



PHOENIX
TECHNOLOGY SERVICES

April 11, 2014

Bopco, LP
Attention: Regulatory Department
PO Box 2760
Midland, TX 79702

Re: Bopco, LP
PLU Big Sinks 23-25-30 USA #1H
Eddy County, NM
API #30-015-41639
Job No. 1310463 (WB2)

30 015 41639

Dear Regulatory Department,

Phoenix Technology Services, Inc. has filed the survey certification, surveys, and lease plat for the above referenced well with the State of New Mexico Oil Conservation Division – District 2 via certified mail. A copy of the filing is attached for your records.

Name of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Mike Layfield	1H	8,699	17,120	3/8/14	4/3/14	MWD

Thank you for the opportunity to be of service. Please contact me if you have any questions or require additional information.

Best Regards,

Dana Robinson
Operations Administrator

**PHOENIX TECHNOLOGY SERVICES INC.
SURVEY DATA CERTIFICATION**



PHOENIX JOB NUMBER 1310436 (WB2)

OPERATOR Bopco, LP

WELL NAME PLU 23-25-30 USA #1H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER 30-015-41639

PROPOSED DIRECTION 179.82

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
8,673 ft	8,670.71 ft	1.3	315.4	-22.93	12.23	Phoenix MWD Survey

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
8-Mar-14	8,699 ft	1.3	305.9

SURVEY INSTRUMENT
TYPE
PHOENIX MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
3-Apr-14	17,069 ft	92.9	178.9

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
3-Apr-14	17,120 ft	92.9	178.9

Michael Layfield
PRINT YOUR NAME ABOVE

Michael Layfield
SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.14
DECLINATION OR GRID	Grid

4/3/2014
TODAY'S DATE

MWD SUPERVISOR 1

Justin Amari

DIRECTIONAL DRILLER 1

Casey Hendrix

MWD SUPERVISOR 2

Mike Layfield

DIRECTIONAL DRILLER 2

Jim Tobola

1805 Briffmore Road

Houston, Texas 77043

(713)3370609 (Voice), (713)337-0599 (Fax)



BOPCO, L P

Eddy County, NM (NAD27 NME)

PLU Big Sinks 23-25-30 USA

#1H

WB2/Job #1310463

Survey: Phoenix WB2 MWD Survey

Standard Survey Report

04 April, 2014



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services Survey Report



Company:	BOPCO, L P	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3383.00usft (Latshaw 14)
Site:	PLU Big Sinks 23-25-30 USA	MD Reference:	KB @ 3383.00usft (Latshaw 14)
Well:	#1H	North Reference:	Grid
Wellbore:	WB2/Job #1310463	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Latshaw 14)	Database:	GCR DB

Project:	Eddy County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	PLU Big Sinks 23-25-30 USA		
Site Position:		Northing:	408,632.20 usft
From:	Map	Easting:	647,221.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 21.19180 N
		Longitude:	103° 51' 28.02580 W
		Grid Convergence:	0.25 °

Well:	#1H		
Well Position	+N-S	0.00 usft	Northing: 408,632.20 usft
	+E-W	0.00 usft	Easting: 647,221.80 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 7' 21.19180 N
		Longitude:	103° 51' 28.02580 W
		Ground Level:	3,361.00 usft

Wellbore:	WB2/Job #1310463				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010_14	01/14/14	(°)	(°)	(nT)
			7.39	59.98	48,266

Design	Surveys (Latshaw 14)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	8,673.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	177.97	

Survey Program	Date	04/04/14			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
1,241.00	8,673.00	Phoenix WB1 MWD Survey (WB1/Job #13	MWD	MWD - Standard	
8,673.00	17,120.00	Phoenix WB2 MWD Survey (WB2/Job #13	MWD	MWD - Standard	

Survey:										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
8,673.00	1.30	315.40	8,670.71	-22.93	12.23	23.35	0.00	0.00	0.00	
Tie-on to WB1										
8,699.00	1.30	305.90	8,696.70	-22.55	11.78	22.95	0.83	0.00	-36.54	
First Phoenix WB2 MWD Survey										
8,794.00	1.50	283.30	8,791.67	-21.63	9.70	21.96	0.61	0.21	-23.79	
8,889.00	0.60	273.90	8,886.65	-21.31	7.99	21.58	0.96	-0.95	-9.89	
8,983.00	0.40	254.70	8,980.65	-21.36	7.19	21.60	0.27	-0.21	-20.43	
9,078.00	4.00	162.10	9,075.57	-24.60	7.89	24.87	4.25	3.79	-97.47	
9,173.00	6.80	158.00	9,170.14	-32.97	11.01	33.34	2.97	2.95	-4.32	



Phoenix Technology Services

Survey Report



Company: BOPCO, L P
Project: Eddy County, NM (NAD27 NME)
Site: PLU Big Sinks 23-25-30 USA
Well: #1H
Wellbore: WB2/Job #1310463
Design: Surveys (Latshaw 14)

Local Co-ordinate Reference: Well #1H
TVD Reference: KB @ 3383.00usft (Latshaw 14)
MD Reference: KB @ 3383.00usft (Latshaw 14)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature
Database: GCR DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,268.00	5.80	164.60	9,264.57	-42.82	14.39	43.30	1.30	-1.05	6.95
9,331.00	5.60	171.60	9,327.26	-48.93	15.69	49.45	1.15	-0.32	11.11
9,363.00	5.40	173.40	9,359.11	-51.97	16.09	52.50	0.83	-0.63	5.63
9,395.00	6.50	170.70	9,390.94	-55.25	16.55	55.80	3.55	3.44	-8.44
9,426.00	8.00	176.10	9,421.69	-59.13	16.99	59.70	5.31	4.84	17.42
9,458.00	10.70	178.60	9,453.26	-64.33	17.21	64.90	8.53	8.44	7.81
9,490.00	13.50	182.30	9,484.55	-71.03	17.13	71.59	9.08	8.75	11.56
9,521.00	15.90	179.80	9,514.53	-78.89	17.00	79.45	8.01	7.74	-8.06
9,553.00	18.50	180.50	9,545.10	-88.35	16.97	88.90	8.15	8.13	2.19
9,584.00	21.10	181.00	9,574.28	-98.85	16.83	99.39	8.40	8.39	1.61
9,617.00	23.70	181.20	9,604.77	-111.43	16.59	111.94	7.88	7.88	0.61
9,649.00	26.20	180.70	9,633.78	-124.92	16.37	125.42	7.84	7.81	-1.56
9,681.00	30.30	179.30	9,661.96	-140.06	16.38	140.56	12.98	12.81	-4.38
9,712.00	35.60	177.50	9,687.97	-156.91	16.87	157.41	17.38	17.10	-5.81
9,743.00	40.80	176.40	9,712.32	-176.04	17.90	176.57	16.92	16.77	-3.55
9,775.00	45.20	176.10	9,735.72	-197.82	19.33	198.38	13.76	13.75	-0.94
9,806.00	48.70	175.40	9,756.88	-220.40	21.01	221.01	11.41	11.29	-2.26
9,838.00	51.40	174.40	9,777.42	-244.83	23.20	245.50	8.77	8.44	-3.13
9,870.00	53.80	174.60	9,796.86	-270.14	25.63	270.88	7.52	7.50	0.63
9,901.00	55.70	175.50	9,814.75	-295.36	27.81	296.16	6.57	6.13	2.90
9,933.00	60.00	176.00	9,831.77	-322.37	29.82	323.22	13.50	13.44	1.56
9,965.00	65.00	176.40	9,846.55	-350.68	31.70	351.59	15.66	15.63	1.25
10,028.00	73.00	176.40	9,869.10	-409.33	35.39	410.33	12.70	12.70	0.00
10,123.00	72.00	175.60	9,897.67	-499.71	41.71	500.88	1.32	-1.05	-0.84
10,144.00	71.70	175.20	9,904.21	-519.61	43.31	520.81	2.31	-1.43	-1.90
10,236.00	74.30	175.00	9,931.11	-607.26	50.82	608.68	2.83	2.83	-0.22
10,267.00	77.60	175.00	9,938.63	-637.21	53.44	638.70	10.65	10.65	0.00
10,298.00	80.80	175.70	9,944.44	-667.56	55.91	669.12	10.56	10.32	2.26
10,328.00	83.10	177.20	9,948.64	-697.20	57.75	698.81	9.13	7.67	5.00
10,358.00	86.00	178.00	9,951.49	-727.04	59.00	728.67	10.02	9.67	2.67
10,452.00	92.60	182.20	9,952.64	-820.96	58.83	822.53	8.32	7.02	4.47
10,542.00	92.70	183.80	9,948.48	-910.73	54.13	912.08	1.78	0.11	1.78
10,634.00	90.40	185.10	9,945.99	-1,002.41	46.99	1,003.45	2.87	-2.50	1.41
10,726.00	89.90	185.10	9,945.75	-1,094.05	38.81	1,094.74	0.54	-0.54	0.00
10,819.00	88.90	185.90	9,946.72	-1,186.61	29.90	1,186.93	1.38	-1.08	0.86
10,913.00	90.30	184.90	9,947.38	-1,280.19	21.05	1,280.13	1.83	1.49	-1.06
11,005.00	90.20	184.10	9,946.98	-1,371.91	13.84	1,371.54	0.88	-0.11	-0.87
11,099.00	90.40	184.00	9,946.49	-1,465.67	7.20	1,465.01	0.24	0.21	-0.11
11,192.00	91.30	178.80	9,945.11	-1,558.60	4.93	1,557.80	5.67	0.97	-5.59
11,285.00	91.60	178.40	9,942.75	-1,651.54	7.20	1,650.76	0.54	0.32	-0.43
11,378.00	90.50	178.30	9,941.05	-1,744.49	9.87	1,743.74	1.19	-1.18	-0.11
11,471.00	89.40	180.70	9,941.13	-1,837.47	10.69	1,836.70	2.84	-1.18	2.58
11,563.00	91.10	179.90	9,940.73	-1,929.47	10.20	1,928.62	2.04	1.85	-0.87



