

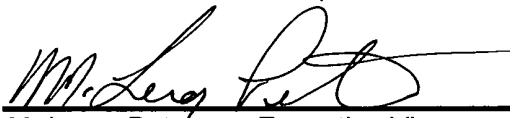
OPERATOR: COG Operating, LLC
WELL/LEASE: Diamondback 22 State Com # 1
COUNTY: Eddy New Mexico
Sec. 22, T26S, R28E

30-015-38528

STATE OF NEW MEXICO
DEVIATION REPORT

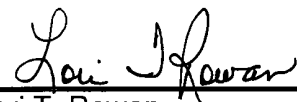
Depth	Deviation	Depth	Deviation
233	1/2	4,080	1/2
1,021	4	4,814	1 1/4
1,116	4	5,091	1
1,211	3	5,574	1
1,306	2 3/4	6,077	3/4
1,402	1 1/2	6,543	1 1/2
1,497	1 1/4	6,830	1
1,592	1 1/2	7,147	1 3/4
1,687	2 1/9	7,465	1
1,782	2	7,751	1
1,877	2 1/4	8,048	1 1/2
1,971	2	8,323	1 1/2
2,065	2	8,802	1 3/4
2,160	2 3/4	9,276	1 3/4
2,223	2 3/4	9,719	1 1/2
2,287	2 1/4		
2,348	1 1/2		
2,448	1 1/4		
2,547	1		
3,057	1		

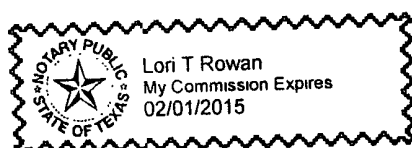
Patriot Drilling, LLC

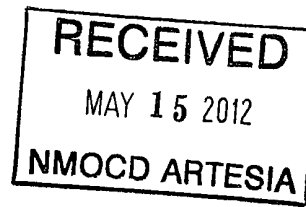

M. Leroy Peterson, Executive Vice-
President

The foregoing instrument was acknowledged before me on this 27th day of March, 2012 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2015


Lori T. Rowan
Notary Public for Ector Co., Texas





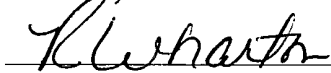
COG OPERATING

Hay Hollow
Eddy County, NM
Diamondback "22" State Com #1H
VH - Job #32K0312251

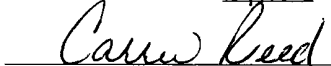
Survey: Gyro

SDI Standard Survey Report

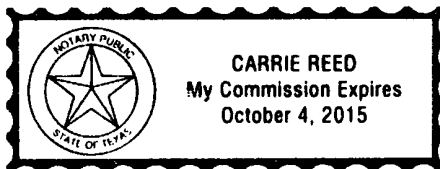
This survey is correct to the best of my knowledge and is supported by actual field data.



Notarized this date 2nd of April, 2012.



Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Diamondback "22" State Com #1H
Project:	Hay Hollow	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Diamondback "22" State Com #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0312251	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0312251	Database:	EDM-Regulatory

Project	Hay Hollow		
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	Eddy County, NM		
Site Position:		Northing:	386,239 33 usft
From:	Lat/Long	Easting:	572,312 98 usft
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 3' 42 020 N
		Longitude:	104° 5' 59 660 W
		Grid Convergence:	0 12 °

Well	Diamondback "22" State Com #1H, Directional (Pathfinder)		
Well Position	+N/-S	0 0 usft	Northing: 376,087 53 usft
	+E/-W	0 0 usft	Easting: 580,788 74 usft
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft
		Latitude:	32° 2' 1 360 N
		Longitude:	104° 4' 21 450 W
		Ground Level:	0 0 usft

Wellbore	VH - Job #32K0312251				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/2/2012	7 71	59 90	48,399

Design	VH - Job #32K0312251			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	182 55

Survey Program	Date 4/10/2012				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100 0	10,000 0	Gyro (VH - Job #32K0312251)	Keeper	Keeper Gyro	

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0	
100 0	0 34	166 88	100 0	-0 3	0 1	166 88	0 3	
200 0	0 37	124 24	200 0	-0 8	0 4	152 13	0 9	
300 0	1 92	54 62	300 0	0 0	2 0	89 19	2 0	
400 0	3 27	43 91	399 9	3 1	5 4	60 42	6 2	
500 0	3 95	43 04	499 7	7 6	9 7	51 85	12 3	
600 0	4 94	42 63	599 4	13 3	15 0	48 37	20 0	
700 0	6 65	41 51	698 9	20 8	21 7	46 23	30 1	
800 0	6 34	47 83	798 2	28 9	29 7	45 78	41 4	
900 0	5 16	59 05	897 7	34 9	37 6	47 16	51 3	
1,000 0	4 10	69 40	997 4	38 4	44 8	49 37	59 0	
1,100 0	3 16	61 93	1,097 2	41 0	50 6	50 97	65 1	

