



COG Operating LLC

Lea County(NAD27)

B-52 Federal

#2H

OH

HOBBS OCD

AUG 10 2011

RECEIVED

Plan: Plan #2

Pathfinder X&Y Report

30 June, 2011

Bureau of Land Management
RECEIVED

JUL 26 2011

Carlsbad Field Office
Carlsbad, NM

PATHFINDER®

A Schlumberger Company

AUG 11 2011



Pathfinder
Pathfinder X&Y Report



A Schlumberger Company

Company: COG Operating LLC
Project: Lea County(NAD27)
Site: B-52 Federal
Well: #2H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference: KB=18 @ 3692.00usft
MD Reference: KB=18 @ 3692.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM:5000.1 Single User Db

Project: Lea County(NAD27)

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: B-52 Federal

Site Position:	From:	Map	Northings:	617,258.000 usft	Latitude:	32° 41' 44.599 N
			Easting:	670,083.900 usft	Longitude:	103° 46' 49.636 W
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.30 °

Well: #2H

Well Position	+N/-S	0.00 usft	Northings:	617,258.000 usft	Latitude:	32° 41' 44.599 N
	+E/-W	0.00 usft	Easting:	670,083.900 usft	Longitude:	103° 46' 49.636 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,674.00 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/13/2011	7.74	60.59	48,893

Design: Plan #2

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	269.21

Survey Tool Program: Date 6/30/2011

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	13,777.80	Plan #2 (OH)	MWD	MWD - Standard



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V.Sec (usft)	DLeg (%/100usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	-3,692.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
100.00	0.00	0.00	100.00	-3,592.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
200.00	0.00	0.00	200.00	-3,492.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
300.00	0.00	0.00	300.00	-3,392.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
400.00	0.00	0.00	400.00	-3,292.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
500.00	0.00	0.00	500.00	-3,192.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
600.00	0.00	0.00	600.00	-3,092.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
700.00	0.00	0.00	700.00	-2,992.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
800.00	0.00	0.00	800.00	-2,892.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
900.00	0.00	0.00	900.00	-2,792.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,000.00	0.00	0.00	1,000.00	-2,692.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,100.00	0.00	0.00	1,100.00	-2,592.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,200.00	0.00	0.00	1,200.00	-2,492.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,300.00	0.00	0.00	1,300.00	-2,392.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,400.00	0.00	0.00	1,400.00	-2,292.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,500.00	0.00	0.00	1,500.00	-2,192.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,600.00	0.00	0.00	1,600.00	-2,092.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,700.00	0.00	0.00	1,700.00	-1,992.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,800.00	0.00	0.00	1,800.00	-1,892.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
1,900.00	0.00	0.00	1,900.00	-1,792.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,000.00	0.00	0.00	2,000.00	-1,692.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,100.00	0.00	0.00	2,100.00	-1,592.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,200.00	0.00	0.00	2,200.00	-1,492.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,300.00	0.00	0.00	2,300.00	-1,392.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,400.00	0.00	0.00	2,400.00	-1,292.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,500.00	0.00	0.00	2,500.00	-1,192.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
2,600.00	0.00	0.00	2,600.00	-1,092.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90



