



HOBBS OCD

DEC 14 2011

RECEIVED

COG Operating LLC

Lea County(NAD27)
Airbonita 12 Federal
2H
OH

Plan: Post Gyro Plan #2

Pathfinder X & Y Report

07 December, 2011

PATHFINDER®
A Schlumberger Company

30-025-40179

DEC 15 2011



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD27)
Site: Airbonita 12 Federal
Well: 2H
Wellbore: OH
Design: Post Gyro Plan #2

Local Co-ordinate Reference: Well 2H
TVD Reference: WELL @ 3652.0usft (Original Well Elev)
MD Reference: WELL @ 3652.0usft (Original Well Elev)
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: Airbonita 12 Federal

Site Position:		Northing:	509,961.400 usft	Latitude:	32° 24' 0.042 N
From:	Map	Easting:	718,394.300 usft	Longitude:	103° 37' 32.672 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well: 2H

Well Position	+N-S	0.0 usft	Northing:	509,961.400 usft	Latitude:	32° 24' 0.042 N
	+E-W	0.0 usft	Easting:	718,394.300 usft	Longitude:	103° 37' 32.672 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	3,635.0 usft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	1/21/2011	7.66	60.37	48,790

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Audit Notes:

Version: Phase: PLAN Tie On Depth: 9,300.0

Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	0.0	0.0	0.0	359.60



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Survey Tool Program Date: 12/7/2011

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	9,300.0	Gyro #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
9,300.0	14,139.4	Post Gyro Plan #2 (OH)	MWD	MWD - Standard

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)
0.0	0.00	0.00	0.0	-3,652.0	0.0	0.0	0.0	0.00	509,961.40	718,394.30
100.0	0.41	163.65	100.0	-3,552.0	-0.3	0.1	-0.3	0.41	509,961.06	718,394.40
200.0	0.36	195.26	200.0	-3,452.0	-1.0	0.1	-1.0	0.22	509,960.41	718,394.42
300.0	0.45	214.54	300.0	-3,352.0	-1.6	-0.2	-1.6	0.16	509,959.78	718,394.11
400.0	0.64	221.29	400.0	-3,252.0	-2.4	-0.8	-2.4	0.20	509,959.04	718,393.52
500.0	0.86	225.42	500.0	-3,152.0	-3.3	-1.7	-3.3	0.23	509,958.09	718,392.62
600.0	1.07	229.06	600.0	-3,052.0	-4.4	-2.9	-4.4	0.22	509,956.96	718,391.36
700.0	1.12	228.42	699.9	-2,952.1	-5.7	-4.4	-5.7	0.05	509,955.70	718,389.94
800.0	1.41	225.56	799.9	-2,852.1	-7.2	-6.0	-7.2	0.30	509,954.19	718,388.33
900.0	1.44	222.86	899.9	-2,752.1	-9.0	-7.7	-8.9	0.07	509,952.40	718,386.60
1,000.0	1.36	207.76	999.9	-2,652.1	-11.0	-9.1	-10.9	0.38	509,950.43	718,385.19
1,100.0	1.45	193.62	1,099.8	-2,552.2	-13.2	-10.0	-13.2	0.36	509,948.15	718,384.34
1,200.0	1.44	185.34	1,199.8	-2,452.2	-15.7	-10.4	-15.7	0.21	509,945.67	718,383.93
1,300.0	1.48	192.25	1,299.8	-2,352.2	-18.2	-10.8	-18.2	0.18	509,943.16	718,383.54
1,400.0	1.08	185.67	1,399.7	-2,252.3	-20.4	-11.1	-20.4	0.43	509,940.96	718,383.17
1,500.0	1.13	176.83	1,499.7	-2,152.3	-22.4	-11.2	-22.3	0.18	509,939.04	718,383.13
1,600.0	1.05	189.25	1,599.7	-2,052.3	-24.3	-11.3	-24.2	0.25	509,937.15	718,383.04
1,700.0	1.10	174.29	1,699.7	-1,952.3	-26.1	-11.3	-26.0	0.28	509,935.29	718,382.99
1,800.0	1.25	167.42	1,799.7	-1,852.3	-28.1	-11.0	-28.1	0.21	509,933.27	718,383.32
1,900.0	1.12	143.51	1,899.6	-1,752.4	-30.0	-10.2	-29.9	0.51	509,931.42	718,384.14
2,000.0	1.45	132.67	1,999.6	-1,652.4	-31.6	-8.7	-31.6	0.41	509,929.77	718,385.65