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Diamondback "22" State Com #1H
Project:	Hay Hollow	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Diamondback "22" State Com #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0312251	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0312251	Database:	EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	2 99	58 67	1,197 0	43 7	55 2	51 69	70 4
1,300 0	2 53	59 39	1,296 9	46 1	59 4	52 15	75 2
1,400 0	1 41	67 67	1,396 9	47 7	62 4	52 60	78 6
1,500 0	1 50	70 41	1,496 8	48 6	64 8	53 10	81 0
1,600 0	1 72	67 70	1,596 8	49 6	67 4	53 63	83 7
1,700 0	1 90	69 20	1,696 7	50 8	70 3	54 16	86 8
1,800 0	2 00	63 96	1,796 7	52 2	73 5	54 63	90 1
1,900 0	1 78	53 30	1,896 6	53 8	76 3	54 78	93 4
2,000 0	1 76	50 18	1,996 6	55 8	78 7	54 68	96 5
2,100 0	2 03	65 55	2,096 5	57 5	81 5	54 80	99 7
2,200 0	2 33	78 68	2,196 5	58 6	85 1	55 44	103 3
2,300 0	1 83	87 33	2,296 4	59 1	88 7	56 33	106 6
2,400 0	1 18	86 77	2,396 4	59 2	91 3	57 04	108 8
2,500 0	0 91	77 36	2,496 3	59 4	93 1	57 44	110 5
2,600 0	0 52	59 07	2,596 3	59 9	94 3	57 59	111 7
2,700 0	0 48	56 41	2,696 3	60 3	95 0	57 59	112 5
2,800 0	0 24	60 57	2,796 3	60 7	95 5	57 59	113 2
2,900 0	0 10	70 77	2,896 3	60 8	95 8	57 61	113 5
3,000 0	0 08	208 44	2,996 3	60 8	95 9	57 63	113 5
3,100 0	0 15	245 46	3,096 3	60 6	95 7	57 64	113 3
3,200 0	0 22	256 42	3,196 3	60 5	95 4	57 60	113 0
3,300 0	0 43	281 29	3,296 3	60 6	94 8	57 44	112 5
3,400 0	0 57	281 19	3,396 3	60 7	94 0	57 13	111 9
3,500 0	0 51	277 95	3,496 3	60 9	93 1	56 80	111 2
3,600 0	0 63	287 36	3,596 3	61 1	92 1	56 43	110 5
3,700 0	0 65	286 44	3,696 3	61 4	91 0	55 98	109 8
3,800 0	0 67	291 23	3,796 3	61 8	89 9	55 50	109 1
3,900 0	0 61	281 53	3,896 3	62 1	88 9	55 04	108 4
4,000 0	0 60	260 59	3,996 3	62 2	87 8	54 72	107 6
4,100 0	0 58	256 01	4,096 3	61 9	86 8	54 49	106 7
4,200 0	0 76	249 92	4,196 3	61 6	85 7	54 30	105 6
4,300 0	0 75	256 09	4,296 3	61 2	84 5	54 07	104 3
4,400 0	0 84	253 54	4,396 3	60 8	83 1	53 79	103 0
4,500 0	0 88	248 75	4,496 2	60 4	81 7	53 54	101 6
4,600 0	0 88	252 28	4,596 2	59 8	80 3	53 29	100 1
4,700 0	0 92	241 75	4,696 2	59 2	78 8	53 07	98 6
4,800 0	1 18	228 02	4,796 2	58 2	77 3	53 05	96 8
4,900 0	1 31	223 80	4,896 2	56 7	75 8	53 22	94 6
5,000 0	1 28	217 57	4,996 2	54 9	74 3	53 52	92 4
5,100 0	1 01	204 05	5,096 1	53 3	73 3	53 99	90 6
5,200 0	1 00	205 46	5,196 1	51 7	72 5	54 54	89 1
5,300 0	0 96	198 60	5,296 1	50 1	71 9	55 14	87 6
5,400 0	0 84	185 79	5,396 1	48 6	71 6	55 84	86 5
5,500 0	0 97	179 82	5,496 1	47 0	71 5	56 69	85 5