Pathfinder
Pathfinder X&Y Report

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2,700.00	0.00	0.00	2,700.00	-992.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
2,800.00	0.00	0.00	2,800.00	-892.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
2,900.00	0.00	0.00	2,900.00	-792.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,000.00	0.00	0.00	3,000.00	-692.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,100.00	0.00	0.00	3,100.00	-592.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,200.00	0.00	0.00	3,200.00	-492.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,300.00	0.00	0.00	3,300.00	-392.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,400.00	0.00	0.00	3,400.00	-292.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,500.00	0.00	0.00	3,500.00	-192.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,600.00	0.00	0.00	3,600.00	-92.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,700.00	0.00	0.00	3,700.00	8.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,800.00	0.00	0.00	3,800.00	108.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
3,900.00	0.00	0.00	3,900.00	208.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,000.00	0.00	0.00	4,000.00	308.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,100.00	0.00	0.00	4,100.00	408.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,200.00	0.00	0.00	4,200.00	508.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,300.00	0.00	0.00	4,300.00	608.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,400.00	0.00	0.00	4,400.00	708.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,500.00	0.00	0.00	4,500.00	808.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,600.00	0.00	0.00	4,600.00	908.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,700.00	0.00	0.00	4,700.00	1,008.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,800.00	0.00	0.00	4,800.00	1,108.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
4,900.00	0.00	0.00	4,900.00	1,208.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
5,000.00	0.00	0.00	5,000.00	1,308.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
5,100.00	0.00	0.00	5,100.00	1,408.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
5,200.00	0.00	0.00	5,200.00	1,508.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
5,300.00	0.00	0.00	5,300.00	1,608.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		



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5,400.00	0.00	0.00	5,400.00	1,708.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
5,500.00	0.00	0.00	5,500.00	1,808.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
5,600.00	0.00	0.00	5,600.00	1,908.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
5,700.00	0.00	0.00	5,700.00	2,008.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
5,800.00	0.00	0.00	5,800.00	2,108.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
5,900.00	0.00	0.00	5,900.00	2,208.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,000.00	0.00	0.00	6,000.00	2,308.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,100.00	0.00	0.00	6,100.00	2,408.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,200.00	0.00	0.00	6,200.00	2,508.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,300.00	0.00	0.00	6,300.00	2,608.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,400.00	0.00	0.00	6,400.00	2,708.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,500.00	0.00	0.00	6,500.00	2,808.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,600.00	0.00	0.00	6,600.00	2,908.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,700.00	0.00	0.00	6,700.00	3,008.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,800.00	0.00	0.00	6,800.00	3,108.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
6,900.00	0.00	0.00	6,900.00	3,208.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,000.00	0.00	0.00	7,000.00	3,308.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,100.00	0.00	0.00	7,100.00	3,408.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,200.00	0.00	0.00	7,200.00	3,508.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,300.00	0.00	0.00	7,300.00	3,608.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,400.00	0.00	0.00	7,400.00	3,708.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,500.00	0.00	0.00	7,500.00	3,808.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,600.00	0.00	0.00	7,600.00	3,908.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,700.00	0.00	0.00	7,700.00	4,008.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,800.00	0.00	0.00	7,800.00	4,108.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
7,900.00	0.00	0.00	7,900.00	4,208.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90
8,000.00	0.00	0.00	8,000.00	4,308.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90



