



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 27 2017

RECEIVED

COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 3, T26S, R28E

SRO State Com #41H

Wellbore #1

30-015-41739

Design: Wellbore #1

QES Survey Certification Report

09 August, 2017



Quintana Energy Services

11390 FM 830
Willis, TX 77318
Phone: (936) 856-4332
Fax: (936) 856-8678



Survey Certification Sheet

Company	Job Number	Date
COG Operating, LLC	WT-170808	8/18/2017

Lease	Well Name	County & State
SEC 3, T-26-S, R28-E	SRO State Com #41H	Eddy County, NM

API No.	Survey Depth Range	Survey Type
30-015-41739	7512 feet to 17918 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
Click here to enter text.	Duke Soileau

Certification Statement

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Quintana Energy Services (QES). This report represents a true and correct directional survey of this well based on the original data obtained at the well site. Wellbore coordinates are calculated using minimum curvature.

Christopher Hughes

Digitally signed by Christopher Hughes
DN: cn=Christopher Hughes, o=QES,
ou=compliance, email=chrish@qeslp.com, c=US
Date: 2017.08.21 15:18:19 -05'00'

Christopher Hughes
MWD Compliance Manager
Quintana Energy Services



QES Survey Certification Report



Company: COG Operating, LLC
Project: Eddy County, NM (NAD 27)
Site: Sec 3, T26S, R28E
Well: SRO State Com #41H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well SRO State Com #41H
RKB @ 2963.0usft (Ensign #156)
RKB @ 2963.0usft (Ensign #156)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Project Eddy County, NM (NAD 27)
Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Sec 3, T26S, R28E
Site Position: Northing: 392,310.50 usft Latitude: 32° 4' 41.889 N
From: Map Easting: 581,716.40 usft Longitude: 104° 4' 10.213 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16" Grid Convergence: 0.14 °

Well SRO State Com #41H
Well Position +N/-S 0.0 usft Northing: 392,303.50 usft Latitude: 32° 4' 41.849 N
+E/-W 0.0 usft Easting: 580,496.30 usft Longitude: 104° 4' 24.394 W
Position Uncertainty 0.0 usft Wellhead Elevation: 0.0 usft Ground Level: 2,939.0 usft

Wellbore Wellbore #1
Magnetics Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)
IGRF2015 7/25/2017 7.16 59.85 47,790.48764664

Design Wellbore #1
Audit Notes: 1.0 Phase: ACTUAL Tie On Depth: 0.0
Version: 1.0
Vertical Section: Depth From (TVD) +N/-S +E/-W Direction
(usft) (usft) (usft) (°)
0.0 0.0 0.0 179.41

Survey Program Date 8/9/2017
From (usft) **To (usft)** **Survey (Wellbore)** **Tool Name** **Description**
100.0 7,512.0 Definitive Keeper Gyro Surveys (Wellbore) GYRO-NS Gyrocompass Gyro
7,632.0 17,918.0 QES MWD Surveys (Wellbore #1) MWD+IFR1+MS OWSG MWD + IFR1 + Multi-Station Correction

Survey	MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
	7,512.0	1.95	246.31	7,509.6	-54.8	-21.0	58.7	200.93
Gyro Tie-in @ 7512.0' MD / 7509.6' TVD								
	7,632.0	0.31	238.50	7,629.5	-55.8	-23.1	60.4	202.50
	7,664.0	1.54	178.92	7,661.5	-56.3	-23.2	60.9	202.38
	7,695.0	5.81	177.07	7,692.5	-58.3	-23.1	62.7	201.62
	7,726.0	10.25	175.68	7,723.2	-62.6	-22.8	66.6	200.02
	7,758.0	14.05	173.48	7,754.4	-69.3	-22.1	72.7	197.72
	7,789.0	18.63	172.85	7,784.2	-77.9	-21.1	80.7	195.15
	7,821.0	22.47	174.65	7,814.1	-89.1	-19.9	91.3	192.58
	7,852.0	24.77	177.47	7,842.5	-101.5	-19.1	103.3	190.63
	7,883.0	30.38	179.63	7,870.0	-115.8	-18.7	117.3	189.18

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Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well SRO State Com #41H
 RKB @ 2963.0usft (Ensign #156)
 RKB @ 2963.0usft (Ensign #156)
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
7,914.0	35.14	179.22	7,896.1	-132.6	-18.5	133.9	187.96
7,946.0	38.60	179.11	7,921.7	-151.8	-18.3	152.9	186.86
7,977.0	42.85	178.90	7,945.2	-172.0	-17.9	172.9	185.94
8,009.0	46.71	179.71	7,967.9	-194.5	-17.6	195.3	185.18
8,040.0	50.64	180.28	7,988.3	-217.8	-17.6	218.5	184.63
8,071.0	55.31	180.19	8,007.0	-242.6	-17.7	243.2	184.18
8,103.0	59.62	178.65	8,024.2	-269.5	-17.5	270.1	183.71
8,135.0	63.02	177.80	8,039.6	-297.6	-16.6	298.0	183.19
8,166.0	64.48	178.10	8,053.3	-325.4	-15.6	325.7	182.74
8,197.0	66.06	178.68	8,066.2	-353.5	-14.8	353.8	182.40
8,229.0	68.27	178.67	8,078.6	-383.0	-14.1	383.3	182.11
8,260.0	70.16	178.43	8,089.6	-412.0	-13.4	412.2	181.86
8,291.0	72.19	178.74	8,099.7	-441.3	-12.7	441.5	181.64
8,323.0	73.18	179.80	8,109.2	-471.8	-12.3	472.0	181.49
8,354.0	73.94	179.96	8,117.9	-501.6	-12.2	501.7	181.39
8,385.0	76.92	179.43	8,125.7	-531.6	-12.1	531.7	181.30
8,417.0	80.65	178.72	8,132.0	-563.0	-11.5	563.1	181.17
8,448.0	83.70	178.24	8,136.2	-593.7	-10.7	593.7	181.04
8,480.0	85.86	177.22	8,139.1	-625.5	-9.5	625.6	180.87
8,511.0	88.63	176.19	8,140.6	-656.4	-7.7	656.4	180.67
8,542.0	90.98	175.55	8,140.7	-687.3	-5.5	687.3	180.45
8,605.0	91.84	175.50	8,139.1	-750.1	-0.5	750.1	180.04
8,637.0	91.96	175.57	8,138.1	-782.0	1.9	782.0	179.86
8,730.0	89.19	176.39	8,137.2	-874.7	8.5	874.8	179.45
8,825.0	90.84	176.94	8,137.1	-969.6	14.0	969.7	179.17
8,919.0	89.66	176.35	8,136.7	-1,063.4	19.5	1,063.6	178.95
9,013.0	90.98	176.70	8,136.2	-1,157.2	25.2	1,157.5	178.75
9,107.0	92.80	176.46	8,133.1	-1,251.0	30.8	1,251.4	178.59
9,201.0	91.59	176.73	8,129.5	-1,344.8	36.4	1,345.3	178.45
9,295.0	92.66	176.72	8,126.0	-1,438.6	41.7	1,439.2	178.34
9,389.0	91.09	177.64	8,122.9	-1,532.4	46.4	1,533.1	178.27
9,483.0	89.21	178.07	8,122.7	-1,626.3	49.9	1,627.1	178.24
9,578.0	90.00	178.11	8,123.3	-1,721.3	53.0	1,722.1	178.23
9,672.0	91.29	178.23	8,122.3	-1,815.2	56.0	1,816.1	178.23
9,766.0	89.50	179.38	8,121.6	-1,909.2	58.0	1,910.1	178.26
9,860.0	89.97	179.39	8,122.1	-2,003.2	59.0	2,004.0	178.31
9,954.0	91.18	180.39	8,121.1	-2,097.2	59.2	2,098.0	178.38
10,049.0	89.69	182.40	8,120.4	-2,192.1	56.9	2,192.9	178.51
10,143.0	91.85	184.44	8,119.1	-2,285.9	51.3	2,286.5	178.71
10,237.0	90.50	183.58	8,117.2	-2,379.7	44.7	2,380.1	178.92
10,331.0	89.11	182.19	8,117.5	-2,473.6	40.0	2,473.9	179.07
10,425.0	89.47	182.19	8,118.7	-2,567.5	36.4	2,567.8	179.19
10,520.0	89.86	183.17	8,119.3	-2,662.4	31.9	2,662.6	179.31
10,614.0	89.75	180.55	8,119.6	-2,756.3	28.9	2,756.5	179.40



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Grid
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EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
10,708.0	89.58	179.69	8,120.1	-2,850.3	28.7	2,850.5	179.42
10,803.0	89.58	180.15	8,120.8	-2,945.3	28.8	2,945.5	179.44
10,897.0	90.40	181.00	8,120.8	-3,039.3	27.9	3,039.4	179.47
10,991.0	89.50	180.62	8,120.9	-3,133.3	26.6	3,133.4	179.51
11,085.0	90.34	181.21	8,121.0	-3,227.3	25.1	3,227.4	179.56
11,179.0	89.78	178.71	8,120.9	-3,321.3	25.1	3,321.4	179.57
11,273.0	90.11	178.45	8,121.0	-3,415.3	27.4	3,415.4	179.54
11,367.0	90.64	178.60	8,120.4	-3,509.2	29.9	3,509.4	179.51
11,462.0	88.66	177.12	8,121.0	-3,604.1	33.4	3,604.3	179.47
11,556.0	88.49	176.53	8,123.3	-3,698.0	38.6	3,698.2	179.40
11,651.0	89.11	176.87	8,125.3	-3,792.8	44.1	3,793.1	179.33
11,745.0	89.52	177.00	8,126.5	-3,886.7	49.1	3,887.0	179.28
11,839.0	90.67	177.84	8,126.3	-3,980.6	53.3	3,980.9	179.23
11,930.0	91.07	177.87	8,124.9	-4,071.5	56.8	4,071.9	179.20
12,023.0	88.88	178.92	8,125.0	-4,164.4	59.4	4,164.9	179.18
12,118.0	89.02	179.25	8,126.7	-4,259.4	60.9	4,259.8	179.18
12,212.0	89.52	179.19	8,127.9	-4,353.4	62.2	4,353.8	179.18
12,306.0	90.22	179.69	8,128.1	-4,447.4	63.1	4,447.8	179.19
12,401.0	89.78	178.53	8,128.1	-4,542.4	64.5	4,542.8	179.19
12,495.0	89.94	179.11	8,128.3	-4,636.4	66.5	4,636.8	179.18
12,589.0	90.53	180.19	8,128.0	-4,730.3	67.1	4,730.8	179.19
12,683.0	90.90	179.70	8,126.8	-4,824.3	67.1	4,824.8	179.20
12,778.0	90.89	179.72	8,125.3	-4,919.3	67.6	4,919.8	179.21
12,872.0	90.42	181.54	8,124.2	-5,013.3	66.6	5,013.8	179.24
12,966.0	90.28	182.08	8,123.6	-5,107.3	63.6	5,107.7	179.29
13,060.0	90.11	181.97	8,123.3	-5,201.2	60.3	5,201.6	179.34
13,154.0	90.79	181.26	8,122.6	-5,295.2	57.7	5,295.5	179.38
13,248.0	91.31	181.25	8,120.9	-5,389.1	55.6	5,389.4	179.41
13,343.0	90.14	179.91	8,119.7	-5,484.1	54.6	5,484.4	179.43
13,437.0	89.78	180.09	8,119.7	-5,578.1	54.6	5,578.4	179.44
13,531.0	89.94	179.87	8,120.0	-5,672.1	54.7	5,672.4	179.45
13,626.0	90.19	180.34	8,119.9	-5,767.1	54.5	5,767.4	179.46
13,721.0	90.56	180.47	8,119.2	-5,862.1	53.8	5,862.3	179.47
13,815.0	91.04	181.16	8,117.9	-5,956.1	52.5	5,956.3	179.50
13,909.0	91.37	181.79	8,115.9	-6,050.0	50.1	6,050.2	179.53
14,003.0	90.45	181.27	8,114.4	-6,144.0	47.6	6,144.2	179.56
14,098.0	89.69	180.55	8,114.3	-6,239.0	46.0	6,239.1	179.58
14,192.0	89.61	180.09	8,114.9	-6,333.0	45.5	6,333.1	179.59
14,286.0	89.61	179.49	8,115.5	-6,427.0	45.9	6,427.1	179.59
14,380.0	90.17	179.86	8,115.7	-6,521.0	46.4	6,521.1	179.59
14,474.0	88.99	179.49	8,116.4	-6,615.0	46.9	6,615.1	179.59
14,568.0	89.61	180.00	8,117.6	-6,708.9	47.4	6,709.1	179.60
14,662.0	89.83	180.28	8,118.0	-6,802.9	47.1	6,803.1	179.60
14,756.0	90.00	180.49	8,118.2	-6,896.9	46.5	6,897.1	179.61