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Diamondback "22" State Com #1H
Project:	Hay Hollow	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Diamondback "22" State Com #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0312251	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0312251	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
5,600 0	0 99	175 92	5,596 1	45 3	71 5	57 68	84 7
5,700 0	0 91	175 53	5,696 1	43 6	71 7	58 68	83 9
5,800 0	0 91	182 12	5,796 0	42 0	71 7	59 62	83 1
5,900 0	1 02	179 73	5,896 0	40 3	71 7	60 62	82 3
6,000 0	1 11	180 07	5,996 0	38 5	71 7	61 77	81 4
6,100 0	1 12	188 54	6,096 0	36 6	71 5	62 93	80 3
6,200 0	1 01	194 95	6,196 0	34 7	71 2	63 98	79 2
6,300 0	1 01	177 53	6,296 0	33 0	71 0	65 06	78 3
6,400 0	1 28	154 26	6,395 9	31 1	71 5	66 48	78 0
6,500 0	1 50	166 49	6,495 9	28 8	72 3	68 25	77 8
6,600 0	1 52	176 99	6,595 9	26 2	72 7	70 14	77 3
6,700 0	1 23	185 16	6,695 8	23 8	72 6	71 82	76 4
6,800 0	1 01	180 35	6,795 8	21 9	72 5	73 20	75 8
6,900 0	1 39	151 59	6,895 8	20 0	73 1	74 74	75 8
7,000 0	1 41	156 71	6,995 8	17 8	74 2	76 54	76 3
7,100 0	1 46	173 25	7,095 7	15 4	74 8	78 40	76 4
7,200 0	1 06	163 32	7,195 7	13 2	75 2	80 04	76 4
7,300 0	0 91	166 29	7,295 7	11 5	75 7	81 32	76 5
7,400 0	0 78	198 83	7,395 7	10 1	75 6	82 37	76 3
7,500 0	0 91	241 00	7,495 7	9 1	74 7	83 05	75 3
7,600 0	1 07	250 92	7,595 7	8 4	73 1	83 44	73 6
7,700 0	1 23	241 29	7,695 6	7 6	71 3	83 92	71 7
7,800 0	1 22	224 98	7,795 6	6 3	69 6	84 81	69 9
7,900 0	1 20	206 59	7,895 6	4 6	68 4	86 12	68 6
8,000 0	1 11	211 66	7,995 6	2 9	67 4	87 56	67 5
8,100 0	1 12	207 84	8,095 6	1 2	66 5	88 98	66 5
8,200 0	0 89	190 92	8,195 6	-0 4	65 9	90 38	65 9
8,300 0	0 94	208 61	8,295 5	-1 9	65 3	91 69	65 4
8,400 0	1 05	199 38	8,395 5	-3 5	64 6	93 11	64 7
8,500 0	1 24	206 69	8,495 5	-5 3	63 8	94 78	64 1
8,600 0	1 41	221 09	8,595 5	-7 2	62 5	96 60	63 0
8,700 0	1 32	229 78	8,695 4	-8 9	60 9	98 32	61 5
8,800 0	1 49	229 05	8,795 4	-10 5	59 0	100 09	59 9
8,900 0	1 58	221 44	8,895 4	-12 4	57 1	102 24	58 4
9,000 0	1 55	223 36	8,995 3	-14 4	55 3	104 61	57 1
9,100 0	1 72	226 41	9,095 3	-16 4	53 2	107 14	55 7
9,200 0	1 81	222 16	9,195 3	-18 6	51 1	110 03	54 4
9,300 0	1 78	218 71	9,295 2	-21 0	49 1	113 18	53 4
9,400 0	1 90	217 61	9,395 2	-23 5	47 1	116 56	52 6
9,500 0	1 81	212 74	9,495 1	-26 2	45 2	120 07	52 2
9,600 0	1 68	216 75	9,595 1	-28 7	43 5	123 40	52 1
9,700 0	1 71	225 51	9,695 0	-30 9	41 5	126 64	51 8
9,800 0	1 93	227 61	9,795 0	-33 1	39 2	130 13	51 3
9,900 0	2 00	227 83	9,894 9	-35 4	36 7	133 96	51 0

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Diamondback "22" State Com #1H
Project:	Hay Hollow	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Diamondback "22" State Com #1H	North Reference:	Grid
Wellbore:	VH - Job #32K0312251	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0312251	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
10,000 0	2 14	223 58	9,994 8	-37 9	34 1	138 01	51 0