Phoenix Technology Services

Survey Report



Company: BOPCO, L.P.
Project: Eddy County, NM (NAD27-NME)
Site: PLU Big Sinks 23-25-30 USA
Well: #1H
Wellbore: WB2/Job #1310463
Design: Surveys (Latshaw 14)

Local Co-ordinate Reference: Well #1H
TVD Reference: KB @ 3383.00usft (Latshaw 14)
MD Reference: KB @ 3383.00usft (Latshaw 14)
North Reference: Grid
Survey/Calculation Method: Minimum Curvature
Database: GCR DB

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N/S (usft)	E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,655.00	91.40	180.50	9,938.72	-2,021.45	9.88	2,020.53	0.73	0.33	0.65	
11,748.00	90.70	180.80	9,937.02	-2,114.42	8.83	2,113.41	0.82	-0.75	0.32	
11,843.00	89.50	182.70	9,936.85	-2,209.37	5.93	2,208.20	2.37	-1.28	2.00	
11,938.00	91.00	181.30	9,936.44	-2,304.31	2.61	2,302.95	2.16	1.58	-1.47	
12,033.00	89.90	181.40	9,935.69	-2,399.28	0.37	2,397.78	1.16	-1.16	0.11	
12,127.00	92.50	178.60	9,933.72	-2,493.24	0.37	2,491.69	4.06	2.77	-2.98	
12,222.00	91.00	177.60	9,930.82	-2,588.14	3.52	2,586.64	1.90	-1.58	-1.05	
12,316.00	92.00	178.40	9,928.36	-2,682.05	6.80	2,680.60	1.36	1.05	0.85	
12,410.00	91.30	178.30	9,925.65	-2,775.97	9.51	2,774.56	0.75	-0.74	-0.11	
12,505.00	89.80	174.90	9,924.74	-2,870.78	15.14	2,869.51	3.91	-1.58	-3.58	
12,600.00	90.50	178.90	9,924.49	-2,965.62	20.28	2,964.48	4.27	0.74	4.21	
12,695.00	90.30	178.90	9,923.83	-3,060.60	22.10	3,059.46	0.21	-0.21	0.00	
12,789.00	92.00	181.40	9,921.94	-3,154.57	21.85	3,153.37	3.22	1.81	2.66	
12,883.00	90.00	181.30	9,920.30	-3,248.53	19.64	3,247.18	2.13	-2.13	-0.11	
12,978.00	90.90	181.60	9,919.56	-3,343.49	17.24	3,342.00	1.00	0.95	0.32	
13,073.00	91.00	180.60	9,917.98	-3,438.46	15.41	3,436.85	1.06	0.11	-1.05	
13,167.00	89.70	178.30	9,917.41	-3,532.45	16.31	3,530.81	2.81	-1.38	-2.45	
13,261.00	91.70	179.20	9,916.26	-3,626.41	18.37	3,624.78	2.33	2.13	0.96	
13,355.00	90.70	179.50	9,914.29	-3,720.38	19.43	3,718.74	1.11	-1.06	0.32	
13,450.00	90.50	179.00	9,913.29	-3,815.37	20.67	3,813.71	0.57	-0.21	-0.53	
13,545.00	90.10	179.80	9,912.80	-3,910.36	21.67	3,908.67	0.94	-0.42	0.84	
13,639.00	89.30	179.70	9,913.29	-4,004.36	22.08	4,002.63	0.86	-0.85	-0.11	
13,734.00	92.50	180.00	9,911.80	-4,099.33	22.33	4,097.55	3.38	3.37	0.32	
13,828.00	92.30	180.20	9,907.86	-4,193.25	22.16	4,191.40	0.30	-0.21	0.21	
13,922.00	92.00	180.30	9,904.33	-4,287.18	21.75	4,285.26	0.34	-0.32	0.11	
14,017.00	91.30	180.50	9,901.60	-4,382.14	21.09	4,380.14	0.77	-0.74	0.21	
14,112.00	90.40	180.30	9,900.19	-4,477.13	20.43	4,475.04	0.97	-0.95	-0.21	
14,206.00	89.50	180.50	9,900.27	-4,571.13	19.77	4,568.96	0.98	-0.96	0.21	
14,301.00	88.50	181.00	9,901.93	-4,666.10	18.53	4,663.83	1.18	-1.05	0.53	
14,396.00	90.20	181.60	9,903.01	-4,761.07	16.37	4,758.66	1.90	1.79	0.63	
14,491.00	89.70	180.90	9,903.09	-4,856.04	14.30	4,853.50	0.91	-0.53	-0.74	
14,585.00	88.70	181.00	9,904.40	-4,950.02	12.74	4,947.35	1.07	-1.06	0.11	
14,680.00	90.80	182.30	9,904.82	-5,044.97	10.01	5,042.16	2.60	2.21	1.37	
14,774.00	90.30	182.40	9,903.92	-5,138.89	6.15	5,135.88	0.54	-0.53	0.11	
14,868.00	89.40	182.50	9,904.16	-5,232.80	2.14	5,229.59	0.96	-0.96	0.11	
14,963.00	88.60	182.30	9,905.82	-5,327.70	-1.84	5,324.29	0.87	-0.84	-0.21	
15,057.00	88.50	179.60	9,908.20	-5,421.65	-3.40	5,418.13	2.87	-0.11	-2.87	
15,152.00	88.50	178.00	9,910.69	-5,516.59	-1.41	5,513.08	1.68	0.00	-1.68	
15,247.00	89.90	178.40	9,912.01	-5,611.54	1.57	5,608.07	1.53	1.47	0.42	
15,342.00	90.20	179.90	9,911.93	-5,706.52	2.98	5,703.04	1.61	0.32	1.58	
15,437.00	89.90	179.70	9,911.85	-5,801.52	3.31	5,798.00	0.38	-0.32	-0.21	
15,531.00	90.70	180.00	9,911.35	-5,895.52	3.56	5,891.94	0.91	0.85	0.32	
15,626.00	89.10	179.10	9,911.52	-5,990.51	4.31	5,986.90	1.93	-1.68	-0.95	
15,720.00	89.80	179.00	9,912.42	-6,084.49	5.86	6,080.88	0.75	0.74	-0.11	



