

COG

EIDER 23 FEDERAL #602H

SCAN QUEST

11/27/2019

This survey is correct to the best of my knowledge and is supported by actual field data.

JAKE ELGER

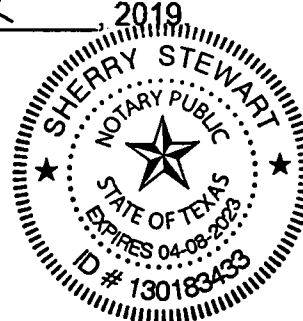
Notarized this date 06 of DECEMBER, 2019

Sherry Stewart

Notary Signature

County of Midland

State of Texas



Scientific Drilling

The

In Wellbore Placement

SURVEY REPORT

EIDER 23 FEDERAL #602H

KEEPER GYRO SURVEY

CUSTOMER
PROJECT
FIELD

COG
Eider 23 Federal #602H
Eider 23 Federal #602H

SDI JOB NO.
SDI DISTRICT
SDI KIT/UNIT

OP.022459
Midland

SITE INFORMATION

Site Name
Lat/Long
Northing
Easting

Eider 23 Federal #602H
32.2090613° N , 103.6428019° W
440,462 ft
713,576.2 ft

Section
Township
Range

MAP INFORMATION

North Reference
Grid Correction
System
Datum
Map Zone

Grid North
-0.37 deg
US State Plane 1927
North American Datum 1927 (Clarke 1866)
Texas Central: 4203

**WELL INFORMATION**

Lat/Long
Northing
Easting
UWI

32.2090613° N , 103.6428019° W
440,462 ft
713,576.2 ft
30-025-46379

DEPTH AND ELEVATION REFERENCE

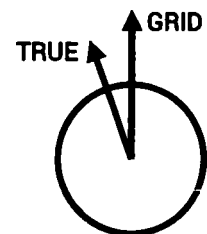
Ground Level
Reference Datum
Reference Height
Reference Elevation

3567.3 ft above Mean Sea
Level
KB
30 ft above G.L.
3597.3 ft

VERTICAL SECTION REFERENCE

+N/-S
+E/-W
Proposal Direction
Calculation Method

0 ft
0 ft
179.65°
Minimum Curvature

**LOCAL GRAVITY REFERENCE INFORMATION**

Local Gravity
True to Grid

998.483 mG [computed]
subtract 0.37°

WELL NOTES

Eider 23 Federal #602H Keeper Gyro Survey

OPERATORS

H Sanghott, L Barreto

SDI Operator Name (Printed)

SIGNATURE

DATE

SURVEY REPORT

EIDER 23 FEDERAL #602H

KEEPER GYRO SURVEY

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.63	69.76	100.00	-0.19	0.19	0.51	0.63	0.55	69.76
125.00	0.73	69.98	125.00	-0.29	0.29	0.79	0.40	0.84	69.80
150.00	0.87	74.51	149.99	-0.39	0.40	1.12	0.62	1.19	70.57
175.00	0.86	71.96	174.99	-0.49	0.50	1.48	0.16	1.57	71.22
200.00	0.85	63.14	199.99	-0.63	0.65	1.83	0.53	1.94	70.52
225.00	0.80	60.49	224.99	-0.80	0.82	2.14	0.22	2.29	69.17
250.00	0.82	60.36	249.98	-0.97	0.99	2.45	0.05	2.64	68.00
275.00	0.82	61.41	274.98	-1.15	1.16	2.76	0.07	3.00	67.16
300.00	0.79	59.48	299.98	-1.32	1.34	3.07	0.19	3.35	66.45
325.00	0.77	62.56	324.98	-1.48	1.50	3.37	0.18	3.68	65.95
350.00	0.80	61.22	349.97	-1.64	1.66	3.67	0.14	4.03	65.61
375.00	0.80	61.58	374.97	-1.81	1.83	3.97	0.03	4.37	65.27
400.00	0.77	62.52	399.97	-1.96	1.99	4.27	0.13	4.71	65.04
425.00	0.80	62.15	424.97	-2.12	2.15	4.58	0.14	5.06	64.86
450.00	0.79	62.23	449.96	-2.28	2.31	4.88	0.06	5.40	64.69
475.00	0.83	64.67	474.96	-2.44	2.47	5.20	0.22	5.75	64.61
500.00	0.74	61.98	499.96	-2.59	2.62	5.50	0.40	6.09	64.54
525.00	0.80	63.30	524.96	-2.74	2.77	5.80	0.26	6.43	64.45
550.00	0.84	62.94	549.95	-2.90	2.93	6.12	0.16	6.79	64.38
575.00	0.85	61.99	574.95	-3.07	3.10	6.44	0.08	7.15	64.28
600.00	0.87	60.09	599.95	-3.25	3.29	6.77	0.14	7.53	64.12
625.00	0.93	56.86	624.95	-3.45	3.49	7.11	0.31	7.92	63.83
650.00	1.05	52.73	649.94	-3.70	3.74	7.46	0.55	8.34	63.36
675.00	1.13	48.35	674.94	-4.00	4.04	7.83	0.48	8.81	62.67
700.00	1.18	45.97	699.93	-4.34	4.39	8.20	0.27	9.30	61.84
725.00	1.25	42.67	724.93	-4.71	4.77	8.57	0.38	9.80	60.90
750.00	1.28	42.90	749.92	-5.12	5.17	8.94	0.12	10.33	59.96
775.00	1.30	39.09	774.91	-5.54	5.59	9.31	0.35	10.86	58.99
800.00	1.39	39.18	799.91	-5.99	6.05	9.68	0.37	11.41	58.00
825.00	1.35	37.19	824.90	-6.46	6.52	10.05	0.23	11.97	57.03
850.00	1.36	35.11	849.89	-6.93	7.00	10.40	0.20	12.53	56.06

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
875.00	1.38	34.35	874.89	-7.42	7.49	10.74	0.11	13.09	55.11
900.00	1.33	34.76	899.88	-7.91	7.98	11.07	0.22	13.65	54.23
925.00	1.37	34.53	924.87	-8.39	8.46	11.41	0.18	14.20	53.44
950.00	1.32	29.53	949.87	-8.89	8.96	11.72	0.51	14.75	52.60
975.00	1.34	24.03	974.86	-9.40	9.48	11.98	0.52	15.28	51.65
1000.00	1.34	22.02	999.85	-9.94	10.02	12.21	0.19	15.79	50.64
1025.00	1.36	22.18	1024.84	-10.49	10.56	12.43	0.08	16.31	49.65
1050.00	1.36	22.53	1049.84	-11.03	11.11	12.66	0.04	16.84	48.72
1075.00	1.37	20.64	1074.83	-11.59	11.66	12.88	0.18	17.37	47.83
1100.00	1.37	23.59	1099.82	-12.14	12.22	13.10	0.28	17.91	47.00
1125.00	1.41	21.01	1124.82	-12.70	12.78	13.33	0.31	18.47	46.21
1150.00	1.38	23.02	1149.81	-13.26	13.34	13.56	0.24	19.02	45.46
1175.00	1.42	21.57	1174.80	-13.82	13.90	13.79	0.22	19.58	44.76
1200.00	1.44	23.05	1199.79	-14.40	14.48	14.03	0.17	20.16	44.09
1225.00	1.46	23.95	1224.79	-14.97	15.06	14.28	0.14	20.75	43.47
1250.00	1.52	18.16	1249.78	-15.58	15.67	14.51	0.65	21.36	42.80
1275.00	2.30	356.36	1274.76	-16.39	16.48	14.58	4.20	22.01	41.50
1300.00	2.50	351.89	1299.74	-17.43	17.52	14.47	1.09	22.73	39.56
1325.00	2.48	351.78	1324.72	-18.51	18.60	14.32	0.05	23.47	37.59
1350.00	2.49	350.51	1349.69	-19.58	19.67	14.15	0.22	24.23	35.74
1375.00	2.61	347.39	1374.67	-20.67	20.76	13.94	0.75	25.01	33.88
1400.00	2.60	344.75	1399.64	-21.78	21.86	13.67	0.48	25.78	32.01
1425.00	2.58	344.69	1424.62	-22.87	22.95	13.37	0.09	26.56	30.22
1450.00	2.61	344.32	1449.59	-23.96	24.04	13.07	0.17	27.36	28.52
1475.00	2.60	342.99	1474.57	-25.05	25.13	12.75	0.25	28.18	26.89
1500.00	2.67	337.76	1499.54	-26.14	26.21	12.36	1.00	28.98	25.25
1525.00	2.95	318.06	1524.51	-27.16	27.23	11.71	4.00	29.64	23.27
1550.00	3.19	310.47	1549.48	-28.09	28.16	10.75	1.88	30.14	20.90
1575.00	3.27	307.51	1574.44	-28.98	29.04	9.66	0.74	30.61	18.39
1600.00	3.10	306.97	1599.40	-29.83	29.88	8.55	0.70	31.08	15.97
1625.00	2.31	298.15	1624.37	-30.48	30.53	7.57	3.55	31.45	13.92
1650.00	1.70	284.14	1649.35	-30.81	30.86	6.76	3.10	31.59	12.36

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	CLOSURE DIST ft	CLOSURE DIR deg
1675.00	1.50	278.99	1674.34	-30.96	31.00	6.08	0.98	31.59	11.10
1700.00	1.45	277.46	1699.34	-31.06	31.09	5.44	0.27	31.56	9.93
1725.00	1.45	277.70	1724.33	-31.14	31.17	4.81	0.03	31.54	8.78
1750.00	1.43	276.68	1749.32	-31.23	31.25	4.19	0.13	31.53	7.64
1775.00	1.35	276.12	1774.31	-31.30	31.32	3.59	0.35	31.53	6.54
1800.00	1.36	275.67	1799.31	-31.36	31.38	3.00	0.09	31.52	5.46
1825.00	1.37	276.42	1824.30	-31.43	31.44	2.41	0.08	31.54	4.38
1850.00	1.35	274.51	1849.29	-31.49	31.50	1.82	0.19	31.55	3.30
1875.00	1.21	274.43	1874.29	-31.54	31.54	1.26	0.56	31.57	2.28
1900.00	0.49	255.72	1899.28	-31.53	31.54	0.89	3.06	31.55	1.62
1925.00	0.32	185.35	1924.28	-31.44	31.44	0.78	1.94	31.45	1.42
1950.00	0.44	144.95	1949.28	-31.29	31.30	0.83	1.16	31.31	1.52
1975.00	0.51	147.80	1974.28	-31.12	31.12	0.94	0.28	31.14	1.74
2000.00	0.43	150.27	1999.28	-30.94	30.95	1.05	0.32	30.96	1.94
2025.00	0.43	148.22	2024.28	-30.78	30.78	1.15	0.06	30.80	2.13
2050.00	0.43	150.55	2049.28	-30.61	30.62	1.24	0.07	30.65	2.32
2075.00	0.50	148.13	2074.28	-30.44	30.45	1.35	0.28	30.48	2.53
2100.00	0.45	144.53	2099.28	-30.26	30.27	1.46	0.21	30.31	2.76
2125.00	0.42	150.74	2124.28	-30.10	30.11	1.56	0.23	30.15	2.97
2150.00	0.44	140.08	2149.27	-29.95	29.96	1.67	0.33	30.01	3.19
2175.00	0.44	144.34	2174.27	-29.80	29.81	1.79	0.13	29.86	3.43
2200.00	0.47	142.28	2199.27	-29.64	29.65	1.90	0.15	29.71	3.68
2225.00	0.47	151.13	2224.27	-29.47	29.48	2.02	0.29	29.55	3.91
2250.00	0.56	149.12	2249.27	-29.27	29.29	2.13	0.36	29.36	4.16
2275.00	0.50	158.03	2274.27	-29.07	29.08	2.23	0.40	29.17	4.39
2300.00	0.46	161.05	2299.27	-28.87	28.88	2.31	0.18	28.97	4.56
2325.00	0.41	158.58	2324.27	-28.69	28.70	2.37	0.22	28.80	4.72
2350.00	0.46	151.68	2349.27	-28.51	28.53	2.45	0.28	28.64	4.91
2375.00	0.48	151.70	2374.27	-28.33	28.35	2.55	0.09	28.46	5.14
2400.00	0.53	153.41	2399.27	-28.14	28.15	2.65	0.19	28.28	5.38
2425.00	0.50	159.01	2424.27	-27.93	27.95	2.74	0.23	28.08	5.61
2450.00	0.42	158.22	2449.26	-27.74	27.76	2.82	0.31	27.90	5.79

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
2475.00	0.46	150.87	2474.26	-27.57	27.59	2.90	0.27	27.74	6.00
2500.00	0.50	153.57	2499.26	-27.38	27.40	3.00	0.17	27.57	6.24
2525.00	0.46	158.66	2524.26	-27.19	27.21	3.08	0.23	27.39	6.46
2550.00	0.22	121.96	2549.26	-27.08	27.09	3.16	1.25	27.28	6.65
2575.00	0.97	9.63	2574.26	-27.26	27.28	3.23	4.27	27.47	6.76
2600.00	1.23	5.71	2599.26	-27.73	27.75	3.29	1.09	27.95	6.77
2625.00	1.47	4.05	2624.25	-28.32	28.34	3.34	0.99	28.53	6.73
2650.00	2.17	358.69	2649.24	-29.11	29.13	3.35	2.89	29.33	6.57
2675.00	3.05	356.30	2674.21	-30.25	30.27	3.30	3.55	30.45	6.22
2700.00	3.44	355.16	2699.17	-31.66	31.68	3.19	1.57	31.84	5.76
2725.00	3.66	355.69	2724.12	-33.21	33.23	3.07	0.88	33.37	5.28
2750.00	4.79	359.29	2749.05	-35.05	35.07	3.00	4.64	35.19	4.89
2775.00	5.46	1.05	2773.95	-37.28	37.30	3.01	2.77	37.42	4.61
2800.00	5.69	1.96	2798.84	-39.71	39.73	3.07	0.97	39.84	4.42
2825.00	5.86	3.07	2823.71	-42.22	42.24	3.18	0.81	42.36	4.31
2850.00	5.83	3.29	2848.58	-44.76	44.78	3.32	0.14	44.90	4.24
2875.00	5.89	2.97	2873.45	-47.31	47.33	3.46	0.25	47.45	4.18
2900.00	5.84	2.30	2898.32	-49.86	49.88	3.58	0.32	50.01	4.11
2925.00	6.00	3.01	2923.18	-52.43	52.45	3.70	0.68	52.59	4.04
2950.00	6.00	3.67	2948.05	-55.04	55.06	3.85	0.28	55.20	4.00
2975.00	6.05	3.69	2972.91	-57.66	57.68	4.02	0.17	57.82	3.99
3000.00	6.09	3.70	2997.77	-60.29	60.32	4.19	0.17	60.46	3.97
3025.00	6.13	3.55	3022.63	-62.95	62.97	4.36	0.19	63.12	3.96
3050.00	6.16	4.34	3047.48	-65.61	65.64	4.54	0.35	65.80	3.96
3075.00	6.07	3.62	3072.34	-68.27	68.30	4.73	0.48	68.46	3.96
3100.00	6.11	4.19	3097.20	-70.91	70.94	4.91	0.29	71.11	3.96
3125.00	6.23	3.75	3122.06	-73.59	73.62	5.09	0.54	73.80	3.96
3150.00	6.25	3.74	3146.91	-76.30	76.33	5.27	0.05	76.52	3.95
3175.00	6.30	3.98	3171.76	-79.02	79.06	5.46	0.23	79.25	3.95
3200.00	6.21	3.94	3196.61	-81.74	81.77	5.64	0.34	81.97	3.95
3225.00	6.25	3.90	3221.46	-84.44	84.48	5.83	0.18	84.68	3.95
3250.00	6.19	3.92	3246.31	-87.15	87.19	6.01	0.26	87.39	3.95