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Well 2H
WELL @ 3652.0usft (Original Well Elev)
WELL @ 3652.0usft (Original Well Elev)
Grid:
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)
2,100.0	1.44	120.77	2,099.6	-1,552.4	-33.1	-6.6	-33.1	0.30	509,928.27	718,387.66
2,200.0	1.82	112.04	2,199.6	-1,452.4	-34.4	-4.1	-34.3	0.45	509,927.04	718,390.21
2,300.0	2.47	97.60	2,299.5	-1,352.5	-35.2	-0.5	-35.2	0.84	509,926.15	718,393.82
2,400.0	3.07	90.22	2,399.4	-1,252.6	-35.5	4.3	-35.6	0.70	509,925.86	718,398.63
2,500.0	3.10	86.46	2,499.2	-1,152.8	-35.4	9.7	-35.5	0.20	509,926.02	718,404.01
2,600.0	2.95	88.03	2,599.1	-1,052.9	-35.1	15.0	-35.2	0.17	509,926.27	718,409.28
2,700.0	2.40	88.34	2,699.0	-953.0	-35.0	19.6	-35.1	0.55	509,926.42	718,413.94
2,800.0	1.19	73.98	2,798.9	-853.1	-34.6	22.7	-34.8	1.28	509,928.77	718,417.04
2,900.0	1.75	55.62	2,898.9	-753.1	-33.5	25.0	-33.7	0.72	509,927.92	718,419.29
3,000.0	2.79	52.98	2,998.8	-653.2	-31.2	28.2	-31.4	1.04	509,930.24	718,422.50
3,100.0	4.11	59.46	3,098.6	-553.4	-27.9	33.2	-28.1	1.37	509,933.53	718,427.53
3,200.0	4.97	76.90	3,198.3	-453.7	-25.1	40.5	-25.4	1.62	509,936.33	718,434.83
3,300.0	4.45	73.32	3,298.0	-354.0	-23.0	48.5	-23.3	0.60	509,938.43	718,442.77
3,400.0	3.02	44.78	3,397.8	-254.2	-20.0	54.0	-20.4	2.30	509,941.41	718,448.34
3,500.0	2.91	15.97	3,497.6	-154.4	-15.7	58.6	-16.1	1.48	509,945.72	718,450.89
3,600.0	3.79	355.76	3,597.5	-54.5	-9.9	57.0	-10.3	1.46	509,951.46	718,451.35
3,700.0	3.72	357.40	3,697.3	45.3	-3.4	56.7	-3.8	0.13	509,958.00	718,450.96
3,800.0	1.98	6.82	3,797.1	145.1	1.6	56.7	1.2	1.80	509,962.95	718,451.01
3,900.0	1.67	90.77	3,897.1	245.1	3.2	58.4	2.8	2.45	509,964.65	718,452.68
4,000.0	3.04	128.12	3,997.0	345.0	1.6	61.9	1.2	1.99	509,962.99	718,456.22
4,100.0	2.93	120.95	4,096.9	444.9	-1.4	66.2	-1.8	0.39	509,960.04	718,460.50
4,200.0	2.64	85.69	4,196.8	544.8	-2.5	70.7	-3.0	1.71	509,958.90	718,464.99
4,300.0	1.77	42.42	4,296.7	644.7	-1.2	74.0	-1.7	1.82	509,960.21	718,468.33
4,400.0	1.86	15.77	4,396.7	744.7	1.5	75.5	1.0	0.84	509,962.92	718,469.81
4,500.0	2.07	10.95	4,496.6	844.6	4.9	76.3	4.3	0.27	509,966.25	718,470.59
4,600.0	1.92	13.45	4,596.5	944.5	8.3	77.0	7.7	0.17	509,969.65	718,471.32
4,700.0	1.78	22.00	4,696.5	1,044.5	11.3	78.0	10.8	0.31	509,972.72	718,472.30



