

NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 29 2016

RECEIVED

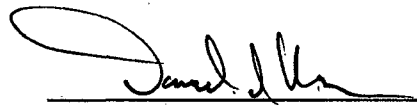


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State of New Mexico
County of Eddy

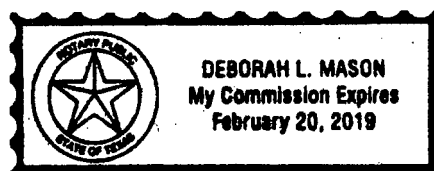
30-015-42759

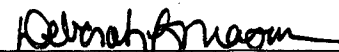
I, Donald D. Mason, certify that: I am employed by Terra Directional Services LLC; that I did on the day(s) of 05/22/2016 through 06/02/2016 conduct or supervise the taking of a MWD survey from a depth of 1081 feet to a depth of 10380 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Terra Directional Services LLC; that I am authorized and qualified to make this report; that this survey was conducted at the request of COG Operating LLC for the Burch Keely Unit #937H Well API 30-015-42759 in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Terra Directional Services LLC.


Donald D. Mason
President

State of Texas
County of Burnet

Before me, a notary public, on this day personally appeared Donald D. Mason, known to me to be the person whose name is subscribed to the foregoing document and, being by me first duly sworn, declared that the statements therein contained are true and correct.




Notary Public's Signature



NM OIL CONSERVATION
ARTESIA DISTRICT

AUG 29 2016

RECEIVED

COG Operating LLC

Eddy County, NM (NAD-27 2015)

Burch Keely Unit #937H

API #: 30-015-42759

SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M

PP: 333' FSL, 330' FWL, Sec 13, T17S, R29E, Unit M

BHL: 348' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M

Design: BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M

Standard Survey Report

03 June, 2016





TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3628.00usft (Silver Oak 3)
Site:	Burch Keely Unit #937H	MD Reference:	KB @ 3628.00usft (Silver Oak 3)
Well:	SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M	North Reference:	Grid
Wellbore:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM (NAD-27 2015)		
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	Burch Keely Unit #937H		
Site Position:		Northing:	665,095.60 usft
From:	Map	Easting:	591,428.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 49' 41.090 N
		Longitude:	104° 2' 8.497 W
		Grid Convergence:	0.16 °

Well	SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M		
Well Position	+N/-S	0.00 usft	Northing: 665,095.60 usft
	+E/-W	0.00 usft	Easting: 591,428.10 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 49' 41.090 N
		Longitude:	104° 2' 8.497 W
		Ground Level:	3,610.00 usft

Wellbore	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/6/2016	7.33	60.55	48,360

Design	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M			
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	89.66

Survey Program	Date 6/3/2016				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,015.00	VES Gyro #1 (BHL: 350' FSL, 465' FWL, S	VES-ISCWSA-GYRO-3	Biaxial Semi-Cont. Gyro	
1,081.00	10,380.00	TDS MWD #2 (BHL: 350' FSL, 465' FWL,	MWD	MWD - Standard	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.20	236.86	100.00	-0.10	-0.15	-0.15	0.20	0.20	0.00	
200.00	0.35	155.55	200.00	-0.47	-0.17	-0.17	0.38	0.15	-81.31	
300.00	0.27	157.73	300.00	-0.96	0.05	0.04	0.08	-0.08	2.18	
400.00	0.23	134.22	400.00	-1.32	0.28	0.28	0.11	-0.04	-23.51	
500.00	0.43	31.95	500.00	-1.14	0.63	0.62	0.53	0.20	-102.27	
600.00	0.98	68.07	599.99	-0.51	1.62	1.61	0.68	0.55	36.12	