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
3275.00	6.33	3.84	3271.16	-89.87	89.90	6.20	0.56	90.12	3.94
3300.00	6.29	3.61	3296.01	-92.61	92.65	6.38	0.18	92.87	3.94
3325.00	6.35	3.54	3320.86	-95.35	95.39	6.55	0.22	95.62	3.93
3350.00	6.21	2.15	3345.71	-98.08	98.13	6.68	0.82	98.35	3.90
3375.00	6.12	0.90	3370.57	-100.77	100.81	6.76	0.65	101.04	3.83
3400.00	6.07	0.10	3395.43	-103.42	103.46	6.78	0.39	103.69	3.75
3425.00	5.81	0.10	3420.29	-106.01	106.05	6.78	1.05	106.27	3.66
3450.00	5.70	359.96	3445.16	-108.52	108.56	6.79	0.46	108.77	3.58
3475.00	5.59	359.57	3470.04	-110.97	111.02	6.78	0.44	111.22	3.49
3500.00	5.51	359.43	3494.93	-113.39	113.44	6.75	0.35	113.64	3.41
3525.00	5.37	0.36	3519.81	-115.76	115.80	6.75	0.66	116.00	3.34
3550.00	5.34	0.47	3544.71	-118.09	118.14	6.77	0.10	118.33	3.28
3575.00	5.30	0.47	3569.60	-120.41	120.46	6.79	0.18	120.65	3.22
3600.00	5.22	359.96	3594.49	-122.70	122.75	6.79	0.37	122.93	3.17
3625.00	5.17	359.56	3619.39	-124.97	125.01	6.78	0.25	125.19	3.11
3650.00	5.04	358.74	3644.29	-127.19	127.23	6.75	0.60	127.41	3.04
3675.00	4.95	358.80	3669.20	-129.37	129.41	6.70	0.36	129.58	2.97
3700.00	4.85	358.01	3694.10	-131.50	131.54	6.65	0.47	131.71	2.89
3725.00	4.70	357.63	3719.02	-133.58	133.62	6.57	0.64	133.78	2.81
3750.00	4.47	355.04	3743.94	-135.57	135.61	6.44	1.23	135.77	2.72
3775.00	4.45	353.65	3768.86	-137.51	137.55	6.25	0.44	137.69	2.60
3800.00	4.39	352.07	3793.79	-139.42	139.46	6.01	0.54	139.59	2.47
3825.00	4.37	351.69	3818.71	-141.31	141.35	5.74	0.13	141.47	2.33
3850.00	4.34	351.96	3843.64	-143.19	143.23	5.47	0.17	143.33	2.19
3875.00	4.22	351.27	3868.57	-145.04	145.07	5.20	0.52	145.17	2.05
3900.00	4.20	348.70	3893.51	-146.85	146.88	4.88	0.76	146.96	1.90
3925.00	4.22	347.99	3918.44	-148.65	148.68	4.51	0.23	148.75	1.74
3950.00	4.23	345.65	3943.37	-150.44	150.47	4.09	0.69	150.53	1.56
3975.00	4.19	344.70	3968.30	-152.22	152.24	3.62	0.32	152.29	1.36
4000.00	4.22	341.98	3993.24	-153.98	154.00	3.09	0.81	154.03	1.15
4025.00	4.17	339.94	4018.17	-155.71	155.73	2.50	0.63	155.75	0.92
4050.00	4.17	339.60	4043.10	-157.42	157.43	1.87	0.10	157.45	0.68

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
4075.00	4.20	339.43	4068.04	-159.13	159.14	1.23	0.13	159.15	0.44
4100.00	4.17	339.32	4092.97	-160.84	160.85	0.59	0.10	160.85	0.21
4125.00	4.14	339.29	4117.90	-162.54	162.55	-0.05	0.12	162.55	359.98
4150.00	4.10	338.97	4142.84	-164.23	164.22	-0.69	0.18	164.23	359.76
4175.00	3.80	340.75	4167.78	-165.85	165.84	-1.29	1.30	165.85	359.56
4200.00	3.65	341.37	4192.73	-167.39	167.38	-1.81	0.64	167.39	359.38
4225.00	3.59	342.89	4217.68	-168.89	168.88	-2.30	0.45	168.90	359.22
4250.00	3.67	349.52	4242.63	-170.43	170.41	-2.67	1.71	170.44	359.10
4275.00	4.05	2.42	4267.57	-172.10	172.08	-2.78	3.77	172.11	359.07
4300.00	4.26	5.83	4292.50	-173.90	173.89	-2.65	1.31	173.91	359.13
4325.00	4.23	7.19	4317.44	-175.74	175.73	-2.44	0.42	175.75	359.20
4350.00	4.26	6.17	4342.37	-177.58	177.57	-2.23	0.33	177.58	359.28
4375.00	4.23	6.97	4367.30	-179.42	179.41	-2.01	0.28	179.42	359.36
4400.00	4.26	7.77	4392.23	-181.25	181.24	-1.78	0.26	181.25	359.44
4425.00	4.24	12.01	4417.16	-183.07	183.06	-1.46	1.26	183.07	359.54
4450.00	4.43	18.69	4442.09	-184.88	184.88	-0.96	2.17	184.88	359.70
4475.00	4.78	24.18	4467.01	-186.75	186.75	-0.22	2.24	186.75	359.93
4500.00	4.93	25.57	4491.92	-188.66	188.67	0.67	0.77	188.67	0.20
4525.00	5.15	26.21	4516.82	-190.63	190.64	1.63	0.91	190.65	0.49
4550.00	5.68	26.35	4541.71	-192.74	192.76	2.67	2.11	192.78	0.79
4575.00	5.79	25.87	4566.59	-194.97	195.00	3.77	0.50	195.04	1.11
4600.00	5.93	25.71	4591.46	-197.27	197.30	4.88	0.56	197.36	1.42
4625.00	6.45	26.26	4616.31	-199.68	199.72	6.06	2.08	199.81	1.74
4650.00	7.52	27.44	4641.12	-202.38	202.43	7.44	4.32	202.57	2.10
4675.00	7.71	26.93	4665.90	-205.32	205.38	8.95	0.79	205.57	2.50
4700.00	7.76	26.88	4690.68	-208.31	208.38	10.47	0.21	208.64	2.88
4725.00	7.73	26.82	4715.45	-211.31	211.38	12.00	0.10	211.72	3.25
4750.00	7.67	24.80	4740.22	-214.31	214.40	13.45	1.11	214.82	3.59
4775.00	7.58	24.24	4765.00	-217.32	217.42	14.83	0.46	217.92	3.90
4800.00	7.57	23.28	4789.78	-220.33	220.43	16.16	0.51	221.02	4.19
4825.00	7.36	23.22	4814.57	-223.31	223.42	17.44	0.86	224.10	4.46
4850.00	7.40	23.27	4839.36	-226.25	226.37	18.71	0.17	227.14	4.72

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
4875.00	7.30	21.31	4864.16	-229.20	229.33	19.92	1.08	230.19	4.96
4900.00	7.14	20.20	4888.96	-232.13	232.27	21.04	0.86	233.22	5.18
4925.00	6.98	18.10	4913.77	-235.03	235.17	22.04	1.22	236.20	5.36
4950.00	7.04	18.86	4938.58	-237.91	238.06	23.01	0.44	239.17	5.52
4975.00	7.06	18.15	4963.40	-240.82	240.97	23.98	0.36	242.16	5.68
5000.00	6.97	16.96	4988.21	-243.72	243.88	24.91	0.70	245.15	5.83
5025.00	6.97	16.42	5013.02	-246.62	246.79	25.78	0.27	248.13	5.96
5050.00	6.98	15.51	5037.84	-249.54	249.70	26.61	0.44	251.12	6.08
5075.00	7.01	15.09	5062.65	-252.47	252.64	27.41	0.23	254.12	6.19
5100.00	7.12	15.57	5087.46	-255.43	255.60	28.23	0.50	257.16	6.30
5125.00	7.11	14.70	5112.27	-258.41	258.59	29.04	0.43	260.22	6.41
5150.00	7.17	14.21	5137.08	-261.41	261.60	29.81	0.34	263.29	6.50
5175.00	7.39	13.63	5161.88	-264.48	264.67	30.57	0.92	266.43	6.59
5200.00	7.69	12.33	5186.66	-267.67	267.87	31.31	1.39	269.69	6.67
5225.00	7.95	12.04	5211.43	-271.00	271.20	32.03	1.05	273.08	6.74
5250.00	8.14	11.66	5236.18	-274.41	274.62	32.74	0.77	276.56	6.80
5275.00	8.10	11.84	5260.93	-277.87	278.07	33.46	0.19	280.08	6.86
5300.00	8.19	11.42	5285.68	-281.33	281.54	34.18	0.44	283.61	6.92
5325.00	8.30	10.90	5310.42	-284.84	285.06	34.87	0.54	287.18	6.97
5350.00	8.25	10.43	5335.16	-288.37	288.60	35.54	0.34	290.78	7.02
5375.00	8.17	10.65	5359.90	-291.88	292.11	36.19	0.33	294.34	7.06
5400.00	7.93	9.44	5384.66	-295.32	295.55	36.80	1.17	297.84	7.10
5425.00	7.86	8.74	5409.42	-298.71	298.94	37.34	0.49	301.27	7.12
5450.00	7.86	8.44	5434.19	-302.09	302.32	37.85	0.17	304.68	7.14
5475.00	7.74	7.50	5458.95	-305.44	305.68	38.32	0.70	308.08	7.15
5500.00	7.66	6.99	5483.73	-308.76	309.00	38.75	0.40	311.42	7.15
5525.00	7.61	6.56	5508.51	-312.06	312.30	39.14	0.32	314.75	7.14
5550.00	7.65	6.72	5533.29	-315.35	315.60	39.52	0.19	318.06	7.14
5575.00	7.58	6.26	5558.07	-318.64	318.89	39.90	0.37	321.38	7.13
5600.00	7.55	5.82	5582.85	-321.91	322.16	40.24	0.27	324.67	7.12
5625.00	7.49	5.48	5607.63	-325.16	325.42	40.57	0.30	327.94	7.11
5650.00	7.50	3.63	5632.42	-328.41	328.67	40.82	0.97	331.19	7.08

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
5675.00	7.28	0.99	5657.21	-331.62	331.88	40.96	1.61	334.40	7.03
5700.00	7.23	358.43	5682.01	-334.78	335.04	40.94	1.31	337.53	6.97
5725.00	7.13	357.28	5706.82	-337.90	338.16	40.82	0.69	340.61	6.88
5750.00	7.09	356.96	5731.62	-341.00	341.25	40.67	0.24	343.67	6.80
5775.00	6.94	356.12	5756.44	-344.05	344.30	40.48	0.72	346.67	6.71
5800.00	6.76	356.12	5781.26	-347.02	347.28	40.28	0.71	349.60	6.62
5825.00	6.64	356.21	5806.09	-349.94	350.19	40.09	0.49	352.47	6.53
5850.00	6.65	355.99	5830.92	-352.82	353.07	39.89	0.10	355.32	6.45
5875.00	6.63	356.44	5855.75	-355.71	355.96	39.70	0.22	358.16	6.36
5900.00	6.62	356.41	5880.58	-358.59	358.83	39.52	0.04	361.00	6.28
5925.00	6.49	356.22	5905.42	-361.43	361.68	39.34	0.54	363.81	6.21
5950.00	6.05	356.03	5930.27	-364.16	364.40	39.15	1.76	366.50	6.13
5975.00	4.92	354.90	5955.16	-366.54	366.78	38.96	4.52	368.85	6.06
6000.00	4.70	355.00	5980.07	-368.63	368.87	38.78	0.89	370.91	6.00
6025.00	4.73	354.65	6004.98	-370.68	370.92	38.59	0.18	372.92	5.94
6050.00	4.75	354.19	6029.90	-372.73	372.97	38.39	0.16	374.95	5.88
6075.00	4.71	355.10	6054.81	-374.79	375.03	38.20	0.33	376.97	5.82
6100.00	4.68	354.45	6079.73	-376.82	377.06	38.02	0.25	378.98	5.76
6125.00	4.24	354.57	6104.65	-378.76	379.00	37.83	1.73	380.88	5.70
6150.00	3.76	352.33	6129.59	-380.50	380.73	37.63	2.04	382.59	5.64
6175.00	3.69	352.58	6154.54	-382.11	382.34	37.42	0.30	384.17	5.59
6200.00	3.75	352.81	6179.49	-383.71	383.95	37.21	0.25	385.75	5.54
6225.00	3.68	353.23	6204.44	-385.32	385.56	37.02	0.29	387.33	5.48
6250.00	3.52	3.89	6229.39	-386.89	387.12	36.97	2.75	388.88	5.46
6275.00	3.63	4.38	6254.34	-388.44	388.67	37.09	0.44	390.44	5.45
6300.00	3.69	3.91	6279.29	-390.03	390.26	37.20	0.27	392.03	5.45
6325.00	3.42	5.47	6304.24	-391.57	391.81	37.33	1.15	393.58	5.44
6350.00	2.64	7.17	6329.20	-392.89	393.12	37.47	3.13	394.90	5.44
6375.00	2.39	5.99	6354.18	-393.97	394.21	37.60	1.04	396.00	5.45
6400.00	2.33	2.75	6379.16	-395.00	395.24	37.68	0.58	397.03	5.45
6425.00	2.10	2.63	6404.14	-395.96	396.20	37.72	0.92	397.99	5.44
6450.00	1.70	357.73	6429.13	-396.79	397.03	37.73	1.71	398.82	5.43