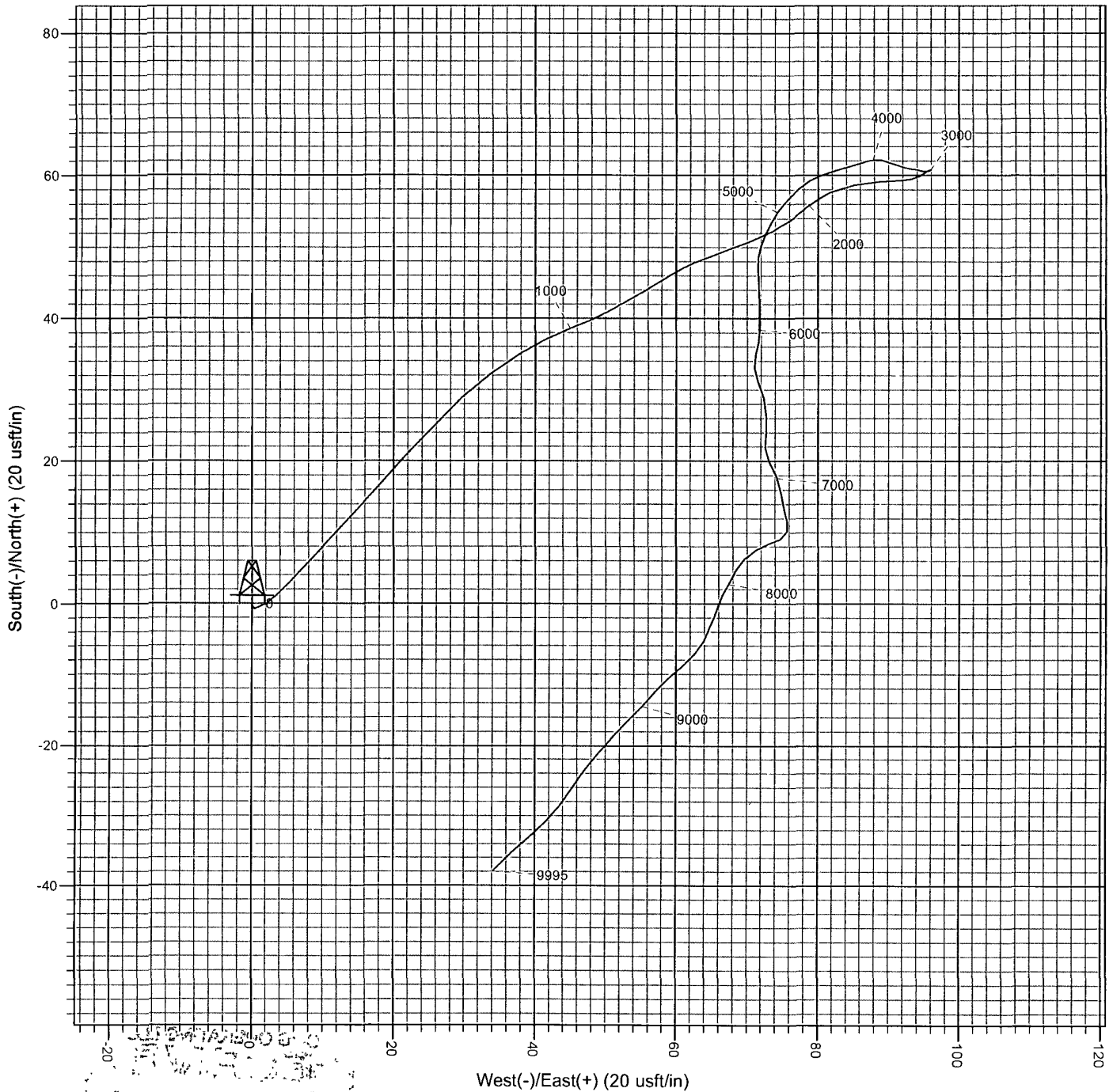


Scientific Drilling
Directional Drilling Operations

Project: Hay Hollow
Eddy County, NM
Well: Diamondback "22" State Com #1H
Wellbore: VH - Job #32K0312251
Design: VH - Job #32K0312251

WELL DETAILS: Diamondback "22" State Com #1H
WELL @ 0.0usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	376087.53	580788.74	32° 2' 1.360 N	104° 4' 21.450 W	



PROJECT DETAILS: Hay Hollow	SITE DETAILS: Eddy County, NM
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 3' 42.020 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 104° 5' 59.660 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.0
Zone: New Mexico East 3001	Convergence: 0.12
System Datum: Mean Sea Level	Local North: Grid



COG Operating LLC

Eddy County(NAD83)

Diamondback 22 State Com

#1H

OH

Design: OH

Pathfinder X & Y Report

14 March, 2012

PATHFINDER[®]

A Schlumberger Company



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Site:	Diamondback 22 State Com	MD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Eddy County(NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Diamondback 22 State Com		
Site Position:		Northing:	376,074.840 usft
From:	Map	Easting:	623,273.570 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 2' 1.083 N
		Longitude:	104° 4' 8.102 W
		Grid Convergence:	0.14 °

Well	#1H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	376,145.242 usft
Position Uncertainty		0.0 usft	Easting:
			621,973.383 usft
			Latitude:
			32° 2' 1.811 N
			Longitude:
			104° 4' 23.204 W
			Ground Level:
			2,981.0 usft
			Wellhead Elevation:
			usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/2/2012	7.71	59.93	48,426

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth:
				0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	182.55



