



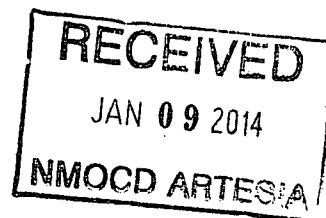
A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

October 11, 2013

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

15-40956



Attn: Kanicia Castillo

RE: **Grave Digger State Com No. 007H**

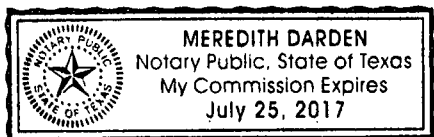
Please find enclosed a copy of the survey from 0.00' to 2363.00' ran on the above referenced well.

Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 11 day of October, A.D., 2013, by Keith Havelka.




Meredith Darden
Notary Public, State of Texas

Company: COG Operating, LLC (Concho)
Lease/Well: Grave Digger State Com/No. 007H



Rig Name: Silver Oak 3
State/County: New Mexico/Eddy
Latitude: 32.61, Longitude: -104.45
GRID North is 0.06 Degrees West of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 17ft

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: final.ut
Minimum Curvature Method
Report Date/Time: 10/11/2013 / 10:12

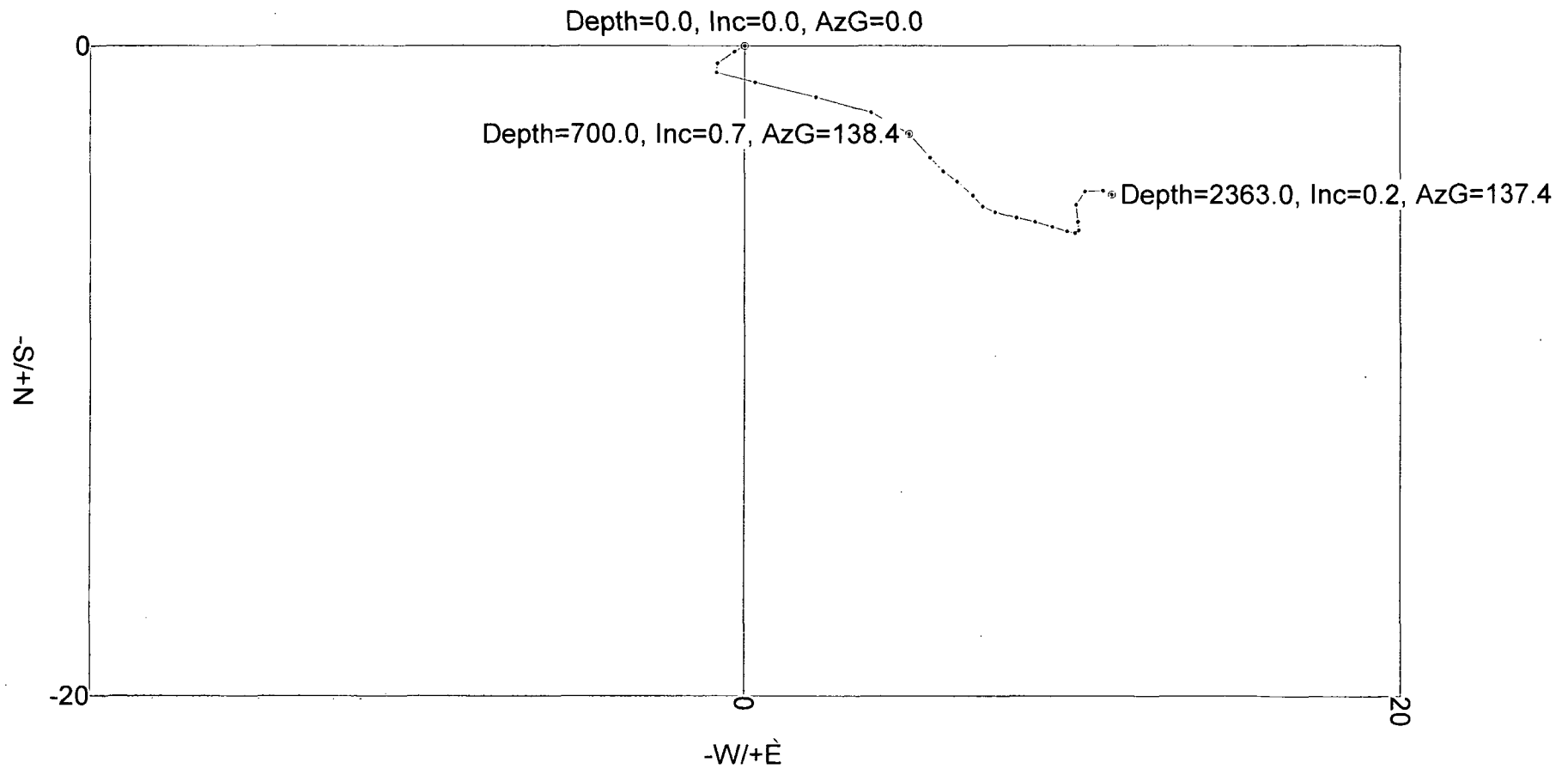
Vaughn Energy Services
Fort Worth, Texas
817-741-3610
Surveyor: Jay Carroll
Grave Digger State Com No. 007H / API 30-015-40956