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
6475.00	1.39	351.97	6454.12	-397.46	397.70	37.67	1.40	399.48	5.41
6500.00	1.10	355.45	6479.11	-398.00	398.24	37.61	1.18	400.01	5.39
6525.00	0.40	114.23	6504.11	-398.21	398.44	37.67	5.37	400.22	5.40
6550.00	1.34	177.46	6529.11	-397.88	398.11	37.76	4.87	399.90	5.42
6575.00	1.48	173.98	6554.10	-397.26	397.50	37.81	0.65	399.29	5.43
6600.00	1.56	176.88	6579.09	-396.60	396.84	37.86	0.44	398.64	5.45
6625.00	1.53	177.92	6604.08	-395.93	396.17	37.89	0.18	397.97	5.46
6650.00	1.49	178.97	6629.07	-395.27	395.51	37.91	0.17	397.32	5.48
6675.00	1.51	176.07	6654.06	-394.61	394.85	37.94	0.31	396.67	5.49
6700.00	1.56	177.81	6679.05	-393.94	394.18	37.97	0.26	396.01	5.50
6725.00	1.57	179.24	6704.05	-393.26	393.50	37.99	0.16	395.33	5.51
6750.00	1.53	178.29	6729.04	-392.59	392.83	38.01	0.17	394.66	5.53
6775.00	1.51	177.16	6754.03	-391.92	392.16	38.03	0.14	394.00	5.54
6800.00	1.50	177.16	6779.02	-391.27	391.51	38.06	0.05	393.35	5.55
6825.00	1.58	177.60	6804.01	-390.59	390.83	38.09	0.33	392.69	5.57
6850.00	1.49	177.99	6829.00	-389.92	390.16	38.12	0.37	392.02	5.58
6875.00	1.52	177.30	6853.99	-389.27	389.51	38.15	0.12	391.37	5.59
6900.00	1.58	176.44	6878.98	-388.59	388.83	38.18	0.26	390.70	5.61
6925.00	1.55	178.80	6903.97	-387.91	388.15	38.21	0.28	390.03	5.62
6950.00	1.51	179.10	6928.96	-387.24	387.48	38.23	0.16	389.37	5.63
6975.00	1.50	177.20	6953.96	-386.59	386.83	38.25	0.21	388.72	5.65
7000.00	1.69	180.96	6978.95	-385.89	386.14	38.26	0.86	388.03	5.66
7025.00	1.74	183.81	7003.94	-385.15	385.39	38.22	0.41	387.28	5.66
7050.00	1.76	183.75	7028.92	-384.39	384.63	38.17	0.06	386.52	5.67
7075.00	1.75	182.04	7053.91	-383.62	383.86	38.14	0.21	385.75	5.67
7100.00	1.72	184.07	7078.90	-382.87	383.11	38.10	0.27	385.00	5.68
7125.00	1.74	186.25	7103.89	-382.12	382.36	38.03	0.28	384.25	5.68
7150.00	1.74	187.58	7128.88	-381.37	381.61	37.94	0.16	383.49	5.68
7175.00	1.74	189.84	7153.87	-380.62	380.86	37.82	0.27	382.73	5.67
7200.00	1.75	192.20	7178.85	-379.87	380.11	37.68	0.29	381.97	5.66
7225.00	1.85	192.80	7203.84	-379.11	379.34	37.51	0.38	381.19	5.65
7250.00	1.84	193.75	7228.83	-378.32	378.56	37.32	0.12	380.39	5.63

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
7275.00	1.82	193.87	7253.82	-377.55	377.78	37.13	0.10	379.60	5.61
7300.00	1.83	191.57	7278.80	-376.78	377.01	36.96	0.29	378.81	5.60
7325.00	1.92	190.37	7303.79	-375.97	376.21	36.80	0.39	378.00	5.59
7350.00	1.91	192.32	7328.78	-375.16	375.39	36.64	0.26	377.17	5.57
7375.00	1.87	194.68	7353.76	-374.36	374.59	36.44	0.34	376.36	5.56
7400.00	1.84	193.69	7378.75	-373.57	373.80	36.25	0.19	375.56	5.54
7425.00	1.88	192.25	7403.74	-372.78	373.01	36.06	0.25	374.75	5.52
7450.00	1.75	193.12	7428.72	-372.01	372.24	35.89	0.54	373.96	5.51
7475.00	1.80	192.04	7453.71	-371.26	371.48	35.72	0.25	373.19	5.49
7500.00	1.70	191.39	7478.70	-370.51	370.73	35.57	0.44	372.43	5.48
7525.00	1.62	191.50	7503.69	-369.80	370.02	35.42	0.32	371.72	5.47
7550.00	1.55	192.04	7528.68	-369.13	369.35	35.28	0.29	371.03	5.46
7575.00	1.54	194.58	7553.67	-368.47	368.69	35.13	0.28	370.36	5.44
7600.00	1.56	191.25	7578.66	-367.81	368.03	34.98	0.37	369.69	5.43
7625.00	1.62	190.45	7603.65	-367.13	367.35	34.85	0.24	369.00	5.42
7650.00	1.66	196.72	7628.64	-366.44	366.66	34.68	0.74	368.30	5.40
7675.00	1.73	204.67	7653.63	-365.75	365.97	34.42	0.98	367.58	5.37
7700.00	1.76	204.37	7678.62	-365.06	365.28	34.10	0.10	366.87	5.33
7725.00	1.76	202.61	7703.61	-364.36	364.57	33.79	0.22	366.14	5.30
7750.00	1.81	202.82	7728.60	-363.64	363.86	33.49	0.18	365.39	5.26
7775.00	1.78	205.60	7753.58	-362.93	363.14	33.17	0.36	364.65	5.22
7800.00	1.79	203.09	7778.57	-362.22	362.43	32.85	0.31	363.92	5.18
7825.00	1.75	202.50	7803.56	-361.52	361.72	32.55	0.17	363.18	5.14
7850.00	1.89	200.90	7828.55	-360.78	360.98	32.26	0.61	362.42	5.11
7875.00	1.81	204.52	7853.53	-360.04	360.24	31.95	0.57	361.65	5.07
7900.00	1.78	204.37	7878.52	-359.33	359.53	31.62	0.12	360.91	5.03
7925.00	1.76	203.95	7903.51	-358.62	358.82	31.31	0.09	360.18	4.99
7950.00	1.77	215.61	7928.50	-357.96	358.16	30.93	1.44	359.49	4.94
7975.00	1.87	220.20	7953.49	-357.34	357.53	30.44	0.72	358.82	4.87
8000.00	1.85	223.55	7978.47	-356.74	356.93	29.90	0.45	358.18	4.79
8025.00	1.81	223.46	8003.46	-356.16	356.35	29.35	0.16	357.55	4.71
8050.00	1.90	221.44	8028.45	-355.57	355.75	28.80	0.46	356.92	4.63

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
8075.00	1.91	222.21	8053.43	-354.95	355.13	28.25	0.11	356.25	4.55
8100.00	1.84	224.43	8078.42	-354.36	354.54	27.69	0.40	355.62	4.47
8125.00	1.59	231.41	8103.41	-353.86	354.04	27.14	1.30	355.07	4.38
8150.00	1.46	247.06	8128.40	-353.53	353.70	26.57	1.74	354.69	4.30
8175.00	1.43	251.18	8153.39	-353.31	353.47	25.99	0.43	354.42	4.20
8200.00	1.40	252.28	8178.38	-353.11	353.28	25.40	0.16	354.19	4.11
8225.00	1.34	251.35	8203.38	-352.93	353.09	24.83	0.26	353.96	4.02
8250.00	1.39	248.79	8228.37	-352.73	352.89	24.27	0.30	353.72	3.93
8275.00	1.42	251.31	8253.36	-352.53	352.68	23.70	0.27	353.47	3.84
8300.00	1.32	249.45	8278.36	-352.33	352.48	23.13	0.43	353.24	3.76
8325.00	1.35	248.48	8303.35	-352.12	352.27	22.59	0.16	352.99	3.67
8350.00	1.35	247.36	8328.34	-351.91	352.05	22.04	0.11	352.74	3.58
8375.00	1.34	248.43	8353.33	-351.69	351.83	21.50	0.12	352.48	3.50
8400.00	1.30	246.81	8378.33	-351.47	351.61	20.97	0.20	352.23	3.41
8425.00	1.30	247.23	8403.32	-351.25	351.39	20.45	0.04	351.98	3.33
8450.00	1.29	245.90	8428.31	-351.03	351.16	19.93	0.13	351.73	3.25
8475.00	1.32	247.12	8453.31	-350.81	350.93	19.41	0.18	351.47	3.17
8500.00	1.24	259.63	8478.30	-350.65	350.77	18.88	1.17	351.28	3.08
8525.00	1.16	268.73	8503.30	-350.60	350.72	18.36	0.82	351.20	3.00
8550.00	1.13	270.85	8528.29	-350.60	350.72	17.86	0.20	351.17	2.91
8575.00	1.21	271.14	8553.29	-350.61	350.73	17.35	0.31	351.16	2.83
8600.00	1.20	271.29	8578.28	-350.63	350.74	16.82	0.03	351.14	2.75
8625.00	1.14	271.61	8603.28	-350.65	350.75	16.31	0.26	351.13	2.66
8650.00	1.11	269.19	8628.27	-350.65	350.75	15.82	0.23	351.11	2.58
8675.00	1.18	271.14	8653.27	-350.66	350.76	15.32	0.32	351.09	2.50
8700.00	1.18	272.76	8678.26	-350.68	350.77	14.80	0.14	351.09	2.42
8725.00	1.12	271.09	8703.26	-350.70	350.79	14.30	0.28	351.08	2.33
8750.00	1.18	269.14	8728.25	-350.70	350.79	13.80	0.27	351.06	2.25
8775.00	1.18	277.84	8753.25	-350.74	350.82	13.29	0.72	351.07	2.17
8800.00	1.26	301.16	8778.24	-350.92	351.00	12.80	1.99	351.23	2.09
8825.00	1.20	303.79	8803.23	-351.21	351.29	12.35	0.33	351.50	2.01
8850.00	1.20	299.77	8828.23	-351.48	351.56	11.90	0.34	351.76	1.94

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
8875.00	1.23	299.83	8853.22	-351.75	351.83	11.44	0.12	352.01	1.86
8900.00	1.25	302.55	8878.22	-352.03	352.11	10.98	0.25	352.28	1.79
8925.00	1.26	301.95	8903.21	-352.33	352.40	10.51	0.07	352.56	1.71
8950.00	1.20	299.15	8928.21	-352.61	352.67	10.05	0.36	352.82	1.63
8975.00	1.33	301.51	8953.20	-352.89	352.95	9.58	0.56	353.08	1.55
9000.00	1.32	302.18	8978.19	-353.19	353.26	9.09	0.08	353.37	1.47
9025.00	1.24	301.55	9003.19	-353.49	353.55	8.61	0.31	353.66	1.40
9050.00	1.25	299.38	9028.18	-353.77	353.83	8.15	0.19	353.92	1.32
9075.00	1.28	298.91	9053.17	-354.04	354.09	7.66	0.12	354.18	1.24
9100.00	1.29	302.68	9078.17	-354.33	354.38	7.18	0.34	354.45	1.16
9125.00	1.25	302.48	9103.16	-354.63	354.68	6.72	0.18	354.74	1.08
9150.00	1.29	300.93	9128.16	-354.93	354.97	6.25	0.22	355.02	1.01
9175.00	1.30	299.45	9153.15	-355.21	355.25	5.76	0.15	355.30	0.93
9200.00	1.28	302.36	9178.14	-355.50	355.54	5.27	0.28	355.58	0.85
9225.00	1.28	300.53	9203.14	-355.80	355.84	4.80	0.16	355.87	0.77
9250.00	1.36	299.87	9228.13	-356.09	356.13	4.30	0.33	356.15	0.69
9275.00	1.45	319.60	9253.12	-356.48	356.51	3.83	1.96	356.54	0.62
9300.00	1.53	330.50	9278.11	-357.02	357.05	3.46	1.17	357.06	0.56
9325.00	1.52	327.71	9303.11	-357.59	357.62	3.12	0.30	357.63	0.50
9350.00	1.63	326.88	9328.10	-358.17	358.20	2.75	0.44	358.21	0.44
9375.00	1.59	326.99	9353.09	-358.76	358.78	2.37	0.13	358.79	0.38
9400.00	1.60	326.27	9378.08	-359.35	359.37	1.99	0.08	359.37	0.32
9425.00	1.68	323.51	9403.07	-359.93	359.95	1.57	0.47	359.95	0.25
9450.00	1.76	320.79	9428.06	-360.53	360.54	1.11	0.46	360.55	0.18
9475.00	1.87	316.97	9453.04	-361.13	361.14	0.59	0.63	361.14	0.09
9500.00	1.97	315.70	9478.03	-361.74	361.74	0.01	0.43	361.74	0.00
9525.00	1.93	317.57	9503.01	-362.36	362.36	-0.57	0.29	362.36	359.91
9550.00	1.93	317.20	9528.00	-362.98	362.98	-1.14	0.05	362.98	359.82
9575.00	1.98	316.74	9552.99	-363.61	363.60	-1.72	0.21	363.61	359.73
9600.00	1.84	314.97	9577.97	-364.21	364.20	-2.30	0.61	364.21	359.64
9625.00	1.74	313.62	9602.96	-364.76	364.75	-2.86	0.43	364.76	359.55
9650.00	1.82	311.95	9627.95	-365.29	365.28	-3.43	0.38	365.29	359.46

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
9675.00	1.71	307.70	9652.94	-365.79	365.77	-4.02	0.69	365.79	359.37
9700.00	1.62	305.80	9677.92	-366.23	366.20	-4.60	0.42	366.23	359.28
9725.00	1.51	300.22	9702.92	-366.60	366.58	-5.17	0.76	366.61	359.19
9750.00	1.44	293.10	9727.91	-366.89	366.86	-5.74	0.78	366.91	359.10
9775.00	1.32	289.58	9752.90	-367.12	367.08	-6.30	0.59	367.14	359.02
9800.00	1.28	285.53	9777.89	-367.29	367.25	-6.84	0.40	367.32	358.93
9825.00	1.19	282.13	9802.89	-367.42	367.38	-7.37	0.47	367.46	358.85
9850.00	0.90	259.00	9827.88	-367.44	367.40	-7.81	2.03	367.48	358.78
9875.00	0.86	244.94	9852.88	-367.33	367.28	-8.18	0.87	367.38	358.72
9900.00	0.91	237.87	9877.88	-367.14	367.10	-8.51	0.48	367.20	358.67
9925.00	0.83	232.94	9902.87	-366.93	366.88	-8.83	0.44	366.99	358.62
9950.00	0.88	232.40	9927.87	-366.71	366.66	-9.12	0.22	366.77	358.57
9975.00	0.90	236.01	9952.87	-366.48	366.43	-9.44	0.24	366.55	358.52
10000.00	0.79	235.14	9977.87	-366.27	366.22	-9.75	0.46	366.35	358.48
10025.00	0.57	213.99	10002.86	-366.07	366.02	-9.96	1.32	366.15	358.44
10050.00	0.46	209.87	10027.86	-365.88	365.83	-10.08	0.48	365.97	358.42
10075.00	0.40	208.77	10052.86	-365.72	365.67	-10.17	0.22	365.81	358.41
10100.00	0.41	208.36	10077.86	-365.57	365.51	-10.25	0.03	365.65	358.39
10125.00	0.43	212.98	10102.86	-365.41	365.35	-10.35	0.16	365.50	358.38
10150.00	0.51	208.31	10127.86	-365.23	365.18	-10.45	0.36	365.33	358.36
10175.00	0.48	218.98	10152.86	-365.05	365.00	-10.57	0.39	365.15	358.34
10200.00	0.40	216.93	10177.86	-364.90	364.84	-10.69	0.31	365.00	358.32
10225.00	0.28	212.94	10202.86	-364.78	364.72	-10.77	0.48	364.88	358.31
10250.00	0.29	221.10	10227.86	-364.68	364.62	-10.85	0.16	364.78	358.30
10275.00	0.32	220.14	10252.86	-364.58	364.52	-10.93	0.11	364.69	358.28
10300.00	0.23	210.18	10277.86	-364.49	364.43	-11.00	0.41	364.59	358.27
10325.00	0.24	95.14	10302.86	-364.44	364.38	-10.98	1.55	364.55	358.27
10350.00	0.44	78.01	10327.86	-364.46	364.40	-10.83	0.92	364.56	358.30
10375.00	0.42	86.79	10352.86	-364.48	364.42	-10.64	0.28	364.58	358.33
10400.00	0.90	107.43	10377.85	-364.42	364.37	-10.36	2.10	364.52	358.37
10425.00	1.28	114.13	10402.85	-364.25	364.19	-9.92	1.61	364.33	358.44
10450.00	1.45	116.97	10427.84	-363.99	363.94	-9.38	0.72	364.06	358.52