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3628.00usft (Silver Oak 3)
Site:	Burch Keely Unit #937H	MD Reference:	KB @ 3628.00usft (Silver Oak 3)
Well:	SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M	North Reference:	Grid
Wellbore:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Database:	EDM 5000.1 Single User 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)
700.00	0.67	74.04	699.98	-0.03	2.97	2.97	0.32	-0.31	5.97
800.00	1.10	59.35	799.97	0.62	4.36	4.36	0.48	0.43	-14.69
900.00	1.68	67.69	899.94	1.67	6.54	6.55	0.61	0.58	8.34
1,015.00	1.08	72.02	1,014.90	2.64	9.13	9.15	0.53	-0.52	3.77
TIE-IN to VES Gyro									
1,081.00	0.80	41.40	1,080.89	3.18	10.03	10.05	0.86	-0.42	-46.39
First TDS MWD Survey									
1,143.00	0.60	20.20	1,142.89	3.81	10.43	10.45	0.52	-0.32	-34.19
1,204.00	0.90	286.70	1,203.89	4.25	10.08	10.10	1.82	0.49	-153.28
1,298.00	2.10	272.20	1,297.85	4.53	7.65	7.68	1.33	1.28	-15.43
1,391.00	2.50	273.00	1,390.78	4.70	3.92	3.95	0.43	0.43	0.86
1,485.00	2.50	274.10	1,484.69	4.95	-0.17	-0.14	0.05	0.00	1.17
1,578.00	3.20	253.40	1,577.57	4.36	-4.68	-4.65	1.33	0.75	-22.26
1,670.00	3.60	247.20	1,669.41	2.50	-9.80	-9.79	0.59	0.43	-6.74
1,764.00	3.80	248.80	1,763.22	0.23	-15.43	-15.43	0.24	0.21	1.70
1,857.00	4.20	251.60	1,855.99	-1.96	-21.53	-21.54	0.48	0.43	3.01
1,950.00	4.40	253.80	1,948.73	-4.03	-28.19	-28.21	0.28	0.22	2.37
2,044.00	4.40	254.30	2,042.45	-6.01	-35.12	-35.16	0.04	0.00	0.53
2,138.00	4.40	257.00	2,136.17	-7.80	-42.11	-42.15	0.22	0.00	2.87
2,231.00	4.30	259.00	2,228.91	-9.26	-49.01	-49.06	0.20	-0.11	2.15
2,325.00	4.10	259.10	2,322.65	-10.57	-55.77	-55.83	0.21	-0.21	0.11
2,419.00	4.20	261.60	2,416.41	-11.71	-62.47	-62.54	0.22	0.11	2.66
2,512.00	4.30	259.80	2,509.15	-12.82	-69.27	-69.35	0.18	0.11	-1.94
2,605.00	4.50	260.90	2,601.88	-14.02	-76.31	-76.39	0.23	0.22	1.18
2,698.00	4.50	260.00	2,694.59	-15.23	-83.50	-83.59	0.08	0.00	-0.97
2,792.00	4.70	259.90	2,788.29	-16.55	-90.92	-91.02	0.21	0.21	-0.11
2,885.00	4.90	267.00	2,880.96	-17.42	-98.64	-98.74	0.67	0.22	7.63
2,978.00	5.60	268.20	2,973.57	-17.77	-107.14	-107.25	0.76	0.75	1.29
3,071.00	5.50	266.20	3,066.14	-18.21	-116.13	-116.23	0.23	-0.11	-2.15
3,165.00	5.10	263.90	3,159.73	-18.95	-124.78	-124.89	0.48	-0.43	-2.45
3,259.00	3.60	254.10	3,253.46	-20.20	-131.77	-131.89	1.78	-1.60	-10.43
3,352.00	2.10	237.80	3,346.35	-21.91	-136.02	-136.15	1.82	-1.61	-17.53
3,446.00	2.20	234.50	3,440.28	-23.88	-138.94	-139.08	0.17	0.11	-3.51
3,539.00	2.40	230.90	3,533.20	-26.14	-141.91	-142.06	0.27	0.22	-3.87
3,632.00	2.60	251.60	3,626.12	-28.04	-145.42	-145.59	0.99	0.22	22.26
3,725.00	3.50	267.50	3,718.99	-28.83	-150.26	-150.43	1.32	0.97	17.10
3,818.00	4.00	276.40	3,811.79	-28.59	-156.32	-156.49	0.82	0.54	9.57
3,912.00	4.40	274.90	3,905.54	-27.92	-163.17	-163.33	0.44	0.43	-1.60
4,005.00	3.70	286.70	3,998.30	-26.75	-169.60	-169.75	1.17	-0.75	12.69
4,098.00	3.50	301.50	4,091.12	-24.40	-174.89	-175.04	1.02	-0.22	15.91
4,192.00	2.70	311.50	4,184.98	-21.44	-179.00	-179.12	1.02	-0.85	10.64



