855.80	
4,864.36	0.77	191.03	-1,413.07	4,864.07	-12.38	14.65	19.11	0.31	453,287.44	639,855.54	
4,958.25	0.66	210.72	-1,506.95	4,957.95	-13.46	14.25	19.59	0.28	453,286.35	639,855.14	
5,052.14	0.75	208.74	-1,600.83	5,051.83	-14.46	13.68	19.90	0.10	453,285.35	639,854.57	
5,146.03	0.67	205.81	-1,694.71	5,145.71	-15.50	13.15	20.25	0.09	453,284.32	639,854.04	
5,239.92	0.59	202.37	-1,788.60	5,239.60	-16.44	12.72	20.62	0.09	453,283.37	639,853.61	
5,333.81	0.62	223.71	-1,882.48	5,333.48	-17.25	12.19	20.82	0.24	453,282.56	639,853.08	
5,427.70	0.66	213.75	-1,976.37	5,427.37	-18.07	11.54	20.93	0.13	453,281.74	639,852.43	
5,521.59	0.71	223.91	-2,070.25	5,521.25	-18.94	10.83	21.05	0.14	453,280.87	639,851.72	
5,615.48	0.79	212.55	-2,164.13	5,615.13	-19.90	10.08	21.20	0.18	453,279.91	639,850.97	
5,709.37	1.02	222.69	-2,258.01	5,709.01	-21.06	9.17	21.37	0.30	453,278.75	639,850.06	
5,803.26	0.95	222.64	-2,351.89	5,802.89	-22.25	8.07	21.44	0.07	453,277.56	639,848.96	
5,897.15	0.85	232.41	-2,445.77	5,896.77	-23.25	6.99	21.38	0.19	453,276.57	639,847.88	
5,991.04	0.99	231.33	-2,539.64	5,990.64	-24.18	5.81	21.20	0.15	453,275.63	639,846.70	
6,084.93	0.97	228.86	-2,633.52	6,084.52	-25.21	4.58	21.06	0.05	453,274.60	639,845.47	
6,178.82	0.95	225.24	-2,727.40	6,178.40	-26.28	3.42	21.01	0.07	453,273.53	639,844.31	
6,272.71	1.07	222.85	-2,821.27	6,272.27	-27.47	2.28	21.04	0.14	453,272.34	639,843.17	
6,366.60	0.94	230.43	-2,915.15	6,366.15	-28.60	1.09	21.00	0.20	453,271.21	639,841.98	
6,460.49	0.59	217.23	-3,009.03	6,460.03	-29.48	0.20	20.99	0.41	453,270.33	639,841.09	
6,554.38	0.46	284.24	-3,102.92	6,553.92	-29.77	-0.46	20.73	0.63	453,270.04	639,840.43	
6,648.27	0.32	297.13	-3,196.80	6,647.80	-29.56	-1.06	20.16	0.18	453,270.25	639,839.83	
6,742.16	0.41	271.34	-3,290.69	6,741.69	-29.43	-1.63	19.66	0.20	453,270.38	639,839.26	
6,836.00	0.52	202.37	-3,384.53	6,835.53	-29.82	-2.12	19.58	0.57	453,270.00	639,838.77	
Tie In From Surveys @ 6836' MD											
6,836.05	0.52	202.35	-3,384.58	6,835.58	-29.82	-2.12	19.59	0.57	453,270.00	639,838.77	