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Diamondback 22 State Com
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
MD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey Program		Date 3/14/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	7,500.0	Gyro #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
7,558.0	12,350.0	MWD #3 (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	-2,998.0	0.0	0.0	0.0	0.00	376,145.24	621,973.38
100.0	0.34	166.88	100.0	-2,898.0	-0.3	0.1	0.3	0.34	376,144.95	621,973.45
200.0	0.37	124.24	200.0	-2,798.0	-0.8	0.4	0.7	0.26	376,144.48	621,973.78
300.0	1.92	54.62	300.0	-2,698.0	0.0	2.0	-0.1	1.82	376,145.27	621,975.42
400.0	3.27	43.91	399.9	-2,598.1	3.1	5.4	-3.3	1.43	376,148.30	621,978.76
500.0	3.95	43.04	499.7	-2,498.3	7.6	9.7	-8.0	0.68	376,152.87	621,983.09
600.0	4.94	42.63	599.4	-2,398.6	13.3	15.0	-14.0	0.99	376,158.55	621,988.36
700.0	6.65	41.51	698.9	-2,299.1	20.8	21.7	-21.8	1.71	376,166.06	621,995.11
800.0	6.34	47.83	798.2	-2,199.8	28.9	29.7	-30.1	0.78	376,174.10	622,003.04
900.0	5.16	59.05	897.7	-2,100.3	34.9	37.6	-36.5	1.62	376,180.12	622,010.99
1,000.0	4.10	69.40	997.4	-2,000.6	38.4	44.8	-40.4	1.35	376,183.69	622,018.19
1,100.0	3.16	61.93	1,097.2	-1,900.8	41.0	50.6	-43.2	1.05	376,186.25	622,023.97
1,200.0	2.99	58.67	1,197.0	-1,801.0	43.7	55.2	-46.1	0.24	376,188.90	622,028.63
1,300.0	2.53	59.39	1,296.9	-1,701.1	46.1	59.4	-48.7	0.46	376,191.38	622,032.76
1,400.0	1.41	67.67	1,396.9	-1,601.1	47.7	62.4	-50.5	1.15	376,192.97	622,035.80
1,500.0	1.50	70.41	1,496.8	-1,501.2	48.6	64.8	-51.5	0.11	376,193.88	622,038.17
1,600.0	1.72	67.70	1,596.8	-1,401.2	49.6	67.4	-52.6	0.23	376,194.88	622,040.79
1,700.0	1.90	69.20	1,696.7	-1,301.3	50.8	70.3	-53.9	0.19	376,196.04	622,043.73
1,800.0	2.00	63.96	1,796.7	-1,201.3	52.2	73.5	-55.4	0.20	376,197.40	622,046.85
1,900.0	1.78	53.30	1,896.6	-1,101.4	53.8	76.3	-57.2	0.41	376,199.09	622,049.66
2,000.0	1.76	50.18	1,996.6	-1,001.4	55.8	78.7	-59.2	0.10	376,201.00	622,052.08



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Diamondback 22 State Com
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
MD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
North Reference: Grid
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)
2,100.0	2.03	65.55	2,096.5	-901.5	57.5	81.5	-61.0	0.57	376,202.72	622,054.88
2,200.0	2.33	78.68	2,196.5	-801.5	58.6	85.1	-62.3	0.58	376,203.85	622,058.48
2,300.0	1.83	87.33	2,296.4	-701.6	59.1	88.7	-63.0	0.59	376,204.32	622,062.07
2,400.0	1.18	86.77	2,396.4	-601.6	59.2	91.3	-63.2	0.65	376,204.46	622,064.69
2,500.0	0.91	77.36	2,496.3	-501.7	59.4	93.1	-63.5	0.32	376,204.69	622,066.49
2,600.0	0.52	59.07	2,596.3	-401.7	59.9	94.3	-64.0	0.45	376,205.10	622,067.66
2,700.0	0.48	56.41	2,696.3	-301.7	60.3	95.0	-64.5	0.05	376,205.56	622,068.40
2,800.0	0.24	60.57	2,796.3	-201.7	60.7	95.5	-64.8	0.24	376,205.90	622,068.93
2,900.0	0.10	70.77	2,896.3	-101.7	60.8	95.8	-65.0	0.14	376,206.03	622,069.19
3,000.0	0.08	208.44	2,996.3	-1.7	60.8	95.9	-65.0	0.17	376,205.99	622,069.24
3,100.0	0.15	245.46	3,096.3	98.3	60.6	95.7	-64.8	0.10	376,205.88	622,069.09
3,200.0	0.22	256.42	3,196.3	198.3	60.5	95.4	-64.7	0.08	376,205.78	622,068.78
3,300.0	0.43	281.29	3,296.3	298.3	60.6	94.8	-64.7	0.25	376,205.81	622,068.23
3,400.0	0.57	281.19	3,396.3	398.3	60.7	94.0	-64.9	0.14	376,205.98	622,067.37
3,500.0	0.51	277.95	3,496.3	498.3	60.9	93.1	-65.0	0.07	376,206.14	622,066.45
3,600.0	0.63	287.36	3,596.3	598.3	61.1	92.1	-65.2	0.15	376,206.36	622,065.48
3,700.0	0.65	286.44	3,696.3	698.3	61.4	91.0	-65.4	0.02	376,206.69	622,064.41
3,800.0	0.67	291.23	3,796.3	798.3	61.8	89.9	-65.8	0.06	376,207.06	622,063.32
3,900.0	0.61	281.53	3,896.3	898.3	62.1	88.9	-66.0	0.12	376,207.38	622,062.26
4,000.0	0.60	260.59	3,996.3	998.3	62.2	87.8	-66.0	0.22	376,207.40	622,061.22
4,100.0	0.58	256.01	4,096.3	1,098.3	61.9	86.8	-65.7	0.05	376,207.19	622,060.21
4,200.0	0.76	249.92	4,196.3	1,198.3	61.6	85.7	-65.3	0.19	376,206.84	622,059.10
4,300.0	0.75	256.09	4,296.3	1,298.3	61.2	84.5	-64.9	0.08	376,206.45	622,057.84
4,400.0	0.84	253.54	4,396.3	1,398.3	60.8	83.1	-64.5	0.10	376,206.09	622,056.50
4,500.0	0.88	248.75	4,496.2	1,498.2	60.4	81.7	-63.9	0.08	376,205.60	622,055.08
4,600.0	0.88	252.28	4,596.2	1,598.2	59.8	80.3	-63.4	0.05	376,205.09	622,053.63
4,700.0	0.92	241.75	4,696.2	1,698.2	59.2	78.8	-62.7	0.17	376,204.48	622,052.19