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3628.00usft (Silver Oak 3)
Site:	Burch Keely Unit #937H	MD Reference:	KB @ 3628.00usft (Silver Oak 3)
Well:	SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M	North Reference:	Grid
Wellbore:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Database:	EDM 5000.1 Single User 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)
4,223.00	2.70	313.10	4,215.95	-20.45	-180.08	-180.20	0.24	0.00	5.16
4,254.00	2.30	319.40	4,246.92	-19.48	-181.02	-181.13	1.56	-1.29	20.32
4,285.00	1.60	336.30	4,277.90	-18.61	-181.60	-181.70	2.90	-2.26	54.52
4,317.00	1.30	36.60	4,309.89	-17.91	-181.56	-181.66	4.62	-0.94	188.44
4,349.00	3.20	76.20	4,341.87	-17.41	-180.47	-180.57	7.34	5.94	123.75
4,380.00	6.40	89.60	4,372.76	-17.19	-177.91	-178.00	10.87	10.32	43.23
4,411.00	9.90	92.20	4,403.44	-17.28	-173.51	-173.61	11.35	11.29	8.39
4,442.00	13.50	91.20	4,433.79	-17.46	-167.23	-167.33	11.63	11.61	-3.23
4,474.00	17.00	90.10	4,464.66	-17.55	-158.82	-158.92	10.97	10.94	-3.44
4,505.00	20.80	87.90	4,493.98	-17.35	-148.78	-148.88	12.47	12.26	-7.10
4,536.00	25.00	85.70	4,522.53	-16.66	-136.74	-136.84	13.82	13.55	-7.10
4,567.00	29.20	84.50	4,550.12	-15.44	-122.68	-122.77	13.66	13.55	-3.87
4,598.00	33.50	83.70	4,576.59	-13.78	-106.64	-106.72	13.94	13.87	-2.58
4,629.00	37.50	84.40	4,601.83	-11.92	-88.74	-88.81	12.97	12.90	2.26
4,660.00	41.00	85.70	4,625.83	-10.23	-69.20	-69.26	11.60	11.29	4.19
4,691.00	43.90	86.40	4,648.70	-8.80	-48.33	-48.38	9.48	9.35	2.26
4,722.00	45.10	86.40	4,670.81	-7.43	-26.64	-26.69	3.87	3.87	0.00
4,753.00	45.50	86.40	4,692.62	-6.05	-4.65	-4.69	1.29	1.29	0.00
4,784.00	45.90	86.30	4,714.27	-4.64	17.49	17.46	1.31	1.29	-0.32
4,815.00	46.40	85.90	4,735.74	-3.11	39.79	39.77	1.86	1.61	-1.29
4,847.00	46.90	85.80	4,757.71	-1.43	63.00	62.99	1.58	1.56	-0.31
4,878.00	47.50	85.70	4,778.77	0.26	85.69	85.69	1.95	1.94	-0.32
4,909.00	49.60	86.40	4,799.29	1.85	108.86	108.87	6.98	6.77	2.26
4,936.08	52.92	87.10	4,816.24	3.05	129.95	129.96	12.42	12.26	2.60
As-Drilled PP									
4,940.00	53.40	87.20	4,818.59	3.20	133.08	133.10	12.42	12.27	2.47
4,971.00	56.20	87.40	4,836.45	4.40	158.38	158.41	9.05	9.03	0.65
5,003.00	59.00	87.70	4,853.60	5.55	185.37	185.40	8.79	8.75	0.94
5,034.00	61.50	88.00	4,868.98	6.56	212.27	212.30	8.11	8.06	0.97
5,065.00	64.70	87.80	4,883.00	7.57	239.89	239.93	10.34	10.32	-0.65
5,096.00	67.20	86.70	4,895.64	8.93	268.16	268.21	8.69	8.06	-3.55
5,128.00	69.80	85.70	4,907.36	10.91	297.87	297.93	8.63	8.13	-3.13
5,159.00	72.40	85.70	4,917.40	13.11	327.11	327.18	8.39	8.39	0.00
5,190.00	75.40	85.70	4,926.00	15.34	356.81	356.89	9.68	9.68	0.00
5,221.00	78.30	86.20	4,933.05	17.47	386.92	387.01	9.49	9.35	1.61
5,252.00	80.40	86.90	4,938.78	19.30	417.33	417.43	7.13	6.77	2.26
5,283.00	82.10	87.10	4,943.50	20.91	447.92	448.04	5.52	5.48	0.65
5,314.00	85.00	87.20	4,946.98	22.44	478.69	478.81	9.36	9.35	0.32
5,348.00	89.00	88.50	4,948.76	23.71	512.61	512.74	12.37	11.76	3.82
5,410.00	89.50	89.70	4,949.57	24.68	574.59	574.73	2.10	0.81	1.94
5,504.00	89.40	90.10	4,950.47	24.85	668.59	668.72	0.44	-0.11	0.43