Company:	Bopco L P	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451 00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451 00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grid
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
6,894.00	2.10	150.30	-3,442.51	6,893.51	-30.98	-1.70	20.71	3.15	453,268.83	639,839.19	
First Phoenix MWD Surveys @ 6894' MD											
6,988.00	5.40	135.30	-3,536.30	6,987.30	-35.62	2.27	26.80	3.63	453,264.19	639,843.16	
7,082.00	5.20	132.90	-3,629.90	7,080.90	-41.67	8.50	35.48	0.32	453,258.15	639,849.39	
7,177.00	8.40	136.30	-3,724.22	7,175.22	-49.62	16.45	46.72	3.39	453,250.20	639,857.34	
7,208.00	11.70	138.00	-3,754.74	7,205.74	-53.59	20.12	52.12	10.69	453,246.22	639,861.01	
7,240.00	15.10	138.10	-3,785.86	7,236.86	-59.11	25.07	59.53	10.63	453,240.71	639,865.96	
7,271.00	18.80	137.20	-3,815.51	7,266.51	-65.78	31.17	68.55	11.97	453,234.03	639,872.06	
7,302.00	22.80	137.10	-3,844.49	7,295.49	-73.85	38.65	79.55	12.90	453,225.97	639,879.54	
7,334.00	26.30	136.40	-3,873.59	7,324.59	-83.53	47.76	92.84	10.98	453,216.29	639,888.65	
7,366.00	28.50	135.60	-3,902.00	7,353.00	-94.11	58.00	107.56	6.97	453,205.70	639,898.89	
7,397.00	31.50	135.20	-3,928.84	7,379.84	-105.15	68.88	123.06	9.70	453,194.66	639,909.77	
7,428.00	33.70	134.70	-3,954.96	7,405.96	-116.95	80.70	139.76	7.15	453,182.87	639,921.59	
7,460.00	35.60	134.70	-3,981.28	7,432.28	-129.74	93.63	157.95	5.94	453,170.07	639,934.52	
7,491.00	39.60	134.70	-4,005.84	7,456.84	-143.04	107.07	176.86	12.90	453,156.77	639,947.96	
7,523.00	42.50	132.50	-4,029.97	7,480.97	-157.52	122.30	197.87	10.12	453,142.29	639,963.19	
7,555.00	44.00	134.90	-4,053.27	7,504.27	-172.67	138.14	219.78	6.95	453,127.14	639,979.03	
7,586.00	45.10	134.50	-4,075.37	7,526.37	-187.97	153.60	241.53	3.66	453,111.84	639,994.49	
7,618.00	46.30	136.10	-4,097.72	7,548.72	-204.25	169.71	264.43	5.18	453,095.56	640,010.60	
7,649.00	47.50	136.70	-4,118.90	7,569.90	-220.64	185.31	287.06	4.12	453,079.17	640,026.20	
7,680.00	50.40	136.50	-4,139.25	7,590.25	-237.63	201.38	310.43	9.37	453,062.19	640,042.27	
7,711.00	54.90	135.00	-4,158.06	7,609.06	-255.27	218.57	335.06	15.02	453,044.55	640,059.46	
7,743.00	59.50	134.10	-4,175.39	7,626.39	-274.13	237.74	361.95	14.57	453,025.69	640,078.63	
7,773.00	64.30	133.40	-4,189.51	7,640.51	-292.42	256.85	388.40	16.13	453,007.39	640,097.74	
7,805.00	69.50	133.20	-4,202.06	7,653.06	-312.60	278.27	417.81	16.26	452,987.21	640,119.16	
7,836.00	74.20	133.50	-4,211.72	7,662.72	-332.81	299.68	447.25	15.19	452,967.00	640,140.57	
7,868.00	80.40	134.00	-4,218.75	7,669.75	-354.39	322.22	478.44	19.43	452,945.42	640,163.11	