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Diamondback 22 State Com
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
MD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
North Reference: Grid
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)
4,800.0	1.18	228.02	4,796.2	1,798.2	58.2	77.3	-61.5	0.36	376,203.41	622,050.72
4,900.0	1.31	223.80	4,896.2	1,898.2	56.7	75.8	-60.0	0.16	376,201.90	622,049.17
5,000.0	1.28	217.57	4,996.2	1,998.2	54.9	74.3	-58.2	0.14	376,200.18	622,047.69
5,100.0	1.01	204.05	5,096.1	2,098.1	53.3	73.3	-56.5	0.38	376,198.49	622,046.65
5,200.0	1.00	205.46	5,196.1	2,198.1	51.7	72.5	-54.8	0.03	376,196.90	622,045.92
5,300.0	0.96	198.60	5,296.1	2,298.1	50.1	71.9	-53.2	0.12	376,195.32	622,045.28
5,400.0	0.84	185.79	5,396.1	2,398.1	48.6	71.6	-51.7	0.23	376,193.80	622,044.94
5,500.0	0.97	179.82	5,496.1	2,498.1	47.0	71.5	-50.1	0.16	376,192.22	622,044.86
5,600.0	0.99	175.92	5,596.1	2,598.1	45.3	71.5	-48.4	0.07	376,190.51	622,044.93
5,700.0	0.91	175.53	5,696.1	2,698.1	43.6	71.7	-46.8	0.08	376,188.86	622,045.05
5,800.0	0.91	182.12	5,796.0	2,798.0	42.0	71.7	-45.2	0.10	376,187.27	622,045.08
5,900.0	1.02	179.73	5,896.0	2,898.0	40.3	71.7	-43.5	0.12	376,185.59	622,045.06
6,000.0	1.11	180.07	5,996.0	2,998.0	38.5	71.7	-41.6	0.09	376,183.73	622,045.06
6,100.0	1.12	188.54	6,096.0	3,098.0	36.6	71.5	-39.7	0.16	376,181.80	622,044.92
6,200.0	1.01	194.95	6,196.0	3,198.0	34.7	71.2	-37.9	0.16	376,179.98	622,044.54
6,300.0	1.01	177.53	6,296.0	3,298.0	33.0	71.0	-36.1	0.31	376,178.25	622,044.35
6,400.0	1.28	154.26	6,395.9	3,397.9	31.1	71.5	-34.3	0.53	376,176.36	622,044.88
6,500.0	1.50	166.49	6,495.9	3,497.9	28.8	72.3	-32.0	0.37	376,174.08	622,045.67
6,600.0	1.52	176.99	6,595.9	3,597.9	26.2	72.7	-29.4	0.28	376,171.48	622,046.04
6,700.0	1.23	185.16	6,695.8	3,697.8	23.8	72.6	-27.1	0.35	376,169.09	622,046.02
6,800.0	1.01	180.35	6,795.8	3,797.8	21.9	72.5	-25.1	0.24	376,167.14	622,045.91
6,900.0	1.39	151.59	6,895.8	3,897.8	20.0	73.1	-23.2	0.70	376,165.19	622,046.49
7,000.0	1.41	156.71	6,995.8	3,997.8	17.8	74.2	-21.0	0.13	376,163.00	622,047.55
7,100.0	1.46	173.25	7,095.7	4,097.7	15.4	74.8	-18.7	0.42	376,160.60	622,048.19
7,200.0	1.06	163.32	7,195.7	4,197.7	13.2	75.2	-16.5	0.45	376,158.45	622,048.60
7,300.0	0.91	166.29	7,295.7	4,297.7	11.5	75.7	-14.9	0.16	376,156.79	622,049.05
7,400.0	0.78	198.83	7,395.7	4,397.7	10.1	75.6	-13.5	0.49	376,155.38	622,049.02