Phoenix Technology Services
Survey Report



Company: BOPCO, L.P.
Project: Eddy County, NM (NAD27 NME)
Site: PLU Big Sinks 23-25-30 USA
Well: #1H
Wellbore: WB2/Job #1310463
Design: Surveys (Latshaw 14)

Local Co-ordinate Reference: Well #1H
TVD Reference: KB @ 3383.00usft (Latshaw 14)
MD Reference: KB @ 3383.00usft (Latshaw 14)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,815.00	90.20	178.70	9,912.42	-6,179.47	7.77	6,175.87	0.53	0.42	-0.32
15,909.00	90.50	178.40	9,911.85	-6,273.44	10.15	6,269.86	0.45	0.32	-0.32
16,004.00	90.60	178.50	9,910.94	-6,368.40	12.72	6,364.86	0.15	0.11	0.11
16,099.00	90.90	178.40	9,909.69	-6,463.36	15.29	6,459.84	0.33	0.32	-0.11
16,193.00	90.70	176.70	9,908.36	-6,557.26	19.31	6,553.83	1.82	-0.21	-1.81
16,288.00	90.50	175.40	9,907.38	-6,652.03	25.85	6,648.77	1.38	-0.21	-1.37
16,382.00	91.00	176.90	9,906.15	-6,745.81	32.16	6,742.71	1.68	0.53	1.60
16,476.00	91.40	176.50	9,904.19	-6,839.63	37.57	6,836.67	0.60	0.43	-0.43
16,570.00	90.30	176.80	9,902.79	-6,933.46	43.06	6,930.63	1.21	-1.17	0.32
16,664.00	92.40	178.20	9,900.58	-7,027.33	47.16	7,024.59	2.68	2.23	1.49
16,758.00	93.00	179.00	9,896.15	-7,121.20	49.46	7,118.48	1.06	0.64	0.85
16,853.00	92.50	179.80	9,891.59	-7,216.08	50.45	7,213.34	0.99	-0.53	0.84
16,947.00	92.30	179.30	9,887.65	-7,310.00	51.19	7,307.22	0.57	-0.21	-0.53
17,041.00	92.70	178.90	9,883.55	-7,403.90	52.66	7,401.11	0.60	0.43	-0.43
17,069.00	92.90	178.90	9,882.19	-7,431.86	53.20	7,429.08	0.71	0.71	0.00
Last Phoenix WB2 MWD Survey									
17,120.00	92.90	178.90	9,879.61	-7,482.78	54.18	7,480.00	0.00	0.00	0.00
Projection to TD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates	Comment
8,673.00	8,670.71	-22.93	12.23 Tie-on to WB1
8,699.00	8,696.70	-22.55	11.78 First Phoenix WB2 MWD Survey
17,069.00	9,882.19	-7,431.86	53.20 Last Phoenix WB2 MWD Survey
17,120.00	9,879.61	-7,482.78	54.18 Projection to TD

Checked By: _____ Approved By: _____ Date: _____



Company: BOPCO
Lease/Well: PLU Big Sinks 23-25-30 USA/No 001H

Rig Name: Latshaw 14
State/County: New Mexico/Eddy
Latitude: 32.07, Longitude: -103.51
GRID North is 0.44 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 22 Feet

DRILLOG.HA GYRO SURVEY CALCULATIONS

Filename: ...3 25 30 usa 1h_gyro survey.ut

Minimum Curvature Method

Report Date/Time: 2/18/2014 / 13:23

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Gene Heiss

PLU Big Sinks 23-25-30 USA No 001H / API 30-015-41639

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.25	259.96	100.00	-0.04	-0.22	-0.04	0.22	259.96	0.25
200.00	0.34	305.03	200.00	0.09	-0.68	0.09	0.68	277.88	0.24
300.00	0.45	309.70	300.00	0.52	-1.22	0.52	1.33	292.89	0.12
400.00	0.42	317.55	399.99	1.04	-1.78	1.04	2.06	300.39	0.07
500.00	0.68	324.03	499.99	1.80	-2.38	1.80	2.98	307.10	0.26
600.00	0.78	332.58	599.98	2.88	-3.04	2.88	4.18	313.47	0.14
700.00	0.80	331.18	699.97	4.09	-3.68	4.09	5.51	317.99	0.03
800.00	0.71	342.04	799.96	5.30	-4.21	5.30	6.77	321.49	0.17
900.00	1.30	341.56	899.95	6.97	-4.77	6.97	8.44	325.63	0.59
1000.00	1.60	345.06	999.91	9.40	-5.49	9.40	10.88	329.72	0.31
1100.00	1.88	359.88	1099.87	12.39	-5.85	12.39	13.70	334.72	0.53
1200.00	2.33	8.71	1199.80	16.04	-5.55	16.04	16.97	340.93	0.56
1300.00	2.20	13.82	1299.72	19.92	-4.78	19.92	20.48	346.51	0.24
1400.00	2.20	15.26	1399.65	23.63	-3.82	23.63	23.93	350.82	0.06
1500.00	2.30	23.23	1499.57	27.32	-2.52	27.32	27.44	354.73	0.33
1600.00	1.99	26.66	1599.50	30.72	-0.95	30.72	30.73	358.23	0.34
1700.00	1.79	31.39	1699.45	33.60	0.64	33.60	33.61	1.10	0.26
1800.00	1.37	45.39	1799.41	35.77	2.31	35.77	35.84	3.69	0.57
1900.00	0.84	54.67	1899.39	37.03	3.75	37.03	37.22	5.79	0.56
2000.00	0.43	76.94	1999.38	37.54	4.71	37.54	37.83	7.16	0.47

Depth FT	Angle Deg	Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Section FT	Distance FT	Direction Deg	Severity Deg/100
2100.00	0.24	59.21	2099.38	37.73	5.26	37.73	38.10	7.94	0.21
2200.00	0.37	85.19	2199.38	37.87	5.77	37.87	38.31	8.66	0.19
2300.00	0.46	74.77	2299.38	38.00	6.48	38.00	38.55	9.68	0.12
2400.00	0.27	90.43	2399.38	38.11	7.11	38.11	38.76	10.57	0.21
2500.00	0.60	105.64	2499.37	37.96	7.85	37.96	38.77	11.68	0.34
2600.00	1.51	98.17	2599.36	37.64	9.66	37.64	38.86	14.40	0.92
2700.00	1.58	86.66	2699.32	37.53	12.35	37.53	39.51	18.21	0.32
2800.00	2.39	76.01	2799.26	38.11	15.75	38.11	41.24	22.45	0.88
2900.00	2.84	80.33	2899.15	39.03	20.21	39.03	43.96	27.38	0.49
3000.00	2.90	82.84	2999.03	39.76	25.17	39.76	47.06	32.33	0.14
3100.00	2.87	89.87	3098.90	40.09	30.18	40.09	50.18	36.98	0.36
3200.00	2.00	101.27	3198.81	39.75	34.40	39.75	52.57	40.87	0.99
3300.00	1.63	111.79	3298.76	38.88	37.43	38.88	53.97	43.91	0.50
3400.00	1.28	100.29	3398.73	38.15	39.85	38.15	55.17	46.24	0.46
3500.00	1.17	109.35	3498.71	37.62	41.91	37.62	56.31	48.09	0.22
3600.00	1.09	110.85	3598.69	36.94	43.76	36.94	57.27	49.83	0.08
3700.00	1.37	132.34	3698.67	35.80	45.53	35.80	57.92	51.83	0.53
3800.00	1.48	155.54	3798.64	33.82	46.95	33.82	57.86	54.23	0.58
3900.00	1.78	179.33	3898.60	31.09	47.50	31.09	56.77	56.79	0.74
3932.00	1.82	176.59	3930.58	30.09	47.53	30.09	56.26	57.67	0.30