Company:	Bopco L P	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451.00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451.00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grd
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
7,899.00	86.60	134.90	-4,222.26	7,673.26	-375.95	344.20	509.22	20.21	452,923.86	640,185.09	
7,930.00	90.10	135.20	-4,223.15	7,674.15	-397.88	366.08	540.21	11.33	452,901.93	640,206.97	
8,085.00	92.00	136.90	-4,220.31	7,671.31	-509.44	473.63	695.14	1.64	452,790.37	640,314.52	
8,181.00	91.50	136.10	-4,217.38	7,668.38	-579.04	539.68	791.06	0.98	452,720.77	640,380.57	
8,275.00	90.40	135.10	-4,215.82	7,666.82	-646.19	605.44	885.04	1.58	452,653.62	640,446.33	
8,370.00	89.40	134.70	-4,215.98	7,666.98	-713.25	672.73	980.04	1.13	452,586.56	640,513.62	
8,465.00	88.90	135.10	-4,217.39	7,668.39	-780.30	740.02	1,075.03	0.67	452,519.51	640,580.91	
8,560.00	88.70	135.30	-4,219.38	7,670.38	-847.69	806.94	1,170.01	0.30	452,452.12	640,647.83	
8,656.00	87.50	134.80	-4,222.57	7,673.57	-915.60	874.73	1,265.95	1.35	452,384.22	640,715.62	
8,752.00	86.20	133.20	-4,227.84	7,678.84	-982.18	943.67	1,361.79	2.15	452,317.63	640,784.56	
8,847.00	88.10	133.70	-4,232.56	7,683.56	-1,047.43	1,012.55	1,456.63	2.07	452,252.38	640,853.44	
8,942.00	89.80	133.40	-4,234.31	7,685.31	-1,112.87	1,081.39	1,551.58	1.82	452,186.94	640,922.28	
9,036.00	86.80	131.70	-4,237.09	7,688.09	-1,176.40	1,150.60	1,645.44	3.67	452,123.41	640,991.49	
9,131.00	89.40	133.20	-4,240.24	7,691.24	-1,240.48	1,220.65	1,740.28	3.16	452,059.33	641,061.54	
9,226.00	89.10	132.20	-4,241.49	7,692.49	-1,304.90	1,290.46	1,835.20	1.10	451,994.92	641,131.35	
9,321.00	90.30	132.60	-4,241.98	7,692.98	-1,368.95	1,360.61	1,930.09	1.33	451,930.86	641,201.50	
9,416.00	89.90	133.20	-4,241.82	7,692.82	-1,433.62	1,430.20	2,025.03	0.76	451,866.19	641,271.09	
9,512.00	93.20	133.40	-4,239.22	7,690.22	-1,499.43	1,500.03	2,120.94	3.44	451,800.39	641,340.92	
9,607.00	95.00	134.00	-4,232.43	7,683.43	-1,564.89	1,568.54	2,215.66	2.00	451,734.92	641,409.43	
9,702.00	93.30	134.50	-4,225.56	7,676.56	-1,631.00	1,636.40	2,310.40	1.86	451,668.81	641,477.29	
9,795.00	91.40	135.40	-4,221.74	7,672.74	-1,696.65	1,702.16	2,403.32	2.26	451,603.16	641,543.05	
9,890.00	87.90	136.60	-4,222.32	7,673.32	-1,764.97	1,768.14	2,498.29	3.89	451,534.84	641,609.03	
9,985.00	88.50	136.90	-4,225.31	7,676.31	-1,834.13	1,833.20	2,593.20	0.71	451,465.68	641,674.09	
10,080.00	87.10	136.10	-4,228.95	7,679.95	-1,902.99	1,898.54	2,688.09	1.70	451,396.82	641,739.43	
10,176.00	90.60	135.40	-4,230.88	7,681.88	-1,971.73	1,965.51	2,784.05	3.72	451,328.08	641,806.40	
10,271.00	85.90	136.10	-4,233.78	7,684.78	-2,039.73	2,031.75	2,878.97	5.00	451,260.09	641,872.64	
10,367.00	88.00	136.40	-4,238.89	7,689.89	-2,108.97	2,098.04	2,974.80	2.21	451,190.84	641,938.93	



Bopco LP, Survey Report



Company: Bopco L P
Project: Eddy County NM
Site: Poker Lake Unit #319H
Well: Job # 1210266
Wellbore: Latshaw #7
Design: Latshaw #7