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	%/100ft	ft	deg
10475.00	1.48	115.30	10452.83	-363.70	363.66	-8.81	0.21	363.76	358.61
10500.00	1.48	116.75	10477.83	-363.42	363.37	-8.23	0.15	363.47	358.70
10525.00	1.50	114.60	10502.82	-363.13	363.09	-7.65	0.24	363.17	358.79
10550.00	1.54	117.94	10527.81	-362.83	362.80	-7.05	0.39	362.87	358.89
10575.00	1.61	114.41	10552.80	-362.53	362.49	-6.43	0.49	362.55	358.98
10600.00	1.62	113.32	10577.79	-362.24	362.21	-5.79	0.12	362.26	359.08
10625.00	1.70	106.50	10602.78	-361.99	361.96	-5.11	0.85	362.00	359.19
10650.00	1.72	105.00	10627.77	-361.78	361.76	-4.39	0.21	361.79	359.30
10675.00	1.76	101.78	10652.76	-361.60	361.59	-3.65	0.41	361.61	359.42
10700.00	1.77	103.62	10677.74	-361.43	361.42	-2.90	0.24	361.43	359.54
10725.00	1.86	103.32	10702.73	-361.24	361.23	-2.13	0.33	361.24	359.66
10750.00	1.87	102.99	10727.72	-361.05	361.05	-1.34	0.09	361.05	359.79
10775.00	1.74	105.47	10752.71	-360.85	360.85	-0.58	0.63	360.86	359.91
10800.00	1.68	107.46	10777.70	-360.64	360.64	0.14	0.34	360.64	0.02
10825.00	1.49	111.07	10802.69	-360.41	360.42	0.79	0.83	360.42	0.13
10850.00	1.32	114.03	10827.68	-360.17	360.18	1.36	0.74	360.18	0.22
10875.00	1.25	115.79	10852.67	-359.93	359.95	1.87	0.34	359.95	0.30
10900.00	1.11	115.31	10877.67	-359.70	359.72	2.33	0.57	359.73	0.37
10925.00	1.08	118.62	10902.66	-359.48	359.51	2.76	0.27	359.52	0.44
10950.00	0.97	116.00	10927.66	-359.28	359.30	3.15	0.47	359.32	0.50
10975.00	0.93	117.86	10952.65	-359.09	359.11	3.52	0.21	359.13	0.56
11000.00	0.88	120.61	10977.65	-358.89	358.92	3.87	0.26	358.94	0.62
11025.00	0.90	121.30	11002.65	-358.69	358.72	4.20	0.10	358.75	0.67
11050.00	0.74	136.72	11027.65	-358.47	358.50	4.48	1.10	358.53	0.72
11075.00	0.65	148.60	11052.64	-358.23	358.26	4.67	0.67	358.29	0.75
11100.00	0.68	155.81	11077.64	-357.97	358.01	4.80	0.35	358.04	0.77
11125.00	0.64	165.26	11102.64	-357.70	357.74	4.90	0.46	357.77	0.78
11150.00	0.61	168.22	11127.64	-357.44	357.47	4.96	0.16	357.51	0.79
11175.00	0.45	178.57	11152.64	-357.21	357.24	4.99	0.74	357.28	0.80
11200.00	0.37	195.98	11177.64	-357.03	357.07	4.97	0.59	357.10	0.80
11225.00	0.38	212.84	11202.64	-356.88	356.92	4.90	0.44	356.95	0.79
11250.00	0.43	221.95	11227.64	-356.74	356.78	4.79	0.33	356.81	0.77

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft	deg
11275.00	0.41	215.36	11252.64	-356.60	356.64	4.68	0.21	356.67	0.75
11300.00	0.44	226.39	11277.64	-356.46	356.50	4.56	0.35	356.53	0.73
11325.00	0.46	207.98	11302.63	-356.31	356.34	4.44	0.58	356.37	0.71
11350.00	0.67	236.04	11327.63	-356.14	356.17	4.27	1.37	356.20	0.69
11375.00	0.47	219.54	11352.63	-355.98	356.01	4.09	1.02	356.03	0.66
11400.00	0.47	219.80	11377.63	-355.82	355.85	3.95	0.01	355.87	0.64
11425.00	0.47	219.64	11402.63	-355.66	355.69	3.82	0.01	355.71	0.62
11430.00	0.47	219.76	11407.63	-355.63	355.66	3.80	0.04	355.68	0.61



PHOENIX
TECHNOLOGY SERVICES

COG Operating LLC

**Lea County, NM (NAD27 NME)
Eider 23 Federal
602H**

OH / 65573

Design: Surveys (Scandrill Quest)

Standard Survey Report

13 December, 2019





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3597.30usft (Scandrill Quest)
Site:	Eider 23 Federal	MD Reference:	RKB @ 3597.30usft (Scandrill Quest)
Well:	602H	North Reference:	Grid
Wellbore:	OH / 65573	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Scandrill Quest)	Database:	USA Compass

Project	Lea 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	Eider 23 Federal				
Site Position:		Northing:	440,462.00 usft	Latitude:	32° 12' 32.620628 N
From:	Map	Easting:	713,576.20 usft	Longitude:	103° 38' 34.086957 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.37 °

Well	602H					
Well Position	+N/-S	0.00 usft	Northing:	440,462.00 usft	Latitude:	32° 12' 32.620628 N
	+E/-W	0.00 usft	Easting:	713,576.20 usft	Longitude:	103° 38' 34.086957 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,567.30 usft	

Wellbore	OH / 65573				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	11/19/2019	6.60	59.82	47,837.10000000

Design	Surveys (Scandrill Quest)				
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	179.65	

Survey Program	Date	12/13/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	11,430.00	Scientific Gyro Surveys (OH / 65573)	Scientific Keeper	Scientific Drilling Intl. Standard Wireline Keeper
11,444.00	19,902.00	Phoenix MWD Surveys (OH / 65573)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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	0.63	69.76	100.00	0.19	0.52	-0.19	0.63	0.63	0.00
125.00	0.73	69.98	125.00	0.29	0.79	-0.29	0.40	0.40	0.88
150.00	0.87	74.51	149.99	0.40	1.13	-0.39	0.61	0.56	18.12
175.00	0.86	71.96	174.99	0.51	1.49	-0.50	0.16	-0.04	-10.20
200.00	0.85	63.14	199.99	0.65	1.83	-0.64	0.53	-0.04	-35.28
225.00	0.80	60.49	224.99	0.82	2.15	-0.80	0.25	-0.20	-10.60
250.00	0.82	60.36	249.98	0.99	2.46	-0.98	0.08	0.08	-0.52
275.00	0.82	61.41	274.98	1.17	2.77	-1.15	0.06	0.00	4.20
300.00	0.79	59.48	299.98	1.34	3.07	-1.32	0.16	-0.12	-7.72



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
325.00	0.77	62.56	324.98	1.50	3.37	-1.48	0.19	-0.08	12.32
350.00	0.80	61.22	349.97	1.67	3.67	-1.64	0.14	0.12	-5.36
375.00	0.80	61.58	374.97	1.83	3.98	-1.81	0.02	0.00	1.44
400.00	0.77	62.52	399.97	1.99	4.28	-1.97	0.13	-0.12	3.76
425.00	0.80	62.15	424.97	2.15	4.59	-2.12	0.12	0.12	-1.48
450.00	0.79	62.23	449.96	2.31	4.89	-2.28	0.04	-0.04	0.32
475.00	0.83	64.67	474.96	2.47	5.21	-2.44	0.21	0.16	9.76
500.00	0.74	61.98	499.96	2.63	5.52	-2.59	0.39	-0.36	-10.76
525.00	0.80	63.30	524.96	2.78	5.81	-2.74	0.25	0.24	5.28
550.00	0.84	62.94	549.95	2.94	6.13	-2.90	0.16	0.16	-1.44
575.00	0.85	61.99	574.95	3.11	6.46	-3.07	0.07	0.04	-3.80
600.00	0.87	60.09	599.95	3.29	6.79	-3.25	0.14	0.08	-7.60
625.00	0.93	56.86	624.95	3.50	7.12	-3.46	0.31	0.24	-12.92
650.00	1.05	52.73	649.94	3.75	7.48	-3.70	0.56	0.48	-16.52
675.00	1.13	48.35	674.94	4.05	7.84	-4.00	0.46	0.32	-17.52
700.00	1.18	45.97	699.93	4.39	8.21	-4.34	0.28	0.20	-9.52
725.00	1.25	42.67	724.93	4.77	8.58	-4.72	0.40	0.28	-13.20
750.00	1.28	42.90	749.92	5.18	8.96	-5.12	0.12	0.12	0.92
775.00	1.30	39.09	774.91	5.60	9.32	-5.55	0.35	0.08	-15.24
800.00	1.39	39.18	799.91	6.06	9.70	-6.00	0.36	0.36	0.36
825.00	1.35	37.19	824.90	6.53	10.06	-6.47	0.25	-0.16	-7.96
850.00	1.36	35.11	849.89	7.01	10.41	-6.94	0.20	0.04	-8.32
875.00	1.38	34.35	874.89	7.50	10.75	-7.43	0.11	0.08	-3.04
900.00	1.33	34.76	899.88	7.98	11.09	-7.92	0.20	-0.20	1.64
925.00	1.37	34.53	924.87	8.47	11.42	-8.40	0.16	0.16	-0.92
950.00	1.32	29.53	949.87	8.96	11.74	-8.89	0.51	-0.20	-20.00
975.00	1.34	24.03	974.86	9.48	12.00	-9.41	0.52	0.08	-22.00
1,000.00	1.34	22.02	999.85	10.02	12.22	-9.95	0.19	0.00	-8.04
1,025.00	1.36	22.18	1,024.84	10.57	12.45	-10.49	0.08	0.08	0.64
1,050.00	1.36	22.53	1,049.84	11.11	12.67	-11.04	0.03	0.00	1.40
1,075.00	1.37	20.64	1,074.83	11.67	12.89	-11.59	0.18	0.04	-7.56
1,100.00	1.37	23.59	1,099.82	12.22	13.12	-12.14	0.28	0.00	11.80
1,125.00	1.41	21.01	1,124.82	12.78	13.35	-12.70	0.30	0.16	-10.32
1,150.00	1.38	23.02	1,149.81	13.35	13.57	-13.26	0.23	-0.12	8.04
1,175.00	1.42	21.57	1,174.80	13.91	13.81	-13.83	0.21	0.16	-5.80
1,200.00	1.44	23.05	1,199.79	14.49	14.04	-14.40	0.17	0.08	5.92
1,225.00	1.46	23.95	1,224.79	15.07	14.29	-14.98	0.12	0.08	3.60
1,250.00	1.52	18.16	1,249.78	15.68	14.53	-15.59	0.65	0.24	-23.16
1,275.00	2.30	356.36	1,274.76	16.49	14.60	-16.40	4.21	3.12	-87.20
1,300.00	2.50	351.89	1,299.74	17.53	14.49	-17.44	1.10	0.80	-17.88
1,325.00	2.48	351.78	1,324.72	18.61	14.34	-18.52	0.08	-0.08	-0.44
1,350.00	2.49	350.51	1,349.69	19.68	14.17	-19.59	0.22	0.04	-5.08
1,375.00	2.61	347.39	1,374.67	20.77	13.96	-20.68	0.73	0.48	-12.48

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3597.30usft (Scandril Quest)
Site:	Eider 23 Federal	MD Reference:	RKB @ 3597.30usft (Scandril Quest)
Well:	602H	North Reference:	Grid
Wellbore:	OH / 65573	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Scandril Quest)	Database:	USA Compass