Company: COG Operating, LLC
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Site: Sec 3, T26S, R28E
Well: SRO State Com #41H
Wellbore: Wellbore #1
Design: Wellbore #1

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Well SRO State Com #41H
 RKB @ 2963.0usft (Ensign #156)
 RKB @ 2963.0usft (Ensign #156)
 Grid
 Minimum Curvature
 EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
14,851.0	90.03	179.43	8,118.1	-6,991.9			
14,945.0	88.93	178.58	8,119.0	-7,085.9	46.6	6,992.1	179.62
15,039.0	89.19	178.25	8,120.5	-7,179.9	48.2	7,086.1	179.61
15,133.0	89.11	178.94	8,121.9	-7,273.8	50.8	7,180.1	179.59
15,227.0					53.1	7,274.0	179.58
15,321.0	88.63	179.51	8,123.8	-7,367.8			
15,415.0	88.99	179.41	8,125.7	-7,461.8	54.4	7,368.0	179.58
15,509.0	89.36	178.69	8,127.1	-7,555.8	55.2	7,462.0	179.58
15,604.0	91.15	178.06	8,126.7	-7,649.7	56.8	7,556.0	179.57
15,698.0	91.99	178.23	8,124.1	-7,744.6	59.5	7,649.9	179.55
15,792.0	90.98	178.40	8,121.6	-7,838.6	62.5	7,744.9	179.54
15,886.0	91.26	178.59	8,119.8	-7,932.5	65.3	7,838.8	179.52
15,980.0	89.44	178.46	8,119.2	-8,026.5	67.8	7,932.8	179.51
16,073.0	90.09	178.23	8,119.6	-8,120.4	70.2	8,026.8	179.50
16,167.0	91.04	178.92	8,118.7	-8,213.4	72.9	8,120.8	179.49
16,261.0	92.21	178.77	8,116.0	-8,307.3	75.2	8,213.7	179.48
16,355.0	92.92	179.01	8,111.8	-8,401.2	77.1	8,307.7	179.47
16,449.0	91.99	178.48	8,107.8	-8,495.1	78.9	8,401.6	179.46
16,543.0	92.41	179.06	8,104.2	-8,589.0	81.0	8,495.5	179.45
16,637.0	92.13	178.52	8,100.5	-8,682.9	83.0	8,589.4	179.45
16,731.0	90.14	177.86	8,098.6	-8,776.9	85.0	8,683.3	179.44
16,825.0	89.58	177.67	8,098.8	-8,870.8	88.0	8,777.3	179.43
16,919.0	89.02	177.52	8,100.0	-8,964.7	91.6	8,871.3	179.41
17,013.0	89.89	178.19	8,100.9	-9,058.6	95.6	8,965.2	179.39
17,107.0	89.36	177.66	8,101.5	-9,152.6	99.1	9,059.2	179.37
17,201.0	89.55	177.49	8,102.4	-9,246.5	102.5	9,153.1	179.36
17,295.0	89.69	177.43	8,103.0	-9,340.4	106.5	9,247.1	179.34
17,390.0	90.50	177.27	8,102.8	-9,434.3	110.6	9,341.0	179.32
17,483.0	90.00	178.51	8,102.4	-9,529.2	115.0	9,435.0	179.30
17,578.0	88.88	177.87	8,103.3	-9,622.2	118.5	9,529.9	179.29
17,672.0					121.4	9,622.9	179.28
17,766.0	90.39	178.07	8,103.9	-9,717.1	124.8	9,717.9	179.26
17,858.0	91.29	179.01	8,102.6	-9,811.0	127.2	9,811.9	179.26
17,918.0	91.99	179.53	8,099.9	-9,905.0	128.4	9,905.8	179.26
	92.47	179.10	8,096.3	-9,996.9	129.5	9,997.8	179.26
	92.47	179.10	8,093.7	-10,056.9	130.4	10,057.7	179.26

TD @ 17918.0' MD / 8093.7' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,512.0	7,509.6	-54.8	-21.0	Gyro Tie-in @ 7512.0' MD / 7509.6' TVD
17,918.0	8,093.7	-10,056.9	130.4	TD @ 17918.0' MD / 8093.7' TVD



CONCHO

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM

ATLAS

SRO STATE COM #41H

OWB

Design: ACTUAL WELLPATH

Survey Report - Geographic

02 November, 2017



COG Operating LLC
Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: SRO STATE COM #41H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well SRO STATE COM #41H
TVD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
MD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

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

Site: ATLAS
Site Position: Northing: 371,480.80 usft Latitude: 32° 1' 15.933 N
From: Map Easting: 573,599.60 usft Longitude: 104° 5' 45.086 W
Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.13 °

Well: SRO STATE COM #41H
Well Position: +N/-S 0.0 usft Northing: 392,303.50 usft Latitude: 32° 4' 41.849 N
+E/-W 0.0 usft Easting: 580,496.30 usft Longitude: 104° 4' 24.394 W
Position Uncertainty: 3.0 usft Wellhead Elevation: usft Ground Level: 2,938.9 usft

Wellbore: OWB
Magnetics: Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)
WMM2015 3/16/2017 7.22 59.84 47,816.18912282

Design: ACTUAL WELLPATH
Audit Notes:
Version: 1.0 Phase: ACTUAL Tie On Depth: 0.0
Vertical Section: Depth From (TVD) (usft) +N/-S (usft) +E/-W (usft) Direction (°)
0.0 0.0 0.0 179.26

Survey Program Date: 8/17/2017
From (usft) To (usft) Survey (Wellbore) Tool Name Description
100.0 7,512.0 GYRO (OWB) Standard Keeper 104 Standard Wireline Keeper ver 1.0.4
7,632.0 17,918.0 MWD 2 - CURVE/LATERAL (OWB) MWD+IFR1+MS OWSG MWD + IFR1 + Multi-Station Correction

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	392,303.50	580,496.30	32° 4' 41.849 N	104° 4' 24.394 W
100.0	0.24	7.97	100.0	0.2	0.0	392,303.71	580,496.33	32° 4' 41.851 N	104° 4' 24.393 W
125.0	0.39	15.37	125.0	0.3	0.1	392,303.84	580,496.36	32° 4' 41.853 N	104° 4' 24.393 W
150.0	0.52	12.24	150.0	0.5	0.1	392,304.03	580,496.41	32° 4' 41.854 N	104° 4' 24.393 W
175.0	0.67	8.42	175.0	0.8	0.2	392,304.29	580,496.45	32° 4' 41.857 N	104° 4' 24.392 W
200.0	0.73	6.03	200.0	1.1	0.2	392,304.59	580,496.49	32° 4' 41.860 N	104° 4' 24.392 W
225.0	0.85	5.33	225.0	1.4	0.2	392,304.93	580,496.53	32° 4' 41.863 N	104° 4' 24.391 W
250.0	0.92	359.89	250.0	1.8	0.2	392,305.32	580,496.54	32° 4' 41.867 N	104° 4' 24.391 W
275.0	0.94	3.10	275.0	2.2	0.3	392,305.73	580,496.55	32° 4' 41.871 N	104° 4' 24.391 W
300.0	0.97	4.05	300.0	2.6	0.3	392,306.14	580,496.58	32° 4' 41.875 N	104° 4' 24.390 W
325.0	1.01	353.08	325.0	3.1	0.3	392,306.57	580,496.57	32° 4' 41.880 N	104° 4' 24.391 W



