

30-15-39503

HOBBS OCD

MAY 24 2012

RECEIVED

COG OPERATING

Green Wood
Eddy County, NM
Airbus 12 Federal #2H
VH - Job #32K11111060

Survey: Gyro

SDI Standard Survey Report

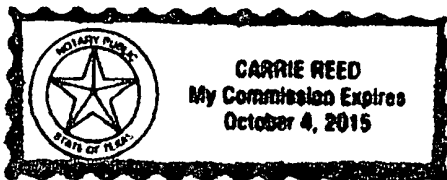
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 12th of December, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling
Directional Drilling Operations

**McVAY DRILLING COMPANY**

P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

15-39503

HOBBS OCD

Well Name and Num: Airbus 12 Federal 2H
Location: Sec. 12, T19S, R31E
Operator: COG
Drilling Contractor: McVay Drilling Company

MAY 24 2012

RECEIVED

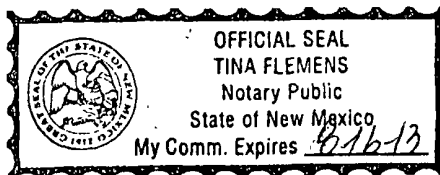
The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.35	745	0.44	8497	91.10	12087
0.70	1244	8.88	8592	91.63	12180
2.21	1744	20.14	8685	88.72	13017
3.20	2126	23.83	8717	89.34	13409
3.40	2021	47.34	8939		
1.40	2660	60.23	9066		
0.61	3145	53.55	9003		
0.79	3447	75.10	9220		
0.58	3761	88.37	9403		
0.80	4264	88.46	9439		
1.16	4754	90.66	10009		
0.52	5226	89.52	10200		
0.28	5698	90.40	10674		
0.80	6198	89.60	11142		
1.25	6698	90.22	11522		
1.17	7183	88.81	11710		
0.71	7683	91.10	11994		

By: Hulub Pranch

Subscribed and sworn to before me this 14th day of November, 2011

Tina FLEMENS
Notary Public, Lea County, New Mexico





COG Operating LLC

Eddy County(NAD27)

Airbus 12 Federal

#2H

OH

Design: OH

Pathfinder X & Y Report

14 November, 2011



A Schlumberger Company

**Smith International, Inc.**

Pathfinder X & Y Report



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD27)	TVD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Eddy County(NAD27)		
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	Airbus 12 Federal		
Site Position:		Northing:	611,922.900 usft
From:	Map	Easting:	654,895.100 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 52.556 N
		Longitude:	103° 49' 47.669 W
		Grid Convergence:	0.27 °

Well	#2H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty		0.0 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	4/7/2011	7.76	60.57	48,881

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth:
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	178.94



Smith International, Inc.
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD27)	TVD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey Program	Date 11/14/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,435.0	Gyro #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
8,497.0	13,457.0	MWD #1 (OH)	MWD	MWD - Standard

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	-3,632.0	0.0	0.0	0.0	0.00	611,922.90	654,895.10	
100.0	0.11	48.73	100.0	-3,532.0	0.1	0.1	-0.1	0.11	611,922.96	654,895.17	
200.0	0.21	63.16	200.0	-3,432.0	0.2	0.3	-0.2	0.11	611,923.11	654,895.41	
300.0	0.12	36.01	300.0	-3,332.0	0.4	0.5	-0.4	0.12	611,923.28	654,895.63	
400.0	0.20	152.32	400.0	-3,232.0	0.3	0.7	-0.3	0.28	611,923.21	654,895.78	
500.0	0.41	210.87	500.0	-3,132.0	-0.2	0.6	0.2	0.35	611,922.75	654,895.67	
600.0	0.97	204.96	600.0	-3,032.0	-1.2	0.0	1.2	0.56	611,921.67	654,895.13	
700.0	1.04	208.24	700.0	-2,932.0	-2.8	-0.8	2.8	0.09	611,920.10	654,894.35	
800.0	1.53	218.02	799.9	-2,832.1	-4.6	-2.0	4.6	0.54	611,918.25	654,893.09	
900.0	1.53	209.32	899.9	-2,732.1	-6.9	-3.5	6.8	0.23	611,916.04	654,891.62	
1,000.0	1.18	206.00	999.9	-2,632.1	-9.0	-4.6	8.9	0.36	611,913.95	654,890.51	
1,100.0	1.02	200.50	1,099.9	-2,532.1	-10.7	-5.4	10.6	0.19	611,912.19	654,889.75	
1,200.0	0.71	174.62	1,199.9	-2,432.1	-12.2	-5.6	12.1	0.49	611,910.74	654,889.50	
1,300.0	0.78	153.67	1,299.8	-2,332.2	-13.4	-5.2	13.3	0.28	611,909.51	654,889.86	
1,400.0	0.87	145.39	1,399.8	-2,232.2	-14.6	-4.5	14.5	0.15	611,908.28	654,890.59	
1,500.0	0.59	131.54	1,499.8	-2,132.2	-15.6	-3.7	15.5	0.33	611,907.31	654,891.41	
1,600.0	0.99	85.90	1,599.8	-2,032.2	-15.9	-2.4	15.8	0.72	611,907.03	654,892.65	
1,700.0	2.34	64.48	1,699.8	-1,932.2	-14.9	0.3	14.9	1.46	611,907.97	654,895.36	
1,800.0	3.07	66.69	1,799.7	-1,832.3	-13.0	4.6	13.1	0.74	611,909.91	654,899.66	
1,900.0	3.56	66.22	1,899.5	-1,732.5	-10.7	9.9	10.9	0.49	611,912.22	654,904.96	
2,000.0	3.70	67.77	1,999.3	-1,632.7	-8.2	15.7	8.5	0.17	611,914.69	654,910.79	