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	0.40	240.57	100.00	-0.17	-0.30	-0.17	0.35	240.57	0.40
200.00	0.33	226.72	200.00	-0.54	-0.82	-0.54	0.98	236.54	0.11
300.00	0.23	115.07	300.00	-0.82	-0.84	-0.82	1.18	225.77	0.47
400.00	1.15	102.39	399.99	-1.12	0.32	-1.12	1.17	164.05	0.93
500.00	1.06	104.95	499.97	-1.57	2.19	-1.57	2.70	125.68	0.11
600.00	0.93	106.46	599.95	-2.04	3.86	-2.04	4.37	117.87	0.13
700.00	0.67	138.41	699.95	-2.71	5.03	-2.71	5.71	118.30	0.51
800.00	0.44	139.22	799.94	-3.43	5.67	-3.43	6.62	121.22	0.23
900.00	0.23	130.40	899.94	-3.85	6.07	-3.85	7.19	122.42	0.22
1000.00	0.37	123.78	999.94	-4.16	6.48	-4.16	7.70	122.68	0.15
1100.00	0.38	140.39	1099.94	-4.59	6.96	-4.59	8.34	123.41	0.11
1200.00	0.13	132.48	1199.93	-4.93	7.26	-4.93	8.77	124.16	0.25
1300.00	0.36	108.75	1299.93	-5.10	7.64	-5.10	9.19	123.74	0.25
1400.00	0.40	101.35	1399.93	-5.27	8.28	-5.27	9.82	122.49	0.06
1500.00	0.27	106.77	1499.93	-5.41	8.85	-5.41	10.37	121.44	0.13
1600.00	0.36	105.84	1599.93	-5.56	9.38	-5.56	10.90	120.69	0.08
1700.00	0.18	106.98	1699.93	-5.70	9.83	-5.70	11.36	120.10	0.18
1800.00	0.11	94.23	1799.93	-5.75	10.07	-5.75	11.60	119.71	0.08

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
1900.00	0.10	14.35	1899.93	-5.67	10.19	-5.67	11.66	119.09	0.14
2000.00	0.22	345.06	1999.93	-5.40	10.16	-5.40	11.51	117.99	0.14
2100.00	0.39	358.17	2099.92	-4.88	10.11	-4.88	11.22	115.78	0.18
2200.00	0.32	75.84	2199.92	-4.47	10.37	-4.47	11.29	113.34	0.45
2300.00	0.33	98.26	2299.92	-4.45	10.93	-4.45	11.79	112.14	0.13
2363.00	0.25	137.39	2362.92	-4.57	11.19	-4.57	12.09	112.21	0.33



Vaughn Energy Services
Fort Worth, Texas
817-741-3610
Surveyor: Jay Carroll
Grave Digger State Com No. 007H / API 30-015-40956





PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

October 21, 2013

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Grave Digger St Com #7H
240' FNL & 991' FEL
Sec. 3, T20S, R25E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

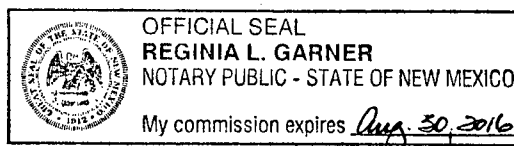
A handwritten signature in cursive script, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 21st day of October, 2013.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".