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Well 2H
WELL @ 3652.0usft (Original Well Elev)
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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)
4,800.0	1.60	18.60	4,796.4	1,144.4	14.1	79.0	13.5	0.21	509,975.49	718,473.32
4,900.0	1.37	14.59	4,896.4	1,244.4	16.8	79.8	16.0	0.25	509,977.97	718,474.07
5,000.0	1.30	5.34	4,996.4	1,344.4	18.9	80.2	18.3	0.23	509,980.25	718,474.48
5,100.0	1.31	349.94	5,096.4	1,444.4	21.1	80.1	20.5	0.35	509,982.51	718,474.38
5,200.0	1.25	348.70	5,196.3	1,544.3	23.3	79.7	22.7	0.07	509,984.70	718,473.97
5,300.0	1.09	359.49	5,296.3	1,644.3	25.3	79.4	24.8	0.27	509,986.72	718,473.75
5,400.0	1.27	354.11	5,396.3	1,744.3	27.4	79.3	26.8	0.21	509,988.78	718,473.62
5,500.0	0.80	4.96	5,496.3	1,844.3	29.2	79.3	28.6	0.51	509,990.57	718,473.57
5,600.0	0.68	354.51	5,596.3	1,944.3	30.5	79.3	29.9	0.18	509,991.86	718,473.57
5,700.0	0.88	346.61	5,696.2	2,044.2	31.8	79.0	31.2	0.23	509,993.20	718,473.34
5,800.0	0.94	344.79	5,796.2	2,144.2	33.3	78.6	32.8	0.07	509,994.74	718,472.95
5,900.0	0.89	345.50	5,896.2	2,244.2	34.9	78.2	34.3	0.05	509,996.28	718,472.54
6,000.0	0.93	359.72	5,996.2	2,344.2	36.4	78.0	35.9	0.23	509,997.84	718,472.34
6,100.0	0.63	22.13	6,096.2	2,444.2	37.8	78.2	37.2	0.42	509,999.16	718,472.54
6,200.0	0.47	21.09	6,196.2	2,544.2	38.7	78.6	38.1	0.18	510,000.06	718,472.90
6,300.0	0.70	21.05	6,296.2	2,644.2	39.6	79.0	39.1	0.23	510,001.01	718,473.26
6,400.0	0.47	32.99	6,396.2	2,744.2	40.5	79.4	40.0	0.26	510,001.92	718,473.71
6,500.0	0.53	30.73	6,496.2	2,844.2	41.3	79.9	40.7	0.06	510,002.66	718,474.17
6,600.0	0.42	11.54	6,596.2	2,944.2	42.0	80.2	41.5	0.19	510,003.42	718,474.48
6,700.0	0.44	358.30	6,696.2	3,044.2	42.8	80.2	42.2	0.10	510,004.18	718,474.54
6,800.0	0.32	7.68	6,796.2	3,144.2	43.4	80.3	42.9	0.13	510,004.82	718,474.56
6,900.0	0.30	339.29	6,896.2	3,244.2	43.9	80.2	43.4	0.15	510,005.35	718,474.51
7,000.0	0.21	28.85	6,996.2	3,344.2	44.4	80.2	43.8	0.23	510,005.75	718,474.50
7,100.0	0.46	30.46	7,096.2	3,444.2	44.9	80.5	44.3	0.25	510,006.26	718,474.80
7,200.0	0.33	347.47	7,196.2	3,544.2	45.5	80.6	44.9	0.31	510,006.89	718,474.94
7,300.0	0.18	345.77	7,296.2	3,644.2	45.9	80.5	45.3	0.15	510,007.32	718,474.84
7,400.0	0.30	243.55	7,396.2	3,744.2	46.0	80.3	45.4	0.38	510,007.35	718,474.56