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD27)	TVD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Well:	#2H	North Reference:	Gnd
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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	3.66	69.49	2,099.1	-1,532.9	-5.9	21.7	6.3	0.12	611,917.03	654,916.76
2,200.0	3.23	68.63	2,198.9	-1,433.1	-3.7	27.3	4.2	0.43	611,919.18	654,922.38
2,300.0	3.17	69.57	2,298.7	-1,333.3	-1.7	32.5	2.3	0.08	611,921.17	654,927.59
2,400.0	2.75	68.91	2,398.6	-1,233.4	0.1	37.3	0.6	0.42	611,923.00	654,932.42
2,500.0	2.03	70.14	2,498.5	-1,133.5	1.6	41.2	-0.8	0.72	611,924.46	654,936.32
2,600.0	1.37	75.96	2,598.5	-1,033.5	2.5	44.0	-1.6	0.68	611,925.36	654,939.15
2,700.0	0.90	85.89	2,698.5	-933.5	2.8	46.0	-1.9	0.51	611,925.70	654,941.09
2,800.0	0.66	102.53	2,798.5	-833.5	2.7	47.3	-1.9	0.33	611,925.63	654,942.44
2,900.0	0.35	134.31	2,898.4	-733.6	2.4	48.1	-1.5	0.41	611,925.29	654,943.22
3,000.0	0.28	164.38	2,998.4	-633.6	1.9	48.4	-1.0	0.18	611,924.85	654,943.50
3,100.0	0.28	181.75	3,098.4	-533.6	1.5	48.5	-0.6	0.08	611,924.37	654,943.56
3,200.0	0.23	179.43	3,198.4	-433.6	1.0	48.5	-0.1	0.05	611,923.92	654,943.56
3,300.0	0.24	194.10	3,298.4	-333.6	0.6	48.4	0.3	0.06	611,923.52	654,943.51
3,400.0	0.19	206.23	3,398.4	-233.6	0.3	48.3	0.6	0.07	611,923.17	654,943.38
3,500.0	0.17	228.12	3,498.4	-133.6	0.0	48.1	0.9	0.07	611,922.92	654,943.20
3,600.0	0.14	253.52	3,598.4	-33.6	-0.1	47.9	1.0	0.07	611,922.78	654,942.97
3,700.0	0.15	219.41	3,698.4	66.4	-0.3	47.7	1.1	0.09	611,922.65	654,942.77
3,800.0	0.19	231.00	3,798.4	166.4	-0.5	47.5	1.3	0.05	611,922.44	654,942.56
3,900.0	0.14	227.19	3,898.4	266.4	-0.6	47.2	1.5	0.05	611,922.26	654,942.34
4,000.0	0.03	323.95	3,998.4	366.4	-0.7	47.1	1.6	0.15	611,922.19	654,942.24
4,100.0	0.03	293.56	4,098.4	466.4	-0.7	47.1	1.5	0.02	611,922.23	654,942.20
4,200.0	0.02	5.91	4,198.4	566.4	-0.6	47.1	1.5	0.03	611,922.25	654,942.17
4,300.0	0.08	119.69	4,298.4	666.4	-0.7	47.1	1.5	0.09	611,922.24	654,942.24
4,400.0	0.17	145.08	4,398.4	766.4	-0.8	47.3	1.7	0.10	611,922.08	654,942.38
4,500.0	0.10	332.38	4,498.4	866.4	-0.9	47.3	1.7	0.27	611,922.04	654,942.43
4,600.0	0.50	7.55	4,598.4	966.4	-0.4	47.3	1.2	0.42	611,922.55	654,942.44
4,700.0	0.48	10.98	4,698.4	1,066.4	0.5	47.5	0.4	0.04	611,923.39	654,942.58