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8,100.00	0.00	0.00	8,100.00	4,408.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,200.00	0.00	0.00	8,200.00	4,508.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,300.00	0.00	0.00	8,300.00	4,608.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,400.00	0.00	0.00	8,400.00	4,708.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,500.00	0.00	0.00	8,500.00	4,808.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,600.00	0.00	0.00	8,600.00	4,908.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,700.00	0.00	0.00	8,700.00	5,008.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,800.00	0.00	0.00	8,800.00	5,108.00	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,882.54	0.00	0.00	8,882.54	5,190.54	0.00	0.00	0.00	0.00	617,258.00	670,083.90		
8,900.00	2.10	269.21	8,900.00	5,208.00	0.00	-0.32	0.32	12.00	617,258.00	670,083.58		
8,925.00	5.10	269.21	8,924.94	5,232.94	-0.03	-1.89	1.89	12.00	617,257.97	670,082.01		
8,950.00	8.10	269.21	8,949.78	5,257.78	-0.07	-4.76	4.76	12.00	617,257.93	670,079.14		
8,975.00	11.10	269.21	8,974.42	5,282.42	-0.12	-8.92	8.92	12.00	617,257.88	670,074.98		
9,000.00	14.10	269.21	8,998.82	5,306.82	-0.20	-14.37	14.38	12.00	617,257.80	670,069.53		
9,025.00	17.10	269.21	9,022.90	5,330.90	-0.29	-21.09	21.10	12.00	617,257.71	670,062.81		
9,050.00	20.10	269.21	9,046.59	5,354.59	-0.40	-29.06	29.07	12.00	617,257.60	670,054.84		
9,075.00	23.10	269.21	9,069.83	5,377.83	-0.53	-38.26	38.27	12.00	617,257.47	670,045.64		
9,100.00	26.10	269.21	9,092.56	5,400.56	-0.67	-48.67	48.67	12.00	617,257.33	670,035.23		
9,125.00	29.10	269.21	9,114.71	5,422.71	-0.83	-60.24	60.25	12.00	617,257.17	670,023.66		
9,150.00	32.10	269.21	9,136.23	5,444.23	-1.01	-72.97	72.97	12.00	617,256.99	670,010.93		
9,175.00	35.10	269.21	9,157.05	5,465.05	-1.20	-86.80	86.80	12.00	617,256.80	669,997.10		
9,200.00	38.10	269.21	9,177.12	5,485.12	-1.40	-101.70	101.71	12.00	617,256.60	669,982.20		
9,225.00	41.10	269.21	9,196.38	5,504.38	-1.62	-117.63	117.64	12.00	617,256.38	669,966.27		
9,250.00	44.10	269.21	9,214.79	5,522.79	-1.86	-134.54	134.56	12.00	617,256.14	669,949.36		
9,275.00	47.10	269.21	9,232.28	5,540.28	-2.10	-152.40	152.42	12.00	617,255.90	669,931.50		
9,300.00	50.10	269.21	9,248.81	5,556.81	-2.36	-171.15	171.16	12.00	617,255.64	669,912.75		
9,325.00	53.10	269.21	9,264.34	5,572.34	-2.63	-190.74	190.75	12.00	617,255.37	669,893.16		