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)
1,400.00	2.60	344.75	1,399.64	21.87	13.68	-21.79	0.48	-0.04	-10.56
1,425.00	2.58	344.69	1,424.62	22.96	13.38	-22.88	0.08	-0.08	-0.24
1,450.00	2.61	344.32	1,449.59	24.05	13.08	-23.97	0.14	0.12	-1.48
1,475.00	2.60	342.99	1,474.57	25.14	12.76	-25.06	0.25	-0.04	-5.32
1,500.00	2.67	337.76	1,499.54	26.22	12.38	-26.15	1.00	0.28	-20.92
1,525.00	2.95	318.06	1,524.51	27.24	11.73	-27.17	4.00	1.12	-78.80
1,550.00	3.19	310.47	1,549.47	28.17	10.77	-28.11	1.89	0.96	-30.36
1,575.00	3.27	307.51	1,574.44	29.06	9.67	-29.00	0.74	0.32	-11.84
1,600.00	3.10	306.97	1,599.40	29.90	8.57	-29.84	0.69	-0.68	-2.16
1,625.00	2.31	298.15	1,624.37	30.54	7.58	-30.49	3.56	-3.16	-35.28
1,650.00	1.70	284.14	1,649.35	30.87	6.78	-30.83	3.11	-2.44	-56.04
1,675.00	1.50	278.99	1,674.34	31.01	6.09	-30.97	0.98	-0.80	-20.60
1,700.00	1.45	277.46	1,699.34	31.10	5.46	-31.07	0.25	-0.20	-6.12
1,725.00	1.45	277.70	1,724.33	31.19	4.83	-31.16	0.02	0.00	0.96
1,750.00	1.43	276.68	1,749.32	31.27	4.21	-31.24	0.13	-0.08	-4.08
1,775.00	1.35	276.12	1,774.31	31.33	3.60	-31.31	0.32	-0.32	-2.24
1,800.00	1.36	275.67	1,799.31	31.39	3.02	-31.38	0.06	0.04	-1.80
1,825.00	1.37	276.42	1,824.30	31.46	2.42	-31.44	0.08	0.04	3.00
1,850.00	1.35	274.51	1,849.29	31.51	1.83	-31.50	0.20	-0.08	-7.64
1,875.00	1.21	274.43	1,874.28	31.56	1.28	-31.55	0.56	-0.56	-0.32
1,900.00	0.49	255.72	1,899.28	31.55	0.91	-31.55	3.05	-2.88	-74.84
1,925.00	0.32	185.35	1,924.28	31.46	0.80	-31.45	1.95	-0.68	-281.48
1,950.00	0.44	144.95	1,949.28	31.31	0.85	-31.30	1.14	0.48	-161.60
1,975.00	0.51	147.80	1,974.28	31.13	0.96	-31.13	0.30	0.28	11.40
2,000.00	0.43	150.27	1,999.28	30.96	1.07	-30.95	0.33	-0.32	9.88
2,025.00	0.43	148.22	2,024.28	30.80	1.17	-30.79	0.06	0.00	-8.20
2,050.00	0.43	150.55	2,049.28	30.64	1.26	-30.63	0.07	0.00	9.32
2,075.00	0.50	148.13	2,074.28	30.46	1.36	-30.45	0.29	0.28	-9.68
2,100.00	0.45	144.53	2,099.28	30.29	1.48	-30.28	0.23	-0.20	-14.40
2,125.00	0.42	150.74	2,124.28	30.13	1.58	-30.12	0.22	-0.12	24.84
2,150.00	0.44	140.08	2,149.27	29.98	1.69	-29.97	0.33	0.08	-42.64
2,175.00	0.44	144.34	2,174.27	29.82	1.80	-29.81	0.13	0.00	17.04
2,200.00	0.47	142.28	2,199.27	29.67	1.92	-29.65	0.14	0.12	-8.24
2,225.00	0.47	151.13	2,224.27	29.49	2.04	-29.48	0.29	0.00	35.40
2,250.00	0.56	149.12	2,249.27	29.30	2.15	-29.29	0.37	0.36	-8.04
2,275.00	0.50	158.03	2,274.27	29.09	2.25	-29.08	0.41	-0.24	35.64
2,300.00	0.46	161.05	2,299.27	28.90	2.32	-28.88	0.19	-0.16	12.08
2,325.00	0.41	158.58	2,324.27	28.72	2.39	-28.70	0.21	-0.20	-9.88
2,350.00	0.46	151.68	2,349.27	28.55	2.47	-28.53	0.29	0.20	-27.60
2,375.00	0.48	151.70	2,374.27	28.37	2.57	-28.35	0.08	0.08	0.08
2,400.00	0.53	153.41	2,399.27	28.17	2.67	-28.15	0.21	0.20	6.84
2,425.00	0.50	159.01	2,424.27	27.97	2.76	-27.95	0.23	-0.12	22.40
2,450.00	0.42	158.22	2,449.26	27.78	2.83	-27.76	0.32	-0.32	-3.16

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3597.30usft (Scandril Quest)
Site:	Eider 23 Federal	MD Reference:	RKB @ 3597.30usft (Scandril Quest)
Well:	602H	North Reference:	Grid
Wellbore:	OH / 65573	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Scandril Quest)	Database:	USA Compass

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)
2,475.00	0.46	150.87	2,474.26	27.61	2.92	-27.59	0.28	0.16	-29.40
2,500.00	0.50	153.57	2,499.26	27.42	3.01	-27.40	0.18	0.16	10.80
2,525.00	0.46	158.66	2,524.26	27.23	3.10	-27.21	0.23	-0.16	20.36
2,550.00	0.22	121.96	2,549.26	27.11	3.18	-27.09	1.25	-0.96	-146.80
2,575.00	0.97	9.63	2,574.26	27.29	3.25	-27.27	4.29	3.00	-449.32
2,600.00	1.23	5.71	2,599.26	27.77	3.31	-27.75	1.08	1.04	-15.68
2,625.00	1.47	4.05	2,624.25	28.36	3.36	-28.34	0.97	0.96	-6.64
2,650.00	2.17	358.69	2,649.24	29.15	3.37	-29.13	2.88	2.80	-21.44
2,675.00	3.05	356.30	2,674.21	30.29	3.32	-30.27	3.55	3.52	-9.56
2,700.00	3.44	355.16	2,699.17	31.70	3.21	-31.68	1.58	1.56	-4.56
2,725.00	3.66	355.69	2,724.12	33.24	3.09	-33.22	0.89	0.88	2.12
2,750.00	4.79	359.29	2,749.05	35.08	3.02	-35.06	4.64	4.52	14.40
2,775.00	5.46	1.05	2,773.95	37.31	3.03	-37.29	2.75	2.68	7.04
2,800.00	5.69	1.96	2,798.83	39.74	3.09	-39.72	0.99	0.92	3.64
2,825.00	5.86	3.07	2,823.71	42.25	3.20	-42.23	0.81	0.68	4.44
2,850.00	5.83	3.29	2,848.58	44.80	3.34	-44.78	0.15	-0.12	0.88
2,875.00	5.89	2.97	2,873.45	47.35	3.48	-47.32	0.27	0.24	-1.28
2,900.00	5.84	2.30	2,898.32	49.90	3.60	-49.87	0.34	-0.20	-2.68
2,925.00	6.00	3.01	2,923.18	52.47	3.72	-52.45	0.70	0.64	2.84
2,950.00	6.00	3.67	2,948.05	55.08	3.87	-55.06	0.28	0.00	2.64
2,975.00	6.05	3.69	2,972.91	57.70	4.04	-57.67	0.20	0.20	0.08
3,000.00	6.09	3.70	2,997.77	60.34	4.21	-60.31	0.16	0.16	0.04
3,025.00	6.13	3.55	3,022.63	62.99	4.38	-62.97	0.17	0.16	-0.60
3,050.00	6.16	4.34	3,047.48	65.66	4.56	-65.63	0.36	0.12	3.16
3,075.00	6.07	3.62	3,072.34	68.32	4.75	-68.29	0.47	-0.36	-2.88
3,100.00	6.11	4.19	3,097.20	70.97	4.93	-70.93	0.29	0.16	2.28
3,125.00	6.23	3.75	3,122.05	73.65	5.12	-73.61	0.52	0.48	-1.76
3,150.00	6.25	3.74	3,146.91	76.36	5.29	-76.32	0.08	0.08	-0.04
3,175.00	6.30	3.98	3,171.76	79.08	5.48	-79.05	0.23	0.20	0.96
3,200.00	6.21	3.94	3,196.61	81.80	5.66	-81.77	0.36	-0.36	-0.16
3,225.00	6.25	3.90	3,221.46	84.51	5.85	-84.47	0.16	0.16	-0.16
3,250.00	6.19	3.92	3,246.31	87.21	6.03	-87.17	0.24	-0.24	0.08
3,275.00	6.33	3.84	3,271.16	89.93	6.22	-89.89	0.56	0.56	-0.32
3,300.00	6.29	3.61	3,296.01	92.67	6.40	-92.63	0.19	-0.16	-0.92
3,325.00	6.35	3.54	3,320.86	95.42	6.57	-95.38	0.24	0.24	-0.28
3,350.00	6.21	2.15	3,345.71	98.15	6.71	-98.11	0.83	-0.56	-5.56
3,375.00	6.12	0.90	3,370.57	100.83	6.78	-100.79	0.65	-0.36	-5.00
3,400.00	6.07	0.10	3,395.42	103.49	6.80	-103.44	0.39	-0.20	-3.20
3,425.00	5.81	0.10	3,420.29	106.08	6.80	-106.03	1.04	-1.04	0.00
3,450.00	5.70	359.96	3,445.16	108.58	6.81	-108.54	0.44	-0.44	-0.56
3,475.00	5.59	359.57	3,470.04	111.04	6.80	-111.00	0.47	-0.44	-1.56
3,500.00	5.51	359.43	3,494.93	113.46	6.78	-113.42	0.32	-0.32	-0.56
3,525.00	5.37	0.36	3,519.81	115.83	6.77	-115.79	0.66	-0.56	3.72
3,550.00	5.34	0.47	3,544.70	118.16	6.79	-118.12	0.13	-0.12	0.44



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
3,575.00	5.30	0.47	3,569.60	120.48	6.81	-120.44	0.16	-0.16	0.00
3,600.00	5.22	359.96	3,594.49	122.77	6.82	-122.73	0.37	-0.32	-2.04
3,625.00	5.17	359.56	3,619.39	125.04	6.81	-124.99	0.25	-0.20	-1.60
3,650.00	5.04	358.74	3,644.29	127.26	6.77	-127.22	0.60	-0.52	-3.28
3,675.00	4.95	358.80	3,669.19	129.44	6.73	-129.39	0.36	-0.36	0.24
3,700.00	4.85	358.01	3,694.10	131.57	6.67	-131.53	0.48	-0.40	-3.16
3,725.00	4.70	357.63	3,719.02	133.65	6.59	-133.61	0.61	-0.60	-1.52
3,750.00	4.47	355.04	3,743.94	135.64	6.46	-135.60	1.24	-0.92	-10.36
3,775.00	4.45	353.65	3,768.86	137.58	6.27	-137.54	0.44	-0.08	-5.56
3,800.00	4.39	352.07	3,793.79	139.49	6.03	-139.45	0.54	-0.24	-6.32
3,825.00	4.37	351.69	3,818.71	141.38	5.76	-141.34	0.14	-0.08	-1.52
3,850.00	4.34	351.96	3,843.64	143.26	5.49	-143.22	0.15	-0.12	1.08
3,875.00	4.22	351.27	3,868.57	145.11	5.22	-145.07	0.52	-0.48	-2.76
3,900.00	4.20	348.70	3,893.50	146.91	4.90	-146.88	0.76	-0.08	-10.28
3,925.00	4.22	347.99	3,918.44	148.71	4.53	-148.68	0.22	0.08	-2.84
3,950.00	4.23	345.65	3,943.37	150.50	4.11	-150.47	0.69	0.04	-9.36
3,975.00	4.19	344.70	3,968.30	152.28	3.64	-152.25	0.32	-0.16	-3.80
4,000.00	4.22	341.98	3,993.23	154.03	3.11	-154.01	0.81	0.12	-10.88
4,025.00	4.17	339.94	4,018.17	155.76	2.52	-155.74	0.63	-0.20	-8.16
4,050.00	4.17	339.60	4,043.10	157.47	1.89	-157.45	0.10	0.00	-1.36
4,075.00	4.20	339.43	4,068.03	159.18	1.25	-159.16	0.13	0.12	-0.68
4,100.00	4.17	339.32	4,092.97	160.88	0.61	-160.88	0.12	-0.12	-0.44
4,125.00	4.14	339.29	4,117.90	162.58	-0.03	-162.57	0.12	-0.12	-0.12
4,150.00	4.10	338.97	4,142.84	164.26	-0.67	-164.26	0.18	-0.16	-1.28
4,175.00	3.80	340.75	4,167.78	165.87	-1.27	-165.88	1.30	-1.20	7.12
4,200.00	3.65	341.37	4,192.72	167.41	-1.79	-167.42	0.62	-0.60	2.48
4,225.00	3.59	342.89	4,217.67	168.91	-2.28	-168.92	0.45	-0.24	6.08
4,250.00	3.67	349.52	4,242.62	170.45	-2.65	-170.46	1.71	0.32	26.52
4,275.00	4.05	2.42	4,267.57	172.11	-2.76	-172.13	3.78	1.52	51.60
4,300.00	4.26	5.83	4,292.50	173.92	-2.63	-173.93	1.30	0.84	13.64
4,325.00	4.23	7.19	4,317.43	175.76	-2.42	-175.77	0.42	-0.12	5.44
4,350.00	4.26	6.17	4,342.37	177.60	-2.21	-177.61	0.32	0.12	-4.08
4,375.00	4.23	6.97	4,367.30	179.43	-1.99	-179.44	0.27	-0.12	3.20
4,400.00	4.26	7.77	4,392.23	181.27	-1.76	-181.28	0.27	0.12	3.20
4,425.00	4.24	12.01	4,417.16	183.09	-1.44	-183.10	1.26	-0.08	16.96
4,450.00	4.43	18.69	4,442.09	184.91	-0.94	-184.91	2.16	0.76	26.72
4,475.00	4.78	24.18	4,467.01	186.78	-0.20	-186.78	2.25	1.40	21.96
4,500.00	4.93	25.57	4,491.92	188.70	0.69	-188.69	0.76	0.60	5.56
4,525.00	5.15	26.21	4,516.82	190.67	1.65	-190.66	0.91	0.88	2.56
4,550.00	5.68	26.35	4,541.71	192.79	2.69	-192.77	2.12	2.12	0.56
4,575.00	5.79	25.87	4,566.58	195.03	3.79	-195.00	0.48	0.44	-1.92
4,600.00	5.93	25.71	4,591.45	197.33	4.90	-197.30	0.56	0.56	-0.64
4,625.00	6.45	26.26	4,616.31	199.75	6.09	-199.71	2.09	2.08	2.20