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: Airbus 12 Federal
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Database:

Well #2H

RKB-17' @ 3632.0usft (Original Well Elev)

RKB-17' @ 3632.0usft (Original Well Elev)

Grd

Minimum Curvature

EDM 5000.1 Single User Db

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	0.39	14.62	4,798.4	1,166.4	1.2	47.6	-0.3	0.09	611,924.13	654,942.75
4,900.0	0.34	358.19	4,898.4	1,266.4	1.9	47.7	-1.0	0.12	611,924.76	654,942.82
5,000.0	0.29	337.35	4,998.4	1,366.4	2.4	47.6	-1.5	0.12	611,925.29	654,942.72
5,100.0	0.68	313.63	5,098.4	1,466.4	3.0	47.1	-2.2	0.43	611,925.93	654,942.19
5,200.0	0.67	311.36	5,198.4	1,566.4	3.8	46.2	-3.0	0.03	611,926.72	654,941.32
5,300.0	0.74	315.94	5,298.4	1,666.4	4.7	45.3	-3.8	0.09	611,927.57	654,940.43
5,400.0	0.84	308.01	5,398.4	1,766.4	5.6	44.3	-4.8	0.15	611,928.49	654,939.41
5,500.0	0.86	314.60	5,498.4	1,866.4	6.6	43.2	-5.8	0.10	611,929.47	654,938.29
5,600.0	0.91	309.99	5,598.4	1,966.4	7.6	42.1	-6.8	0.09	611,930.51	654,937.15
5,700.0	0.86	321.12	5,698.4	2,066.4	8.7	41.0	-7.9	0.18	611,931.60	654,936.07
5,800.0	0.80	319.18	5,798.4	2,166.4	9.8	40.0	-9.1	0.07	611,932.71	654,935.14
5,900.0	0.87	311.66	5,898.3	2,266.3	10.8	39.0	-10.1	0.13	611,933.75	654,934.12
6,000.0	0.86	320.35	5,998.3	2,366.3	11.9	38.0	-11.2	0.13	611,934.83	654,933.08
6,100.0	0.83	315.99	6,098.3	2,466.3	13.0	37.0	-12.3	0.07	611,935.93	654,932.09
6,200.0	0.86	319.28	6,198.3	2,566.3	14.1	36.0	-13.4	0.06	611,937.02	654,931.10
6,300.0	0.94	314.45	6,298.3	2,666.3	15.3	34.9	-14.6	0.11	611,938.16	654,930.03
6,400.0	0.99	310.26	6,398.3	2,766.3	16.4	33.7	-15.8	0.09	611,939.29	654,928.78
6,500.0	1.08	299.72	6,498.3	2,866.3	17.4	32.2	-16.8	0.21	611,940.32	654,927.30
6,600.0	1.34	294.62	6,598.2	2,966.2	18.4	30.3	-17.8	0.28	611,941.27	654,925.42
6,700.0	0.93	298.02	6,698.2	3,066.2	19.2	28.5	-18.7	0.42	611,942.14	654,923.64
6,800.0	0.59	353.79	6,798.2	3,166.2	20.1	27.8	-19.6	0.77	611,943.03	654,922.87
6,900.0	0.60	10.95	6,898.2	3,266.2	21.2	27.8	-20.6	0.18	611,944.06	654,922.91
7,000.0	0.80	67.47	6,998.2	3,366.2	21.9	28.6	-21.4	0.69	611,944.84	654,923.66
7,100.0	0.88	71.57	7,098.2	3,466.2	22.5	29.9	-21.9	0.10	611,945.35	654,925.03
7,200.0	0.60	71.17	7,198.2	3,566.2	22.9	31.2	-22.3	0.28	611,945.76	654,926.26
7,300.0	0.48	43.47	7,298.2	3,666.2	23.3	31.9	-22.7	0.28	611,946.24	654,927.04
7,400.0	0.75	65.78	7,398.2	3,766.2	23.9	32.8	-23.3	0.36	611,946.81	654,927.92