Notary Public

Grave Digger State Com #7H

Date	Depth	Deviation	Direction
10/4/2013	114	0.10	0.00
10/4/2013	363	0.90	0.00
10/5/2013	834	0.70	0.00
10/7/2013	1185	0.40	0.00
10/8/2013	1683	0.40	0.00
10/8/2013	2185	0.30	0.00
10/10/2013	2405	0.20	67.40
10/10/2013	2436	0.10	319.60
10/10/2013	2468	0.20	50.90
10/10/2013	2499	1.80	169.90
10/10/2013	2530	6.40	170.10
10/10/2013	2717	24.90	175.70
10/10/2013	2747	27.20	175.90
10/10/2013	2779	30.20	177.70
10/10/2013	2810	34.00	179.50
10/10/2013	2841	38.00	180.60
10/10/2013	2872	40.10	180.90
10/10/2013	2903	42.20	179.10
10/10/2013	2934	45.10	179.80
10/10/2013	2965	48.70	181.50
10/10/2013	2996	52.40	183.00
10/10/2013	3027	54.70	184.50
10/10/2013	3058	56.80	184.60
10/11/2013	3121	65.00	184.00
10/11/2013	3152	69.00	183.70
10/11/2013	3183	71.50	183.30
10/11/2013	3214	74.50	182.50
10/11/2013	3246	78.50	182.40
10/11/2013	3277	83.10	182.20
10/11/2013	3308	86.60	181.10
10/11/2013	3340	88.40	179.50
10/11/2013	3371	88.40	179.00
10/12/2013	3434	90.40	178.20
10/13/2013	3465	90.50	178.50
10/13/2013	3558	90.60	178.70
10/13/2013	3652	90.40	178.60
10/13/2013	3745	90.30	179.20
10/13/2013	3839	90.00	179.40
10/13/2013	3933	89.60	179.70
10/13/2013	4020	89.00	179.30
10/13/2013	4120	89.80	179.20
10/14/2013	4401	90.00	179.00
10/14/2013	4494	89.60	178.10

Date	Depth	Deviation	Direction
10/14/2013	4588	91.60	179.40
10/14/2013	4681	91.80	179.40
10/14/2013	4775	91.50	178.70
10/14/2013	4869	91.10	177.20
10/14/2013	4962	90.80	177.90
10/14/2013	5055	90.00	177.50
10/14/2013	5150	90.20	179.40
10/15/2013	5431	89.80	180.80
10/15/2013	5525	91.10	181.10
10/15/2013	5618	90.90	180.80
10/15/2013	5712	90.70	180.30
10/15/2013	5805	90.30	180.50
10/15/2013	5899	90.20	180.20
10/15/2013	5993	89.40	179.90
10/15/2013	6087	88.60	179.60
10/15/2013	6181	90.90	181.30
10/15/2013	6274	90.70	180.90
10/16/2013	6554	91.40	181.00
10/16/2013	6648	91.20	180.60
10/16/2013	6741	90.60	180.60
10/16/2013	6835	90.20	180.20
10/16/2013	6928	89.80	180.10
10/16/2013	7021	89.30	179.20
10/16/2013	7115	88.70	179.20
10/16/2013	7209	90.10	181.70
10/16/2013	7302	89.70	181.60
10/16/2013	7396	89.30	181.60
10/16/2013	7427	89.00	180.90



COG Operating LLC

Eddy County, New Mexico (NAD 27 NME)

Grave Digger State Com

#7H

WB1/Job #1311240

Survey: Phoenix MWD Survey

Phoenix Final Survey Report

16 October, 2013





Phoenix Technology Services
Phoenix Final Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, New Mexico (NAD 27, NME)	TVD Reference:	KB @ 3466.00usft (Silver Oak 3)
Site:	Grave Digger State Com	MD Reference:	KB @ 3466.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	WB1/Job #1311240	Survey Calculation Method:	Minimum Curvature
Design:	Survey (Silver Oak 3)	Database:	GCR DB

Project:	Eddy County, New Mexico (NAD 27, 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:	Grave Digger State Com		
Site Position:	Map	Northing:	585,277.40 usft
From:		Easting:	464,199.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 36' 32.32192 N
		Longitude:	104° 26' 58.54459 W
		Grid Convergence:	-0.06 °

Well:	#7H					
Well Position	+N/-S	0.00 usft	Northing:	585,277.40 usft	Latitude:	32° 36' 32.32192 N
	+E/-W	0.00 usft	Easting:	464,199.50 usft	Longitude:	104° 26' 58.54459 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,448.00 usft

Wellbore:	WB1/Job #1311240				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	10/09/13	7.73	60.34	48,518

Design: Survey (Silver Oak 3)				
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	179.92

Survey Program:	Date: 10/16/13				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	2,363.00	VES Survey (WB1/Job #1311240)	VES-ISCWSA-GYRO-3	Biaxial Semi-Cont. Gyro	
2,405.00	7,482.00	Phoenix MWD Survey (WB1/Job #131124)	MWD	MWD - Standard	