COG Operating LLC
Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: SRO STATE COM #41H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well SRO STATE COM #41H
TVD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
MD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
350.0	1.01	359.07	350.0	3.5	0.2	392,307.01	580,496.54	32° 4' 41.884 N	104° 4' 24.391 W
375.0	1.05	0.04	375.0	4.0	0.2	392,307.46	580,496.53	32° 4' 41.888 N	104° 4' 24.391 W
400.0	0.99	1.84	400.0	4.4	0.2	392,307.90	580,496.54	32° 4' 41.893 N	104° 4' 24.391 W
425.0	1.03	355.77	425.0	4.8	0.2	392,308.34	580,496.53	32° 4' 41.897 N	104° 4' 24.391 W
450.0	1.05	357.74	450.0	5.3	0.2	392,308.80	580,496.51	32° 4' 41.902 N	104° 4' 24.391 W
475.0	1.01	0.16	475.0	5.7	0.2	392,309.25	580,496.50	32° 4' 41.906 N	104° 4' 24.391 W
500.0	1.02	3.18	500.0	6.2	0.2	392,309.69	580,496.51	32° 4' 41.910 N	104° 4' 24.391 W
525.0	1.03	12.27	524.9	6.6	0.3	392,310.13	580,496.57	32° 4' 41.915 N	104° 4' 24.390 W
550.0	1.14	28.54	549.9	7.1	0.4	392,310.57	580,496.74	32° 4' 41.919 N	104° 4' 24.389 W
575.0	1.57	42.49	574.9	7.5	0.8	392,311.04	580,497.09	32° 4' 41.924 N	104° 4' 24.384 W
600.0	1.49	40.51	599.9	8.0	1.2	392,311.54	580,497.53	32° 4' 41.929 N	104° 4' 24.379 W
625.0	1.46	41.99	624.9	8.5	1.7	392,312.02	580,497.95	32° 4' 41.933 N	104° 4' 24.374 W
650.0	1.57	43.46	649.9	9.0	2.1	392,312.51	580,498.40	32° 4' 41.938 N	104° 4' 24.369 W
675.0	1.47	42.04	674.9	9.5	2.6	392,313.00	580,498.85	32° 4' 41.943 N	104° 4' 24.364 W
700.0	1.61	44.33	699.9	10.0	3.0	392,313.48	580,499.31	32° 4' 41.948 N	104° 4' 24.359 W
725.0	1.55	39.95	724.9	10.5	3.5	392,314.00	580,499.78	32° 4' 41.953 N	104° 4' 24.353 W
750.0	1.60	43.99	749.9	11.0	3.9	392,314.51	580,500.24	32° 4' 41.958 N	104° 4' 24.348 W
775.0	1.60	42.53	774.9	11.5	4.4	392,315.01	580,500.71	32° 4' 41.963 N	104° 4' 24.342 W
800.0	1.65	43.10	799.9	12.0	4.9	392,315.53	580,501.20	32° 4' 41.968 N	104° 4' 24.337 W
825.0	1.68	40.17	824.8	12.6	5.4	392,316.08	580,501.68	32° 4' 41.973 N	104° 4' 24.331 W
850.0	1.66	38.40	849.8	13.1	5.8	392,316.64	580,502.14	32° 4' 41.979 N	104° 4' 24.326 W
875.0	1.70	39.88	874.8	13.7	6.3	392,317.21	580,502.60	32° 4' 41.985 N	104° 4' 24.320 W
900.0	1.61	38.14	899.8	14.3	6.8	392,317.77	580,503.06	32° 4' 41.990 N	104° 4' 24.315 W
925.0	1.61	41.09	924.8	14.8	7.2	392,318.31	580,503.50	32° 4' 41.996 N	104° 4' 24.310 W
950.0	1.57	38.35	949.8	15.3	7.6	392,318.84	580,503.95	32° 4' 42.001 N	104° 4' 24.304 W
975.0	1.57	38.72	974.8	15.9	8.1	392,319.38	580,504.37	32° 4' 42.006 N	104° 4' 24.300 W
1,000.0	1.61	39.40	999.8	16.4	8.5	392,319.92	580,504.81	32° 4' 42.011 N	104° 4' 24.294 W
1,025.0	1.58	38.30	1,024.8	17.0	8.9	392,320.46	580,505.25	32° 4' 42.017 N	104° 4' 24.289 W
1,050.0	1.48	35.66	1,049.8	17.5	9.3	392,320.99	580,505.65	32° 4' 42.022 N	104° 4' 24.285 W
1,075.0	1.46	37.77	1,074.7	18.0	9.7	392,321.51	580,506.03	32° 4' 42.027 N	104° 4' 24.280 W
1,100.0	1.38	36.13	1,099.7	18.5	10.1	392,322.00	580,506.41	32° 4' 42.032 N	104° 4' 24.276 W
1,125.0	1.42	37.61	1,124.7	19.0	10.5	392,322.49	580,506.77	32° 4' 42.037 N	104° 4' 24.272 W
1,150.0	1.33	36.96	1,149.7	19.5	10.8	392,322.97	580,507.14	32° 4' 42.042 N	104° 4' 24.267 W
1,175.0	1.28	34.45	1,174.7	19.9	11.2	392,323.43	580,507.47	32° 4' 42.046 N	104° 4' 24.263 W
1,200.0	1.12	30.40	1,199.7	20.4	11.4	392,323.87	580,507.75	32° 4' 42.050 N	104° 4' 24.260 W
1,225.0	1.14	31.46	1,224.7	20.8	11.7	392,324.29	580,508.00	32° 4' 42.055 N	104° 4' 24.257 W
1,250.0	1.21	31.85	1,249.7	21.2	12.0	392,324.73	580,508.27	32° 4' 42.059 N	104° 4' 24.254 W
1,275.0	1.25	33.49	1,274.7	21.7	12.3	392,325.18	580,508.56	32° 4' 42.063 N	104° 4' 24.251 W
1,300.0	1.02	28.32	1,299.7	22.1	12.5	392,325.60	580,508.82	32° 4' 42.068 N	104° 4' 24.248 W
1,325.0	1.01	31.28	1,324.7	22.5	12.7	392,325.99	580,509.04	32° 4' 42.071 N	104° 4' 24.245 W
1,350.0	1.05	33.03	1,349.7	22.9	13.0	392,326.37	580,509.28	32° 4' 42.075 N	104° 4' 24.242 W
1,375.0	0.97	22.80	1,374.7	23.3	13.2	392,326.76	580,509.48	32° 4' 42.079 N	104° 4' 24.240 W
1,400.0	0.95	28.20	1,399.7	23.6	13.4	392,327.13	580,509.66	32° 4' 42.083 N	104° 4' 24.238 W
1,425.0	0.84	22.87	1,424.7	24.0	13.5	392,327.49	580,509.83	32° 4' 42.086 N	104° 4' 24.236 W
1,450.0	0.73	20.52	1,449.7	24.3	13.7	392,327.80	580,509.96	32° 4' 42.089 N	104° 4' 24.234 W
1,475.0	0.73	11.74	1,474.7	24.6	13.7	392,328.11	580,510.05	32° 4' 42.092 N	104° 4' 24.233 W
1,500.0	0.75	12.02	1,499.7	24.9	13.8	392,328.42	580,510.11	32° 4' 42.095 N	104° 4' 24.233 W
1,525.0	0.80	21.17	1,524.7	25.2	13.9	392,328.75	580,510.21	32° 4' 42.099 N	104° 4' 24.231 W
1,550.0	0.76	18.26	1,549.7	25.6	14.0	392,329.07	580,510.33	32° 4' 42.102 N	104° 4' 24.230 W
1,575.0	0.75	12.52	1,574.7	25.9	14.1	392,329.38	580,510.41	32° 4' 42.105 N	104° 4' 24.229 W
1,600.0	0.72	10.22	1,599.7	26.2	14.2	392,329.70	580,510.48	32° 4' 42.108 N	104° 4' 24.228 W
1,625.0	0.77	16.69	1,624.7	26.5	14.3	392,330.01	580,510.55	32° 4' 42.111 N	104° 4' 24.227 W
1,650.0	0.78	16.05	1,649.7	26.8	14.3	392,330.34	580,510.65	32° 4' 42.114 N	104° 4' 24.226 W
1,675.0	0.85	17.77	1,674.7	27.2	14.4	392,330.68	580,510.75	32° 4' 42.118 N	104° 4' 24.225 W
1,700.0	0.87	16.18	1,699.6	27.5	14.6	392,331.04	580,510.86	32° 4' 42.121 N	104° 4' 24.224 W



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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,725.0	0.97	24.46	1,724.6	27.9	14.7	392,331.41	580,511.00	32° 4' 42.125 N	104° 4' 24.222 W
1,750.0	0.96	27.78	1,749.6	28.3	14.9	392,331.79	580,511.19	32° 4' 42.129 N	104° 4' 24.220 W
1,775.0	1.20	48.27	1,774.6	28.7	15.2	392,332.15	580,511.48	32° 4' 42.132 N	104° 4' 24.217 W
1,800.0	1.23	61.17	1,799.6	29.0	15.6	392,332.45	580,511.91	32° 4' 42.135 N	104° 4' 24.212 W
1,825.0	1.31	81.70	1,824.6	29.1	16.1	392,332.62	580,512.43	32° 4' 42.137 N	104° 4' 24.206 W
1,850.0	1.54	87.38	1,849.6	29.2	16.7	392,332.68	580,513.05	32° 4' 42.138 N	104° 4' 24.198 W
1,875.0	1.75	95.44	1,874.6	29.2	17.5	392,332.66	580,513.76	32° 4' 42.137 N	104° 4' 24.190 W
1,900.0	1.74	96.12	1,899.6	29.1	18.2	392,332.58	580,514.52	32° 4' 42.137 N	104° 4' 24.181 W
1,925.0	1.72	97.33	1,924.6	29.0	19.0	392,332.50	580,515.27	32° 4' 42.136 N	104° 4' 24.173 W
1,950.0	1.77	97.38	1,949.6	28.9	19.7	392,332.40	580,516.03	32° 4' 42.135 N	104° 4' 24.164 W
1,975.0	1.61	96.19	1,974.6	28.8	20.5	392,332.31	580,516.76	32° 4' 42.134 N	104° 4' 24.155 W
2,000.0	1.56	93.15	1,999.6	28.8	21.1	392,332.25	580,517.45	32° 4' 42.133 N	104° 4' 24.147 W
2,025.0	1.52	94.98	2,024.5	28.7	21.8	392,332.21	580,518.12	32° 4' 42.133 N	104° 4' 24.139 W
2,050.0	1.55	94.50	2,049.5	28.7	22.5	392,332.15	580,518.78	32° 4' 42.132 N	104° 4' 24.132 W
2,075.0	1.81	91.91	2,074.5	28.6	23.2	392,332.11	580,519.52	32° 4' 42.132 N	104° 4' 24.123 W
2,100.0	1.97	91.69	2,099.5	28.6	24.0	392,332.09	580,520.34	32° 4' 42.131 N	104° 4' 24.114 W
2,125.0	2.05	92.25	2,124.5	28.6	24.9	392,332.06	580,521.22	32° 4' 42.131 N	104° 4' 24.103 W
2,150.0	1.97	91.91	2,149.5	28.5	25.8	392,332.02	580,522.09	32° 4' 42.131 N	104° 4' 24.093 W
2,175.0	1.83	90.19	2,174.5	28.5	26.6	392,332.01	580,522.92	32° 4' 42.131 N	104° 4' 24.084 W
2,200.0	1.72	90.26	2,199.5	28.5	27.4	392,332.00	580,523.70	32° 4' 42.131 N	104° 4' 24.075 W
2,225.0	1.51	90.76	2,224.4	28.5	28.1	392,332.00	580,524.40	32° 4' 42.131 N	104° 4' 24.066 W
2,250.0	1.43	89.51	2,249.4	28.5	28.7	392,332.00	580,525.04	32° 4' 42.130 N	104° 4' 24.059 W
2,275.0	1.05	83.97	2,274.4	28.5	29.3	392,332.02	580,525.58	32° 4' 42.131 N	104° 4' 24.053 W
2,300.0	0.98	84.14	2,299.4	28.6	29.7	392,332.07	580,526.02	32° 4' 42.131 N	104° 4' 24.048 W
2,325.0	0.82	86.10	2,324.4	28.6	30.1	392,332.10	580,526.41	32° 4' 42.131 N	104° 4' 24.043 W
2,350.0	0.93	89.19	2,349.4	28.6	30.5	392,332.12	580,526.79	32° 4' 42.132 N	104° 4' 24.039 W
2,375.0	0.83	94.34	2,374.4	28.6	30.9	392,332.11	580,527.18	32° 4' 42.132 N	104° 4' 24.034 W
2,400.0	0.78	96.66	2,399.4	28.6	31.2	392,332.07	580,527.53	32° 4' 42.131 N	104° 4' 24.030 W
2,425.0	0.76	100.86	2,424.4	28.5	31.6	392,332.02	580,527.86	32° 4' 42.131 N	104° 4' 24.026 W
2,450.0	0.70	104.79	2,449.4	28.5	31.9	392,331.95	580,528.17	32° 4' 42.130 N	104° 4' 24.023 W
2,475.0	0.68	112.52	2,474.4	28.4	32.2	392,331.86	580,528.45	32° 4' 42.129 N	104° 4' 24.019 W
2,500.0	0.72	109.35	2,499.4	28.2	32.4	392,331.75	580,528.74	32° 4' 42.128 N	104° 4' 24.016 W
2,525.0	0.73	118.22	2,524.4	28.1	32.7	392,331.62	580,529.03	32° 4' 42.127 N	104° 4' 24.013 W
2,550.0	0.72	120.25	2,549.4	28.0	33.0	392,331.47	580,529.30	32° 4' 42.125 N	104° 4' 24.009 W
2,575.0	0.78	114.66	2,574.4	27.8	33.3	392,331.32	580,529.59	32° 4' 42.124 N	104° 4' 24.006 W
2,600.0	0.74	117.32	2,599.4	27.7	33.6	392,331.17	580,529.89	32° 4' 42.122 N	104° 4' 24.003 W
2,625.0	0.73	111.59	2,624.4	27.5	33.9	392,331.04	580,530.18	32° 4' 42.121 N	104° 4' 23.999 W
2,650.0	0.69	121.96	2,649.4	27.4	34.2	392,330.90	580,530.46	32° 4' 42.119 N	104° 4' 23.996 W
2,675.0	0.70	124.56	2,674.4	27.2	34.4	392,330.73	580,530.71	32° 4' 42.118 N	104° 4' 23.993 W
2,700.0	0.71	140.87	2,699.4	27.0	34.6	392,330.53	580,530.94	32° 4' 42.116 N	104° 4' 23.990 W
2,725.0	0.80	169.03	2,724.4	26.7	34.8	392,330.24	580,531.07	32° 4' 42.113 N	104° 4' 23.989 W
2,750.0	1.41	188.64	2,749.4	26.3	34.8	392,329.76	580,531.05	32° 4' 42.108 N	104° 4' 23.989 W
2,775.0	1.70	205.75	2,774.4	25.6	34.5	392,329.12	580,530.85	32° 4' 42.102 N	104° 4' 23.992 W
2,800.0	1.91	208.38	2,799.4	24.9	34.2	392,328.42	580,530.49	32° 4' 42.095 N	104° 4' 23.996 W
2,825.0	1.89	207.08	2,824.3	24.2	33.8	392,327.69	580,530.10	32° 4' 42.088 N	104° 4' 24.000 W
2,850.0	1.93	206.91	2,849.3	23.4	33.4	392,326.95	580,529.72	32° 4' 42.080 N	104° 4' 24.005 W
2,875.0	1.93	207.04	2,874.3	22.7	33.0	392,326.20	580,529.34	32° 4' 42.073 N	104° 4' 24.009 W
2,900.0	1.96	206.66	2,899.3	21.9	32.7	392,325.44	580,528.96	32° 4' 42.065 N	104° 4' 24.014 W
2,925.0	2.04	209.58	2,924.3	21.2	32.2	392,324.67	580,528.55	32° 4' 42.058 N	104° 4' 24.018 W
2,950.0	2.06	208.69	2,949.3	20.4	31.8	392,323.89	580,528.11	32° 4' 42.050 N	104° 4' 24.023 W
2,975.0	2.14	211.35	2,974.3	19.6	31.4	392,323.10	580,527.65	32° 4' 42.042 N	104° 4' 24.029 W
3,000.0	2.13	209.65	2,999.2	18.8	30.9	392,322.29	580,527.18	32° 4' 42.034 N	104° 4' 24.034 W
3,025.0	2.25	211.40	3,024.2	18.0	30.4	392,321.47	580,526.70	32° 4' 42.026 N	104° 4' 24.040 W
3,050.0	2.21	210.61	3,049.2	17.1	29.9	392,320.64	580,526.19	32° 4' 42.018 N	104° 4' 24.046 W
3,075.0	2.29	210.45	3,074.2	16.3	29.4	392,319.79	580,525.70	32° 4' 42.010 N	104° 4' 24.052 W