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
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Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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)
7,500.0	0.93	129.90	7,498.2	3,866.2	23.7	34.0	-23.0	0.90	611,946.56	654,929.14
7,600.0	0.97	135.38	7,598.1	3,966.1	22.5	35.3	-21.9	0.10	611,945.43	654,930.36
7,700.0	0.59	183.52	7,698.1	4,066.1	21.4	35.8	-20.7	0.72	611,944.32	654,930.92
7,800.0	0.62	189.08	7,798.1	4,166.1	20.4	35.7	-19.7	0.07	611,943.27	654,930.81
7,900.0	0.57	200.18	7,898.1	4,266.1	19.4	35.4	-18.7	0.13	611,942.27	654,930.55
8,000.0	0.37	169.20	7,998.1	4,366.1	18.6	35.3	-17.9	0.32	611,941.48	654,930.44
8,100.0	1.10	92.93	8,098.1	4,466.1	18.2	36.4	-17.5	1.07	611,941.12	654,931.46
8,200.0	1.20	67.24	8,198.1	4,566.1	18.6	38.3	-17.9	0.52	611,941.47	654,933.38
8,300.0	0.94	55.98	8,298.1	4,666.1	19.4	39.9	-18.7	0.33	611,942.34	654,935.03
8,400.0	0.68	76.59	8,398.1	4,766.1	20.0	41.2	-19.3	0.39	611,942.93	654,936.28
8,435.0	0.72	93.36	8,433.1	4,801.1	20.1	41.6	-19.3	0.59	611,942.97	654,936.71
8,497.0	0.44	68.37	8,495.1	4,863.1	20.1	42.2	-19.3	0.60	611,943.03	654,937.32
8,529.0	1.49	167.07	8,527.1	4,895.1	19.8	42.4	-19.0	5.05	611,942.67	654,937.52
8,561.0	5.01	184.55	8,559.0	4,927.0	18.0	42.4	-17.2	11.30	611,940.87	654,937.51
KOP - 8561.0 'MD, 8559.0 'TVD, 18.0 'N, 42.4 'E										
8,592.0	8.88	188.04	8,589.8	4,957.8	14.3	42.0	-13.5	12.56	611,937.16	654,937.06
8,623.0	12.75	185.05	8,620.2	4,988.2	8.5	41.3	-7.7	12.61	611,931.38	654,936.43
8,654.0	16.44	181.70	8,650.2	5,018.2	0.7	40.9	0.1	12.21	611,923.58	654,936.00
8,685.0	20.14	179.09	8,679.6	5,047.6	-9.0	40.9	9.8	12.22	611,913.86	654,935.95
8,717.0	23.83	178.23	8,709.3	5,077.3	-21.0	41.1	21.8	11.57	611,901.88	654,936.24
8,748.0	26.91	177.22	8,737.3	5,105.3	-34.3	41.7	35.1	10.03	611,888.61	654,936.77
8,780.0	29.90	177.08	8,765.5	5,133.5	-49.5	42.4	50.3	9.35	611,873.41	654,937.53
8,812.0	33.24	177.08	8,792.7	5,160.7	-66.2	43.3	67.0	10.44	611,856.68	654,938.38
8,843.0	37.02	177.82	8,818.1	5,186.1	-84.0	44.1	84.8	12.27	611,838.87	654,939.17
8,875.0	41.15	178.55	8,842.9	5,210.9	-104.2	44.7	105.0	12.99	611,818.70	654,939.80
8,907.0	44.85	179.31	8,866.3	5,234.3	-126.0	45.1	126.8	11.68	611,796.89	654,940.21
8,939.0	47.40	179.72	8,888.5	5,256.5	-149.1	45.3	149.9	8.02	611,773.82	654,940.40