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
4,650.00	7.52	27.44	4,641.12	202.46	7.46	-202.41	4.32	4.28	4.72
4,675.00	7.71	26.93	4,665.90	205.41	8.97	-205.35	0.81	0.76	-2.04
4,700.00	7.76	26.88	4,690.67	208.41	10.50	-208.34	0.20	0.20	-0.20
4,725.00	7.73	26.82	4,715.45	211.42	12.02	-211.34	0.12	-0.12	-0.24
4,750.00	7.67	24.80	4,740.22	214.43	13.48	-214.35	1.11	-0.24	-8.08
4,775.00	7.58	24.24	4,765.00	217.45	14.85	-217.35	0.47	-0.36	-2.24
4,800.00	7.57	23.28	4,789.78	220.47	16.18	-220.36	0.51	-0.04	-3.84
4,825.00	7.36	23.22	4,814.57	223.45	17.46	-223.34	0.84	-0.84	-0.24
4,850.00	7.40	23.27	4,839.36	226.40	18.73	-226.28	0.16	0.16	0.20
4,875.00	7.30	21.31	4,864.16	229.36	19.94	-229.23	1.08	-0.40	-7.84
4,900.00	7.14	20.20	4,888.96	232.30	21.06	-232.16	0.85	-0.64	-4.44
4,925.00	6.98	18.10	4,913.77	235.20	22.07	-235.06	1.21	-0.64	-8.40
4,950.00	7.04	18.86	4,938.58	238.09	23.03	-237.95	0.44	0.24	3.04
4,975.00	7.06	18.15	4,963.39	241.00	24.01	-240.85	0.36	0.08	-2.84
5,000.00	6.97	16.96	4,988.21	243.91	24.93	-243.76	0.68	-0.36	-4.76
5,025.00	6.97	16.42	5,013.02	246.82	25.80	-246.66	0.26	0.00	-2.16
5,050.00	6.98	15.51	5,037.84	249.74	26.63	-249.57	0.44	0.04	-3.64
5,075.00	7.01	15.09	5,062.65	252.67	27.44	-252.50	0.24	0.12	-1.68
5,100.00	7.12	15.57	5,087.46	255.64	28.25	-255.46	0.50	0.44	1.92
5,125.00	7.11	14.70	5,112.27	258.63	29.06	-258.45	0.43	-0.04	-3.48
5,150.00	7.17	14.21	5,137.07	261.64	29.83	-261.45	0.34	0.24	-1.96
5,175.00	7.39	13.63	5,161.87	264.71	30.60	-264.52	0.93	0.88	-2.32
5,200.00	7.69	12.33	5,186.66	267.91	31.33	-267.71	1.38	1.20	-5.20
5,225.00	7.95	12.04	5,211.42	271.23	32.05	-271.03	1.05	1.04	-1.16
5,250.00	8.14	11.66	5,236.18	274.66	32.77	-274.45	0.79	0.76	-1.52
5,275.00	8.10	11.84	5,260.93	278.12	33.49	-277.91	0.19	-0.16	0.72
5,300.00	8.19	11.42	5,285.68	281.58	34.20	-281.37	0.43	0.36	-1.68
5,325.00	8.30	10.90	5,310.42	285.10	34.90	-284.88	0.53	0.44	-2.08
5,350.00	8.25	10.43	5,335.16	288.64	35.56	-288.42	0.34	-0.20	-1.88
5,375.00	8.17	10.65	5,359.90	292.15	36.21	-291.92	0.34	-0.32	0.88
5,400.00	7.93	9.44	5,384.65	295.59	36.83	-295.36	1.18	-0.96	-4.84
5,425.00	7.86	8.74	5,409.42	298.99	37.37	-298.75	0.48	-0.28	-2.80
5,450.00	7.86	8.44	5,434.18	302.37	37.88	-302.13	0.16	0.00	-1.20
5,475.00	7.74	7.50	5,458.95	305.73	38.35	-305.49	0.70	-0.48	-3.76
5,500.00	7.66	6.99	5,483.73	309.05	38.77	-308.81	0.42	-0.32	-2.04
5,525.00	7.61	6.56	5,508.50	312.35	39.16	-312.10	0.30	-0.20	-1.72
5,550.00	7.65	6.72	5,533.28	315.64	39.55	-315.40	0.18	0.16	0.64
5,575.00	7.58	6.26	5,558.06	318.94	39.92	-318.69	0.37	-0.28	-1.84
5,600.00	7.55	5.82	5,582.84	322.21	40.27	-321.96	0.26	-0.12	-1.76
5,625.00	7.49	5.48	5,607.63	325.46	40.59	-325.21	0.30	-0.24	-1.36
5,650.00	7.50	3.63	5,632.42	328.72	40.85	-328.46	0.97	0.04	-7.40
5,675.00	7.28	0.99	5,657.21	331.93	40.98	-331.67	1.62	-0.88	-10.56
5,700.00	7.23	358.43	5,682.01	335.08	40.96	-334.83	1.31	-0.20	-10.24

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3597.30usft (Scandril Quest)
Site:	Eider 23 Federal	MD Reference:	RKB @ 3597.30usft (Scandril Quest)
Well:	602H	North Reference:	Grid
Wellbore:	OH / 65573	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Scandril Quest)	Database:	USA Compass

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)
5,725.00	7.13	357.28	5,706.81	338.21	40.85	-337.95	0.70	-0.40	-4.60
5,750.00	7.09	356.96	5,731.62	341.30	40.69	-341.04	0.23	-0.16	-1.28
5,775.00	6.94	356.12	5,756.43	344.34	40.51	-344.09	0.73	-0.60	-3.36
5,800.00	6.76	356.12	5,781.25	347.32	40.31	-347.07	0.72	-0.72	0.00
5,825.00	6.64	356.21	5,806.08	350.23	40.11	-349.98	0.48	-0.48	0.36
5,850.00	6.65	355.99	5,830.92	353.12	39.91	-352.87	0.11	0.04	-0.88
5,875.00	6.63	356.44	5,855.75	356.00	39.72	-355.75	0.22	-0.08	1.80
5,900.00	6.62	356.41	5,880.58	358.88	39.54	-358.63	0.04	-0.04	-0.12
5,925.00	6.49	356.22	5,905.42	361.73	39.36	-361.48	0.53	-0.52	-0.76
5,950.00	6.05	356.03	5,930.27	364.45	39.18	-364.20	1.76	-1.76	-0.76
5,975.00	4.92	354.90	5,955.15	366.83	38.99	-366.59	4.54	-4.52	-4.52
6,000.00	4.70	355.00	5,980.06	368.92	38.81	-368.68	0.88	-0.88	0.40
6,025.00	4.73	354.65	6,004.98	370.97	38.62	-370.72	0.17	0.12	-1.40
6,050.00	4.75	354.19	6,029.89	373.02	38.42	-372.78	0.17	0.08	-1.84
6,075.00	4.71	355.10	6,054.81	375.08	38.23	-374.84	0.34	-0.16	3.64
6,100.00	4.68	354.45	6,079.73	377.11	38.04	-376.87	0.24	-0.12	-2.60
6,125.00	4.24	354.57	6,104.65	379.05	37.85	-378.81	1.76	-1.76	0.48
6,150.00	3.76	352.33	6,129.59	380.78	37.66	-380.54	2.02	-1.92	-8.96
6,175.00	3.69	352.58	6,154.54	382.39	37.44	-382.16	0.29	-0.28	1.00
6,200.00	3.75	352.81	6,179.48	384.00	37.24	-383.77	0.25	0.24	0.92
6,225.00	3.68	353.23	6,204.43	385.61	37.04	-385.37	0.30	-0.28	1.68
6,250.00	3.52	3.89	6,229.38	387.17	37.00	-386.94	2.75	-0.64	42.64
6,275.00	3.63	4.38	6,254.33	388.73	37.11	-388.49	0.46	0.44	1.96
6,300.00	3.69	3.91	6,279.28	390.32	37.23	-390.08	0.27	0.24	-1.88
6,325.00	3.42	5.47	6,304.23	391.86	37.35	-391.63	1.15	-1.08	6.24
6,350.00	2.64	7.17	6,329.20	393.18	37.49	-392.94	3.14	-3.12	6.80
6,375.00	2.39	5.99	6,354.18	394.27	37.62	-394.03	1.02	-1.00	-4.72
6,400.00	2.33	2.75	6,379.15	395.29	37.70	-395.05	0.59	-0.24	-12.96
6,425.00	2.10	2.63	6,404.14	396.26	37.75	-396.02	0.92	-0.92	-0.48
6,450.00	1.70	357.73	6,429.12	397.08	37.75	-396.85	1.73	-1.60	-19.60
6,475.00	1.39	351.97	6,454.11	397.76	37.69	-397.52	1.39	-1.24	-23.04
6,500.00	1.10	355.45	6,479.11	398.29	37.63	-398.06	1.20	-1.16	13.92
6,525.00	0.40	114.23	6,504.10	398.50	37.69	-398.26	5.36	-2.80	475.12
6,550.00	1.34	177.46	6,529.10	398.17	37.79	-397.93	4.85	3.76	252.92
6,575.00	1.48	173.98	6,554.09	397.56	37.83	-397.32	0.66	0.56	-13.92
6,600.00	1.56	176.88	6,579.09	396.90	37.89	-396.66	0.44	0.32	11.60
6,625.00	1.53	177.92	6,604.08	396.22	37.92	-395.98	0.16	-0.12	4.16
6,650.00	1.49	178.97	6,629.07	395.56	37.93	-395.33	0.19	-0.16	4.20
6,675.00	1.51	176.07	6,654.06	394.91	37.96	-394.67	0.31	0.08	-11.60
6,700.00	1.56	177.81	6,679.05	394.24	38.00	-394.00	0.27	0.20	6.96
6,725.00	1.57	179.24	6,704.04	393.56	38.02	-393.32	0.16	0.04	5.72
6,750.00	1.53	178.29	6,729.03	392.88	38.03	-392.64	0.19	-0.16	-3.80
6,775.00	1.51	177.16	6,754.02	392.22	38.06	-391.98	0.14	-0.08	-4.52
6,800.00	1.50	177.16	6,779.01	391.57	38.09	-391.33	0.04	-0.04	0.00



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
6,825.00	1.58	177.60	6,804.01	390.89	38.12	-390.65	0.32	0.32	1.76
6,850.00	1.49	177.99	6,829.00	390.22	38.15	-389.98	0.36	-0.36	1.56
6,875.00	1.52	177.30	6,853.99	389.57	38.17	-389.33	0.14	0.12	-2.76
6,900.00	1.58	176.44	6,878.98	388.89	38.21	-388.65	0.26	0.24	-3.44
6,925.00	1.55	178.80	6,903.97	388.21	38.24	-387.97	0.28	-0.12	9.44
6,950.00	1.51	179.10	6,928.96	387.54	38.25	-387.30	0.16	-0.16	1.20
6,975.00	1.50	177.20	6,953.95	386.89	38.27	-386.65	0.20	-0.04	-7.60
7,000.00	1.69	180.96	6,978.94	386.19	38.28	-385.95	0.87	0.76	15.04
7,025.00	1.74	183.81	7,003.93	385.45	38.25	-385.20	0.40	0.20	11.40
7,050.00	1.76	183.75	7,028.92	384.68	38.20	-384.44	0.08	0.08	-0.24
7,075.00	1.75	182.04	7,053.91	383.92	38.16	-383.68	0.21	-0.04	-6.84
7,100.00	1.72	184.07	7,078.90	383.16	38.12	-382.92	0.27	-0.12	8.12
7,125.00	1.74	186.25	7,103.88	382.41	38.05	-382.17	0.28	0.08	8.72
7,150.00	1.74	187.58	7,128.87	381.66	37.96	-381.42	0.16	0.00	5.32
7,175.00	1.74	189.84	7,153.86	380.91	37.85	-380.67	0.27	0.00	9.04
7,200.00	1.75	192.20	7,178.85	380.16	37.70	-379.92	0.29	0.04	9.44
7,225.00	1.85	192.80	7,203.84	379.39	37.53	-379.16	0.41	0.40	2.40
7,250.00	1.84	193.75	7,228.82	378.61	37.35	-378.38	0.13	-0.04	3.80
7,275.00	1.82	193.87	7,253.81	377.84	37.16	-377.60	0.08	-0.08	0.48
7,300.00	1.83	191.57	7,278.80	377.06	36.98	-376.83	0.30	0.04	-9.20
7,325.00	1.92	190.37	7,303.79	376.26	36.82	-376.02	0.39	0.36	-4.80
7,350.00	1.91	192.32	7,328.77	375.44	36.66	-375.21	0.26	-0.04	7.80
7,375.00	1.87	194.68	7,353.76	374.64	36.47	-374.41	0.35	-0.16	9.44
7,400.00	1.84	193.69	7,378.75	373.85	36.27	-373.62	0.18	-0.12	-3.96
7,425.00	1.88	192.25	7,403.73	373.06	36.09	-372.83	0.25	0.16	-5.76
7,450.00	1.75	193.12	7,428.72	372.29	35.91	-372.06	0.53	-0.52	3.48
7,475.00	1.80	192.04	7,453.71	371.53	35.75	-371.31	0.24	0.20	-4.32
7,500.00	1.70	191.39	7,478.70	370.78	35.59	-370.56	0.41	-0.40	-2.60
7,525.00	1.62	191.50	7,503.69	370.07	35.45	-369.85	0.32	-0.32	0.44
7,550.00	1.55	192.04	7,528.68	369.40	35.31	-369.18	0.29	-0.28	2.16
7,575.00	1.54	194.58	7,553.67	368.74	35.15	-368.52	0.28	-0.04	10.16
7,600.00	1.56	191.25	7,578.66	368.08	35.00	-367.86	0.37	0.08	-13.32
7,625.00	1.62	190.45	7,603.65	367.40	34.87	-367.18	0.26	0.24	-3.20
7,650.00	1.66	196.72	7,628.64	366.71	34.70	-366.49	0.73	0.16	25.08
7,675.00	1.73	204.67	7,653.63	366.02	34.44	-365.80	0.98	0.28	31.80
7,700.00	1.76	204.37	7,678.62	365.33	34.12	-365.11	0.13	0.12	-1.20
7,725.00	1.76	202.61	7,703.60	364.62	33.82	-364.41	0.22	0.00	-7.04
7,750.00	1.81	202.82	7,728.59	363.90	33.52	-363.69	0.20	0.20	0.84
7,775.00	1.78	205.60	7,753.58	363.19	33.20	-362.98	0.37	-0.12	11.12
7,800.00	1.79	203.09	7,778.57	362.48	32.87	-362.27	0.32	0.04	-10.04
7,825.00	1.75	202.50	7,803.56	361.77	32.58	-361.56	0.18	-0.16	-2.36
7,850.00	1.89	200.90	7,828.54	361.03	32.28	-360.83	0.60	0.56	-6.40
7,875.00	1.81	204.52	7,853.53	360.29	31.97	-360.08	0.57	-0.32	14.48

Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
7,900.00	1.78	204.37	7,878.52	359.57	31.65	-359.37	0.12	-0.12	-0.60
7,925.00	1.76	203.95	7,903.51	358.87	31.33	-358.67	0.10	-0.08	-1.68
7,950.00	1.77	215.61	7,928.49	358.20	30.95	-358.01	1.43	0.04	46.64
7,975.00	1.87	220.20	7,953.48	357.58	30.46	-357.39	0.71	0.40	18.36
8,000.00	1.85	223.55	7,978.47	356.97	29.92	-356.78	0.44	-0.08	13.40
8,025.00	1.81	223.46	8,003.46	356.39	29.37	-356.21	0.16	-0.16	-0.36
8,050.00	1.90	221.44	8,028.44	355.80	28.83	-355.61	0.44	0.36	-8.08
8,075.00	1.91	222.21	8,053.43	355.18	28.27	-355.00	0.11	0.04	3.08
8,100.00	1.84	224.43	8,078.41	354.58	27.71	-354.41	0.40	-0.28	8.88
8,125.00	1.59	231.41	8,103.40	354.08	27.16	-353.91	1.30	-1.00	27.92
8,150.00	1.46	247.06	8,128.39	353.74	26.59	-353.57	1.74	-0.52	62.60
8,175.00	1.43	251.18	8,153.39	353.51	26.01	-353.35	0.43	-0.12	16.48
8,200.00	1.40	252.28	8,178.38	353.32	25.42	-353.16	0.16	-0.12	4.40
8,225.00	1.34	251.35	8,203.37	353.13	24.85	-352.98	0.26	-0.24	-3.72
8,250.00	1.39	248.79	8,228.36	352.93	24.29	-352.78	0.32	0.20	-10.24
8,275.00	1.42	251.31	8,253.36	352.72	23.72	-352.57	0.27	0.12	10.08
8,300.00	1.32	249.45	8,278.35	352.52	23.15	-352.37	0.44	-0.40	-7.44
8,325.00	1.35	248.48	8,303.34	352.31	22.61	-352.17	0.15	0.12	-3.88
8,350.00	1.35	247.36	8,328.34	352.09	22.06	-351.95	0.11	0.00	-4.48
8,375.00	1.34	248.43	8,353.33	351.87	21.52	-351.73	0.11	-0.04	4.28
8,400.00	1.30	246.81	8,378.32	351.65	20.99	-351.52	0.22	-0.16	-6.48
8,425.00	1.30	247.23	8,403.32	351.43	20.47	-351.30	0.04	0.00	1.68
8,450.00	1.29	245.90	8,428.31	351.21	19.95	-351.08	0.13	-0.04	-5.32
8,475.00	1.32	247.12	8,453.30	350.98	19.42	-350.85	0.16	0.12	4.88
8,500.00	1.24	259.63	8,478.30	350.82	18.89	-350.70	1.16	-0.32	50.04
8,525.00	1.16	268.73	8,503.29	350.76	18.37	-350.65	0.83	-0.32	36.40
8,550.00	1.13	270.85	8,528.29	350.76	17.87	-350.65	0.21	-0.12	8.48
8,575.00	1.21	271.14	8,553.28	350.77	17.36	-350.66	0.32	0.32	1.16
8,600.00	1.20	271.29	8,578.28	350.78	16.84	-350.67	0.04	-0.04	0.60
8,625.00	1.14	271.61	8,603.27	350.79	16.33	-350.69	0.24	-0.24	1.28
8,650.00	1.11	269.19	8,628.27	350.80	15.84	-350.70	0.22	-0.12	-9.68
8,675.00	1.18	271.14	8,653.26	350.80	15.34	-350.70	0.32	0.28	7.80
8,700.00	1.18	272.76	8,678.26	350.82	14.82	-350.72	0.13	0.00	6.48
8,725.00	1.12	271.09	8,703.25	350.83	14.32	-350.74	0.27	-0.24	-6.68
8,750.00	1.18	269.14	8,728.25	350.84	13.82	-350.74	0.29	0.24	-7.80
8,775.00	1.18	277.84	8,753.24	350.87	13.31	-350.78	0.72	0.00	34.80
8,800.00	1.26	301.16	8,778.24	351.04	12.82	-350.96	2.00	0.32	93.28
8,825.00	1.20	303.79	8,803.23	351.33	12.37	-351.25	0.33	-0.24	10.52
8,850.00	1.20	299.77	8,828.22	351.61	11.92	-351.53	0.34	0.00	-16.08
8,875.00	1.23	299.83	8,853.22	351.87	11.46	-351.79	0.12	0.12	0.24
8,900.00	1.25	302.55	8,878.21	352.15	11.00	-352.08	0.25	0.08	10.88
8,925.00	1.26	301.95	8,903.21	352.44	10.53	-352.37	0.07	0.04	-2.40
8,950.00	1.20	299.15	8,928.20	352.72	10.07	-352.65	0.34	-0.24	-11.20



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3597.30usft (Scandril Quest)
Site:	Eider 23 Federal	MD Reference:	RKB @ 3597.30usft (Scandril Quest)
Well:	602H	North Reference:	Grid
Wellbore:	OH / 65573	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Scandril Quest)	Database:	USA Compass

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)
8,975.00	1.33	301.51	8,953.19	353.00	9.60	-352.93	0.56	0.52	9.44
9,000.00	1.32	302.18	8,978.19	353.30	9.11	-353.24	0.07	-0.04	2.68
9,025.00	1.24	301.55	9,003.18	353.60	8.63	-353.54	0.32	-0.32	-2.52
9,050.00	1.25	299.38	9,028.18	353.87	8.16	-353.81	0.19	0.04	-8.68
9,075.00	1.28	298.91	9,053.17	354.14	7.68	-354.09	0.13	0.12	-1.88
9,100.00	1.29	302.68	9,078.16	354.43	7.20	-354.38	0.34	0.04	15.08
9,125.00	1.25	302.48	9,103.16	354.72	6.73	-354.68	0.16	-0.16	-0.80
9,150.00	1.29	300.93	9,128.15	355.02	6.26	-354.97	0.21	0.16	-6.20
9,175.00	1.30	299.45	9,153.14	355.30	5.77	-355.26	0.14	0.04	-5.92
9,200.00	1.28	302.36	9,178.14	355.59	5.29	-355.55	0.27	-0.08	11.64
9,225.00	1.28	300.53	9,203.13	355.88	4.81	-355.84	0.16	0.00	-7.32
9,250.00	1.36	299.87	9,228.13	356.17	4.32	-356.14	0.33	0.32	-2.64
9,275.00	1.45	319.60	9,253.12	356.56	3.85	-356.53	1.96	0.36	78.92
9,300.00	1.53	330.50	9,278.11	357.09	3.48	-357.06	1.18	0.32	43.60
9,325.00	1.52	327.71	9,303.10	357.66	3.14	-357.63	0.30	-0.04	-11.16
9,350.00	1.63	326.88	9,328.09	358.24	2.77	-358.21	0.45	0.44	-3.32
9,375.00	1.59	326.99	9,353.08	358.83	2.39	-358.81	0.16	-0.16	0.44
9,400.00	1.60	326.27	9,378.07	359.41	2.01	-359.39	0.09	0.04	-2.88
9,425.00	1.68	323.51	9,403.06	359.99	1.59	-359.98	0.45	0.32	-11.04
9,450.00	1.76	320.79	9,428.05	360.59	1.13	-360.57	0.46	0.32	-10.88
9,475.00	1.87	316.97	9,453.04	361.18	0.61	-361.17	0.65	0.44	-15.28
9,500.00	1.97	315.70	9,478.02	361.79	0.03	-361.78	0.43	0.40	-5.08
9,525.00	1.93	317.57	9,503.01	362.40	-0.55	-362.40	0.30	-0.16	7.48
9,550.00	1.93	317.20	9,528.00	363.02	-1.12	-363.02	0.05	0.00	-1.48
9,575.00	1.98	316.74	9,552.98	363.65	-1.70	-363.65	0.21	0.20	-1.84
9,600.00	1.84	314.97	9,577.97	364.25	-2.28	-364.25	0.61	-0.56	-7.08
9,625.00	1.74	313.62	9,602.95	364.79	-2.84	-364.80	0.43	-0.40	-5.40
9,650.00	1.82	311.95	9,627.94	365.32	-3.41	-365.33	0.38	0.32	-6.68
9,675.00	1.71	307.70	9,652.93	365.81	-4.00	-365.83	0.68	-0.44	-17.00
9,700.00	1.62	305.80	9,677.92	366.25	-4.58	-366.27	0.42	-0.36	-7.60
9,725.00	1.51	300.22	9,702.91	366.62	-5.15	-366.64	0.75	-0.44	-22.32
9,750.00	1.44	293.10	9,727.90	366.91	-5.73	-366.94	0.78	-0.28	-28.48
9,775.00	1.32	289.58	9,752.90	367.13	-6.29	-367.16	0.59	-0.48	-14.08
9,800.00	1.28	285.53	9,777.89	367.30	-6.83	-367.33	0.40	-0.16	-16.20
9,825.00	1.19	282.13	9,802.88	367.43	-7.35	-367.47	0.46	-0.36	-13.60
9,850.00	0.90	259.00	9,827.88	367.45	-7.80	-367.49	2.02	-1.16	-92.52
9,875.00	0.86	244.94	9,852.88	367.33	-8.16	-367.37	0.88	-0.16	-56.24
9,900.00	0.91	237.87	9,877.87	367.14	-8.50	-367.19	0.48	0.20	-28.28
9,925.00	0.83	232.94	9,902.87	366.93	-8.81	-366.98	0.44	-0.32	-19.72
9,950.00	0.88	232.40	9,927.87	366.70	-9.11	-366.75	0.20	0.20	-2.16
9,975.00	0.90	236.01	9,952.86	366.48	-9.42	-366.53	0.24	0.08	14.44
10,000.00	0.79	235.14	9,977.86	366.27	-9.73	-366.32	0.44	-0.44	-3.48
10,025.00	0.57	213.99	10,002.86	366.07	-9.94	-366.12	1.32	-0.88	-84.60
10,050.00	0.46	209.87	10,027.86	365.88	-10.06	-365.93	0.46	-0.44	-16.48

Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
10,075.00	0.40	208.77	10,052.86	365.71	-10.15	-365.77	0.24	-0.24	-4.40
10,100.00	0.41	208.36	10,077.86	365.56	-10.23	-365.61	0.04	0.04	-1.64
10,125.00	0.43	212.98	10,102.86	365.40	-10.33	-365.46	0.16	0.08	18.48
10,150.00	0.51	208.31	10,127.86	365.22	-10.43	-365.28	0.35	0.32	-18.68
10,175.00	0.48	218.98	10,152.86	365.04	-10.55	-365.10	0.39	-0.12	42.68
10,200.00	0.40	216.93	10,177.85	364.89	-10.67	-364.95	0.33	-0.32	-8.20
10,225.00	0.28	212.94	10,202.85	364.77	-10.75	-364.83	0.49	-0.48	-15.96
10,250.00	0.29	221.10	10,227.85	364.67	-10.83	-364.73	0.17	0.04	32.64
10,275.00	0.32	220.14	10,252.85	364.57	-10.92	-364.63	0.12	0.12	-3.84
10,300.00	0.23	210.18	10,277.85	364.47	-10.99	-364.54	0.41	-0.36	-39.84
10,325.00	0.24	95.14	10,302.85	364.43	-10.96	-364.49	1.59	0.04	-460.16
10,350.00	0.44	78.01	10,327.85	364.44	-10.81	-364.50	0.89	0.80	-68.52
10,375.00	0.42	86.79	10,352.85	364.47	-10.63	-364.53	0.28	-0.08	35.12
10,400.00	0.90	107.43	10,377.85	364.41	-10.35	-364.47	2.11	1.92	82.56
10,425.00	1.28	114.13	10,402.85	364.24	-9.91	-364.29	1.60	1.52	26.80
10,450.00	1.45	116.97	10,427.84	363.98	-9.37	-364.03	0.73	0.68	11.36
10,475.00	1.48	115.30	10,452.83	363.70	-8.80	-363.75	0.21	0.12	-6.68
10,500.00	1.48	116.75	10,477.82	363.42	-8.22	-363.46	0.15	0.00	5.80
10,525.00	1.50	114.60	10,502.81	363.14	-7.63	-363.18	0.24	0.08	-8.60
10,550.00	1.54	117.94	10,527.80	362.84	-7.04	-362.88	0.39	0.16	13.36
10,575.00	1.61	114.41	10,552.80	362.54	-6.42	-362.57	0.48	0.28	-14.12
10,600.00	1.62	113.32	10,577.79	362.26	-5.77	-362.28	0.13	0.04	-4.36
10,625.00	1.70	106.50	10,602.77	362.01	-5.09	-362.03	0.85	0.32	-27.28
10,650.00	1.72	105.00	10,627.76	361.81	-4.38	-361.83	0.20	0.08	-6.00
10,675.00	1.76	101.78	10,652.75	361.63	-3.64	-361.65	0.42	0.16	-12.88
10,700.00	1.77	103.62	10,677.74	361.46	-2.89	-361.47	0.23	0.04	7.36
10,725.00	1.86	103.32	10,702.73	361.28	-2.12	-361.28	0.36	0.36	-1.20
10,750.00	1.87	102.99	10,727.71	361.09	-1.32	-361.09	0.06	0.04	-1.32
10,775.00	1.74	105.47	10,752.70	360.90	-0.56	-360.90	0.61	-0.52	9.92
10,800.00	1.68	107.46	10,777.69	360.69	0.15	-360.68	0.34	-0.24	7.96
10,825.00	1.49	111.07	10,802.68	360.46	0.81	-360.45	0.86	-0.76	14.44
10,850.00	1.32	114.03	10,827.67	360.23	1.37	-360.21	0.74	-0.68	11.84
10,875.00	1.25	115.79	10,852.67	359.99	1.88	-359.97	0.32	-0.28	7.04
10,900.00	1.11	115.31	10,877.66	359.77	2.35	-359.75	0.56	-0.56	-1.92
10,925.00	1.08	118.62	10,902.66	359.55	2.77	-359.53	0.28	-0.12	13.24
10,950.00	0.97	116.00	10,927.65	359.35	3.17	-359.32	0.48	-0.44	-10.48
10,975.00	0.93	117.86	10,952.65	359.16	3.54	-359.13	0.20	-0.16	7.44
11,000.00	0.88	120.61	10,977.65	358.97	3.88	-358.94	0.26	-0.20	11.00
11,025.00	0.90	121.30	11,002.64	358.77	4.22	-358.74	0.09	0.08	2.76
11,050.00	0.74	136.72	11,027.64	358.55	4.49	-358.51	1.08	-0.64	61.68
11,075.00	0.65	148.60	11,052.64	358.31	4.68	-358.28	0.68	-0.36	47.52
11,100.00	0.68	155.81	11,077.64	358.05	4.81	-358.02	0.36	0.12	28.84
11,125.00	0.64	165.26	11,102.64	357.78	4.91	-357.75	0.46	-0.16	37.80