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9,350.00	56.10	269.21	9,278.82	5,586.82	-2.91	-211.11	211.13	12.00	617,255.09	669,872.79
9,375.00	59.10	269.21	9,292.21	5,600.21	-3.20	-232.21	232.23	12.00	617,254.80	669,851.69
9,400.00	62.10	269.21	9,304.49	5,612.49	-3.50	-253.99	254.01	12.00	617,254.50	669,829.91
9,425.00	65.10	269.21	9,315.60	5,623.60	-3.81	-276.37	276.40	12.00	617,254.19	669,807.53
9,450.00	68.10	269.21	9,325.53	5,633.53	-4.13	-299.31	299.34	12.00	617,253.87	669,784.59
9,475.00	71.10	269.21	9,334.25	5,642.25	-4.45	-322.74	322.77	12.00	617,253.55	669,761.16
9,500.00	74.10	269.21	9,341.73	5,649.73	-4.78	-346.59	346.62	12.00	617,253.22	669,737.31
9,525.00	77.10	269.21	9,347.94	5,655.94	-5.11	-370.80	370.83	12.00	617,252.89	669,713.10
9,550.00	80.10	269.21	9,352.89	5,660.89	-5.45	-395.30	395.34	12.00	617,252.55	669,688.60
9,575.00	83.10	269.21	9,356.54	5,664.54	-5.79	-420.02	420.06	12.00	617,252.21	669,663.88
9,600.00	86.10	269.21	9,358.90	5,666.90	-6.13	-444.91	444.95	12.00	617,251.87	669,638.99
9,625.00	89.10	269.21	9,359.94	5,667.94	-6.48	-469.88	469.93	12.00	617,251.52	669,614.02
9,632.54	90.00	269.21	9,360.00	5,668.00	-6.58	-477.42	477.47	12.00	617,251.42	669,606.48
LP (B-52 Federal #2)										
9,700.00	90.00	269.21	9,360.00	5,668.00	-7.51	-544.87	544.93	0.00	617,250.49	669,539.03
9,800.00	90.00	269.21	9,360.00	5,668.00	-8.89	-644.86	644.93	0.00	617,249.11	669,439.04
9,900.00	90.00	269.21	9,360.00	5,668.00	-10.27	-744.85	744.93	0.00	617,247.73	669,339.05
10,000.00	90.00	269.21	9,360.00	5,668.00	-11.65	-844.85	844.93	0.00	617,246.35	669,239.05
10,100.00	90.00	269.21	9,360.00	5,668.00	-13.03	-944.84	944.93	0.00	617,244.97	669,139.06
10,200.00	90.00	269.21	9,360.00	5,668.00	-14.41	-1,044.83	1,044.93	0.00	617,243.59	669,039.07
10,300.00	90.00	269.21	9,360.00	5,668.00	-15.79	-1,144.82	1,144.93	0.00	617,242.21	668,939.08
10,400.00	90.00	269.21	9,360.00	5,668.00	-17.16	-1,244.81	1,244.93	0.00	617,240.84	668,839.09
10,500.00	90.00	269.21	9,360.00	5,668.00	-18.54	-1,344.80	1,344.93	0.00	617,239.46	668,739.10
10,600.00	90.00	269.21	9,360.00	5,668.00	-19.92	-1,444.79	1,444.93	0.00	617,238.08	668,639.11
10,700.00	90.00	269.21	9,360.00	5,668.00	-21.30	-1,544.78	1,544.93	0.00	617,236.70	668,539.12
10,800.00	90.00	269.21	9,360.00	5,668.00	-22.68	-1,644.77	1,644.93	0.00	617,235.32	668,439.13
10,900.00	90.00	269.21	9,360.00	5,668.00	-24.06	-1,744.76	1,744.93	0.00	617,233.94	668,339.14