Smith International, Inc.
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD27)	TVD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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)	
8,971.0	50.21	179.88	8,909.5	5,277.5	-173.2	45.4	174.0	8.79	611,749.75	654,940.48	
9,003.0	53.55	180.31	8,929.3	5,297.3	-198.3	45.3	199.1	10.49	611,724.58	654,940.44	
9,035.0	56.98	180.64	8,947.5	5,315.5	-224.6	45.1	225.4	10.75	611,698.28	654,940.22	
9,066.0	60.23	180.65	8,963.7	5,331.7	-251.1	44.8	251.9	10.48	611,671.83	654,939.92	
9,098.0	63.49	180.27	8,978.8	5,346.8	-279.3	44.6	280.1	10.24	611,643.62	654,939.70	
9,130.0	66.13	179.74	8,992.4	5,360.4	-308.2	44.6	309.0	8.39	611,614.66	654,939.70	
9,161.0	68.68	179.41	9,004.3	5,372.3	-336.9	44.8	337.6	8.28	611,586.04	654,939.91	
9,193.0	71.67	179.06	9,015.1	5,383.1	-367.0	45.2	367.7	9.40	611,555.95	654,940.31	
9,220.0	75.10	178.10	9,022.9	5,390.9	-392.8	45.9	393.6	13.15	611,530.09	654,940.95	
9,250.0	78.70	178.10	9,029.7	5,397.7	-422.0	46.8	422.8	12.00	611,500.89	654,941.92	
9,282.0	82.39	178.19	9,034.9	5,402.9	-453.6	47.8	454.4	11.53	611,469.34	654,942.94	
9,314.0	85.82	178.46	9,038.2	5,406.2	-485.4	48.8	486.2	10.75	611,437.53	654,943.87	
9,345.0	87.41	178.63	9,040.0	5,408.0	-516.3	49.6	517.1	5.16	611,406.60	654,944.66	
9,377.0	87.58	178.90	9,041.4	5,409.4	-548.3	50.2	549.1	1.00	611,374.64	654,945.35	
9,408.0	88.37	179.51	9,042.5	5,410.5	-579.2	50.7	580.1	3.22	611,343.66	654,945.78	
9,439.0	88.46	179.95	9,043.4	5,411.4	-610.2	50.8	611.1	1.45	611,312.67	654,945.93	
9,471.0	88.37	179.77	9,044.3	5,412.3	-642.2	50.9	643.1	0.63	611,280.68	654,946.00	
9,564.0	88.11	179.69	9,047.1	5,415.1	-735.2	51.3	736.0	0.29	611,187.73	654,946.44	
9,627.0	88.81	179.77	9,048.8	5,416.8	-798.1	51.6	799.0	1.12	611,124.75	654,946.74	
9,723.0	90.31	178.98	9,049.6	5,417.6	-894.2	52.7	895.0	1.77	611,028.74	654,947.79	
LP - 9723.0 'MD, 9049.6 'TVD, -894.2 'N, 52.7 'E											
9,818.0	90.04	178.81	9,049.3	5,417.3	-989.1	54.5	990.0	0.34	610,933.78	654,949.62	
9,914.0	89.69	178.63	9,049.5	5,417.5	-1,085.1	56.7	1,086.0	0.41	610,837.81	654,951.76	
10,009.0	90.66	178.72	9,049.2	5,417.2	-1,180.1	58.9	1,181.0	1.03	610,742.83	654,953.96	
10,105.0	89.78	178.98	9,048.8	5,416.8	-1,276.0	60.8	1,277.0	0.96	610,646.86	654,955.89	
10,200.0	89.52	177.75	9,049.4	5,417.4	-1,371.0	63.5	1,371.9	1.32	610,551.90	654,958.60	
10,296.0	90.22	179.95	9,049.6	5,417.6	-1,467.0	65.4	1,467.9	2.40	610,455.92	654,960.52	



Smith International, Inc.