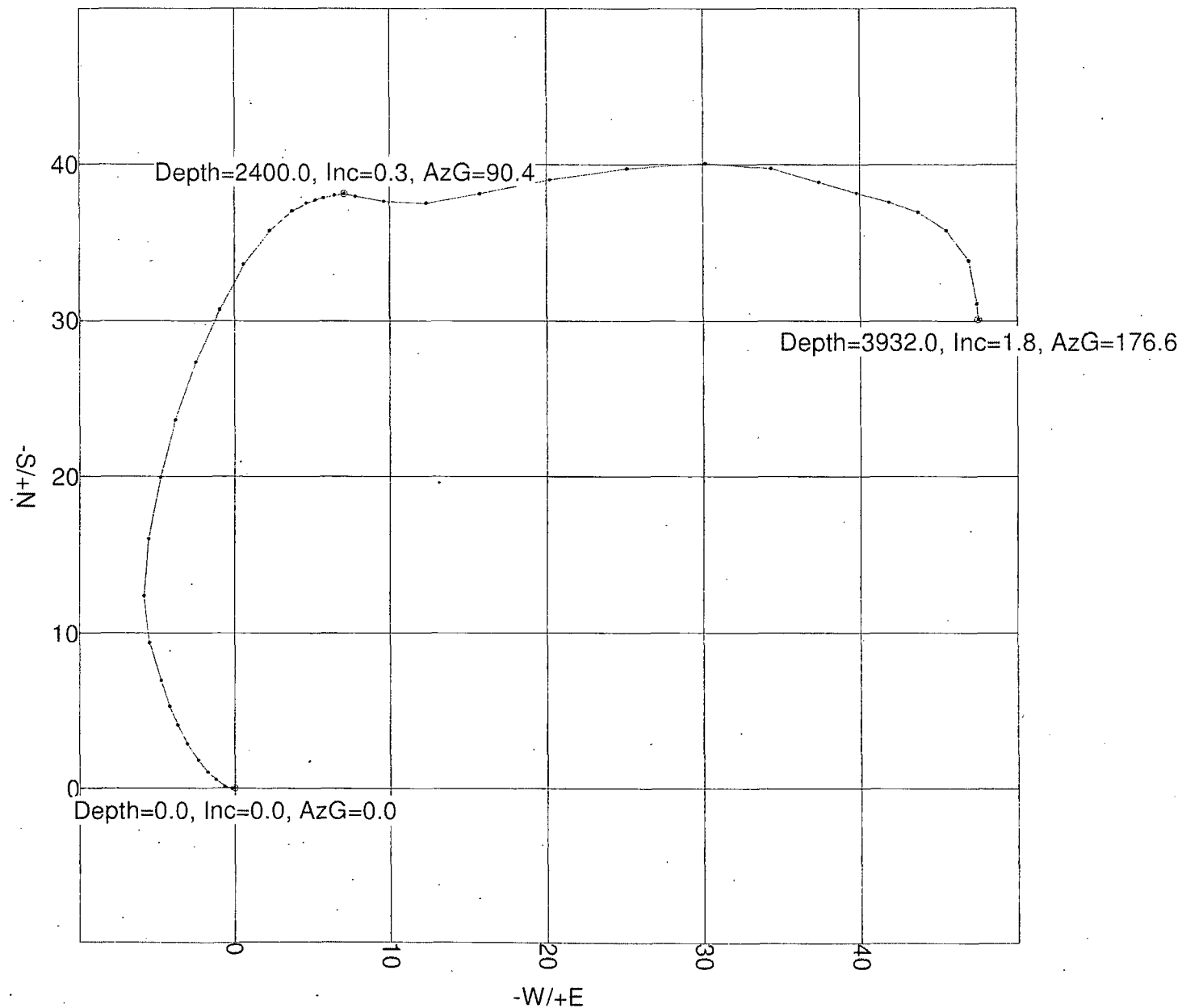
Vaughn Energy Services

Midland, Texas

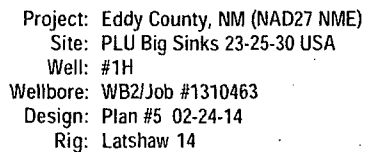
432-563-5444

Surveyor: Gene Heiss

PLU Big Sinks 23-25-30 USA No 001H / API 30-015-41639



VES Survey Date: 01/31/2014

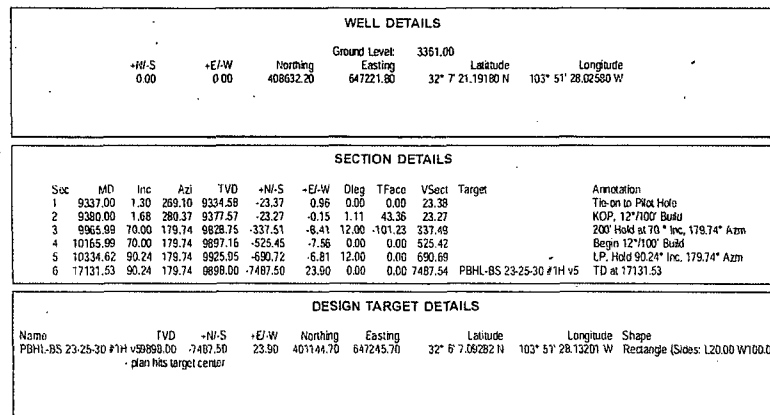


PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.25°
Magnetic North: 7.14°

* Magnetic Field
 Strength: 48266.2nT
 Dip Angle: 59.98°
 Date: 01/14/2014
 Model: IGRF2010_14



Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #1H, Grid North

Latitude: 32° 7' 21.19180 N
Longitude: 103° 51' 28.02580 W

Grid East: 647221.80
Grid North: 408632.20
Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14
 Sample Date: 14-Jan-14
 Magnetic Declination: 7.39°
 Dip Angle from Horizontal: 59.98°
 Magnetic Field Strength: 48266
t