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7,500.0	0.31	190.53	7,496.2	3,844.2	45.6	80.0	45.0	0.27	510,006.97	718,474.28
7,600.0	0.49	235.46	7,596.2	3,944.2	45.1	79.6	44.5	0.35	510,006.46	718,473.88
7,700.0	0.58	231.28	7,696.2	4,044.2	44.5	78.8	43.9	0.10	510,005.90	718,473.13
7,800.0	0.57	234.76	7,796.2	4,144.2	43.9	78.0	43.3	0.04	510,005.30	718,472.33
7,900.0	0.64	231.60	7,896.1	4,244.1	43.3	77.2	42.7	0.08	510,004.67	718,471.49
8,000.0	0.51	217.28	7,996.1	4,344.1	42.6	76.5	42.0	0.19	510,003.97	718,470.78
8,100.0	0.63	216.41	8,096.1	4,444.1	41.8	75.9	41.2	0.12	510,003.17	718,470.18
8,200.0	0.77	207.37	8,196.1	4,544.1	40.7	75.2	40.2	0.18	510,002.13	718,469.55
8,300.0	0.94	196.35	8,296.1	4,644.1	39.3	74.7	38.8	0.24	510,000.75	718,469.01
8,400.0	0.98	208.76	8,396.1	4,744.1	37.8	74.1	37.3	0.21	509,999.21	718,468.36
8,500.0	0.77	196.82	8,496.1	4,844.1	36.4	73.5	35.9	0.28	509,997.82	718,467.76
8,600.0	0.99	210.60	8,596.1	4,944.1	35.0	72.8	34.5	0.30	509,996.43	718,467.12
8,700.0	1.06	209.32	8,696.1	5,044.1	33.5	71.9	33.0	0.07	509,994.88	718,466.23
8,800.0	0.83	221.33	8,796.1	5,144.1	32.1	71.0	31.6	0.30	509,993.53	718,465.30
8,900.0	0.93	218.58	8,896.0	5,244.0	31.0	70.0	30.5	0.11	509,992.35	718,464.32
9,000.0	1.04	206.53	8,996.0	5,344.0	29.5	69.1	28.0	0.23	509,990.90	718,463.41
9,100.0	0.82	184.60	9,096.0	5,444.0	28.0	68.6	27.5	0.41	509,989.38	718,462.94
9,200.0	0.46	187.11	9,196.0	5,544.0	26.9	68.5	26.4	0.36	509,988.27	718,462.84
9,300.0	0.78	323.57	9,296.0	5,644.0	27.0	68.1	26.5	1.16	509,988.42	718,462.38
9,371.9	0.78	323.57	9,367.9	5,715.9	27.8	67.5	27.3	0.00	509,989.20	718,461.80
9,375.0	1.10	334.76	9,371.0	5,719.0	27.8	67.5	27.4	12.00	509,989.25	718,461.77
9,400.0	4.03	352.39	9,396.0	5,744.0	28.9	67.3	26.5	12.00	509,990.34	718,461.56
9,425.0	7.02	355.13	9,420.9	5,768.9	31.3	67.0	30.9	12.00	509,992.73	718,461.31
9,450.0	10.02	356.23	9,445.6	5,793.6	35.0	66.7	34.6	12.00	509,996.43	718,461.04
9,475.0	13.02	356.83	9,470.1	5,818.1	40.0	66.4	39.5	12.00	510,001.41	718,460.74
9,500.0	16.02	357.21	9,494.3	5,842.3	46.3	66.1	45.8	12.00	510,007.67	718,460.41
9,525.0	19.01	357.47	9,518.1	5,866.1	53.8	65.8	53.3	12.00	510,015.18	718,460.07