Pathfinder X & Y Report



A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #2H
Project:	Eddy County(NAD27)	TVD Reference:	RKB-17' @ 3632.0usft (Original Well Elev)
Site:	Airbus 12 Federal	MD Reference:	RKB-17' @ 3632 0usft (Original Well Elev)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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)	
10,391.0	90.57	179.69	9,049.0	5,417.0	-1,562.0	65.7	1,562.9	0.46	610,360.93	654,960.82	
10,487.0	90.13	179.25	9,048.4	5,416.4	-1,658.0	66.6	1,658.9	0.65	610,264.93	654,961.71	
10,580.0	90.31	179.33	9,048.0	5,416.0	-1,751.0	67.8	1,751.9	0.21	610,171.94	654,962.86	
10,674.0	90.40	178.19	9,047.5	5,415.5	-1,844.9	69.8	1,845.9	1.22	610,077.97	654,964.89	
10,768.0	91.54	178.10	9,045.9	5,413.9	-1,938.9	72.8	1,939.9	1.22	609,984.03	654,967.94	
10,863.0	88.72	179.86	9,045.6	5,413.6	-2,033.8	74.5	2,034.9	3.50	609,889.06	654,969.63	
10,955.0	89.69	180.04	9,046.9	5,414.9	-2,125.8	74.6	2,126.8	1.07	609,797.07	654,969.71	
11,048.0	89.43	179.25	9,047.6	5,415.6	-2,218.8	75.2	2,219.8	0.89	609,704.08	654,970.28	
11,142.0	89.60	179.07	9,048.4	5,416.4	-2,312.8	76.6	2,313.8	0.26	609,610.09	654,971.66	
11,237.0	89.69	178.63	9,049.0	5,417.0	-2,407.8	78.5	2,408.8	0.47	609,515.11	654,973.57	
11,332.0	90.04	179.60	9,049.2	5,417.2	-2,502.8	79.9	2,503.8	1.09	609,420.13	654,975.04	
11,427.0	90.40	178.63	9,048.9	5,416.9	-2,597.8	81.4	2,598.8	1.09	609,325.14	654,976.50	
11,522.0	90.22	180.57	9,048.4	5,416.4	-2,692.8	82.1	2,693.8	2.05	609,230.15	654,977.17	
11,679.0	89.16	179.51	9,049.2	5,417.2	-2,849.7	82.0	2,850.8	0.95	609,073.15	654,977.06	
11,710.0	88.81	179.77	9,049.8	5,417.8	-2,880.7	82.2	2,881.8	1.41	609,042.16	654,977.25	
11,805.0	90.22	178.72	9,050.6	5,418.6	-2,975.7	83.4	2,976.8	1.85	608,947.18	654,978.50	
11,901.0	90.92	177.40	9,049.6	5,417.6	-3,071.7	86.7	3,072.7	1.56	608,851.24	654,981.75	
11,994.0	91.10	180.83	9,048.0	5,416.0	-3,164.6	88.1	3,165.7	3.69	608,758.28	654,983.19	
12,087.0	91.10	181.18	9,046.2	5,414.2	-3,257.6	86.5	3,258.6	0.38	608,665.31	654,981.56	
12,180.0	91.63	180.75	9,044.0	5,412.0	-3,350.6	84.9	3,351.5	0.73	608,572.35	654,979.99	
12,274.0	91.10	180.44	9,041.7	5,409.7	-3,444.5	83.9	3,445.5	0.65	608,478.38	654,979.02	
12,368.0	90.57	179.94	9,040.4	5,408.4	-3,538.5	83.6	3,539.4	0.78	608,384.39	654,978.71	
12,461.0	90.31	179.95	9,039.7	5,407.7	-3,631.5	83.7	3,632.4	0.28	608,291.40	654,978.79	
12,552.0	89.52	179.67	9,039.8	5,407.8	-3,722.5	84.0	3,723.4	0.92	608,200.40	654,979.10	
12,645.0	88.55	179.13	9,041.4	5,409.4	-3,815.5	85.0	3,816.4	1.19	608,107.42	654,980.07	
12,737.0	87.85	178.46	9,044.2	5,412.2	-3,907.4	86.9	3,908.4	1.05	608,015.49	654,982.00	
12,829.0	88.81	178.67	9,046.9	5,414.9	-3,999.3	89.2	4,000.3	1.07	607,923.55	654,984.31	



Company: COG Operating LLC
Project: Eddy County(NAD27)
Site: Airbus 12 Federal
Well: #2H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #2H
TVD Reference: RKB-17' @ 3632.0usft (Original Well Elev)
MD Reference: RKB-17' @ 3632.0usft (Original Well Elev)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
12,923.0	88.11	178.23	9,049.5	5,417.5	-4,093.3	91.7	4,094.3	0.88	607,829.62	654,986.85
13,017.0	88.72	179.20	9,052.1	5,420.1	-4,187.2	93.9	4,188.2	1.22	607,735.69	654,988.96
13,110.0	90.04	180.54	9,053.1	5,421.1	-4,280.2	94.1	4,281.2	2.02	607,642.70	654,989.17
13,202.0	90.13	180.20	9,052.9	5,420.9	-4,372.2	93.5	4,373.2	0.38	607,550.70	654,988.57
13,295.0	89.60	179.45	9,053.1	5,421.1	-4,465.2	93.8	4,466.2	0.99	607,457.70	654,988.86
13,409.0	89.34	178.66	9,054.2	5,422.2	-4,579.2	95.6	4,580.2	0.73	607,343.72	654,990.74
13,457.0	89.34	178.66	9,054.7	5,422.7	-4,627.2	96.8	4,628.2	0.00	607,295.74	654,991.86

BHL - 13457.0 'MD, 9054.7 'TVD, -4627.2 'N, 96.8 'E

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,561.0	8,559.0	18.0	42.4	KOP - 8561.0 'MD, 8559.0 'TVD, 18.0 'N, 42.4 'E
9,723.0	9,049.6	-894.2	52.7	LP - 9723.0 'MD, 9049.6 'TVD, -894.2 'N, 52.7 'E
13,457.0	9,054.7	-4,627.2	96.8	BHL - 13457.0 'MD, 9054.7 'TVD, -4627.2 'N, 96.8 'E