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North Reference: Grid
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Survey

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3,100.0	2.25	210.62	3,099.2	15.4	28.9	392,318.94	580,525.19	32° 4' 42.001 N	104° 4' 24.058 W
3,125.0	2.30	210.62	3,124.1	14.6	28.4	392,318.08	580,524.69	32° 4' 41.993 N	104° 4' 24.063 W
3,150.0	2.32	210.47	3,149.1	13.7	27.9	392,317.22	580,524.17	32° 4' 41.984 N	104° 4' 24.069 W
3,175.0	2.37	209.04	3,174.1	12.8	27.4	392,316.33	580,523.67	32° 4' 41.975 N	104° 4' 24.075 W
3,200.0	2.40	208.61	3,199.1	11.9	26.9	392,315.42	580,523.17	32° 4' 41.966 N	104° 4' 24.081 W
3,225.0	2.45	208.74	3,224.1	11.0	26.4	392,314.49	580,522.66	32° 4' 41.957 N	104° 4' 24.087 W
3,250.0	2.48	208.61	3,249.0	10.0	25.8	392,313.55	580,522.14	32° 4' 41.948 N	104° 4' 24.093 W
3,275.0	2.50	208.83	3,274.0	9.1	25.3	392,312.59	580,521.62	32° 4' 41.939 N	104° 4' 24.099 W
3,300.0	2.46	207.50	3,299.0	8.1	24.8	392,311.64	580,521.11	32° 4' 41.929 N	104° 4' 24.105 W
3,325.0	2.52	208.59	3,324.0	7.2	24.3	392,310.68	580,520.60	32° 4' 41.920 N	104° 4' 24.111 W
3,350.0	2.48	208.64	3,348.9	6.2	23.8	392,309.72	580,520.08	32° 4' 41.910 N	104° 4' 24.117 W
3,375.0	2.56	209.47	3,373.9	5.3	23.2	392,308.76	580,519.54	32° 4' 41.901 N	104° 4' 24.124 W
3,400.0	2.56	210.52	3,398.9	4.3	22.7	392,307.80	580,518.98	32° 4' 41.891 N	104° 4' 24.130 W
3,425.0	2.43	208.28	3,423.9	3.3	22.1	392,306.85	580,518.45	32° 4' 41.882 N	104° 4' 24.136 W
3,450.0	2.46	209.50	3,448.8	2.4	21.6	392,305.91	580,517.93	32° 4' 41.873 N	104° 4' 24.142 W
3,475.0	2.48	209.10	3,473.8	1.5	21.1	392,304.97	580,517.41	32° 4' 41.863 N	104° 4' 24.148 W
3,500.0	2.50	210.34	3,498.8	0.5	20.6	392,304.03	580,516.87	32° 4' 41.854 N	104° 4' 24.155 W
3,525.0	2.49	209.29	3,523.8	-0.4	20.0	392,303.09	580,516.33	32° 4' 41.845 N	104° 4' 24.161 W
3,550.0	2.48	209.00	3,548.8	-1.4	19.5	392,302.14	580,515.80	32° 4' 41.835 N	104° 4' 24.167 W
3,575.0	2.44	207.88	3,573.7	-2.3	19.0	392,301.20	580,515.29	32° 4' 41.826 N	104° 4' 24.173 W
3,600.0	2.38	209.50	3,598.7	-3.2	18.5	392,300.28	580,514.78	32° 4' 41.817 N	104° 4' 24.179 W
3,625.0	2.22	208.24	3,623.7	-4.1	18.0	392,299.40	580,514.30	32° 4' 41.808 N	104° 4' 24.185 W
3,650.0	1.96	202.92	3,648.7	-4.9	17.6	392,298.58	580,513.90	32° 4' 41.800 N	104° 4' 24.189 W
3,675.0	1.77	198.07	3,673.7	-5.7	17.3	392,297.82	580,513.62	32° 4' 41.792 N	104° 4' 24.193 W
3,700.0	1.58	192.62	3,698.6	-6.4	17.1	392,297.11	580,513.42	32° 4' 41.786 N	104° 4' 24.195 W
3,725.0	1.28	182.60	3,723.6	-7.0	17.0	392,296.50	580,513.33	32° 4' 41.779 N	104° 4' 24.196 W
3,750.0	1.19	182.10	3,748.6	-7.5	17.0	392,295.96	580,513.31	32° 4' 41.774 N	104° 4' 24.196 W
3,775.0	1.23	182.16	3,773.6	-8.1	17.0	392,295.43	580,513.29	32° 4' 41.769 N	104° 4' 24.197 W
3,800.0	1.21	180.93	3,798.6	-8.6	17.0	392,294.90	580,513.28	32° 4' 41.764 N	104° 4' 24.197 W
3,825.0	1.18	174.79	3,823.6	-9.1	17.0	392,294.38	580,513.30	32° 4' 41.758 N	104° 4' 24.197 W
3,850.0	1.24	178.14	3,848.6	-9.6	17.0	392,293.85	580,513.33	32° 4' 41.753 N	104° 4' 24.196 W
3,875.0	1.22	179.45	3,873.6	-10.2	17.0	392,293.32	580,513.34	32° 4' 41.748 N	104° 4' 24.196 W
3,900.0	1.21	175.69	3,898.6	-10.7	17.1	392,292.79	580,513.36	32° 4' 41.743 N	104° 4' 24.196 W
3,925.0	1.17	178.53	3,923.6	-11.2	17.1	392,292.27	580,513.39	32° 4' 41.738 N	104° 4' 24.195 W
3,950.0	1.23	178.28	3,948.6	-11.8	17.1	392,291.74	580,513.40	32° 4' 41.732 N	104° 4' 24.195 W
3,975.0	1.22	177.36	3,973.6	-12.3	17.1	392,291.21	580,513.42	32° 4' 41.727 N	104° 4' 24.195 W
4,000.0	1.24	176.86	3,998.6	-12.8	17.1	392,290.67	580,513.45	32° 4' 41.722 N	104° 4' 24.195 W
4,025.0	1.25	179.33	4,023.6	-13.4	17.2	392,290.13	580,513.47	32° 4' 41.716 N	104° 4' 24.195 W
4,050.0	1.25	176.81	4,048.6	-13.9	17.2	392,289.59	580,513.49	32° 4' 41.711 N	104° 4' 24.194 W
4,075.0	1.30	180.12	4,073.6	-14.5	17.2	392,289.03	580,513.50	32° 4' 41.706 N	104° 4' 24.194 W
4,100.0	1.26	178.30	4,098.6	-15.0	17.2	392,288.47	580,513.51	32° 4' 41.700 N	104° 4' 24.194 W
4,125.0	1.31	176.49	4,123.5	-15.6	17.2	392,287.91	580,513.54	32° 4' 41.694 N	104° 4' 24.194 W
4,150.0	1.33	173.25	4,148.5	-16.2	17.3	392,287.34	580,513.59	32° 4' 41.689 N	104° 4' 24.193 W
4,175.0	1.31	177.08	4,173.5	-16.7	17.3	392,286.77	580,513.64	32° 4' 41.683 N	104° 4' 24.193 W
4,200.0	1.37	175.93	4,198.5	-17.3	17.4	392,286.18	580,513.67	32° 4' 41.677 N	104° 4' 24.192 W
4,225.0	1.37	175.91	4,223.5	-17.9	17.4	392,285.59	580,513.71	32° 4' 41.671 N	104° 4' 24.192 W
4,250.0	1.35	174.69	4,248.5	-18.5	17.5	392,284.99	580,513.76	32° 4' 41.666 N	104° 4' 24.191 W
4,275.0	1.38	177.18	4,273.5	-19.1	17.5	392,284.40	580,513.81	32° 4' 41.660 N	104° 4' 24.191 W
4,300.0	1.40	173.51	4,298.5	-19.7	17.6	392,283.80	580,513.85	32° 4' 41.654 N	104° 4' 24.190 W
4,325.0	1.39	173.00	4,323.5	-20.3	17.6	392,283.19	580,513.93	32° 4' 41.648 N	104° 4' 24.190 W
4,350.0	1.40	179.49	4,348.5	-20.9	17.7	392,282.59	580,513.97	32° 4' 41.642 N	104° 4' 24.189 W
4,375.0	1.39	173.39	4,373.5	-21.5	17.7	392,281.98	580,514.00	32° 4' 41.636 N	104° 4' 24.189 W
4,400.0	1.29	173.92	4,398.5	-22.1	17.8	392,281.40	580,514.07	32° 4' 41.630 N	104° 4' 24.188 W
4,425.0	0.91	158.00	4,423.5	-22.6	17.9	392,280.93	580,514.17	32° 4' 41.625 N	104° 4' 24.187 W
4,450.0	0.72	120.33	4,448.5	-22.8	18.1	392,280.67	580,514.38	32° 4' 41.623 N	104° 4' 24.184 W