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
11,150.00	0.61	168.22	11,127.63	357.52	4.97	-357.48	0.18	-0.12	11.84
11,175.00	0.45	178.57	11,152.63	357.29	5.00	-357.25	0.74	-0.64	41.40
11,200.00	0.37	195.98	11,177.63	357.11	4.98	-357.08	0.59	-0.32	69.64
11,225.00	0.38	212.84	11,202.63	356.97	4.92	-356.93	0.44	0.04	67.44
11,250.00	0.43	221.95	11,227.63	356.83	4.81	-356.79	0.33	0.20	36.44
11,275.00	0.41	215.36	11,252.63	356.68	4.69	-356.65	0.21	-0.08	-26.36
11,300.00	0.44	226.39	11,277.63	356.55	4.57	-356.51	0.35	0.12	44.12
11,325.00	0.46	207.98	11,302.63	356.39	4.46	-356.36	0.58	0.08	-73.64
11,350.00	0.67	236.04	11,327.63	356.22	4.29	-356.19	1.37	0.84	112.24
11,375.00	0.47	219.54	11,352.63	356.06	4.10	-356.03	1.03	-0.80	-66.00
11,400.00	0.47	219.80	11,377.63	355.90	3.97	-355.87	0.01	0.00	1.04
11,425.00	0.47	219.64	11,402.63	355.74	3.84	-355.71	0.01	0.00	-0.64
11,430.00	0.47	219.76	11,407.63	355.71	3.81	-355.68	0.02	0.00	2.40
Tie In									
11,560.00	0.72	280.66	11,537.62	355.45	2.67	-355.43	0.49	0.19	46.85
First Phoenix MWD Survey									
11,655.00	1.66	238.11	11,632.60	354.84	0.91	-354.83	1.29	0.99	-44.79
11,718.00	1.73	235.02	11,695.57	353.81	-0.64	-353.81	0.18	0.11	-4.90
11,749.00	1.46	178.99	11,726.56	353.15	-1.02	-353.15	4.89	-0.87	-180.74
11,781.00	5.17	169.75	11,758.50	351.32	-0.75	-351.32	11.68	11.59	-28.88
11,813.00	7.13	173.85	11,790.32	347.93	-0.28	-347.92	6.27	6.13	12.81
11,845.00	10.71	173.49	11,821.93	343.00	0.27	-342.99	11.19	11.19	-1.13
11,877.00	14.79	174.63	11,853.13	335.97	0.99	-335.96	12.77	12.75	3.56
11,908.00	18.82	176.68	11,882.80	327.04	1.65	-327.02	13.14	13.00	6.61
11,940.00	22.22	177.42	11,912.77	315.84	2.22	-315.82	10.66	10.63	2.31
11,972.00	24.38	177.00	11,942.15	303.20	2.84	-303.17	6.77	6.75	-1.31
12,004.00	27.32	177.96	11,970.95	289.26	3.44	-289.23	9.28	9.19	3.00
12,036.00	29.07	177.50	11,999.15	274.15	4.04	-274.12	5.51	5.47	-1.44
12,068.00	32.57	176.71	12,026.63	257.78	4.88	-257.75	11.01	10.94	-2.47
12,099.00	34.60	176.98	12,052.45	240.66	5.82	-240.62	6.57	6.55	0.87
12,131.00	36.09	177.01	12,078.55	222.17	6.79	-222.13	4.66	4.66	0.09
12,163.00	37.41	179.40	12,104.19	203.04	7.38	-202.99	6.08	4.13	7.47
12,195.00	38.55	181.55	12,129.42	183.35	7.22	-183.30	5.46	3.56	6.72
12,227.00	40.26	182.40	12,154.14	163.05	6.51	-163.01	5.60	5.34	2.66
12,259.00	43.63	181.24	12,177.94	141.68	5.84	-141.64	10.81	10.53	-3.63
12,290.00	47.24	181.37	12,199.69	119.60	5.34	-119.56	11.65	11.65	0.42
12,309.00	48.64	180.40	12,212.42	105.49	5.12	-105.46	8.28	7.36	-5.11
FTP: 12309' MD									
12,322.00	49.60	179.76	12,220.93	95.67	5.11	-95.63	8.28	7.40	-4.92
12,354.00	51.67	177.10	12,241.22	70.94	5.79	-70.90	9.12	6.47	-8.31
12,386.00	54.23	175.89	12,260.50	45.45	7.36	-45.41	8.55	8.00	-3.78
12,418.00	56.54	175.48	12,278.68	19.19	9.34	-19.14	7.30	7.22	-1.28
12,450.00	58.61	176.32	12,295.84	-7.75	11.27	7.82	6.84	6.47	2.63
12,482.00	62.08	178.10	12,311.67	-35.52	12.62	35.59	11.87	10.84	5.56

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well 602H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3597.30usft (Scandrift Quest)
Site:	Eider 23 Federal	MD Reference:	RKB @ 3597.30usft (Scandrift Quest)
Well:	602H	North Reference:	Grid
Wellbore:	OH / 65573	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Scandrift Quest)	Database:	USA Compass

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)
12,514.00	65.39	177.97	12,325.83	-64.19	13.60	64.27	10.35	10.34	-0.41
12,546.00	69.62	178.88	12,338.07	-93.74	14.41	93.83	13.48	13.22	2.84
12,578.00	73.35	180.06	12,348.23	-124.08	14.69	124.16	12.17	11.66	3.69
12,610.00	76.02	180.40	12,356.68	-154.94	14.56	155.02	8.41	8.34	1.06
12,642.00	80.84	180.08	12,363.10	-186.28	14.43	186.36	15.09	15.06	-1.00
12,674.00	84.58	179.46	12,367.16	-218.01	14.56	218.10	11.84	11.69	-1.94
12,705.00	88.63	178.92	12,368.99	-248.95	15.00	249.03	13.18	13.06	-1.74
12,801.00	88.47	175.15	12,371.42	-344.77	19.96	344.89	3.93	-0.17	-3.93
12,896.00	90.22	173.99	12,372.51	-439.33	28.95	439.50	2.21	1.84	-1.22
12,991.00	92.55	180.90	12,370.21	-534.15	33.18	534.34	7.67	2.45	7.27
13,086.00	91.77	180.42	12,366.63	-629.07	32.09	629.26	0.96	-0.82	-0.51
13,181.00	87.92	177.80	12,366.88	-724.03	33.56	724.23	4.90	-4.05	-2.76
13,277.00	87.88	180.79	12,370.40	-819.95	34.75	820.15	3.11	-0.04	3.11
13,372.00	89.88	182.11	12,372.26	-914.90	32.34	915.08	2.52	2.11	1.39
13,467.00	87.35	178.71	12,374.56	-1,009.84	31.66	1,010.02	4.46	-2.66	-3.58
13,561.00	90.25	180.43	12,376.53	-1,103.81	32.37	1,103.98	3.59	3.09	1.83
13,655.00	93.37	182.60	12,373.56	-1,197.71	29.88	1,197.87	4.04	3.32	2.31
13,750.00	92.34	180.88	12,368.82	-1,292.54	27.00	1,292.68	2.11	-1.08	-1.81
13,844.00	91.58	181.50	12,365.61	-1,386.47	25.05	1,386.59	1.04	-0.81	0.66
13,938.00	89.45	180.77	12,364.76	-1,480.44	23.19	1,480.55	2.40	-2.27	-0.78
14,033.00	90.57	179.63	12,364.75	-1,575.44	22.86	1,575.55	1.68	1.18	-1.20
14,128.00	88.49	179.54	12,365.53	-1,670.42	23.55	1,670.54	2.19	-2.19	-0.09
14,222.00	88.70	180.54	12,367.83	-1,764.40	23.48	1,764.51	1.09	0.22	1.06
14,317.00	90.22	178.71	12,368.73	-1,859.38	24.10	1,859.49	2.50	1.60	-1.93
14,412.00	88.48	179.31	12,369.81	-1,954.36	25.74	1,954.48	1.94	-1.83	0.63
14,507.00	88.95	178.01	12,371.94	-2,049.31	27.97	2,049.44	1.45	0.49	-1.37
14,602.00	87.91	178.27	12,374.54	-2,144.22	31.05	2,144.37	1.13	-1.09	0.27
14,697.00	89.27	179.54	12,376.88	-2,239.17	32.86	2,239.33	1.96	1.43	1.34
14,792.00	88.91	180.85	12,378.39	-2,334.15	32.54	2,334.31	1.43	-0.38	1.38
14,887.00	90.10	180.34	12,379.21	-2,429.14	31.55	2,429.29	1.36	1.25	-0.54
14,982.00	88.61	178.85	12,380.28	-2,524.13	32.22	2,524.28	2.22	-1.57	-1.57
15,077.00	86.64	179.57	12,384.21	-2,619.03	33.53	2,619.19	2.21	-2.07	0.76
15,172.00	87.04	178.39	12,389.45	-2,713.87	35.22	2,714.04	1.31	0.42	-1.24
15,231.00	89.01	178.07	12,391.48	-2,772.81	37.04	2,772.98	3.38	3.34	-0.54
15,326.00	89.46	182.46	12,392.75	-2,867.77	36.60	2,867.94	4.64	0.47	4.62
15,420.00	91.35	182.19	12,392.09	-2,961.69	32.79	2,961.83	2.03	2.01	-0.29
15,514.00	92.70	182.07	12,388.77	-3,055.56	29.30	3,055.68	1.44	1.44	-0.13
15,608.00	91.09	182.61	12,385.66	-3,149.43	25.46	3,149.53	1.81	-1.71	0.57
15,702.00	92.83	183.76	12,382.44	-3,243.22	20.24	3,243.29	2.22	1.85	1.22
15,796.00	90.98	181.54	12,379.32	-3,337.06	15.90	3,337.10	3.07	-1.97	-2.36
15,891.00	88.84	182.22	12,379.47	-3,432.00	12.79	3,432.02	2.36	-2.25	0.72
15,985.00	87.02	182.90	12,382.86	-3,525.85	8.59	3,525.83	2.07	-1.94	0.72
16,079.00	88.37	180.92	12,386.64	-3,619.71	5.46	3,619.68	2.55	1.44	-2.11



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
16,173.00	87.42	180.28	12,390.09	-3,713.64	4.48	3,713.60	1.22	-1.01	-0.68
16,267.00	88.79	181.99	12,393.20	-3,807.56	2.62	3,807.51	2.33	1.46	1.82
16,361.00	88.11	183.36	12,395.75	-3,901.42	-1.77	3,901.34	1.63	-0.72	1.46
16,455.00	89.46	181.86	12,397.74	-3,995.30	-6.05	3,995.19	2.15	1.44	-1.60
16,550.00	92.41	184.75	12,396.19	-4,090.11	-11.52	4,089.96	4.35	3.11	3.04
16,644.00	92.21	186.27	12,392.40	-4,183.60	-20.54	4,183.39	1.63	-0.21	1.62
16,738.00	92.26	184.50	12,388.73	-4,277.11	-29.36	4,276.85	1.88	0.05	-1.88
16,832.00	88.21	182.57	12,388.35	-4,370.90	-35.15	4,370.61	4.77	-4.31	-2.05
16,927.00	89.68	183.52	12,390.10	-4,465.75	-40.20	4,465.42	1.84	1.55	1.00
17,021.00	89.64	183.25	12,390.66	-4,559.58	-45.75	4,559.22	0.29	-0.04	-0.29
17,116.00	90.61	181.38	12,390.45	-4,654.50	-49.58	4,654.11	2.22	1.02	-1.97
17,211.00	87.68	176.39	12,391.87	-4,749.43	-47.74	4,749.05	6.09	-3.08	-5.25
17,306.00	90.94	174.32	12,393.01	-4,844.10	-40.04	4,843.76	4.06	3.43	-2.18
17,401.00	87.72	170.86	12,394.12	-4,938.27	-27.80	4,938.01	4.97	-3.39	-3.64
17,496.00	90.52	171.85	12,395.58	-5,032.17	-13.52	5,031.99	3.13	2.95	1.04
17,591.00	93.96	173.47	12,391.87	-5,126.30	-1.40	5,126.20	4.00	3.62	1.71
17,686.00	87.74	176.38	12,390.46	-5,220.86	7.00	5,220.81	7.23	-6.55	3.06
17,781.00	89.70	175.57	12,392.58	-5,315.60	13.67	5,315.58	2.23	2.06	-0.85
17,876.00	90.30	177.71	12,392.58	-5,410.43	19.23	5,410.44	2.34	0.63	2.25
17,970.00	90.96	176.20	12,391.55	-5,504.29	24.23	5,504.33	1.75	0.70	-1.61
18,066.00	90.67	179.07	12,390.18	-5,600.18	28.19	5,600.25	3.00	-0.30	2.99
18,161.00	92.18	178.57	12,387.82	-5,695.13	30.14	5,695.21	1.67	1.59	-0.53
18,255.00	93.58	179.85	12,383.10	-5,789.00	31.44	5,789.08	2.02	1.49	1.36
18,350.00	92.67	180.41	12,377.92	-5,883.86	31.22	5,883.94	1.12	-0.96	0.59
18,445.00	88.48	180.21	12,376.96	-5,978.83	30.71	5,978.91	4.42	-4.41	-0.21
18,540.00	88.04	180.74	12,379.85	-6,073.78	29.92	6,073.85	0.72	-0.46	0.56
18,635.00	90.37	180.17	12,381.17	-6,168.76	29.17	6,168.83	2.52	2.45	-0.60
18,730.00	92.34	178.22	12,378.92	-6,263.72	30.50	6,263.79	2.92	2.07	-2.05
18,825.00	88.41	176.08	12,378.30	-6,358.57	35.22	6,358.67	4.71	-4.14	-2.25
18,920.00	89.88	176.84	12,379.72	-6,453.38	41.09	6,453.51	1.74	1.55	0.80
19,015.00	86.53	174.92	12,382.69	-6,548.07	47.91	6,548.24	4.06	-3.53	-2.02
19,110.00	87.54	175.13	12,387.61	-6,642.58	56.14	6,642.80	1.09	1.06	0.22
19,205.00	87.64	178.59	12,391.60	-6,737.34	61.33	6,737.59	3.64	0.11	3.64
19,299.00	89.02	179.84	12,394.34	-6,831.29	62.62	6,831.54	1.98	1.47	1.33
19,394.00	90.82	181.89	12,394.47	-6,926.27	61.19	6,926.51	2.87	1.89	2.16
19,489.00	90.37	181.95	12,393.49	-7,021.21	58.00	7,021.43	0.48	-0.47	0.06
19,584.00	93.81	181.94	12,390.02	-7,116.08	54.78	7,116.28	3.62	3.62	-0.01
19,679.00	95.31	184.57	12,382.47	-7,210.61	49.41	7,210.78	3.18	1.58	2.77
19,773.00	95.07	183.70	12,373.97	-7,303.98	42.66	7,304.11	0.96	-0.26	-0.93
19,843.00	94.29	183.23	12,368.25	-7,373.62	38.44	7,373.72	1.30	-1.11	-0.67
Final Phoenix MWD Survey									
19,855.00	94.29	183.23	12,367.36	-7,385.57	37.77	7,385.66	0.00	0.00	0.00
LTP: 19855' MD									
19,902.00	94.29	183.23	12,363.84	-7,432.36	35.13	7,432.44	0.00	0.00	0.00



Survey Report



Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: Eider 23 Federal
Well: 602H
Wellbore: OH / 65573
Design: Surveys (Scandril Quest)

Local Co-ordinate Reference: Well 602H
TVD Reference: RKB @ 3597.30usft (Scandril Quest)
MD Reference: RKB @ 3597.30usft (Scandril Quest)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

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)
Projection to TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,430.00	11,407.63	355.71	3.81	Tie In
11,560.00	11,537.62	355.45	2.67	First Phoenix MWD Survey
12,309.00	12,212.42	105.49	5.12	FTP: 12309' MD
19,843.00	12,368.25	-7,373.62	38.44	Final Phoenix MWD Survey
19,855.00	12,367.36	-7,385.57	37.77	LTP: 19855' MD
19,902.00	12,363.84	-7,432.36	35.13	Projection to TD