Pathfinder
Pathfinder X&Y Report



A Schlumberger Company

Company: COG Operating LLC
Project: Lea County(NAD27)
Site: B-52 Federal
Well: #2H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference

TVD Reference

MD Reference

North Reference

Survey Calculation Method

Database

Well #2H

KB=18 @ 3692.00usft

KB=18 @ 3692.00usft

Grd

Minimum Curvature

EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,000.00	90.00	269.21	9,360.00	5,668.00	-25.44	-1,844.75	1,844.93	0.00	617,232.56	668,239.15
11,100.00	90.00	269.21	9,360.00	5,668.00	-26.82	-1,944.74	1,944.93	0.00	617,231.18	668,139.16
11,200.00	90.00	269.21	9,360.00	5,668.00	-28.19	-2,044.73	2,044.93	0.00	617,229.81	668,039.17
11,300.00	90.00	269.21	9,360.00	5,668.00	-29.57	-2,144.72	2,144.93	0.00	617,228.43	667,939.18
11,400.00	90.00	269.21	9,360.00	5,668.00	-30.95	-2,244.71	2,244.93	0.00	617,227.05	667,839.19
11,500.00	90.00	269.21	9,360.00	5,668.00	-32.33	-2,344.70	2,344.93	0.00	617,225.67	667,739.20
11,600.00	90.00	269.21	9,360.00	5,668.00	-33.71	-2,444.69	2,444.93	0.00	617,224.29	667,639.21
11,700.00	90.00	269.21	9,360.00	5,668.00	-35.09	-2,544.68	2,544.93	0.00	617,222.91	667,539.22
11,800.00	90.00	269.21	9,360.00	5,668.00	-36.47	-2,644.67	2,644.93	0.00	617,221.53	667,439.23
11,900.00	90.00	269.21	9,360.00	5,668.00	-37.85	-2,744.66	2,744.93	0.00	617,220.15	667,339.24
12,000.00	90.00	269.21	9,360.00	5,668.00	-39.22	-2,844.65	2,844.93	0.00	617,218.78	667,239.25
12,100.00	90.00	269.21	9,360.00	5,668.00	-40.60	-2,944.65	2,944.93	0.00	617,217.40	667,139.25
12,200.00	90.00	269.21	9,360.00	5,668.00	-41.98	-3,044.64	3,044.93	0.00	617,216.02	667,039.26
12,300.00	90.00	269.21	9,360.00	5,668.00	-43.36	-3,144.63	3,144.93	0.00	617,214.64	666,939.27
12,400.00	90.00	269.21	9,360.00	5,668.00	-44.74	-3,244.62	3,244.93	0.00	617,213.26	666,839.28
12,500.00	90.00	269.21	9,360.00	5,668.00	-46.12	-3,344.61	3,344.93	0.00	617,211.88	666,739.29
12,600.00	90.00	269.21	9,360.00	5,668.00	-47.50	-3,444.60	3,444.93	0.00	617,210.50	666,639.30
12,700.00	90.00	269.21	9,360.00	5,668.00	-48.88	-3,544.59	3,544.93	0.00	617,209.12	666,539.31
12,800.00	90.00	269.21	9,360.00	5,668.00	-50.26	-3,644.58	3,644.93	0.00	617,207.74	666,439.32
12,900.00	90.00	269.21	9,360.00	5,668.00	-51.63	-3,744.57	3,744.93	0.00	617,206.37	666,339.33
13,000.00	90.00	269.21	9,360.00	5,668.00	-53.01	-3,844.56	3,844.93	0.00	617,204.99	666,239.34
13,100.00	90.00	269.21	9,360.00	5,668.00	-54.39	-3,944.55	3,944.93	0.00	617,203.61	666,139.35
13,200.00	90.00	269.21	9,360.00	5,668.00	-55.77	-4,044.54	4,044.93	0.00	617,202.23	666,039.36
13,300.00	90.00	269.21	9,360.00	5,668.00	-57.15	-4,144.53	4,144.93	0.00	617,200.85	665,939.37
13,400.00	90.00	269.21	9,360.00	5,668.00	-58.53	-4,244.52	4,244.93	0.00	617,199.47	665,839.38
13,500.00	90.00	269.21	9,360.00	5,668.00	-59.91	-4,344.51	4,344.93	0.00	617,198.09	665,739.39
13,600.00	90.00	269.21	9,360.00	5,668.00	-61.29	-4,444.50	4,444.93	0.00	617,196.71	665,639.40



Pathfinder
Pathfinder X&Y Report



A Schlumberger Company

Company: COG Operating LLC
Project: Lea County(NAD27)
Site: B-52 Federal
Well: #2H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference: Well #2H
TVD Reference: KB=18 @ 3692.00usft
MD Reference: KB=18 @ 3692.00usft
North Reference: Grid
Survey/Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