Local Co-ordinate Reference: Well Job # 1210266
TVD Reference: WELL @ 3451 00usft (Latshaw #7)
MD Reference: WELL @ 3451 00usft (Latshaw #7)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
10,461.00	90.10	134.50	-4,240.45	7,691.45	-2,175.94	2,163.96	3,068.78	3.01	451,123.87	642,004.85	
10,556.00	88.40	133.10	-4,241.69	7,692.69	-2,241.69	2,232.52	3,163.74	2.32	451,058.12	642,073.41	
10,650.00	89.80	132.40	-4,243.17	7,694.17	-2,305.48	2,301.54	3,257.66	1.67	450,994.33	642,142.43	
10,745.00	89.80	132.30	-4,243.50	7,694.50	-2,369.48	2,371.75	3,352.55	0.11	450,930.33	642,212.64	
10,840.00	89.20	132.80	-4,244.33	7,695.33	-2,433.72	2,441.73	3,447.46	0.82	450,866.09	642,282.62	
10,935.00	89.80	132.80	-4,245.16	7,696.16	-2,498.27	2,511.43	3,542.39	0.63	450,801.55	642,352.32	
11,030.00	90.60	132.50	-4,244.82	7,695.82	-2,562.63	2,581.30	3,637.31	0.90	450,737.18	642,422.19	
11,125.00	88.40	133.70	-4,245.65	7,696.65	-2,627.53	2,650.66	3,732.24	2.64	450,672.28	642,491.55	
11,221.00	88.90	136.50	-4,247.92	7,698.92	-2,695.51	2,718.40	3,828.20	2.96	450,604.31	642,559.29	
11,316.00	88.70	137.50	-4,249.91	7,700.91	-2,764.97	2,783.17	3,923.13	1.07	450,534.84	642,624.06	
11,443.00	89.60	138.30	-4,251.79	7,702.79	-2,859.19	2,868.30	4,049.95	0.95	450,440.62	642,709.19	
11,536.00	89.80	137.60	-4,252.28	7,703.28	-2,928.24	2,930.59	4,142.82	0.78	450,371.57	642,771.48	
11,631.00	88.00	135.40	-4,254.10	7,705.10	-2,997.14	2,995.97	4,237.76	2.99	450,302.68	642,836.86	
11,726.00	88.10	136.10	-4,257.33	7,708.33	-3,065.14	3,062.22	4,332.70	0.74	450,234.67	642,903.11	
11,821.00	88.90	135.60	-4,259.82	7,710.82	-3,133.28	3,128.37	4,427.66	0.99	450,166.53	642,969.26	
11,916.00	88.40	137.60	-4,262.06	7,713.06	-3,202.29	3,193.62	4,522.59	2.17	450,097.53	643,034.51	
12,011.00	90.30	140.50	-4,263.14	7,714.14	-3,274.02	3,255.87	4,617.33	3.65	450,025.79	643,096.76	
12,107.00	89.50	138.60	-4,263.30	7,714.30	-3,347.07	3,318.15	4,713.03	2.15	449,952.74	643,159.04	
12,203.00	88.10	136.80	-4,265.31	7,716.31	-3,418.06	3,382.74	4,808.89	2.38	449,881.76	643,223.63	
12,298.00	88.60	136.50	-4,268.05	7,719.05	-3,487.11	3,447.92	4,903.81	0.61	449,812.70	643,288.81	
12,393.00	89.00	136.20	-4,270.04	7,721.04	-3,555.83	3,513.48	4,998.77	0.53	449,743.98	643,354.37	
12,488.00	90.10	135.70	-4,270.79	7,721.79	-3,624.11	3,579.53	5,093.75	1.27	449,675.70	643,420.42	
12,583.00	90.70	135.20	-4,270.12	7,721.12	-3,691.81	3,646.17	5,188.74	0.82	449,608.00	643,487.06	
12,679.00	89.90	134.70	-4,269.62	7,720.62	-3,759.63	3,714.11	5,284.74	0.98	449,540.18	643,555.00	
12,774.00	89.70	134.80	-4,269.95	7,720.95	-3,826.51	3,781.58	5,379.74	0.24	449,473.30	643,622.47	
12,869.00	91.10	134.60	-4,269.29	7,720.29	-3,893.33	3,849.10	5,474.73	1.49	449,406.48	643,689.99	
12,964.00	90.00	134.90	-4,268.38	7,719.38	-3,960.21	3,916.57	5,569.73	1.20	449,339.61	643,757.46	