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9,550.0	22.01	357.67	9,541.5	5,889.5	62.5	65.4	62.1	12.00	510,023.93	718,459.70
9,575.0	25.01	357.81	9,564.4	5,912.4	72.5	65.0	72.0	12.00	510,033.90	718,459.30
9,600.0	28.01	357.93	9,586.8	5,934.8	83.7	64.6	83.2	12.00	510,045.05	718,458.89
9,625.0	31.01	358.03	9,608.8	5,956.6	96.0	64.2	95.5	12.00	510,057.38	718,458.46
9,650.0	34.01	358.11	9,629.6	5,977.6	109.4	63.7	108.9	12.00	510,070.78	718,458.01
9,675.0	37.01	358.18	9,650.0	5,998.0	123.9	63.2	123.4	12.00	510,085.30	718,457.54
9,700.0	40.01	358.24	9,669.5	6,017.5	139.5	62.8	139.0	12.00	510,100.85	718,457.05
9,725.0	43.01	358.30	9,688.3	6,036.3	156.0	62.3	155.6	12.00	510,117.41	718,456.55
9,750.0	46.01	358.34	9,706.1	6,054.1	173.5	61.7	173.1	12.00	510,134.93	718,456.04
9,775.0	49.01	358.39	9,723.0	6,071.0	192.0	61.2	191.5	12.00	510,153.36	718,455.51
9,800.0	52.01	358.43	9,738.9	6,086.9	211.2	60.7	210.8	12.00	510,172.64	718,454.98
9,825.0	55.01	358.46	9,753.7	6,101.7	231.3	60.1	230.9	12.00	510,192.73	718,454.43
9,850.0	58.01	358.50	9,767.5	6,115.5	252.2	59.6	251.7	12.00	510,213.57	718,453.88
9,875.0	61.01	358.53	9,780.2	6,128.2	273.7	59.0	273.3	12.00	510,235.10	718,453.32
9,900.0	64.01	358.56	9,791.8	6,139.8	295.9	58.5	295.5	12.00	510,257.27	718,452.76
9,925.0	67.01	358.59	9,802.1	6,150.1	318.6	57.9	318.2	12.00	510,280.01	718,452.19
9,950.0	70.01	358.61	9,811.3	6,159.3	341.9	57.3	341.5	12.00	510,303.26	718,451.62
9,975.0	73.01	358.64	9,819.2	6,167.2	365.6	56.8	365.2	12.00	510,326.96	718,451.06
10,000.0	76.01	358.67	9,825.9	6,173.9	389.6	56.2	389.2	12.00	510,351.05	718,450.49
10,025.0	79.01	358.69	9,831.3	6,179.3	414.0	55.6	413.6	12.00	510,375.45	718,449.93
10,050.0	82.01	358.72	9,835.4	6,183.4	438.7	55.1	438.3	12.00	510,400.09	718,449.37
10,075.0	85.01	358.74	9,838.2	6,186.2	463.5	54.5	463.1	12.00	510,424.93	718,448.82
10,100.0	88.01	358.76	9,839.7	6,187.7	488.5	54.0	488.1	12.00	510,449.87	718,448.27
10,120.2	90.43	358.78	9,840.0	6,188.0	508.6	53.5	508.2	12.00	510,470.02	718,447.84
10,200.0	90.43	358.78	9,839.4	6,187.4	588.4	51.8	588.1	0.00	510,549.84	718,446.14
10,300.0	90.43	358.78	9,838.7	6,186.7	688.4	49.7	688.0	0.00	510,649.82	718,444.02
10,400.0	90.43	358.78	9,837.9	6,185.9	788.4	47.6	788.0	0.00	510,749.79	718,441.89



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Lea County(NAD27)
Site: Airbonita 12 Federal
Well: 2H
Wellbore: OH
Design: Post Gyro Plan #2