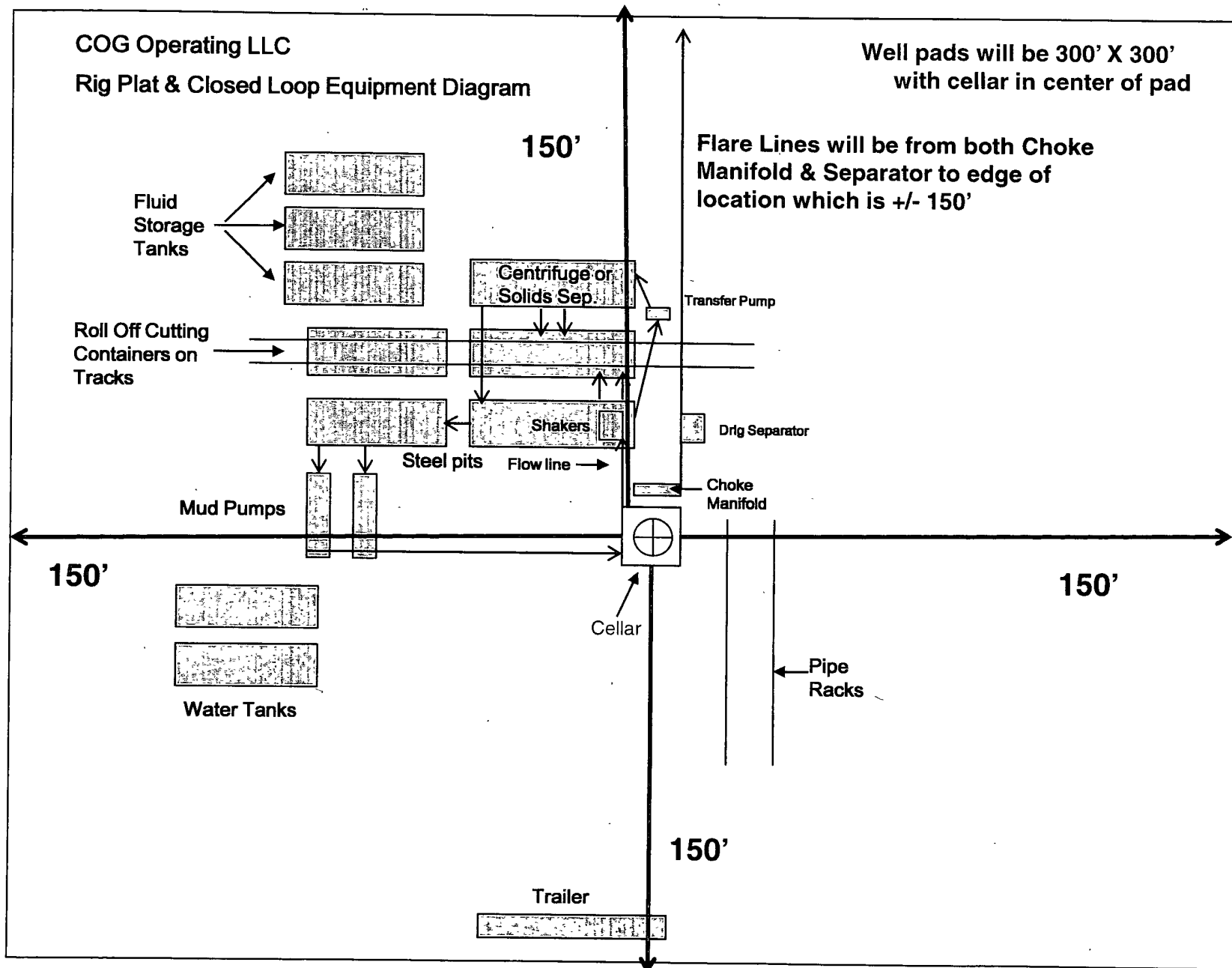
Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (%/100usft)	Northing (usft)	Easting (usft)
13,700.00	90.00	269.21	9,360.00	5,668.00	-62.66	-4,544.49	4,544.93	0.00	617,195.34	665,539.41
13,777.81	90.00	269.21	9,360.00	5,668.00	-63.74	-4,622.29	4,622.73	0.00	617,194.26	665,461.61
BHL (B-52 Federal #2)										

Checked By: _____ Approved By: _____ Date: _____

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pads will be 300' X 300'
with cellar in center of pad