Bopco LP, Survey Report



Company:	Bopco L P	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451 00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451 00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grid
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
13,059.00	90 50	137.00	-4,267.96	7,718.96	-4,028.48	3,982.62	5,664.71	2 27	449,271.33	643,823.51	
13,155.00	88 50	134 70	-4,268.80	7,719.80	-4,097.35	4,049.47	5,760.68	3 17	449,202.46	643,890.36	
13,250.00	85 50	133 10	-4,273.77	7,724.77	-4,163.13	4,117.82	5,855.52	3 58	449,136.68	643,958.71	
13,345.00	86 60	133.90	-4,280.32	7,731.32	-4,228.36	4,186.56	5,950.26	1 43	449,071.45	644,027.45	
13,441.00	87 20	134.00	-4,285.51	7,736.51	-4,294.89	4,255.58	6,046.10	0 63	449,004.92	644,096.47	
13,537.00	88 90	133.10	-4,288.77	7,739.77	-4,360.99	4,325.11	6,142.01	2 00	448,938.82	644,166.00	
13,632.00	89 20	132 50	-4,290.35	7,741.35	-4,425.53	4,394.81	6,236.93	0 71	448,874.28	644,235.70	
13,727.00	89 00	131.20	-4,291.84	7,742.84	-4,488.91	4,465.56	6,331.77	1 38	448,810.91	644,306.45	
13,822.00	89 30	131 60	-4,293.25	7,744.25	-4,551.72	4,536.81	6,426.57	0 53	448,748.09	644,377.70	
13,917.00	89 90	131 80	-4,293.91	7,744.91	-4,614.92	4,607.74	6,521.41	0 67	448,684.89	644,448.63	
14,013.00	89.00	134 60	-4,294.83	7,745.83	-4,680.62	4,677.71	6,617.34	3 06	448,619.19	644,518.60	
14,108.00	88 40	133 90	-4,296.99	7,747.99	-4,746.90	4,745.74	6,712.31	0 97	448,552.92	644,586.63	
14,203.00	90 60	135 10	-4,297.82	7,748.82	-4,813.48	4,813.49	6,807.30	2 64	448,486.34	644,654.38	
14,298.00	89 60	133.60	-4,297.65	7,748.65	-4,879.88	4,881.42	6,902.28	1 90	448,419.93	644,722.31	
14,393.00	88 10	133 40	-4,299.56	7,750.56	-4,945.26	4,950.32	6,997.23	1 59	448,354.55	644,791.21	
14,489.00	90 00	134 40	-4,301.15	7,752.15	-5,011.81	5,019.48	7,093.19	2 24	448,288.00	644,860.37	
14,584.00	90.40	133.50	-4,300.82	7,751.82	-5,077.75	5,087.87	7,188.18	1 04	448,222.07	644,928.76	
14,679.00	90 20	134 70	-4,300.32	7,751.32	-5,143.85	5,156.09	7,283.16	1 28	448,155.96	644,996.98	
14,774.00	89.80	134 10	-4,300.32	7,751.32	-5,210.32	5,223.97	7,378.15	0 76	448,089.49	645,064.86	
14,869.00	89.80	134 00	-4,300.65	7,751.65	-5,276.37	5,292.25	7,473.14	0 11	448,023.44	645,133.14	
14,965.00	88.10	129.80	-4,302.41	7,753.41	-5,340.46	5,363.67	7,568.96	4 72	447,959.35	645,204.56	
15,060.00	89.10	131 10	-4,304.74	7,755.74	-5,402.07	5,435.94	7,663.63	1 73	447,897.74	645,276.83	
15,155.00	88.40	130 90	-4,306.81	7,757.81	-5,464.38	5,507.62	7,758.37	0 77	447,835.43	645,348.51	
15,250.00	89.00	132 00	-4,308.96	7,759.96	-5,527.25	5,578.80	7,853.16	1 32	447,772.56	645,419.69	
15,346.00	89.80	134 10	-4,309.97	7,760.97	-5,592.78	5,648.95	7,949.09	2 34	447,707.03	645,489.84	
15,440.00	88.80	131 60	-4,311.12	7,762.12	-5,656.70	5,717.85	8,043.01	2 86	447,643.12	645,558.74	
15,536.00	90.00	132 80	-4,312.12	7,763.12	-5,721.18	5,788.96	8,138.89	1 77	447,578.64	645,629.85	