COG Operating LLC
Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: SRO STATE COM #41H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well SRO STATE COM #41H
TVD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
MD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,475.0	0.68	91.84	4,473.5	-22.9	18.4	392,280.59	580,514.67	32° 4' 41.622 N	104° 4' 24.181 W
4,500.0	0.81	83.34	4,498.5	-22.9	18.7	392,280.60	580,514.99	32° 4' 41.622 N	104° 4' 24.177 W
4,525.0	0.91	80.36	4,523.5	-22.8	19.1	392,280.66	580,515.36	32° 4' 41.623 N	104° 4' 24.173 W
4,550.0	0.76	79.40	4,548.5	-22.8	19.4	392,280.72	580,515.72	32° 4' 41.623 N	104° 4' 24.169 W
4,575.0	0.85	81.62	4,573.4	-22.7	19.8	392,280.78	580,516.07	32° 4' 41.624 N	104° 4' 24.165 W
4,600.0	0.73	86.02	4,598.4	-22.7	20.1	392,280.82	580,516.41	32° 4' 41.624 N	104° 4' 24.161 W
4,625.0	0.74	79.24	4,623.4	-22.6	20.4	392,280.86	580,516.73	32° 4' 41.625 N	104° 4' 24.157 W
4,650.0	0.74	85.63	4,648.4	-22.6	20.7	392,280.90	580,517.05	32° 4' 41.625 N	104° 4' 24.153 W
4,675.0	0.57	83.96	4,673.4	-22.6	21.0	392,280.92	580,517.33	32° 4' 41.625 N	104° 4' 24.150 W
4,700.0	0.58	91.29	4,698.4	-22.6	21.3	392,280.93	580,517.58	32° 4' 41.625 N	104° 4' 24.147 W
4,725.0	0.49	99.64	4,723.4	-22.6	21.5	392,280.91	580,517.81	32° 4' 41.625 N	104° 4' 24.144 W
4,750.0	0.49	104.03	4,748.4	-22.6	21.7	392,280.87	580,518.02	32° 4' 41.625 N	104° 4' 24.142 W
4,775.0	0.41	112.06	4,773.4	-22.7	21.9	392,280.81	580,518.21	32° 4' 41.624 N	104° 4' 24.140 W
4,800.0	0.29	165.25	4,798.4	-22.8	22.0	392,280.72	580,518.31	32° 4' 41.623 N	104° 4' 24.139 W
4,825.0	0.37	166.21	4,823.4	-22.9	22.0	392,280.58	580,518.34	32° 4' 41.622 N	104° 4' 24.138 W
4,850.0	0.38	155.13	4,848.4	-23.1	22.1	392,280.42	580,518.40	32° 4' 41.620 N	104° 4' 24.138 W
4,875.0	0.55	194.11	4,873.4	-23.3	22.1	392,280.23	580,518.40	32° 4' 41.618 N	104° 4' 24.138 W
4,900.0	0.58	194.87	4,898.4	-23.5	22.0	392,279.99	580,518.34	32° 4' 41.616 N	104° 4' 24.138 W
4,925.0	0.61	201.73	4,923.4	-23.8	22.0	392,279.75	580,518.26	32° 4' 41.614 N	104° 4' 24.139 W
4,950.0	0.72	207.00	4,948.4	-24.0	21.8	392,279.48	580,518.14	32° 4' 41.611 N	104° 4' 24.141 W
4,975.0	0.68	203.87	4,973.4	-24.3	21.7	392,279.21	580,518.01	32° 4' 41.608 N	104° 4' 24.142 W
5,000.0	0.77	204.94	4,998.4	-24.6	21.6	392,278.92	580,517.88	32° 4' 41.605 N	104° 4' 24.144 W
5,025.0	0.93	209.68	5,023.4	-24.9	21.4	392,278.59	580,517.70	32° 4' 41.602 N	104° 4' 24.146 W
5,050.0	0.92	212.22	5,048.4	-25.3	21.2	392,278.24	580,517.50	32° 4' 41.599 N	104° 4' 24.148 W
5,075.0	1.11	220.49	5,073.4	-25.6	20.9	392,277.89	580,517.23	32° 4' 41.595 N	104° 4' 24.151 W
5,100.0	1.03	218.15	5,098.4	-26.0	20.6	392,277.53	580,516.94	32° 4' 41.592 N	104° 4' 24.155 W
5,125.0	1.05	217.79	5,123.4	-26.3	20.4	392,277.17	580,516.66	32° 4' 41.588 N	104° 4' 24.158 W
5,150.0	1.04	224.43	5,148.4	-26.7	20.1	392,276.83	580,516.36	32° 4' 41.585 N	104° 4' 24.161 W
5,175.0	1.04	245.35	5,173.4	-26.9	19.7	392,276.57	580,515.99	32° 4' 41.582 N	104° 4' 24.166 W
5,200.0	1.25	283.29	5,198.4	-27.0	19.2	392,276.54	580,515.52	32° 4' 41.582 N	104° 4' 24.171 W
5,225.0	1.48	293.65	5,223.4	-26.8	18.7	392,276.73	580,514.96	32° 4' 41.584 N	104° 4' 24.178 W
5,250.0	1.57	293.01	5,248.4	-26.5	18.0	392,277.00	580,514.35	32° 4' 41.586 N	104° 4' 24.185 W
5,275.0	1.63	292.76	5,273.4	-26.2	17.4	392,277.27	580,513.71	32° 4' 41.589 N	104° 4' 24.192 W
5,300.0	1.66	286.57	5,298.4	-26.0	16.7	392,277.51	580,513.03	32° 4' 41.592 N	104° 4' 24.200 W
5,325.0	1.61	292.43	5,323.3	-25.8	16.1	392,277.75	580,512.36	32° 4' 41.594 N	104° 4' 24.208 W
5,350.0	1.60	292.67	5,348.3	-25.5	15.4	392,278.01	580,511.71	32° 4' 41.597 N	104° 4' 24.215 W
5,375.0	1.61	293.79	5,373.3	-25.2	14.8	392,278.29	580,511.07	32° 4' 41.599 N	104° 4' 24.223 W
5,400.0	1.67	289.42	5,398.3	-24.9	14.1	392,278.55	580,510.40	32° 4' 41.602 N	104° 4' 24.231 W
5,425.0	1.65	289.96	5,423.3	-24.7	13.4	392,278.80	580,509.72	32° 4' 41.604 N	104° 4' 24.238 W
5,450.0	1.63	290.53	5,448.3	-24.5	12.7	392,279.04	580,509.05	32° 4' 41.607 N	104° 4' 24.246 W
5,475.0	1.59	287.17	5,473.3	-24.2	12.1	392,279.27	580,508.39	32° 4' 41.609 N	104° 4' 24.254 W
5,500.0	1.55	286.18	5,498.3	-24.0	11.4	392,279.47	580,507.73	32° 4' 41.611 N	104° 4' 24.262 W
5,525.0	1.54	282.85	5,523.3	-23.9	10.8	392,279.64	580,507.08	32° 4' 41.613 N	104° 4' 24.269 W
5,550.0	1.50	280.86	5,548.3	-23.7	10.1	392,279.77	580,506.43	32° 4' 41.614 N	104° 4' 24.277 W
5,575.0	1.53	279.23	5,573.3	-23.6	9.5	392,279.89	580,505.78	32° 4' 41.615 N	104° 4' 24.284 W
5,600.0	1.58	270.42	5,598.2	-23.6	8.8	392,279.95	580,505.11	32° 4' 41.616 N	104° 4' 24.292 W
5,625.0	1.50	264.96	5,623.2	-23.6	8.1	392,279.92	580,504.43	32° 4' 41.616 N	104° 4' 24.300 W
5,650.0	1.48	261.76	5,648.2	-23.7	7.5	392,279.84	580,503.79	32° 4' 41.615 N	104° 4' 24.307 W
5,675.0	1.42	258.39	5,673.2	-23.8	6.9	392,279.74	580,503.17	32° 4' 41.614 N	104° 4' 24.315 W
5,700.0	1.43	257.63	5,698.2	-23.9	6.3	392,279.61	580,502.56	32° 4' 41.613 N	104° 4' 24.322 W
5,725.0	1.53	251.66	5,723.2	-24.1	5.6	392,279.43	580,501.94	32° 4' 41.611 N	104° 4' 24.329 W
5,750.0	1.47	249.32	5,748.2	-24.3	5.0	392,279.22	580,501.32	32° 4' 41.609 N	104° 4' 24.336 W
5,775.0	1.49	249.27	5,773.2	-24.5	4.4	392,278.99	580,500.72	32° 4' 41.606 N	104° 4' 24.343 W
5,800.0	1.45	248.34	5,798.2	-24.7	3.8	392,278.76	580,500.12	32° 4' 41.604 N	104° 4' 24.350 W
5,825.0	1.53	249.86	5,823.2	-25.0	3.2	392,278.52	580,499.51	32° 4' 41.602 N	104° 4' 24.357 W