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Site:	Diamondback 22 State Com	MD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Well:	#1H	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	0.91	241.00	7,495.7	4,497.7	9.1	74.7	-12.4	0.62	376,154.35	622,048.11	
7,558.0	1.23	235.83	7,553.7	4,555.7	8.5	73.8	-11.8	0.58	376,153.77	622,047.19	
7,589.0	2.37	211.32	7,584.7	4,586.7	7.8	73.2	-11.0	4.36	376,153.04	622,046.58	
7,620.0	5.19	203.98	7,615.6	4,617.6	6.0	72.3	-9.2	9.21	376,151.21	622,045.68	
7,652.0	8.62	194.72	7,647.4	4,649.4	2.3	71.1	-5.5	11.24	376,147.57	622,044.48	
7,683.0	12.13	190.14	7,677.8	4,679.8	-3.1	69.9	0.0	11.62	376,142.11	622,043.32	
7,715.0	15.92	190.85	7,708.9	4,710.9	-10.8	68.5	7.7	11.86	376,134.49	622,041.90	
7,747.0	19.52	191.26	7,739.4	4,741.4	-20.3	66.6	17.3	11.26	376,124.93	622,040.03	
7,778.0	23.30	190.58	7,768.2	4,770.2	-31.4	64.5	28.5	12.22	376,113.82	622,037.89	
7,810.0	27.08	189.14	7,797.2	4,799.2	-44.8	62.2	42.0	11.97	376,100.41	622,035.57	
7,842.0	30.95	187.86	7,825.1	4,827.1	-60.2	59.9	57.5	12.25	376,085.06	622,033.29	
7,874.0	35.09	186.84	7,852.0	4,854.0	-77.5	57.7	74.8	13.05	376,067.77	622,031.07	
7,906.0	39.31	186.28	7,877.5	4,879.5	-96.7	55.5	94.1	13.23	376,048.55	622,028.86	
7,937.0	42.74	184.52	7,900.8	4,902.8	-116.9	53.6	114.4	11.67	376,028.30	622,026.96	
7,969.0	45.11	183.53	7,923.9	4,925.9	-139.1	52.0	136.6	7.71	376,006.15	622,025.40	
8,000.0	47.84	183.18	7,945.2	4,947.2	-161.5	50.7	159.1	8.84	375,983.72	622,024.09	
8,032.0	50.74	183.29	7,966.1	4,968.1	-185.7	49.3	183.4	9.07	375,959.50	622,022.72	
8,063.0	54.08	183.31	7,985.0	4,987.0	-210.3	47.9	207.9	10.77	375,934.98	622,021.31	
8,095.0	57.33	183.92	8,003.0	5,005.0	-236.6	46.3	234.4	10.28	375,908.60	622,019.64	
8,127.0	61.03	185.10	8,019.4	5,021.4	-264.0	44.1	261.8	11.99	375,881.21	622,017.47	
8,159.0	64.98	185.91	8,034.0	5,036.0	-292.4	41.3	290.3	12.55	375,852.83	622,014.73	
8,191.0	69.12	185.90	8,046.4	5,048.4	-321.7	38.3	319.7	12.94	375,823.53	622,011.70	
8,214.0	72.19	184.98	8,054.0	5,056.0	-343.3	36.3	341.4	13.87	375,801.93	622,009.65	
8,246.0	75.80	184.12	8,062.9	5,064.9	-374.0	33.8	372.1	11.57	375,771.27	622,007.21	
8,277.0	78.61	183.33	8,069.7	5,071.7	-404.1	31.9	402.3	9.40	375,741.11	622,005.25	
8,308.0	81.34	183.44	8,075.1	5,077.1	-434.6	30.1	432.8	8.81	375,710.64	622,003.44	
8,340.0	83.71	183.65	8,079.3	5,081.3	-466.3	28.1	464.6	7.43	375,678.97	622,001.48	