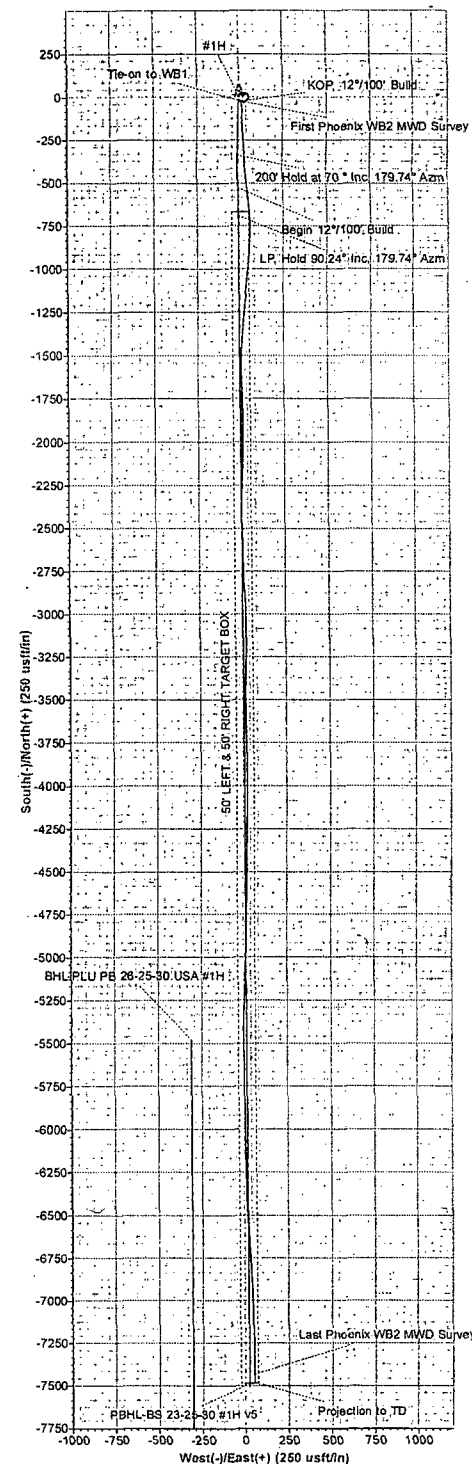
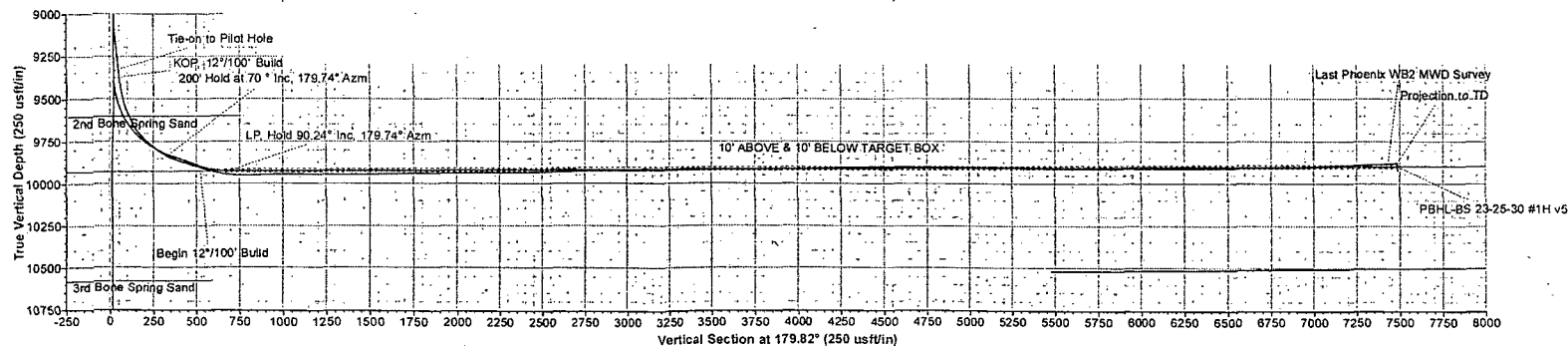
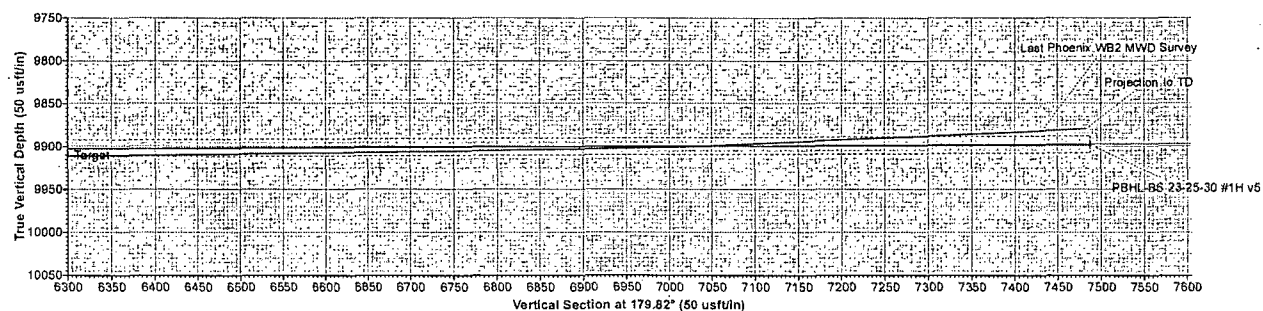
To convert a Magnetic Direction to a Grid Direction, Add 7.14°
 To convert a Magnetic Direction to a True Direction, Add 7.39° East
 To convert a True Direction to a Grid Direction, Subtract 0.25°

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION	DIPANGLE	DIPDIR
9602.67	9614.15	2nd Bone Spring Sand	-0.24	179.77
9917.52	12385.26	Target	-0.24	179.77

LEGEND

- _____ #1H, WB2/Job #1310463, Surveys (Latshaw 14) VO
 _____ #1H, WB1/Job #1310463, Surveys (Latshaw 14) VO
 _____ #1H, WB1/Job #1311358, Plan #1 10-10-13 VO
 _____ Plan #5 02-24-14





BOPCO, L P

Eddy County, NM (NAD27 NME)

PLU Big Sinks 23-25-30 USA

#1H

WB2/Job #1310463

Design: Surveys (Latshaw 14)

Standard Survey Report

04 April, 2014



PHOENIX
TECHNOLOGY SERVICES



Phoenix Technology Services

Survey Report



Company:	BOPCO, L.P.	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27-NME)	TVD Reference:	KB @ 3383.00usft (Latshaw 14)
Site:	PLU Big Sinks 23-25-30 USA	MD Reference:	KB @ 3383.00usft (Latshaw 14)
Well:	#1H	North Reference:	Grid
Wellbore:	WB2/Job #1310463	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Latshaw 14)	Database:	GCR DB

Project:	Eddy County, NM (NAD27-NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	PLU Big Sinks 23-25-30 USA		
Site Position:	Map	Northing:	408,632.20 usft
From:		Easting:	647,221.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 21.19180 N
		Longitude:	103° 51' 28.02580 W
		Grid Convergence:	0.25 °

Well:	#1H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 7' 21.19180 N
		Longitude:	103° 51' 28.02580 W
		Ground Level:	3,361.00 usft

Wellbore:	WB2/Job #1310463		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010_14	01/14/14	7.39
			59.98
			48,266

Design:	Surveys (Latshaw 14)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	8,673.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			177.97

Survey Program:	Date: 04/04/14		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
1,241.00	8,673.00	Phoenix WB1 MWD Survey (WB1/Job #13	MWD
8,673.00	17,120.00	Phoenix WB2 MWD Survey (WB2/Job #13	MWD

Survey	Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
	(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
	1,210.00	2.53	0.00	1,209.77	0.00	0.00	0.00	0.00	0.00	0.00
	1,241.00	2.50	17.60	1,240.74	1.33	0.20	-1.32	2.48	-0.10	56.77
	1,336.00	2.40	13.60	1,335.65	5.24	1.30	-5.19	0.21	-0.11	-4.21
	1,525.00	2.30	14.00	1,524.49	12.76	3.15	-12.64	0.05	-0.05	0.21
	1,716.00	1.70	27.40	1,715.37	19.00	5.38	-18.79	0.40	-0.31	7.02
	1,810.00	1.60	43.10	1,809.34	21.19	6.92	-20.93	0.49	-0.11	16.70
	2,001.00	0.20	123.60	2,000.31	22.96	9.02	-22.62	0.83	-0.73	42.15
	2,191.00	0.40	82.90	2,190.31	22.85	9.95	-22.49	0.15	0.11	-21.42
	2,381.00	0.40	84.40	2,380.30	23.00	11.27	-22.59	0.01	0.00	0.79
	2,571.00	1.70	113.10	2,570.27	21.96	14.52	-21.43	0.72	0.68	15.11