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Design: ACTUAL WELLPATH

Local Co-ordinate Reference:
TVD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
MD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,850.0	1.62	257.09	5,848.2	-25.2	2.5	392,278.33	580,498.85	32° 4' 41.600 N	104° 4' 24.365 W
5,875.0	1.72	260.01	5,873.1	-25.3	1.8	392,278.19	580,498.14	32° 4' 41.599 N	104° 4' 24.373 W
5,900.0	1.60	261.40	5,898.1	-25.4	1.1	392,278.07	580,497.42	32° 4' 41.597 N	104° 4' 24.381 W
5,925.0	1.33	267.56	5,923.1	-25.5	0.5	392,278.00	580,496.79	32° 4' 41.597 N	104° 4' 24.389 W
5,950.0	0.66	275.99	5,948.1	-25.5	0.1	392,278.01	580,496.36	32° 4' 41.597 N	104° 4' 24.394 W
5,975.0	0.52	285.04	5,973.1	-25.4	-0.2	392,278.05	580,496.10	32° 4' 41.597 N	104° 4' 24.397 W
6,000.0	0.34	280.37	5,998.1	-25.4	-0.4	392,278.09	580,495.92	32° 4' 41.598 N	104° 4' 24.399 W
6,025.0	0.29	277.72	6,023.1	-25.4	-0.5	392,278.12	580,495.79	32° 4' 41.598 N	104° 4' 24.401 W
6,050.0	0.36	264.03	6,048.1	-25.4	-0.7	392,278.12	580,495.64	32° 4' 41.598 N	104° 4' 24.402 W
6,075.0	0.39	251.52	6,073.1	-25.4	-0.8	392,278.08	580,495.49	32° 4' 41.598 N	104° 4' 24.404 W
6,100.0	0.37	233.22	6,098.1	-25.5	-1.0	392,278.01	580,495.34	32° 4' 41.597 N	104° 4' 24.406 W
6,125.0	0.52	226.21	6,123.1	-25.6	-1.1	392,277.88	580,495.19	32° 4' 41.596 N	104° 4' 24.407 W
6,150.0	0.55	210.38	6,148.1	-25.8	-1.3	392,277.70	580,495.05	32° 4' 41.594 N	104° 4' 24.409 W
6,175.0	0.60	206.35	6,173.1	-26.0	-1.4	392,277.48	580,494.93	32° 4' 41.592 N	104° 4' 24.410 W
6,200.0	0.67	213.35	6,198.1	-26.3	-1.5	392,277.24	580,494.79	32° 4' 41.589 N	104° 4' 24.412 W
6,225.0	0.83	211.07	6,223.1	-26.5	-1.7	392,276.96	580,494.62	32° 4' 41.587 N	104° 4' 24.414 W
6,250.0	0.49	144.68	6,248.1	-26.8	-1.7	392,276.72	580,494.59	32° 4' 41.584 N	104° 4' 24.414 W
6,275.0	0.77	210.94	6,273.1	-27.0	-1.7	392,276.49	580,494.56	32° 4' 41.582 N	104° 4' 24.415 W
6,300.0	0.90	217.18	6,298.1	-27.3	-1.9	392,276.19	580,494.36	32° 4' 41.579 N	104° 4' 24.417 W
6,325.0	1.34	230.01	6,323.1	-27.7	-2.3	392,275.84	580,494.02	32° 4' 41.575 N	104° 4' 24.421 W
6,350.0	1.70	230.07	6,348.1	-28.1	-2.8	392,275.42	580,493.51	32° 4' 41.571 N	104° 4' 24.427 W
6,375.0	1.98	224.45	6,373.1	-28.6	-3.4	392,274.87	580,492.92	32° 4' 41.566 N	104° 4' 24.434 W
6,400.0	2.13	220.17	6,398.1	-29.3	-4.0	392,274.21	580,492.32	32° 4' 41.559 N	104° 4' 24.441 W
6,425.0	2.40	213.47	6,423.0	-30.1	-4.6	392,273.41	580,491.73	32° 4' 41.552 N	104° 4' 24.448 W
6,450.0	2.51	211.24	6,448.0	-31.0	-5.1	392,272.51	580,491.16	32° 4' 41.543 N	104° 4' 24.454 W
6,475.0	2.44	212.20	6,473.0	-31.9	-5.7	392,271.59	580,490.59	32° 4' 41.533 N	104° 4' 24.461 W
6,500.0	2.37	214.46	6,498.0	-32.8	-6.3	392,270.71	580,490.01	32° 4' 41.525 N	104° 4' 24.468 W
6,525.0	2.12	218.31	6,523.0	-33.6	-6.9	392,269.93	580,489.44	32° 4' 41.517 N	104° 4' 24.475 W
6,550.0	2.07	217.84	6,547.9	-34.3	-7.4	392,269.21	580,488.87	32° 4' 41.510 N	104° 4' 24.481 W
6,575.0	2.05	218.74	6,572.9	-35.0	-8.0	392,268.50	580,488.31	32° 4' 41.503 N	104° 4' 24.488 W
6,600.0	1.57	222.15	6,597.9	-35.6	-8.5	392,267.90	580,487.81	32° 4' 41.497 N	104° 4' 24.494 W
6,625.0	1.74	222.42	6,622.9	-36.1	-9.0	392,267.36	580,487.32	32° 4' 41.492 N	104° 4' 24.499 W
6,650.0	1.66	225.15	6,647.9	-36.7	-9.5	392,266.83	580,486.81	32° 4' 41.486 N	104° 4' 24.505 W
6,675.0	1.52	231.56	6,672.9	-37.1	-10.0	392,266.37	580,486.29	32° 4' 41.482 N	104° 4' 24.511 W
6,700.0	1.63	231.20	6,697.9	-37.6	-10.5	392,265.94	580,485.75	32° 4' 41.478 N	104° 4' 24.517 W
6,725.0	1.63	235.36	6,722.9	-38.0	-11.1	392,265.51	580,485.18	32° 4' 41.473 N	104° 4' 24.524 W
6,750.0	1.68	235.76	6,747.9	-38.4	-11.7	392,265.11	580,484.59	32° 4' 41.469 N	104° 4' 24.531 W
6,775.0	1.87	224.72	6,772.8	-38.9	-12.3	392,264.61	580,484.00	32° 4' 41.465 N	104° 4' 24.538 W
6,800.0	2.23	220.08	6,797.8	-39.6	-12.9	392,263.95	580,483.40	32° 4' 41.458 N	104° 4' 24.545 W
6,825.0	2.45	209.83	6,822.8	-40.4	-13.5	392,263.11	580,482.82	32° 4' 41.450 N	104° 4' 24.552 W
6,850.0	2.44	201.39	6,847.8	-41.3	-13.9	392,262.15	580,482.36	32° 4' 41.440 N	104° 4' 24.557 W
6,875.0	2.16	192.11	6,872.8	-42.3	-14.2	392,261.20	580,482.07	32° 4' 41.431 N	104° 4' 24.560 W
6,900.0	1.43	174.53	6,897.7	-43.1	-14.3	392,260.42	580,482.00	32° 4' 41.423 N	104° 4' 24.561 W
6,925.0	0.66	157.69	6,922.7	-43.5	-14.2	392,259.98	580,482.08	32° 4' 41.419 N	104° 4' 24.560 W
6,950.0	0.43	180.72	6,947.7	-43.7	-14.2	392,259.75	580,482.13	32° 4' 41.417 N	104° 4' 24.560 W
6,975.0	0.62	217.13	6,972.7	-43.9	-14.3	392,259.55	580,482.05	32° 4' 41.415 N	104° 4' 24.561 W
7,000.0	0.85	226.74	6,997.7	-44.2	-14.5	392,259.32	580,481.84	32° 4' 41.412 N	104° 4' 24.563 W
7,025.0	1.11	222.11	7,022.7	-44.5	-14.8	392,259.01	580,481.54	32° 4' 41.409 N	104° 4' 24.567 W
7,050.0	1.15	216.55	7,047.7	-44.9	-15.1	392,258.63	580,481.23	32° 4' 41.405 N	104° 4' 24.570 W
7,075.0	1.07	204.11	7,072.7	-45.3	-15.3	392,258.22	580,480.98	32° 4' 41.401 N	104° 4' 24.573 W
7,100.0	1.10	198.35	7,097.7	-45.7	-15.5	392,257.77	580,480.81	32° 4' 41.397 N	104° 4' 24.575 W
7,125.0	1.13	197.43	7,122.7	-46.2	-15.6	392,257.31	580,480.66	32° 4' 41.392 N	104° 4' 24.577 W
7,150.0	1.52	203.95	7,147.7	-46.7	-15.9	392,256.77	580,480.45	32° 4' 41.387 N	104° 4' 24.579 W
7,175.0	1.45	200.96	7,172.7	-47.3	-16.1	392,256.17	580,480.21	32° 4' 41.381 N	104° 4' 24.582 W
7,200.0	1.46	198.20	7,197.7	-47.9	-16.3	392,255.58	580,479.99	32° 4' 41.375 N	104° 4' 24.585 W