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (°/100usft)
	2,363.00	0.25	137.39	2,362.92	-4.57	11.19	4.59	0.00
Tie-on to VES Gyro	2,405.00	0.20	67.40	2,404.92	-4.61	11.32	4.63	0.62
First Phoenix MWD Survey	2,436.00	0.10	319.60	2,435.92	-4.57	11.35	4.58	0.80
	2,467.00	0.20	50.90	2,466.92	-4.51	11.38	4.53	0.73
	2,499.00	1.80	161.90	2,498.91	-4.96	11.58	4.97	5.88
	2,530.00	6.40	170.10	2,529.83	-7.12	12.02	7.14	14.92
	2,561.00	11.30	172.40	2,560.45	-11.84	12.72	11.85	15.84
	2,592.00	14.90	172.20	2,590.64	-18.80	13.67	18.82	11.61
	2,623.00	17.30	171.30	2,620.42	-27.30	14.90	27.33	7.78



Phoenix Technology Services
Phoenix Final Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, New Mexico (NAD 27 NME)	TVD Reference:	KB @ 3466.00usft (Silver Oak 3)
Site:	Grave Digger State Corn	MD Reference:	KB @ 3466.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	WB1/Job #1311240	Survey Calculation Method:	Minimum Curvature
Design:	Survey (Silver Oak 3)	Database:	GCR DB

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	D Leg (%/100usft)
2,654.00	20.00	172.30	2,649.79	-37.12	16.31	37.14	8.77
2,686.00	22.50	174.40	2,679.61	-48.64	17.64	48.66	8.17
2,717.00	24.90	175.70	2,708.00	-61.05	18.71	61.07	7.92
2,747.00	27.20	175.90	2,734.95	-74.19	19.68	74.21	7.67
2,779.00	30.20	177.70	2,763.01	-89.53	20.52	89.56	9.76
2,810.00	34.00	179.50	2,789.27	-105.99	20.91	106.02	12.64
2,841.00	38.00	180.60	2,814.34	-124.21	20.89	124.24	13.07
2,872.00	40.10	180.90	2,838.42	-143.74	20.63	143.76	6.80
2,903.00	42.20	179.10	2,861.76	-164.13	20.64	164.16	7.78
2,934.00	45.10	179.80	2,884.19	-185.53	20.84	185.55	9.48
2,965.00	48.70	181.50	2,905.37	-208.15	20.57	208.18	12.28
2,996.00	52.40	183.00	2,925.06	-232.07	19.62	232.09	12.51
3,027.00	54.70	184.50	2,943.48	-256.95	17.99	256.97	8.38
3,058.00	56.80	184.60	2,960.92	-282.49	15.96	282.51	6.78
3,090.00	60.60	184.60	2,977.54	-309.74	13.76	309.76	11.87
3,121.00	65.00	184.00	2,991.71	-337.23	11.70	337.24	14.30
3,152.00	69.00	183.70	3,003.82	-365.69	9.78	365.70	12.93
3,183.00	71.50	183.30	3,014.30	-394.81	8.00	394.82	8.16
3,214.00	74.50	182.50	3,023.36	-424.41	6.51	424.42	9.99
3,246.00	78.50	182.40	3,030.83	-455.50	5.18	455.50	12.50
3,277.00	83.10	182.20	3,035.78	-486.06	3.95	486.07	14.85
3,308.00	86.60	181.10	3,038.57	-516.92	3.06	516.92	11.83
3,340.00	88.40	179.50	3,039.96	-548.89	2.89	548.89	7.52
3,371.00	88.40	179.00	3,040.83	-579.87	3.30	579.88	1.61
3,465.00	90.50	178.50	3,041.73	-673.84	5.35	673.85	2.30
3,558.00	90.60	178.70	3,040.84	-766.81	7.62	766.82	0.24
3,652.00	90.40	178.60	3,040.02	-860.78	9.84	860.79	0.24
3,745.00	90.30	179.20	3,039.45	-953.76	11.62	953.77	0.65
3,839.00	90.00	179.40	3,039.20	-1,047.75	12.77	1,047.77	0.38
3,933.00	89.60	179.70	3,039.53	-1,141.75	13.51	1,141.77	0.53
4,026.00	89.00	179.30	3,040.67	-1,234.74	14.32	1,234.76	0.78
4,120.00	89.80	179.20	3,041.65	-1,328.72	15.55	1,328.74	0.86
4,214.00	90.60	179.70	3,041.32	-1,422.72	16.45	1,422.74	1.00
4,308.00	90.50	179.40	3,040.42	-1,516.71	17.19	1,516.73	0.34
4,401.00	90.00	179.00	3,040.01	-1,609.70	18.49	1,609.72	0.69
4,494.00	89.60	178.10	3,040.34	-1,702.67	20.84	1,702.69	1.06
4,588.00	91.60	179.40	3,039.35	-1,796.63	22.89	1,796.66	2.54
4,681.00	91.80	179.40	3,036.60	-1,889.59	23.87	1,889.62	0.22
4,775.00	91.50	178.70	3,033.89	-1,983.53	25.42	1,983.57	0.81
4,869.00	91.10	178.20	3,031.76	-2,077.48	27.97	2,077.51	0.68
4,962.00	90.80	177.90	3,030.21	-2,170.41	31.13	2,170.45	0.46
5,055.00	90.00	177.50	3,029.56	-2,263.33	34.86	2,263.38	0.96
5,150.00	90.20	179.40	3,029.40	-2,358.29	37.43	2,358.34	2.01
5,244.00	90.60	181.10	3,028.74	-2,452.28	37.02	2,452.33	1.86