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

Well 2H
WELL @ 3652.0usft (Original Well Elev)
WELL @ 3652.0usft (Original Well Elev)
Gnd
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)
10,500.0	90.43	358.78	9,837.2	6,185.2	888.4	45.5	888.0	0.00	510,849.77	718,439.77
10,600.0	90.43	358.78	9,836.4	6,184.4	988.3	43.3	988.0	0.00	510,949.74	718,437.64
10,700.0	90.43	358.78	9,835.7	6,183.7	1,088.3	41.2	1,088.0	0.00	511,049.72	718,435.51
10,800.0	90.43	358.78	9,834.9	6,182.9	1,188.3	39.1	1,188.0	0.00	511,149.69	718,433.39
10,900.0	90.43	358.78	9,834.2	6,182.2	1,288.3	37.0	1,288.0	0.00	511,249.66	718,431.26
11,000.0	90.43	358.78	9,833.5	6,181.5	1,388.2	34.8	1,388.0	0.00	511,349.64	718,429.14
11,100.0	90.43	358.78	9,832.7	6,180.7	1,488.2	32.7	1,487.9	0.00	511,449.61	718,427.01
11,200.0	90.43	358.78	9,832.0	6,180.0	1,588.2	30.6	1,587.9	0.00	511,549.59	718,424.89
11,300.0	90.43	358.78	9,831.2	6,179.2	1,688.2	28.5	1,687.9	0.00	511,649.56	718,422.76
11,400.0	90.43	358.78	9,830.5	6,178.5	1,788.1	26.3	1,787.9	0.00	511,749.54	718,420.63
11,500.0	90.43	358.78	9,829.7	6,177.7	1,888.1	24.2	1,887.9	0.00	511,849.51	718,418.51
11,600.0	90.43	358.78	9,829.0	6,177.0	1,988.1	22.1	1,987.9	0.00	511,949.49	718,416.38
11,700.0	90.43	358.78	9,828.2	6,176.2	2,088.1	20.0	2,087.9	0.00	512,049.46	718,414.26
11,800.0	90.43	358.78	9,827.5	6,175.5	2,188.0	17.8	2,187.9	0.00	512,149.44	718,412.13
11,900.0	90.43	358.78	9,826.7	6,174.7	2,288.0	15.7	2,287.8	0.00	512,249.41	718,410.00
12,000.0	90.43	358.78	9,826.0	6,174.0	2,388.0	13.6	2,387.8	0.00	512,349.39	718,407.88
12,100.0	90.43	358.78	9,825.2	6,173.2	2,488.0	11.5	2,487.8	0.00	512,449.36	718,405.75
12,200.0	90.43	358.78	9,824.5	6,172.5	2,587.9	9.3	2,587.8	0.00	512,549.33	718,403.63
12,300.0	90.43	358.78	9,823.7	6,171.7	2,687.9	7.2	2,687.8	0.00	512,649.31	718,401.50
12,400.0	90.43	358.78	9,823.0	6,171.0	2,787.9	5.1	2,787.8	0.00	512,749.28	718,399.38
12,500.0	90.43	358.78	9,822.2	6,170.2	2,887.9	2.9	2,887.8	0.00	512,849.26	718,397.25
12,600.0	90.43	358.78	9,821.5	6,169.5	2,987.8	0.8	2,987.8	0.00	512,949.23	718,395.12
12,700.0	90.43	358.78	9,820.8	6,168.8	3,087.8	-1.3	3,087.7	0.00	513,049.21	718,393.00
12,800.0	90.43	358.78	9,820.0	6,168.0	3,187.8	-3.4	3,187.7	0.00	513,149.18	718,390.87
12,900.0	90.43	358.78	9,819.3	6,167.3	3,287.8	-5.6	3,287.7	0.00	513,249.16	718,388.75
13,000.0	90.43	358.78	9,818.5	6,166.5	3,387.7	-7.7	3,387.7	0.00	513,349.13	718,386.62
13,100.0	90.43	358.78	9,817.8	6,165.8	3,487.7	-9.8	3,487.7	0.00	513,449.11	718,384.49



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD27)
Site: Airbonita 12 Federal
Well: 2H
Wellbore: OH
Design: Post Gyro Plan #2