COG Operating LLC
Survey Report - Geographic

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Project: EDDY COUNTY, NM
Site: ATLAS
Well: SRO STATE COM #41H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well SRO STATE COM #41H
TVD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
MD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
7,225.0	1.33	201.28	7,222.7	-48.5	-16.5	392,255.00	580,479.79	32° 4' 41.370 N	104° 4' 24.587 W	
7,250.0	1.37	196.57	7,247.7	-49.1	-16.7	392,254.45	580,479.60	32° 4' 41.364 N	104° 4' 24.589 W	
7,275.0	1.36	197.87	7,272.7	-49.6	-16.9	392,253.88	580,479.42	32° 4' 41.358 N	104° 4' 24.591 W	
7,300.0	1.41	196.36	7,297.7	-50.2	-17.1	392,253.30	580,479.24	32° 4' 41.353 N	104° 4' 24.593 W	
7,325.0	1.65	199.08	7,322.7	-50.8	-17.3	392,252.67	580,479.04	32° 4' 41.346 N	104° 4' 24.596 W	
7,350.0	1.64	204.45	7,347.6	-51.5	-17.5	392,252.00	580,478.77	32° 4' 41.340 N	104° 4' 24.599 W	
7,375.0	1.54	209.64	7,372.6	-52.1	-17.8	392,251.38	580,478.46	32° 4' 41.334 N	104° 4' 24.603 W	
7,400.0	1.71	215.12	7,397.6	-52.7	-18.2	392,250.78	580,478.08	32° 4' 41.328 N	104° 4' 24.607 W	
7,425.0	1.76	225.37	7,422.6	-53.3	-18.7	392,250.21	580,477.59	32° 4' 41.322 N	104° 4' 24.613 W	
7,450.0	1.77	229.23	7,447.6	-53.8	-19.3	392,249.69	580,477.02	32° 4' 41.317 N	104° 4' 24.619 W	
7,475.0	1.81	238.44	7,472.6	-54.3	-19.9	392,249.23	580,476.40	32° 4' 41.313 N	104° 4' 24.627 W	
7,500.0	1.82	244.75	7,497.6	-54.6	-20.6	392,248.85	580,475.70	32° 4' 41.309 N	104° 4' 24.635 W	
7,512.0	1.95	246.31	7,509.6	-54.8	-21.0	392,248.69	580,475.34	32° 4' 41.307 N	104° 4' 24.639 W	
7,632.0	0.31	238.50	7,629.5	-55.8	-23.1	392,247.70	580,473.19	32° 4' 41.297 N	104° 4' 24.664 W	
7,664.0	1.54	178.92	7,661.5	-56.3	-23.2	392,247.22	580,473.13	32° 4' 41.293 N	104° 4' 24.665 W	
7,695.0	5.81	177.07	7,692.5	-58.3	-23.1	392,245.24	580,473.22	32° 4' 41.273 N	104° 4' 24.664 W	
7,726.0	10.25	175.68	7,723.2	-62.6	-22.8	392,240.92	580,473.51	32° 4' 41.230 N	104° 4' 24.661 W	
7,758.0	14.05	173.48	7,754.4	-69.3	-22.1	392,234.22	580,474.16	32° 4' 41.164 N	104° 4' 24.653 W	
7,789.0	18.63	172.85	7,784.2	-77.9	-21.1	392,225.56	580,475.21	32° 4' 41.078 N	104° 4' 24.641 W	
7,821.0	22.47	174.65	7,814.1	-89.1	-19.9	392,214.40	580,476.41	32° 4' 40.968 N	104° 4' 24.627 W	
7,852.0	24.77	177.47	7,842.5	-101.5	-19.1	392,202.01	580,477.25	32° 4' 40.845 N	104° 4' 24.618 W	
7,883.0	30.38	179.63	7,870.0	-115.8	-18.7	392,187.67	580,477.59	32° 4' 40.703 N	104° 4' 24.615 W	
7,914.0	35.14	179.22	7,896.1	-132.6	-18.5	392,170.90	580,477.76	32° 4' 40.537 N	104° 4' 24.613 W	
7,946.0	38.60	179.11	7,921.7	-151.8	-18.3	392,151.71	580,478.04	32° 4' 40.347 N	104° 4' 24.610 W	
7,977.0	42.85	178.90	7,945.2	-172.0	-17.9	392,131.49	580,478.39	32° 4' 40.147 N	104° 4' 24.607 W	
8,009.0	46.71	179.71	7,967.9	-194.5	-17.6	392,108.96	580,478.66	32° 4' 39.924 N	104° 4' 24.604 W	
8,040.0	50.64	180.28	7,988.3	-217.8	-17.6	392,085.68	580,478.66	32° 4' 39.694 N	104° 4' 24.605 W	
8,071.0	55.31	180.19	8,007.0	-242.6	-17.7	392,060.94	580,478.56	32° 4' 39.449 N	104° 4' 24.607 W	
8,103.0	59.62	178.65	8,024.2	-269.5	-17.5	392,033.97	580,478.84	32° 4' 39.182 N	104° 4' 24.604 W	
8,135.0	63.02	177.80	8,039.6	-297.6	-16.6	392,005.91	580,479.71	32° 4' 38.904 N	104° 4' 24.595 W	
8,166.0	64.48	178.10	8,053.3	-325.4	-15.6	391,978.13	580,480.71	32° 4' 38.629 N	104° 4' 24.584 W	
8,197.0	66.06	178.68	8,066.2	-353.5	-14.8	391,949.99	580,481.50	32° 4' 38.351 N	104° 4' 24.576 W	
8,229.0	68.27	178.67	8,078.6	-383.0	-14.1	391,920.50	580,482.18	32° 4' 38.059 N	104° 4' 24.569 W	
8,260.0	70.16	178.43	8,089.6	-412.0	-13.4	391,891.53	580,482.91	32° 4' 37.772 N	104° 4' 24.561 W	
8,291.0	72.19	178.74	8,099.7	-441.3	-12.7	391,862.20	580,483.64	32° 4' 37.482 N	104° 4' 24.553 W	
8,323.0	73.18	179.80	8,109.2	-471.8	-12.3	391,831.65	580,484.03	32° 4' 37.180 N	104° 4' 24.550 W	
8,354.0	73.94	179.96	8,117.9	-501.6	-12.2	391,801.92	580,484.09	32° 4' 36.886 N	104° 4' 24.550 W	
8,385.0	76.92	179.43	8,125.7	-531.6	-12.1	391,771.92	580,484.25	32° 4' 36.589 N	104° 4' 24.549 W	
8,417.0	80.65	178.72	8,132.0	-563.0	-11.5	391,740.54	580,484.76	32° 4' 36.278 N	104° 4' 24.544 W	
8,448.0	83.70	178.24	8,136.2	-593.7	-10.7	391,709.85	580,485.57	32° 4' 35.974 N	104° 4' 24.535 W	
8,480.0	85.86	177.22	8,139.1	-625.5	-9.5	391,678.01	580,486.83	32° 4' 35.659 N	104° 4' 24.521 W	
8,511.0	88.63	176.19	8,140.6	-656.4	-7.7	391,647.10	580,488.61	32° 4' 35.353 N	104° 4' 24.502 W	
8,542.0	90.98	175.55	8,140.7	-687.3	-5.5	391,616.18	580,490.85	32° 4' 35.047 N	104° 4' 24.476 W	
8,605.0	91.84	175.50	8,139.1	-750.1	-0.5	391,553.39	580,495.76	32° 4' 34.426 N	104° 4' 24.421 W	
8,637.0	91.96	175.57	8,138.1	-782.0	1.9	391,521.51	580,498.25	32° 4' 34.110 N	104° 4' 24.393 W	
8,730.0	89.19	176.39	8,137.2	-874.7	8.5	391,428.75	580,504.77	32° 4' 33.192 N	104° 4' 24.320 W	
8,825.0	90.84	176.94	8,137.1	-969.6	14.0	391,333.91	580,510.30	32° 4' 32.253 N	104° 4' 24.258 W	
8,919.0	89.66	176.35	8,136.7	-1,063.4	19.5	391,240.08	580,515.80	32° 4' 31.325 N	104° 4' 24.197 W	
9,013.0	90.98	176.70	8,136.2	-1,157.2	25.2	391,146.25	580,521.49	32° 4' 30.396 N	104° 4' 24.133 W	
9,107.0	92.80	176.46	8,133.1	-1,251.0	30.8	391,052.48	580,527.10	32° 4' 29.468 N	104° 4' 24.071 W	
9,201.0	91.59	176.73	8,129.5	-1,344.8	36.4	390,958.71	580,532.68	32° 4' 28.540 N	104° 4' 24.009 W	
9,295.0	92.66	176.72	8,126.0	-1,438.6	41.7	390,864.93	580,538.04	32° 4' 27.611 N	104° 4' 23.949 W	
9,389.0	91.09	177.64	8,122.9	-1,532.4	46.4	390,771.10	580,542.67	32° 4' 26.683 N	104° 4' 23.898 W	
9,483.0	89.21	178.07	8,122.7	-1,626.3	49.9	390,677.17	580,546.18	32° 4' 25.753 N	104° 4' 23.860 W	
9,578.0	90.00	178.11	8,123.3	-1,721.3	53.0	390,582.23	580,549.35	32° 4' 24.813 N	104° 4' 23.825 W	