Phoenix Technology Services

Phoenix Final Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, New Mexico (NAD 27 NME)	TVD Reference:	KB @ 3466.00usft (Silver Oak 3)
Site:	Grave Digger State Corn	MD Reference:	KB @ 3466.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	WB1/Job #1311240	Survey Calculation Method:	Minimum Curvature
Design:	Survey (Silver Oak 3)	Database:	GCR DB

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,338.00	89.90	180.70	3,028.33	-2,546.27	35.55	2,546.32	0.86	
5,431.00	89.80	180.80	3,028.58	-2,639.26	34.33	2,639.31	0.15	
5,525.00	91.10	181.10	3,027.84	-2,733.24	32.77	2,733.29	1.42	
5,618.00	90.90	180.80	3,026.21	-2,826.22	31.23	2,826.26	0.39	
5,712.00	90.80	180.90	3,024.82	-2,920.20	29.83	2,920.24	0.15	
5,805.00	90.30	180.50	3,023.93	-3,013.19	28.70	3,013.22	0.69	
5,899.00	90.20	180.20	3,023.52	-3,107.18	28.12	3,107.22	0.34	
5,993.00	89.40	179.90	3,023.85	-3,201.18	28.04	3,201.22	0.91	
6,087.00	88.60	179.60	3,025.49	-3,295.17	28.45	3,295.20	0.91	
6,181.00	90.90	181.30	3,025.90	-3,389.15	27.71	3,389.19	3.04	
6,274.00	90.70	180.90	3,024.60	-3,482.13	25.93	3,482.16	0.48	
6,367.00	90.40	180.30	3,023.71	-3,575.12	24.95	3,575.15	0.72	
6,461.00	90.00	180.40	3,023.38	-3,669.11	24.38	3,669.14	0.44	
6,554.00	91.40	181.00	3,022.24	-3,762.10	23.24	3,762.12	1.64	
6,648.00	91.20	180.60	3,020.11	-3,856.06	21.93	3,856.09	0.48	
6,741.00	90.60	180.60	3,018.65	-3,949.05	20.96	3,949.07	0.65	
6,835.00	90.20	180.20	3,017.99	-4,043.04	20.30	4,043.06	0.60	
6,928.00	89.80	180.10	3,017.99	-4,136.04	20.06	4,136.06	0.44	
7,021.00	89.30	179.20	3,018.72	-4,229.03	20.63	4,229.06	1.11	
7,115.00	88.70	179.20	3,020.36	-4,323.01	21.94	4,323.04	0.64	
7,209.00	90.10	181.70	3,021.35	-4,416.99	21.20	4,417.02	3.05	
7,302.00	89.70	181.60	3,021.51	-4,509.95	18.52	4,509.97	0.44	
7,396.00	89.30	181.60	3,022.33	-4,603.91	15.90	4,603.93	0.43	
7,427.00	89.00	180.90	3,022.79	-4,634.90	15.22	4,634.92	2.46	
Last Phoenix MWD Survey								
7,482.00	89.00	180.90	3,023.75	-4,689.89	14.36	4,689.90	0.00	
Projection to TD								

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,363.00	2,362.92	-4.57	11.19	Tie-on to VES Gyro
2,405.00	2,404.92	-4.61	11.32	First Phoenix MWD Survey
7,427.00	3,022.79	-4,634.90	15.22	Last Phoenix MWD Survey
7,482.00	3,023.75	-4,689.89	14.36	Projection to TD

Checked By: _____ Approved By: _____ Date: _____