Phoenix Technology Services

Survey Report



Company:	BOPCO-LP	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27-NME)	TVD Reference:	KB @ 3383.00usft (Latshaw 14)
Site:	PLU Big Sinks 23-25-30 USA	MD Reference:	KB @ 3383.00usft (Latshaw 14)
Well:	#1H	North Reference:	Grid
Wellbore:	WB2/Job #1310463	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Latshaw 14)	Database:	GCR DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,761.00	2.20	83.40	2,760.16	21.27	20.74	-20.53	0.58	0.26	-15.63
2,951.00	3.00	84.40	2,949.96	22.18	29.31	-21.13	0.42	0.42	0.53
3,046.00	2.90	88.00	3,044.84	22.50	34.18	-21.28	0.22	-0.11	3.79
3,141.00	2.20	103.30	3,139.75	22.17	38.36	-20.80	1.02	-0.74	16.11
3,237.00	1.90	114.10	3,235.68	21.09	41.61	-19.61	0.51	-0.31	11.25
3,332.00	1.60	92.60	3,330.64	20.39	44.37	-18.81	0.75	-0.32	-22.63
3,426.00	1.00	100.00	3,424.62	20.19	46.49	-18.53	0.66	-0.64	7.87
3,522.00	1.50	114.50	3,520.59	19.52	48.45	-17.79	0.61	0.52	15.10
3,617.00	0.90	119.50	3,615.57	18.64	50.24	-16.85	0.64	-0.63	5.26
3,712.00	1.70	121.00	3,710.55	17.55	52.09	-15.69	0.84	0.84	1.58
3,807.00	1.60	168.50	3,805.51	15.52	53.57	-13.61	1.40	-0.11	50.00
3,901.00	1.80	177.30	3,899.47	12.76	53.90	-10.84	0.35	0.21	9.36
3,990.00	1.70	182.00	3,988.43	10.05	53.92	-8.13	0.20	-0.11	5.28
4,020.00	1.40	185.40	4,018.42	9.24	53.87	-7.32	1.05	-1.00	11.33
4,115.00	1.10	177.20	4,113.39	7.17	53.80	-5.26	0.37	-0.32	-8.63
4,209.00	1.10	167.50	4,207.38	5.39	54.04	-3.47	0.20	0.00	-10.32
4,301.00	0.90	165.20	4,299.36	3.83	54.42	-1.90	0.22	-0.22	-2.50
4,396.00	1.10	171.70	4,394.35	2.20	54.74	-0.26	0.24	0.21	6.84
4,491.00	1.10	167.30	4,489.33	0.41	55.07	1.54	0.09	0.00	-4.63
4,586.00	1.00	179.10	4,584.32	-1.31	55.28	3.27	0.25	-0.11	12.42
4,681.00	0.90	175.90	4,679.30	-2.88	55.35	4.84	0.12	-0.11	-3.37
4,776.00	0.80	183.60	4,774.29	-4.29	55.36	6.25	0.16	-0.11	8.11
4,871.00	0.80	192.60	4,869.28	-5.60	55.18	7.55	0.13	0.00	9.47
4,966.00	0.70	194.10	4,964.28	-6.81	54.89	8.75	0.11	-0.11	1.58
5,061.00	0.80	205.80	5,059.27	-7.97	54.46	9.89	0.19	0.11	12.32
5,156.00	0.80	206.20	5,154.26	-9.16	53.88	11.06	0.01	0.00	0.42
5,251.00	0.90	213.00	5,249.25	-10.38	53.18	12.26	0.15	0.11	7.16
5,346.00	0.90	219.20	5,344.24	-11.58	52.30	13.43	0.10	0.00	6.53
5,442.00	1.00	214.00	5,440.22	-12.86	51.36	14.67	0.14	0.10	-5.42
5,537.00	1.00	219.20	5,535.21	-14.19	50.37	15.97	0.10	0.00	5.47
5,632.00	0.90	213.60	5,630.19	-15.45	49.43	17.20	0.14	-0.11	-5.89
5,727.00	1.20	206.50	5,725.18	-16.97	48.58	18.68	0.34	0.32	-7.47
5,822.00	1.30	198.00	5,820.16	-18.88	47.80	20.56	0.22	0.11	-8.95
5,917.00	0.90	219.10	5,915.14	-20.49	47.00	22.14	0.59	-0.42	22.21
6,011.00	0.90	220.80	6,009.13	-21.62	46.05	23.24	0.03	0.00	1.81
6,107.00	1.10	207.80	6,105.11	-23.00	45.12	24.59	0.31	0.21	-13.54
6,202.00	1.30	247.30	6,200.09	-24.23	43.71	25.76	0.88	0.21	41.58
6,298.00	0.70	269.10	6,296.08	-24.66	42.11	26.13	0.73	-0.63	22.71
6,393.00	1.00	270.70	6,391.07	-24.65	40.71	26.08	0.32	0.32	1.68
6,487.00	1.00	264.70	6,485.05	-24.72	39.07	26.09	0.11	0.00	-6.38
6,582.00	1.10	263.80	6,580.04	-24.90	37.34	26.20	0.11	0.11	-0.95
6,677.00	1.00	264.10	6,675.02	-25.08	35.60	26.32	0.11	-0.11	0.32
6,773.00	0.70	261.60	6,771.01	-25.25	34.19	26.45	0.31	-0.31	-2.60