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3628.00usft (Silver Oak 3)
Site:	Burch Keely Unit #937H	MD Reference:	KB @ 3628.00usft (Silver Oak 3)
Well:	SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M	North Reference:	Grid
Wellbore:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M	Database:	EDM 5000.1 Single User 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)
5,598.00	90.00	90.60	4,950.96	24.27	762.58	762.72	0.83	0.64	0.53
5,691.00	91.10	90.30	4,950.07	23.54	855.58	855.70	1.23	1.18	-0.32
5,784.00	90.90	90.90	4,948.45	22.57	948.56	948.67	0.68	-0.22	0.65
5,878.00	91.50	89.30	4,946.48	22.41	1,042.53	1,042.65	1.82	0.64	-1.70
5,972.00	91.00	88.70	4,944.43	24.05	1,136.49	1,136.62	0.83	-0.53	-0.64
6,065.00	90.80	89.20	4,942.97	25.75	1,229.47	1,229.60	0.58	-0.22	0.54
6,159.00	91.20	89.80	4,941.33	26.57	1,323.45	1,323.58	0.77	0.43	0.64
6,252.00	91.10	90.10	4,939.46	26.65	1,416.43	1,416.56	0.34	-0.11	0.32
6,346.00	90.90	90.30	4,937.82	26.32	1,510.41	1,510.54	0.30	-0.21	0.21
6,439.00	91.00	89.70	4,936.28	26.32	1,603.40	1,603.53	0.65	0.11	-0.65
6,533.00	91.40	90.00	4,934.31	26.57	1,697.38	1,697.51	0.53	0.43	0.32
6,626.00	91.00	90.20	4,932.36	26.41	1,790.36	1,790.48	0.48	-0.43	0.22
6,719.00	91.00	90.50	4,930.74	25.84	1,883.34	1,883.46	0.32	0.00	0.32
6,812.00	90.60	90.70	4,929.44	24.87	1,976.33	1,976.44	0.48	-0.43	0.22
6,905.00	90.70	90.00	4,928.39	24.30	2,069.32	2,069.43	0.76	0.11	-0.75
6,999.00	90.50	90.10	4,927.40	24.22	2,163.32	2,163.42	0.24	-0.21	0.11
7,092.00	91.00	89.80	4,926.18	24.30	2,256.31	2,256.41	0.63	0.54	-0.32
7,185.00	91.70	89.80	4,923.99	24.62	2,349.28	2,349.38	0.75	0.75	0.00
7,278.00	91.80	89.90	4,921.15	24.86	2,442.24	2,442.34	0.15	0.11	0.11
7,372.00	91.90	90.00	4,918.12	24.95	2,536.19	2,536.29	0.15	0.11	0.11
7,465.00	91.70	89.80	4,915.20	25.11	2,629.14	2,629.24	0.30	-0.22	-0.22
7,559.00	91.30	90.20	4,912.74	25.11	2,723.11	2,723.21	0.60	-0.43	0.43
7,652.00	91.30	90.50	4,910.63	24.54	2,816.08	2,816.18	0.32	0.00	0.32
7,745.00	91.30	90.50	4,908.52	23.73	2,909.06	2,909.15	0.00	0.00	0.00
7,838.00	91.40	90.80	4,906.33	22.67	3,002.02	3,002.11	0.34	0.11	0.32
7,931.00	91.60	90.60	4,903.89	21.54	3,094.98	3,095.06	0.30	0.22	-0.22
8,025.00	91.20	89.30	4,901.59	21.62	3,188.95	3,189.03	1.45	-0.43	-1.38
8,118.00	91.10	89.10	4,899.73	22.92	3,281.93	3,282.00	0.24	-0.11	-0.22
8,212.00	91.00	89.50	4,898.00	24.07	3,375.90	3,375.99	0.44	-0.11	0.43
8,305.00	90.80	89.90	4,896.54	24.55	3,468.89	3,468.98	0.48	-0.22	0.43
8,399.00	90.60	90.00	4,895.40	24.64	3,562.88	3,562.97	0.24	-0.21	0.11
8,492.00	90.90	89.70	4,894.18	24.88	3,655.87	3,655.96	0.46	0.32	-0.32
8,582.00	91.00	89.70	4,892.69	25.35	3,745.86	3,745.95	0.11	0.11	0.00
8,644.00	90.60	89.90	4,891.82	25.57	3,807.85	3,807.94	0.72	-0.65	0.32
8,737.00	90.20	89.60	4,891.17	25.97	3,900.85	3,900.94	0.54	-0.43	-0.32
8,831.00	91.10	89.80	4,890.10	26.46	3,994.84	3,994.93	0.98	0.96	0.21
8,925.00	90.90	89.50	4,888.46	27.04	4,088.83	4,088.92	0.38	-0.21	-0.32
9,017.00	90.60	89.40	4,887.26	27.92	4,180.81	4,180.91	0.34	-0.33	-0.11
9,109.00	90.80	89.80	4,886.14	28.56	4,272.81	4,272.90	0.49	0.22	0.43
9,199.00	91.30	90.30	4,884.49	28.49	4,362.79	4,362.88	0.79	0.56	0.56
9,286.00	91.30	90.70	4,882.51	27.73	4,449.76	4,449.85	0.46	0.00	0.46