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Local Co-ordinate Reference: Well SRO STATE COM #41H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,672.0	91.29	178.23	8,122.3	-1,815.2	56.0	390,488.28	580,552.35	32° 4' 23.883 N	104° 4' 23.793 W	
9,766.0	89.50	179.38	8,121.6	-1,909.2	58.0	390,394.31	580,554.31	32° 4' 22.953 N	104° 4' 23.773 W	
9,860.0	89.97	179.39	8,122.1	-2,003.2	59.0	390,300.32	580,555.32	32° 4' 22.023 N	104° 4' 23.764 W	
9,954.0	91.18	180.39	8,121.1	-2,097.2	59.2	390,206.33	580,555.50	32° 4' 21.093 N	104° 4' 23.764 W	
10,049.0	89.69	182.40	8,120.4	-2,192.1	56.9	390,111.36	580,553.19	32° 4' 20.153 N	104° 4' 23.794 W	
10,143.0	91.85	184.44	8,119.1	-2,285.9	51.3	390,017.55	580,547.58	32° 4' 19.225 N	104° 4' 23.862 W	
10,237.0	90.50	183.58	8,117.2	-2,379.7	44.7	389,923.80	580,541.01	32° 4' 18.297 N	104° 4' 23.941 W	
10,331.0	89.11	182.19	8,117.5	-2,473.6	40.0	389,829.93	580,536.28	32° 4' 17.368 N	104° 4' 23.998 W	
10,425.0	89.47	182.19	8,118.7	-2,567.5	36.4	389,736.00	580,532.69	32° 4' 16.439 N	104° 4' 24.043 W	
10,520.0	89.86	183.17	8,119.3	-2,662.4	31.9	389,641.11	580,528.25	32° 4' 15.500 N	104° 4' 24.097 W	
10,614.0	89.75	180.55	8,119.6	-2,756.3	28.9	389,547.17	580,525.19	32° 4' 14.570 N	104° 4' 24.135 W	
10,708.0	89.58	179.69	8,120.1	-2,850.3	28.7	389,453.17	580,525.00	32° 4' 13.640 N	104° 4' 24.140 W	
10,803.0	89.58	180.15	8,120.8	-2,945.3	28.8	389,358.17	580,525.13	32° 4' 12.700 N	104° 4' 24.141 W	
10,897.0	90.40	181.00	8,120.8	-3,039.3	27.9	389,264.18	580,524.19	32° 4' 11.770 N	104° 4' 24.155 W	
10,991.0	89.50	180.62	8,120.9	-3,133.3	26.6	389,170.19	580,522.86	32° 4' 10.840 N	104° 4' 24.173 W	
11,085.0	90.34	181.21	8,121.0	-3,227.3	25.1	389,076.20	580,521.36	32° 4' 9.910 N	104° 4' 24.193 W	
11,179.0	89.78	178.71	8,120.9	-3,321.3	25.1	388,982.21	580,521.42	32° 4' 8.979 N	104° 4' 24.195 W	
11,273.0	90.11	178.45	8,121.0	-3,415.3	27.4	388,888.24	580,523.75	32° 4' 8.049 N	104° 4' 24.170 W	
11,367.0	90.64	178.60	8,120.4	-3,509.2	29.9	388,794.28	580,526.17	32° 4' 7.119 N	104° 4' 24.145 W	
11,462.0	88.66	177.12	8,121.0	-3,604.1	33.4	388,699.35	580,529.72	32° 4' 6.180 N	104° 4' 24.106 W	
11,556.0	88.49	176.53	8,123.3	-3,698.0	38.6	388,605.52	580,534.92	32° 4' 5.251 N	104° 4' 24.048 W	
11,651.0	89.11	176.87	8,125.3	-3,792.8	44.1	388,510.70	580,540.39	32° 4' 4.313 N	104° 4' 23.988 W	
11,745.0	89.52	177.00	8,126.5	-3,886.7	49.1	388,416.84	580,545.42	32° 4' 3.384 N	104° 4' 23.932 W	
11,839.0	90.67	177.84	8,126.3	-3,980.6	53.3	388,322.94	580,549.65	32° 4' 2.454 N	104° 4' 23.885 W	
11,930.0	91.07	177.87	8,124.9	-4,071.5	56.8	388,232.02	580,553.05	32° 4' 1.554 N	104° 4' 23.848 W	
12,023.0	88.88	178.92	8,125.0	-4,164.4	59.4	388,139.06	580,555.66	32° 4' 0.634 N	104° 4' 23.821 W	
12,118.0	89.02	179.25	8,126.7	-4,259.4	60.9	388,044.09	580,557.17	32° 3' 59.694 N	104° 4' 23.806 W	
12,212.0	89.52	179.19	8,127.9	-4,353.4	62.2	387,950.11	580,558.45	32° 3' 58.764 N	104° 4' 23.793 W	
12,306.0	90.22	179.69	8,128.1	-4,447.4	63.1	387,856.11	580,559.37	32° 3' 57.834 N	104° 4' 23.785 W	
12,401.0	89.78	178.53	8,128.1	-4,542.4	64.5	387,761.12	580,560.85	32° 3' 56.894 N	104° 4' 23.771 W	
12,495.0	89.94	179.11	8,128.3	-4,636.4	66.5	387,667.14	580,562.78	32° 3' 55.964 N	104° 4' 23.751 W	
12,589.0	90.53	180.19	8,128.0	-4,730.3	67.1	387,573.15	580,563.36	32° 3' 55.034 N	104° 4' 23.747 W	
12,683.0	90.90	179.70	8,126.8	-4,824.3	67.1	387,479.16	580,563.45	32° 3' 54.103 N	104° 4' 23.748 W	
12,778.0	90.89	179.72	8,125.3	-4,919.3	67.6	387,384.17	580,563.93	32° 3' 53.163 N	104° 4' 23.746 W	
12,872.0	90.42	181.54	8,124.2	-5,013.3	66.6	387,290.19	580,562.90	32° 3' 52.233 N	104° 4' 23.760 W	
12,966.0	90.28	182.08	8,123.6	-5,107.3	63.6	387,196.24	580,559.93	32° 3' 51.303 N	104° 4' 23.797 W	
13,060.0	90.11	181.97	8,123.3	-5,201.2	60.3	387,102.29	580,556.61	32° 3' 50.374 N	104° 4' 23.839 W	
13,154.0	90.79	181.26	8,122.6	-5,295.2	57.7	387,008.34	580,553.96	32° 3' 49.444 N	104° 4' 23.872 W	
13,248.0	91.31	181.25	8,120.9	-5,389.1	55.6	386,914.37	580,551.90	32° 3' 48.514 N	104° 4' 23.899 W	
13,343.0	90.14	179.91	8,119.7	-5,484.1	54.6	386,819.39	580,550.94	32° 3' 47.574 N	104° 4' 23.912 W	
13,437.0	89.78	180.09	8,119.7	-5,578.1	54.6	386,725.39	580,550.94	32° 3' 46.644 N	104° 4' 23.915 W	
13,531.0	89.94	179.87	8,120.0	-5,672.1	54.7	386,631.39	580,550.97	32° 3' 45.714 N	104° 4' 23.917 W	
13,626.0	90.19	180.34	8,119.9	-5,767.1	54.5	386,536.39	580,550.80	32° 3' 44.774 N	104° 4' 23.922 W	
13,721.0	90.56	180.47	8,119.2	-5,862.1	53.8	386,441.40	580,550.12	32° 3' 43.833 N	104° 4' 23.932 W	
13,815.0	91.04	181.16	8,117.9	-5,956.1	52.5	386,347.42	580,548.79	32° 3' 42.903 N	104° 4' 23.951 W	
13,909.0	91.37	181.79	8,115.9	-6,050.0	50.1	386,253.47	580,546.37	32° 3' 41.974 N	104° 4' 23.981 W	
14,003.0	90.45	181.27	8,114.4	-6,144.0	47.6	386,159.52	580,543.86	32° 3' 41.044 N	104° 4' 24.013 W	
14,098.0	89.69	180.55	8,114.3	-6,239.0	46.0	386,064.53	580,542.35	32° 3' 40.104 N	104° 4' 24.033 W	
14,192.0	89.61	180.09	8,114.9	-6,333.0	45.5	385,970.53	580,541.82	32° 3' 39.174 N	104° 4' 24.042 W	
14,286.0	89.61	179.49	8,115.5	-6,427.0	45.9	385,876.54	580,542.17	32° 3' 38.243 N	104° 4' 24.041 W	
14,380.0	90.17	179.86	8,115.7	-6,521.0	46.4	385,782.54	580,542.70	32° 3' 37.313 N	104° 4' 24.037 W	
14,474.0	88.99	179.49	8,116.4	-6,615.0	46.9	385,688.54	580,543.24	32° 3' 36.383 N	104° 4' 24.034 W	
14,568.0	89.61	180.00	8,117.6	-6,708.9	47.4	385,594.55	580,543.65	32° 3' 35.453 N	104° 4' 24.031 W	
14,662.0	89.83	180.28	8,118.0	-6,802.9	47.1	385,500.55	580,543.42	32° 3' 34.522 N	104° 4' 24.037 W	
14,756.0	90.00	180.49	8,118.2	-6,896.9	46.5	385,406.56	580,542.79	32° 3' 33.592 N	104° 4' 24.047 W	



COG Operating LLC
Survey Report - Geographic

Company: NORTHERN DELAWARE BASIN
Project: EDDY COUNTY, NM
Site: ATLAS
Well: SRO STATE COM #41H
Wellbore: OWB
Design: ACTUAL WELLPATH

Local Co-ordinate Reference: Well SRO STATE COM #41H
TVD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
MD Reference: 2938.9+24 @ 2962.9usft (ENSIGN 156)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM_Users

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,851.0	90.03	179.43	8,118.1	-6,991.9	46.6	385,311.56	580,542.86	32° 3' 32.652 N	104° 4' 24.048 W
14,945.0	88.93	178.58	8,119.0	-7,085.9	48.2	385,217.58	580,544.49	32° 3' 31.722 N	104° 4' 24.032 W
15,039.0	89.19	178.25	8,120.5	-7,179.9	50.8	385,123.63	580,547.09	32° 3' 30.792 N	104° 4' 24.005 W
15,133.0	89.11	178.94	8,121.9	-7,273.8	53.1	385,029.67	580,549.40	32° 3' 29.862 N	104° 4' 23.980 W
15,227.0	88.63	179.51	8,123.8	-7,367.8	54.4	384,935.69	580,550.67	32° 3' 28.932 N	104° 4' 23.968 W
15,321.0	88.99	179.41	8,125.7	-7,461.8	55.2	384,841.72	580,551.55	32° 3' 28.002 N	104° 4' 23.961 W
15,415.0	89.36	178.69	8,127.1	-7,555.8	56.8	384,747.74	580,553.11	32° 3' 27.072 N	104° 4' 23.945 W
15,509.0	91.15	178.06	8,126.7	-7,649.7	59.5	384,653.78	580,555.78	32° 3' 26.142 N	104° 4' 23.917 W
15,604.0	91.99	178.23	8,124.1	-7,744.6	62.5	384,558.87	580,558.85	32° 3' 25.203 N	104° 4' 23.884 W
15,698.0	90.98	178.40	8,121.6	-7,838.6	65.3	384,464.94	580,561.61	32° 3' 24.273 N	104° 4' 23.854 W
15,792.0	91.26	178.59	8,119.8	-7,932.5	67.8	384,370.99	580,564.08	32° 3' 23.343 N	104° 4' 23.828 W
15,886.0	89.44	178.46	8,119.2	-8,026.5	70.2	384,277.03	580,566.50	32° 3' 22.413 N	104° 4' 23.803 W
15,980.0	90.09	178.23	8,119.6	-8,120.4	72.9	384,183.07	580,569.22	32° 3' 21.483 N	104° 4' 23.774 W
16,073.0	91.04	178.92	8,118.7	-8,213.4	75.2	384,090.11	580,571.53	32° 3' 20.563 N	104° 4' 23.749 W
16,167.0	92.21	178.77	8,116.0	-8,307.3	77.1	383,996.17	580,573.42	32° 3' 19.634 N	104° 4' 23.730 W
16,261.0	92.92	179.01	8,111.8	-8,401.2	78.9	383,902.28	580,575.24	32° 3' 18.704 N	104° 4' 23.712 W
16,355.0	91.99	178.48	8,107.8	-8,495.1	81.0	383,808.39	580,577.30	32° 3' 17.775 N	104° 4' 23.690 W
16,449.0	92.41	179.06	8,104.2	-8,589.0	83.0	383,714.48	580,579.32	32° 3' 16.846 N	104° 4' 23.670 W
16,543.0	92.13	178.52	8,100.5	-8,682.9	85.0	383,620.57	580,581.30	32° 3' 15.916 N	104° 4' 23.649 W
16,637.0	90.14	177.86	8,098.6	-8,776.9	88.0	383,526.65	580,584.27	32° 3' 14.987 N	104° 4' 23.617 W
16,731.0	89.58	177.67	8,098.8	-8,870.8	91.6	383,432.72	580,587.93	32° 3' 14.057 N	104° 4' 23.577 W
16,825.0	89.02	177.52	8,100.0	-8,964.7	95.6	383,338.81	580,591.88	32° 3' 13.128 N	104° 4' 23.534 W
16,919.0	89.89	178.19	8,100.9	-9,058.6	99.1	383,244.88	580,595.39	32° 3' 12.198 N	104° 4' 23.496 W
17,013.0	89.36	177.66	8,101.5	-9,152.6	102.5	383,150.94	580,598.80	32° 3' 11.268 N	104° 4' 23.459 W
17,107.0	89.55	177.49	8,102.4	-9,246.5	106.5	383,057.03	580,602.78	32° 3' 10.339 N	104° 4' 23.415 W
17,201.0	89.69	177.43	8,103.0	-9,340.4	110.6	382,963.13	580,606.94	32° 3' 9.409 N	104° 4' 23.370 W
17,295.0	90.50	177.27	8,102.8	-9,434.3	115.0	382,869.23	580,611.29	32° 3' 8.480 N	104° 4' 23.322 W
17,390.0	90.00	178.51	8,102.4	-9,529.2	118.5	382,774.30	580,614.78	32° 3' 7.540 N	104° 4' 23.284 W
17,483.0	88.88	177.87	8,103.3	-9,622.2	121.4	382,681.35	580,617.72	32° 3' 6.620 N	104° 4' 23.252 W
17,578.0	90.39	178.07	8,103.9	-9,717.1	124.8	382,586.41	580,621.09	32° 3' 5.681 N	104° 4' 23.216 W
17,672.0	91.29	179.01	8,102.6	-9,811.0	127.2	382,492.46	580,623.48	32° 3' 4.751 N	104° 4' 23.191 W
17,766.0	91.99	179.53	8,099.9	-9,905.0	128.4	382,398.50	580,624.68	32° 3' 3.821 N	104° 4' 23.179 W
17,858.0	92.47	179.10	8,096.3	-9,996.9	129.5	382,306.58	580,625.78	32° 3' 2.911 N	104° 4' 23.169 W
17,918.0	92.47	179.10	8,093.7	-10,056.9	130.4	382,246.64	580,626.72	32° 3' 2.318 N	104° 4' 23.160 W

Checked By: _____ Approved By: _____ Date: _____