Company:	Bopco L P	Local Co-ordinate Reference:	Well Job # 1210266
Project:	Eddy County NM	TVD Reference:	WELL @ 3451 00usft (Latshaw #7)
Site:	Poker Lake Unit #319H	MD Reference:	WELL @ 3451 00usft (Latshaw #7)
Well:	Job # 1210266	North Reference:	Grid
Wellbore:	Latshaw #7	Survey Calculation Method:	Minimum Curvature
Design:	Latshaw #7	Database:	Compass5000

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
15,631.00	90 50	133 20	-4,311 71	7,762.71	-5,785 96	5,858 44	8,233 83	0 67	447,513 85	645,699.33	
15,726.00	89.50	130 70	-4,311 71	7,762 71	-5,849.46	5,929.09	8,328 68	2.83	447,450 35	645,769.98	
15,821 00	90 20	131.80	-4,311 96	7,762 96	-5,912 10	6,000 51	8,423 48	1 37	447,387 71	645,841.40	
Last Phoenix MWD Surveys @ 15821' MD											
15,886 00	90.20	131.80	-4,311 73	7,762.73	-5,955.42	6,048 96	8,488 37	0.00	447,344 39	645,889.85	
Projection to TD @ 15886' MD											

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
6,836.00	6,835 53	-29 82	-2.12	Tie In From Surveys @ 6836' MD	
6,894.00	6,893.51	-30 98	-1.70	First Phoenix MWD Surveys @ 6894' MD	
15,821.00	7,762 96	-5,912.10	6,000 51	Last Phoenix MWD Surveys @ 15821' MD	
15,886.00	7,762 73	-5,955 42	6,048 96	Projection to TD @ 15886' MD	

Checked By: _____ Approved By: _____ Date: _____



PHOENIX

TECHNOLOGY SERVICES

MD
1:600
Feet

MWD Gamma / ROP

Client: Bopco LLP

Well Name: Poker Lake Unit 319H

UWID: 30-015-39834

County: Permian Basin

Licence #:

State: New Mexico

Country: U.S.A

Longitude: 103° 52' 51.6686 W
Latitude: 32° 14' 43.5429 N

Personnel

Rig Name: Latshaw 7

Job Number: 1210266

Ground Level: 3425.00 ft

Kelly Bushing: 3451.00 ft

Permanent Datum: Ground Level

Drilling Measured From: Kelly Bushing

Spud Date: April 6, 2012

Bottom Hole Temp: NA °F

Log Start Depth: 6850 00 ft

Log End Depth: 15900 00 ft

Company Representative

David Sanchez

Geologist

Amanda Jones

Directional Driller(s)

Louie Corman

Garrett Wright

MWD Operator(s)

David Hayden

Tyler Landers

Comments:

Main Leg

PHOENIX TECHNOLOGY SERVICES LP ("PHOENIX") DOES NOT MAKE AND EXPRESSLY DISCLAIMS ALL WARRANTIES, REPRESENTATIONS AND CONDITIONS WITH RESPECT TO THE INFORMATION CONTAINED IN THIS DOCUMENT, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED OR ARISING FROM CONTRACT OR STATUTE INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, ACCURACY AND FITNESS FOR A PARTICULAR PURPOSE. ANYONE USING THIS INFORMATION DOES SO AT THEIR OWN RISK AND ACKNOWLEDGES AND AGREES THAT PHOENIX SHALL NOT BE LIABLE FOR ANY ERROR, OMISSION, DEFECT, DEFICIENCY OR NONCONFORMITY IN THE INFORMATION AND WITHOUT LIMITING THE FOREGOING, PHOENIX DOES NOT WARRANT THAT THE INFORMATION (OR THE USE THEREOF) WILL BE FREE OF ALL ERRORS OR THAT IT DOES NOT INFRINGE ANY THIRD PARTY RIGHTS. ANYONE USING THE INFORMATION AGREES TO INDEMNIFY AND HOLD PHOENIX HARMLESS FROM ALL CLAIMS, ACTIONS, COSTS (INCLUDING LEGAL COSTS ON A SOLICITOR AND HIS OWN CLIENT BASIS) AND LIABILITIES ARISING FROM OR IN CONNECTION WITH THE USE OF THE INFORMATION.