Phoenix Technology Services
Survey Report



Company:	BOPCO, L.P.	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3383.00usft (Latshaw 14)
Site:	PLU Big Sinks 23-25-30 USA	MD Reference:	KB @ 3383.00usft (Latshaw 14)
Well:	#1H	North Reference:	Grid
Wellbore:	WB2/Job #1310463	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Latshaw 14)	Database:	GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N/S (usft)	E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,867.00	0.60	258.80	6,865.01	-25.43	33.14	26.59	0.11	-0.11	-2.98
6,962.00	0.40	238.10	6,960.00	-25.70	32.37	26.83	0.28	-0.21	-21.79
7,058.00	0.40	230.30	7,056.00	-26.09	31.83	27.20	0.06	0.00	-8.13
7,153.00	0.60	203.80	7,151.00	-26.76	31.37	27.85	0.32	0.21	-27.89
7,248.00	0.80	186.20	7,245.99	-27.87	31.10	28.96	0.31	0.21	-18.53
7,343.00	1.10	179.40	7,340.98	-29.45	31.04	30.53	0.34	0.32	-7.16
7,438.00	0.80	209.60	7,435.96	-30.93	30.72	32.00	0.60	-0.32	31.79
7,533.00	1.00	210.60	7,530.95	-32.22	29.97	33.27	0.21	0.21	1.05
7,627.00	0.70	278.90	7,624.94	-32.84	28.99	33.85	1.05	-0.32	72.66
7,722.00	0.90	268.20	7,719.93	-32.78	27.67	33.73	0.26	0.21	-11.26
7,817.00	0.90	268.30	7,814.92	-32.82	26.18	33.73	0.00	0.00	0.11
7,912.00	1.10	303.90	7,909.91	-32.33	24.67	33.19	0.67	0.21	37.47
8,007.00	0.60	349.20	8,004.90	-31.34	23.82	32.16	0.84	-0.53	47.68
8,102.00	0.70	353.80	8,099.89	-30.27	23.67	31.09	0.12	0.11	4.84
8,197.00	2.30	311.80	8,194.86	-28.42	22.18	29.19	1.94	1.68	-44.21
8,292.00	1.10	285.10	8,289.82	-26.92	19.88	27.60	1.48	-1.26	-28.11
8,387.00	1.00	276.00	8,384.80	-26.59	18.18	27.22	0.20	-0.11	-9.58
8,482.00	2.00	287.00	8,479.77	-26.02	15.77	26.56	1.09	1.05	11.58
8,578.00	1.30	326.40	8,575.73	-24.62	13.56	25.09	1.35	-0.73	41.04
8,673.00	1.30	315.40	8,670.71	-22.96	12.21	23.38	0.26	0.00	-11.58
Tie-on to WB1									
8,699.00	1.30	305.90	8,696.70	-22.58	11.76	22.98	0.83	0.00	-36.54
First Phoenix WB2 MWD Survey									
8,794.00	1.50	283.30	8,791.67	-21.66	9.68	21.99	0.61	0.21	-23.79
8,889.00	0.60	273.90	8,886.65	-21.34	7.97	21.61	0.96	-0.95	-9.89
8,983.00	0.40	254.70	8,980.65	-21.39	7.17	21.63	0.27	-0.21	-20.43
9,078.00	4.00	162.10	9,075.57	-24.63	7.87	24.90	4.25	3.79	-97.47
9,173.00	6.80	158.00	9,170.14	-33.00	10.99	33.37	2.97	2.95	-4.32
9,268.00	5.80	164.60	9,264.57	-42.84	14.37	43.33	1.30	-1.05	6.95
9,331.00	5.60	171.60	9,327.26	-48.95	15.67	49.48	1.15	-0.32	11.11
9,363.00	5.40	173.40	9,359.11	-51.99	16.07	52.53	0.83	-0.63	5.63
9,395.00	6.50	170.70	9,390.94	-55.28	16.53	55.83	3.55	3.44	-8.44
9,426.00	8.00	176.10	9,421.69	-59.16	16.96	59.73	5.31	4.84	17.42
9,458.00	10.70	178.60	9,453.26	-64.35	17.19	64.92	8.53	8.44	7.81
9,490.00	13.50	182.30	9,484.55	-71.06	17.11	71.62	9.08	8.75	11.56
9,521.00	15.90	179.80	9,514.53	-78.92	16.98	79.47	8.01	7.74	-8.06
9,553.00	18.50	180.50	9,545.10	-88.38	16.95	88.93	8.15	8.13	2.19
9,584.00	21.10	181.00	9,574.26	-98.88	16.81	99.42	8.40	8.39	1.61
9,617.00	23.70	181.20	9,604.77	-111.45	16.57	111.97	7.88	7.88	0.61
9,649.00	26.20	180.70	9,633.78	-124.95	16.35	125.45	7.84	7.81	-1.56
9,681.00	30.30	179.30	9,661.96	-140.09	16.36	140.58	12.98	12.81	-4.38
9,712.00	35.60	177.50	9,687.97	-156.94	16.85	157.44	17.38	17.10	-5.81
9,743.00	40.80	176.40	9,712.32	-176.07	17.88	176.60	16.92	16.77	-3.55
9,775.00	45.20	176.10	9,735.72	-197.84	19.31	198.40	13.76	13.75	-0.94



Phoenix Technology Services

Survey Report



Company	BOPCO, L.P.	Local Co-ordinate Reference	Well #1H
Project	Eddy County, NM (NAD27 NME)	TVD Reference	KB @ 3383.00usft (Latshaw 14)
Site	PLU Big Sinks 23-25-30 USA	MD Reference	KB @ 3383.00usft (Latshaw 14)
Well	#1H	North Reference	Grid
Wellbore	WB2/Job #1310463	Survey Calculation Method	Minimum Curvature
Design	Surveys (Latshaw 14)	Database	GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,806.00	48.70	175.40	9,756.88	-220.43	20.99	221.04	11.41	11.29	-2.26
9,838.00	51.40	174.40	9,777.42	-244.86	23.18	245.53	8.77	8.44	-3.13
9,870.00	53.80	174.60	9,796.86	-270.17	25.61	270.90	7.52	7.50	0.63
9,901.00	55.70	175.50	9,814.75	-295.39	27.79	296.18	6.57	6.13	2.90
9,933.00	60.00	176.00	9,831.77	-322.40	29.80	323.25	13.50	13.44	1.56
9,965.00	65.00	176.40	9,846.55	-350.71	31.68	351.61	15.66	15.63	1.25
10,028.00	73.00	176.40	9,869.10	-409.36	35.37	410.36	12.70	12.70	0.00
10,123.00	72.00	175.60	9,897.67	-499.74	41.68	500.91	1.32	-1.05	-0.84
10,144.00	71.70	175.20	9,904.21	-519.63	43.29	520.84	2.31	-1.43	-1.90
10,236.00	74.30	175.00	9,931.11	-607.28	50.80	608.70	2.83	2.83	-0.22
10,267.00	77.60	175.00	9,938.63	-637.24	53.42	638.73	10.65	10.65	0.00
10,298.00	80.80	175.70	9,944.44	-667.59	55.89	669.15	10.56	10.32	2.26
10,328.00	83.10	177.20	9,948.64	-697.23	57.73	698.84	9.13	7.67	5.00
10,358.00	86.00	178.00	9,951.49	-727.06	58.98	728.70	10.02	9.67	2.67
10,452.00	92.60	182.20	9,952.64	-820.98	58.81	822.55	8.32	7.02	4.47
10,542.00	92.70	183.80	9,948.48	-910.76	54.11	912.11	1.78	0.11	1.78
10,634.00	90.40	185.10	9,945.99	-1,002.44	46.97	1,003.48	2.87	-2.50	1.41
10,726.00	89.90	185.10	9,945.75	-1,094.08	38.79	1,094.77	0.54	-0.54	0.00
10,819.00	88.90	185.90	9,946.72	-1,186.64	29.88	1,186.96	1.38	-1.08	0.86
10,913.00	90.30	184.90	9,947.38	-1,280.22	21.03	1,280.16	1.83	1.49	-1.06
11,005.00	90.20	184.10	9,946.98	-1,371.94	13.81	1,371.56	0.88	-0.11	-0.87
11,099.00	90.40	184.00	9,946.49	-1,465.70	7.18	1,465.03	0.24	0.21	-0.11
11,192.00	91.30	178.80	9,945.11	-1,558.63	4.90	1,557.82	5.67	0.97	-5.59
11,285.00	91.60	178.40	9,942.75	-1,651.57	7.18	1,650.79	0.54	0.32	-0.43
11,378.00	90.50	178.30	9,941.05	-1,744.51	9.85	1,743.77	1.19	-1.18	-0.11
11,471.00	89.40	180.70	9,941.13	-1,837.50	10.66	1,836.73	2.84	-1.18	2.58
11,563.00	91.10	179.90	9,940.73	-1,929.50	10.18	1,928.65	2.04	1.85	-0.87
11,655.00	91.40	180.50	9,938.72	-2,021.47	9.86	2,020.55	0.73	0.33	0.65
11,748.00	90.70	180.80	9,937.02	-2,114.45	8.81	2,113.44	0.82	-0.75	0.32
11,843.00	89.50	182.70	9,936.85	-2,209.40	5.91	2,208.22	2.37	-1.26	2.00
11,938.00	91.00	181.30	9,936.44	-2,304.34	2.59	2,302.98	2.16	1.58	-1.47
12,033.00	89.90	181.40	9,935.69	-2,399.31	0.35	2,397.81	1.16	-1.16	0.11
12,127.00	92.50	178.60	9,933.72	-2,493.27	0.35	2,491.71	4.06	2.77	-2.98
12,222.00	91.00	177.60	9,930.82	-2,588.17	3.50	2,586.67	1.90	-1.58	-1.05
12,316.00	92.00	178.40	9,928.36	-2,682.08	6.78	2,680.63	1.36	1.06	0.85
12,410.00	91.30	178.30	9,925.65	-2,776.00	9.49	2,774.59	0.75	-0.74	-0.11
12,505.00	89.80	174.90	9,924.74	-2,870.81	15.12	2,869.54	3.91	-1.58	-3.58
12,600.00	90.50	178.90	9,924.49	-2,965.65	20.25	2,964.51	4.27	0.74	4.21
12,695.00	90.30	178.90	9,923.83	-3,060.63	22.08	3,059.49	0.21	-0.21	0.00
12,789.00	92.00	181.40	9,921.94	-3,154.60	21.83	3,153.39	3.22	1.81	2.66
12,883.00	90.00	181.30	9,920.30	-3,248.56	19.62	3,247.21	2.13	-2.13	-0.11
12,978.00	90.90	181.60	9,919.56	-3,343.52	17.22	3,342.03	1.00	0.95	0.32
13,073.00	91.00	180.60	9,917.98	-3,438.49	15.39	3,436.88	1.06	0.11	-1.05