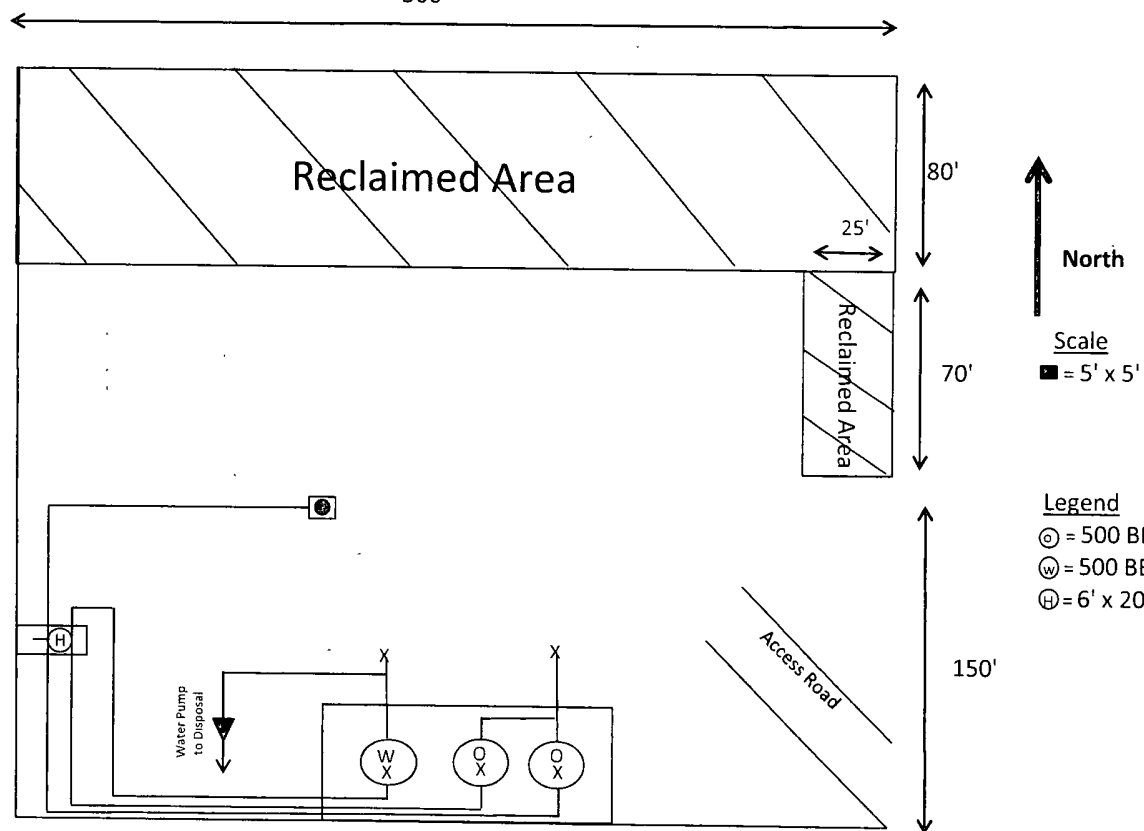
13 3/8	surface csg in a	17 1/2	inch hole.	<u>Design Factors</u>			<u>SURFACE</u>		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	54.50	J 55	ST&C	8.2	2.25	1.59	1,150	62,675	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,409 Tail Cmt does not circ to sfc.							Totals:	1,150 62,675	
<u>Comparison of Proposed to Minimum Required Cement Volumes</u>									
Hole	Annular	Proposed	CuFt Cmt	Min	Excess	Drilling	Calc	Req'd	Min Dist
Size	Volume	Sx Cmt	Proposed	Cu Ft	% Cmt	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	700	1223	847	44	8.40	988	2M	1.56

9 5/8 casing inside the 13 3/8 casing.					<u>Design Factors</u>		<u>INTERMEDIATE</u>		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	36.00	J 55	ST&C	3.32	1.18	0.77	3,300	118,800	
"B"							0	0	
"C"							0	0	
"D"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,024							Totals:	3,300 118,800	
<u>The cement volume(s) proposed may achieve a top</u>					0	<u>feet from surface.</u>			
Hole	Annular	Proposed	CuFt Cmt	Min	Excess	Drilling	Calc	Req'd	Min Dist
Size	Volume	Sx Cmt	Proposed	Cu Ft	% Cmt	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	850	1510	1110	36	10.00	2413	3M	0.81
Frac Gradient is 1.07 Safety Factor for Burst is OK									