Checked By: _____ Approved By: _____ Date: _____



Project: Eddy County(NA)
Site: Airbus 12 Federa
Well: #2H
Wellbore: OH
Plan: Post Gyro Plan #1 (#2H/OH)



Azimuths to Grid North
True North: -0.27°
Magnetic North: 7.49°

Magnetic Field
Strength: 48881.2snT
Dip Angle: 60.57°
Date: 4/7/2011
Model: IGRF2010

PATHFINDER

A Schlumberger Company

PROJECT DETAILS: Eddy 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

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Diag	TFace	VSecl	Target
8435.0	0.72	93.36	8433.1	20.1	41.6	0.00	0.00	-19.3	
8569.9	0.72	93.36	8568.0	20.0	43.3	0.00	0.00	-19.2	
9316.7	89.66	179.55	9045.0	-454.6	53.0	12.00	86.19	455.5	
413490.6	89.66	179.55	9070.0	-4628.3	85.9	0.00	0.00	4629.1	BHL (Airbus12Fed#2H)

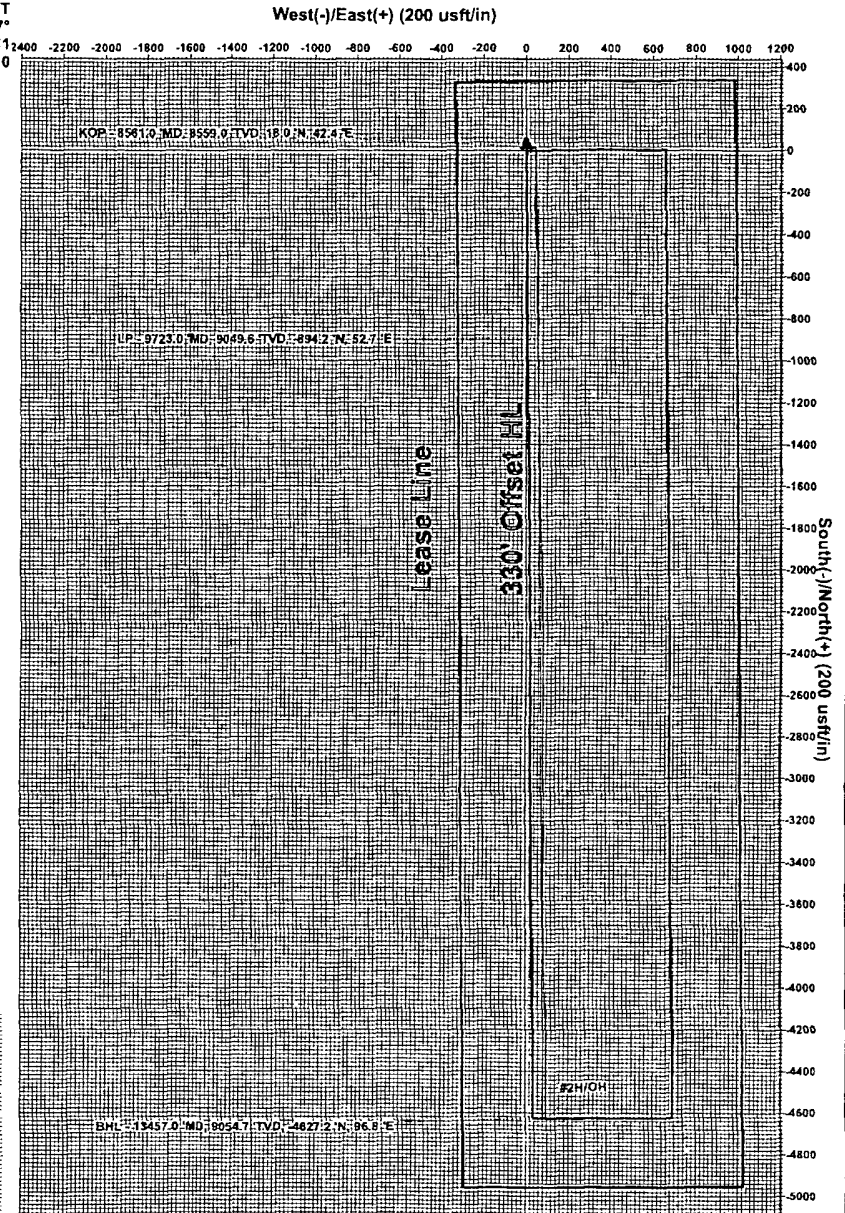
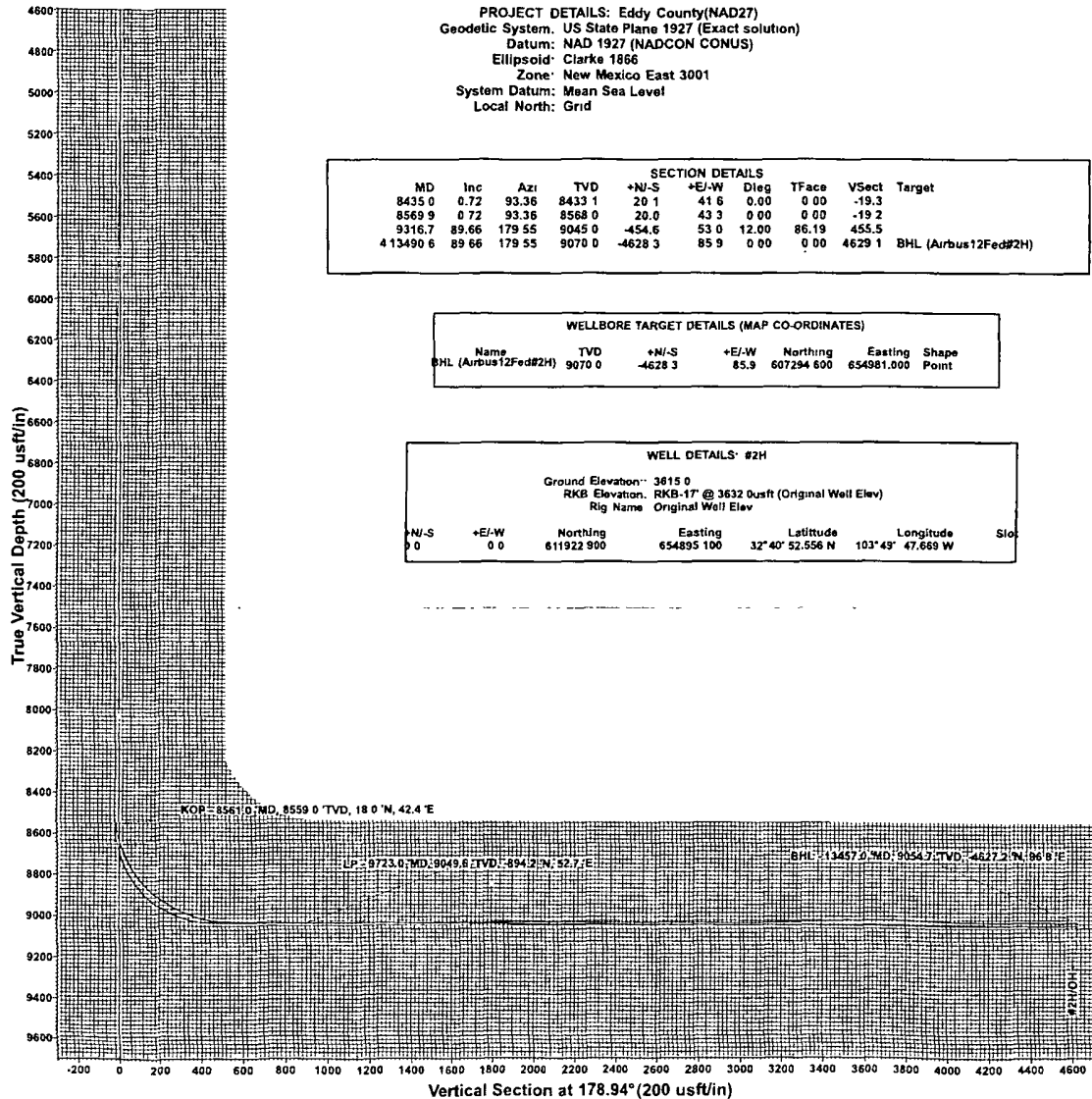
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
BHL (Airbus12Fed#2H)	9070.0	-4628.3	85.9	607294.600	654981.000	Point

WELL DETAILS: #2H

Ground Elevation: 3815.0
RKB Elevation: RKB-17' @ 3632.0usft (Original Well Elev)
Rig Name: Original Well Elev

N-S	+E-W	Northing	Easting	Latitude	Longitude	Sig.
0.0	0.0	611922.900	654895.100	32° 40' 52.556 N	103° 43' 47.669 W	



Plan: Post Gyro Plan #1 (#2H/OH)

Created By: Sam Bille Date: 10/21, November 14 2011

Checked: _____ Date: _____