Phoenix Technology Services

Survey Report



Company:	BOPCO, L.P.	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM (NAD27/NME)	TVD Reference:	KB @ 3383.00usft (Latshaw 14)
Site:	PLU Big Sinks 23-25-30 USA	MD Reference:	KB @ 3383.00usft (Latshaw 14)
Well:	#1H	North Reference:	Grid
Wellbore:	WB2/Job #1310463	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Latshaw 14)	Database:	GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,167.00	89.70	178.30	9,917.41	-3,532.47	16.29	3,530.83	2.81	-1.38	-2.45
13,261.00	91.70	179.20	9,916.26	-3,626.44	18.34	3,624.81	2.33	2.13	0.96
13,355.00	90.70	179.50	9,914.29	-3,720.41	19.41	3,718.76	1.11	-1.06	0.32
13,450.00	90.50	179.00	9,913.29	-3,815.40	20.65	3,813.73	0.57	-0.21	-0.53
13,545.00	90.10	179.80	9,912.80	-3,910.39	21.65	3,908.70	0.94	-0.42	0.84
13,639.00	89.30	179.70	9,913.29	-4,004.39	22.06	4,002.65	0.86	-0.85	-0.11
13,734.00	92.50	180.00	9,911.80	-4,099.36	22.31	4,097.58	3.38	3.37	0.32
13,828.00	92.30	180.20	9,907.86	-4,193.28	22.14	4,191.43	0.30	-0.21	0.21
13,922.00	92.00	180.30	9,904.33	-4,287.21	21.73	4,285.29	0.34	-0.32	0.11
14,017.00	91.30	180.50	9,901.60	-4,382.17	21.07	4,380.17	0.77	-0.74	0.21
14,112.00	90.40	180.30	9,900.19	-4,477.16	20.41	4,475.07	0.97	-0.95	-0.21
14,206.00	89.50	180.50	9,900.27	-4,571.15	19.75	4,568.98	0.98	-0.96	0.21
14,301.00	88.50	181.00	9,901.93	-4,666.13	18.51	4,663.85	1.18	-1.05	0.53
14,396.00	90.20	181.60	9,903.01	-4,761.09	16.35	4,758.68	1.90	1.79	0.63
14,491.00	89.70	180.90	9,903.09	-4,856.07	14.28	4,853.53	0.91	-0.53	-0.74
14,585.00	88.70	181.00	9,904.40	-4,950.05	12.72	4,947.39	1.07	-1.06	0.11
14,680.00	90.80	182.30	9,904.82	-5,045.00	9.99	5,042.19	2.60	2.21	1.37
14,774.00	90.30	182.40	9,903.92	-5,138.92	6.13	5,135.91	0.54	-0.53	0.11
14,868.00	89.40	182.50	9,904.16	-5,232.83	2.11	5,229.62	0.96	-0.96	0.11
14,963.00	88.60	182.30	9,905.82	-5,327.73	-1.86	5,324.32	0.87	-0.84	-0.21
15,057.00	88.50	179.60	9,908.20	-5,421.68	-3.42	5,418.15	2.87	-0.11	-2.87
15,152.00	88.50	178.00	9,910.69	-5,516.62	-1.43	5,513.11	1.68	0.00	-1.68
15,247.00	89.90	178.40	9,912.01	-5,611.56	1.55	5,608.10	1.53	1.47	0.42
15,342.00	90.20	179.90	9,911.93	-5,706.55	2.96	5,703.07	1.61	0.32	1.58
15,437.00	89.90	179.70	9,911.85	-5,801.55	3.29	5,798.02	0.38	-0.32	-0.21
15,531.00	90.70	180.00	9,911.35	-5,895.55	3.54	5,891.97	0.91	0.85	0.32
15,626.00	89.10	179.10	9,911.52	-5,990.54	4.28	5,986.93	1.93	-1.68	-0.95
15,720.00	89.80	179.00	9,912.42	-6,084.52	5.84	6,080.91	0.75	0.74	-0.11
15,815.00	90.20	178.70	9,912.42	-6,179.50	7.75	6,175.90	0.53	0.42	-0.32
15,909.00	90.50	178.40	9,911.85	-6,273.47	10.13	6,269.89	0.45	0.32	-0.32
16,004.00	90.60	178.50	9,910.94	-6,368.43	12.70	6,364.88	0.15	0.11	0.11
16,099.00	90.90	178.40	9,909.69	-6,463.39	15.27	6,459.87	0.33	0.32	-0.11
16,193.00	90.70	176.70	9,908.38	-6,557.29	19.29	6,553.86	1.82	-0.21	-1.81
16,288.00	90.50	175.40	9,907.38	-6,652.06	25.83	6,648.80	1.38	-0.21	-1.37
16,382.00	91.00	176.90	9,906.15	-6,745.83	32.14	6,742.74	1.68	0.53	1.60
16,476.00	91.40	176.50	9,904.19	-6,839.66	37.55	6,836.69	0.60	0.43	-0.43
16,570.00	90.30	176.80	9,902.79	-6,933.48	43.04	6,930.66	1.21	-1.17	0.32
16,664.00	92.40	178.20	9,900.58	-7,027.36	47.14	7,024.62	2.68	2.23	1.49
16,758.00	93.00	179.00	9,896.15	-7,121.23	49.44	7,118.51	1.06	0.64	0.85
16,853.00	92.50	179.80	9,891.59	-7,216.11	50.43	7,213.37	0.99	-0.53	0.84
16,947.00	92.30	179.30	9,887.65	-7,310.03	51.17	7,307.25	0.57	-0.21	-0.53
17,041.00	92.70	178.90	9,883.55	-7,403.93	52.64	7,401.14	0.60	0.43	-0.43
17,069.00	92.90	178.90	9,882.19	-7,431.89	53.18	7,429.10	0.71	0.71	0.00



Phoenix Technology Services
Survey Report



Company:	BOPCO, L.P.	Local Co-ordinate/Reference:	Well #1H:
Project:	Eddy County, NM (NAD27, NME)	TVD Reference:	KB @ 3383.00usft (Latshaw, 14)
Site:	PLU Big Sinks 23-25-30, USA	MD Reference:	KB @ 3383.00usft (Latshaw, 14)
Well:	#1H	North Reference:	Grid
Wellbore:	WB2/Job #1310463	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Latshaw, 14)	Database:	GCR DB

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Last Phoenix WB2 MWD Survey									
17,120.00	92.90	178.90	9,879.61	-7,482.81	54.16	7,480.03	0.00	0.00	0.00
Projection to TD:									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
8,673.00	8,670.71	-22.96	12.21	Tie-on to WB1	
8,699.00	8,696.70	-22.58	11.76	First Phoenix WB2 MWD Survey	
17,069.00	9,882.19	-7,431.89	53.18	Last Phoenix WB2 MWD Survey	
17,120.00	9,879.61	-7,482.81	54.16	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____