5 1/2	casing inside the		9 5/8	<u>Design Factors</u>			<u>PRODUCTION</u>	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	17.00	P 110	LT&C	1 46	1.51	2.33	13,778	234,226
"B"							0	0
"C"							0	0
"D"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,059							Totals:	13,778 234,226
A	Segment	Design	Factors	would be:	2.80	1.71	if it were a vertical wellbore.	
<u>The cement volume(s) proposed may achieve a top</u>					<u>2900</u>	<u>feet from surface.</u>		
Hole	Annular	Proposed	CuFt Cmt.	Min	Excess	Drilling	Calc	Req'd
Size	Volume	Sx Cmt	Proposed	Cu Ft	% Cmt	Mud Wt	MASP	BOPE
7 7/8	0.1733	1800	2634	1929	37	9.00		Min Dist Hole-Cplg 0.91

Production Facility Layout

Patterson B-52 Federal #2H
300'



Carlsbad Field Office NEPA Checklist

Friday, July 29, 2011

EA	NEPA #:	DOI-BLM-NM-P020-2011-1151-EA	Project Type:	WELL RELOCATION	Recd Date:	07/26/2011
Reference Number:	NMNM118720	Project Name:	PATTERSON B 52 FEDERAL NO 2H	Routing Started:	07/26/2011	
Project Lead:	FAST, JOHN	Applicant:	COG OPERATING LLC	Review Due:		

Status: **COMPLETE**

☐

NEPA Coordinator Initial Review

☐

NEPA Coordinator Final Review

Resource/Activity	Not Present	Not Impacted	** May be Impacted	Reviewer	COAs/Stips Req	Sign Off Date
Wastes, Hazardous or Solid*	☒	☐	☐	Fast, John	☐	07/26/2011
Public Health and Safety	☐	☒	☐			
Environmental Justice*	☐	☒	☐	Fast, John	☐	07/26/2011
General Topography/Surface Geology	☐	☒	☐			
Prime or Unique Farmlands*	☒	☐	☐			
Lands/Realty, ROW	☐	☒	☐	Fast, John	☐	07/26/2011
Access/Transportation	☐	☒	☐			
Vegetation/Forestry	☐	☐	☒	Fast, John	☐	07/26/2011
Livestock Grazing	☐	☐	☒			
Invasive, Non-Native Species*	☐	☐	☒			
Soils	☐	☒	☐	Fast, John	☐	07/26/2011
Air Quality*	☐	☒	☐			
Floodplains*	☐	☒	☐	Fast, John	☐	07/26/2011
Water Quality Surface/Ground*	☐	☒	☐			
Watershed	☐	☒	☐			
Mineral Materials	☐	☒	☐	Fast, John	☐	07/26/2011
Potash	☐	☒	☐	Fast, John	☐	07/26/2011
Federally Proposed, Threatened or Endangered Species*	☒	☐		McAiley, Rex	☒	07/29/2011
USFWS Concurrence						
Wetlands/Riparian Zones*	☒	☐	☐			
Special Status Species	☐	☐	☒			
Wildlife Habitat	☐	☐	☒			
Cave/Karst Resources	☐	☒	☐	Fast, John	☐	07/26/2011
ACEC's*	☐	☒	☐	Fast, John	☐	07/26/2011
Wild/Scenic Rivers*	☒	☐	☐	Fast, John	☐	07/26/2011
Wilderness*	☒	☐	☐			
Outdoor Recreation	☐	☒	☐			
Visual Resources	☐	☒	☐			
Native American Religious Concerns*	Unk	Unk	Unk	Renn, James 05-5002	☐	07/29/2011
Cultural Resources*	☐	☐	☒			
Paleontology	Unk	Unk	Unk			

* "Critical Element" --- must be addressed in all NEPA documents

** "Affected Element" --- must be addressed in the attached EA

*1 May affect T&E, Not likely to be Adversely Affected

*2 May affect T&E, likely to be Adversely Affected

Reason for Delay:

The EA gives the new location as same as the original location. JCR 7-28-11