TDS
Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Burch Keely Unit #937H
Well: SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M
Wellbore: BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M
Design: BHL: 350' FSL, 465' FWL, Sec 18, T17S, R30E, Unit M
Local Co-ordinate Reference: Well SHL: 330' FSL, 200' FWL, Sec 13, T17S, R29E, Unit M
TVD Reference: KB @ 3628.00usft (Silver Oak 3)
MD Reference: KB @ 3628.00usft (Silver Oak 3)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User 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)
9,380.00	90.90	91.20	4,880.71	26.17	4,543.73	4,543.81	0.68	-0.43	0.53
9,473.00	91.40	90.90	4,878.84	24.46	4,636.70	4,636.76	0.63	0.54	-0.32
9,567.00	91.30	90.10	4,876.63	23.64	4,730.67	4,730.72	0.86	-0.11	-0.85
9,660.00	91.50	90.80	4,874.36	22.91	4,823.64	4,823.69	0.78	0.22	0.75
9,753.00	91.80	88.80	4,871.68	23.24	4,916.59	4,916.64	2.17	0.32	-2.15
9,847.00	92.00	88.90	4,868.56	25.12	5,010.52	5,010.58	0.24	0.21	0.11
9,941.00	91.60	89.30	4,865.61	26.60	5,104.46	5,104.53	0.60	-0.43	0.43
10,034.00	91.30	90.00	4,863.25	27.17	5,197.43	5,197.50	0.82	-0.32	0.75
10,096.00	90.50	89.20	4,862.28	27.60	5,259.42	5,259.49	1.82	-1.29	-1.29
10,189.00	90.20	89.50	4,861.71	28.66	5,352.41	5,352.49	0.46	-0.32	0.32
10,282.00	90.10	89.30	4,861.47	29.63	5,445.41	5,445.49	0.24	-0.11	-0.22
Final MWD Survey									
10,380.00	90.10	89.30	4,861.30	30.83	5,543.40	5,543.49	0.00	0.00	0.00
Projection to Bit/TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
1,015.00	1,014.90	2.64	9.13	TIE-IN to VES Gyro
1,081.00	1,080.89	3.18	10.03	First TDS MWD Survey
4,936.08	4,816.24	3.05	129.95	As-Drilled PP
10,282.00	4,861.47	29.63	5,445.41	Final MWD Survey
10,380.00	4,861.30	30.83	5,543.40	Projection to Bit/TD

Checked By: Deborah L. Mason Approved By: James L. Mason Date: 7/13/2016