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

Well 2H
WELL @ 3652.0usft (Original Well Elev)
WELL @ 3652.0usft (Original Well Elev)
Grid
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)
13,200.0	90.43	358.78	9,817.0	6,165.0	3,587.7	-11.9	3,587.7	0.00	513,549.08	718,382.37
13,300.0	90.43	358.78	9,816.3	6,164.3	3,687.7	-14.1	3,687.7	0.00	513,649.05	718,380.24
13,400.0	90.43	358.78	9,815.5	6,163.5	3,787.6	-16.2	3,787.6	0.00	513,749.03	718,378.12
13,500.0	90.43	358.78	9,814.8	6,162.8	3,887.6	-18.3	3,887.6	0.00	513,849.00	718,375.99
13,600.0	90.43	358.78	9,814.0	6,162.0	3,987.6	-20.4	3,987.6	0.00	513,948.98	718,373.87
13,700.0	90.43	358.78	9,813.3	6,161.3	4,087.6	-22.6	4,087.6	0.00	514,048.95	718,371.74
13,800.0	90.43	358.78	9,812.5	6,160.5	4,187.5	-24.7	4,187.6	0.00	514,148.93	718,369.61
13,900.0	90.43	358.78	9,811.8	6,159.8	4,287.5	-26.8	4,287.6	0.00	514,248.90	718,367.49
14,000.0	90.43	358.78	9,811.0	6,159.0	4,387.5	-28.9	4,387.6	0.00	514,348.88	718,365.36
14,100.0	90.43	358.78	9,810.3	6,158.3	4,487.5	-31.1	4,487.6	0.00	514,448.85	718,363.24
14,139.4	90.43	358.78	9,810.0	6,158.0	4,526.8	-31.9	4,526.9	0.00	514,488.20	718,362.40

Checked By: _____ Approved By: _____ Date: _____



Project: Lea County(NAD27)
Site: Airbonita 12 Federal
Well: 2H
Wellbore: OH
Plan: Post Gyro Plan #2 (2H/OH)



Azimuths to Grid North
True North: -0.38°
Magnetic North: 7.28°

Magnetic Field
Strength: 48789.6nT
Dip Angle: 60.37°
Date: 1/21/2011
Model: IGRF200510



A Schlumberger Company

PROJECT DETAILS: Lea County(NAD27)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid

WELL DETAILS: 2H

Ground Elevation: 3835.0
RKB Elevation: WELL @ 3552.9usft (Original Well Elev)
Rig Name: Original Well Elev

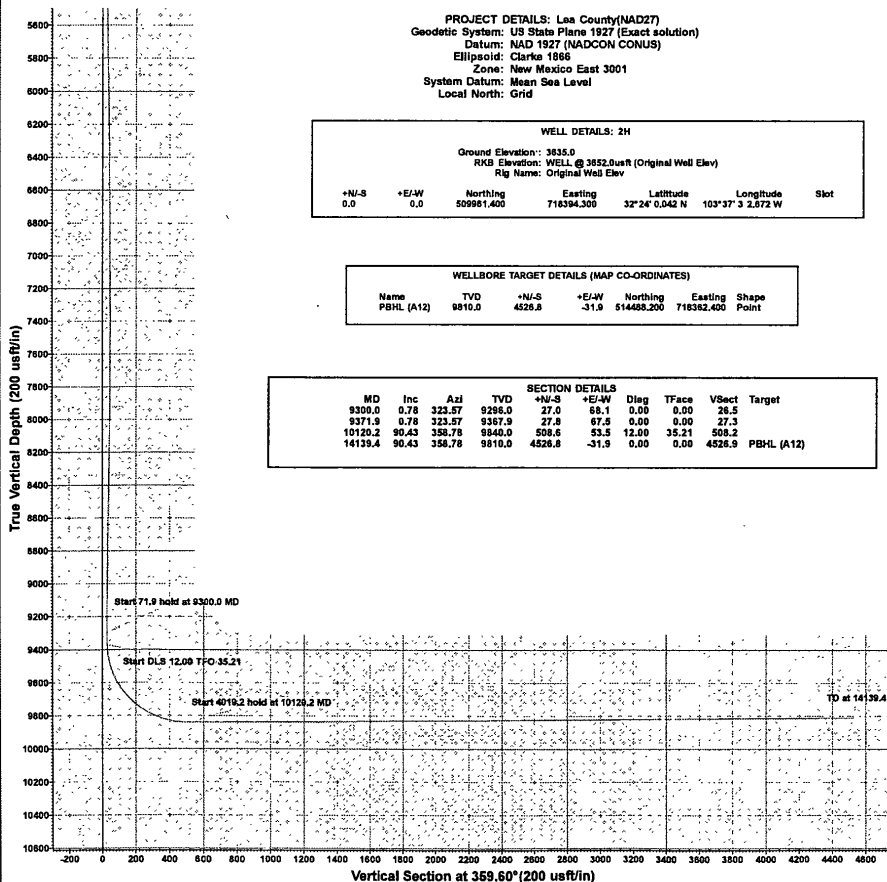
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	50981.400	716394.300	32° 28' 0.042 N	103° 37' 3 2.872 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

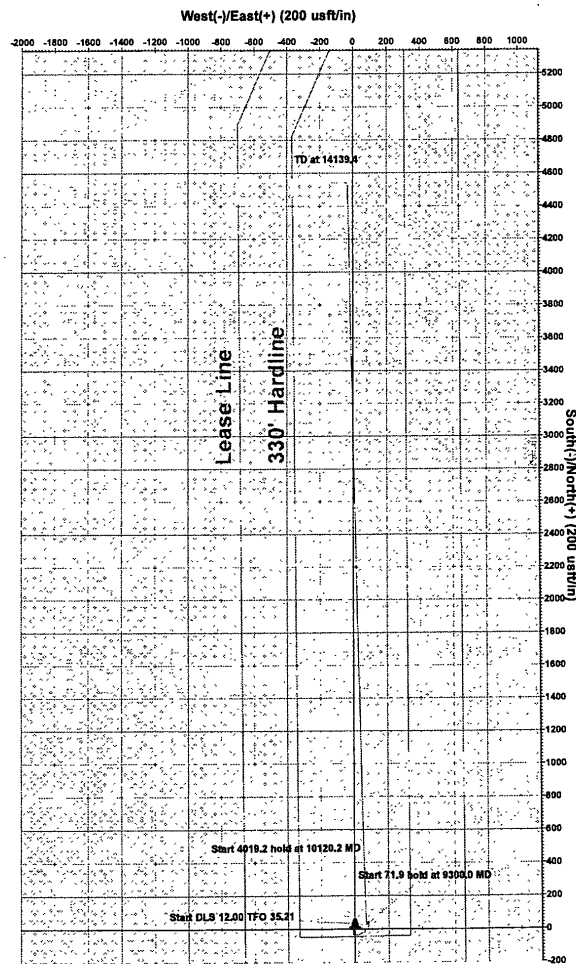
Name	TVD	+N-S	+E-W	Northing	Easting	Shape
PBHL (A12)	9810.0	4526.8	-31.9	514468.200	718382.400	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dlog	TFace	VSec	Target
9300.0	0.78	323.57	9296.0	27.0	68.1	0.00	0.00	26.5	
9371.9	0.78	323.57	9367.9	27.0	67.5	0.00	0.00	27.3	
10120.2	90.43	358.78	9840.0	506.6	53.5	12.00	35.21	506.2	
14139.4	90.43	358.78	9910.0	4526.8	-31.9	0.00	0.00	4526.9	PBHL (A12)



Vertical Section at 359.60°(200 usft/in)



Plan: Post Gyro Plan #2 (2H/OH)

Created By: Michael Trout Date: 8:34, December 07 2011

Checked: _____ Date: _____

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Lea County(NAD27)
Airbonita 12 Federal
Original Well Elev
2H
Post Gyro Plan #2