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Site:	Diamondback 22 State Com	MD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Well:	#1H	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)
8,371.0	84.06	183.67	8,082.6	5,084.6	-497.0	26.1	495.4	1.13	375,648.21	621,999.51
8,403.0	85.74	183.62	8,085.4	5,087.4	-528.8	24.1	527.2	5.25	375,616.41	621,997.49
8,436.0	87.58	183.91	8,087.4	5,089.4	-561.7	21.9	560.2	5.64	375,583.53	621,995.32
8,467.0	88.20	183.27	8,088.5	5,090.5	-592.6	20.0	591.2	2.87	375,552.62	621,993.38
8,498.0	89.52	183.63	8,089.1	5,091.1	-623.6	18.1	622.1	4.41	375,521.68	621,991.52
8,561.0	90.13	183.47	8,089.3	5,091.3	-686.4	14.2	685.1	1.00	375,458.80	621,987.62
8,624.0	90.40	183.23	8,089.0	5,091.0	-749.3	10.6	748.1	0.57	375,395.91	621,983.94
8,688.0	90.75	183.36	8,088.4	5,090.4	-813.2	6.9	812.1	0.58	375,332.02	621,980.26
8,782.0	90.57	182.08	8,087.3	5,089.3	-907.1	2.4	906.1	1.38	375,238.13	621,975.80
8,877.0	89.69	182.35	8,087.1	5,089.1	-1,002.0	-1.3	1,001.1	0.97	375,143.20	621,972.13
8,972.0	89.96	182.33	8,087.4	5,089.4	-1,097.0	-5.1	1,096.1	0.28	375,048.28	621,968.25
9,067.0	89.52	183.54	8,087.8	5,089.8	-1,191.8	-10.0	1,191.1	1.36	374,953.41	621,963.38
9,162.0	90.04	183.37	8,088.2	5,090.2	-1,286.7	-15.7	1,286.1	0.58	374,858.59	621,957.66
9,256.0	90.66	183.24	8,087.6	5,089.6	-1,380.5	-21.1	1,380.1	0.67	374,764.74	621,952.24
9,319.0	90.92	182.74	8,086.7	5,088.7	-1,443.4	-24.4	1,443.1	0.89	374,701.84	621,948.95
9,413.0	89.60	182.44	8,086.3	5,088.3	-1,537.3	-28.7	1,537.1	1.44	374,607.94	621,944.71
9,508.0	89.43	183.58	8,087.1	5,089.1	-1,632.2	-33.7	1,632.1	1.21	374,513.07	621,939.72
9,603.0	89.96	183.17	8,087.6	5,089.6	-1,727.0	-39.3	1,727.0	0.71	374,418.24	621,934.13
9,698.0	89.60	184.43	8,088.0	5,090.0	-1,821.8	-45.6	1,822.0	1.38	374,323.45	621,927.83
9,793.0	90.22	184.48	8,088.1	5,090.1	-1,916.5	-52.9	1,917.0	0.65	374,228.74	621,920.45
9,887.0	90.75	184.51	8,087.3	5,089.3	-2,010.2	-60.3	2,010.9	0.56	374,135.03	621,913.08
9,983.0	89.43	183.77	8,087.2	5,089.2	-2,106.0	-67.2	2,106.9	1.58	374,039.28	621,906.15
10,077.0	89.78	183.83	8,087.8	5,089.8	-2,199.7	-73.5	2,200.8	0.38	373,945.49	621,899.92
10,172.0	90.22	183.88	8,087.8	5,089.8	-2,294.5	-79.8	2,295.8	0.47	373,850.71	621,893.54
10,267.0	90.75	183.89	8,087.0	5,089.0	-2,389.3	-86.3	2,390.8	0.56	373,755.93	621,887.10
10,361.0	90.48	184.60	8,086.0	5,088.0	-2,483.0	-93.2	2,484.7	0.81	373,662.19	621,880.14
10,456.0	90.13	184.31	8,085.5	5,087.5	-2,577.8	-100.6	2,579.7	0.48	373,567.48	621,872.76



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: COG Operating LLC
Project: Eddy County(NAD83)
Site: Diamondback 22 State Com
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
MD Reference: KB = 17' @ 2998.0usft (Original Well Elev)
North Reference: Grid
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)
10,549.0	89.96	184.08	8,085.4	5,087.4	-2,670.5	-107.4	2,672.6	0.31	373,474.73	621,865.96
10,644.0	88.02	184.09	8,087.1	5,089.1	-2,765.2	-114.2	2,767.6	2.04	373,379.99	621,859.19
10,738.0	87.76	183.54	8,090.6	5,092.6	-2,859.0	-120.4	2,861.5	0.65	373,286.26	621,852.94
10,833.0	89.25	183.89	8,093.0	5,095.0	-2,953.7	-126.6	2,956.5	1.61	373,191.50	621,846.79
10,928.0	89.08	183.54	8,094.4	5,096.4	-3,048.5	-132.7	3,051.4	0.41	373,096.71	621,840.64
11,022.0	90.13	183.36	8,095.1	5,097.1	-3,142.4	-138.4	3,145.4	1.13	373,002.88	621,834.98
11,116.0	90.84	182.83	8,094.3	5,096.3	-3,236.2	-143.5	3,239.4	0.94	372,909.02	621,829.90
11,211.0	91.28	182.92	8,092.5	5,094.5	-3,331.1	-148.2	3,334.4	0.47	372,814.16	621,825.14
11,306.0	90.31	183.36	8,091.2	5,093.2	-3,425.9	-153.4	3,429.4	1.12	372,719.31	621,819.94
11,401.0	91.10	182.83	8,090.0	5,092.0	-3,520.8	-158.6	3,524.4	1.00	372,624.46	621,814.81
11,495.0	88.81	182.48	8,090.1	5,092.1	-3,614.7	-162.9	3,618.3	2.46	372,530.57	621,810.45
11,589.0	89.16	182.48	8,091.8	5,093.8	-3,708.6	-167.0	3,712.3	0.37	372,436.67	621,806.39
11,687.0	89.60	182.22	8,092.8	5,094.8	-3,806.5	-171.0	3,810.3	0.52	372,338.76	621,802.37
11,783.0	91.19	183.01	8,092.2	5,094.2	-3,902.4	-175.4	3,906.3	1.85	372,242.87	621,797.99
11,878.0	89.60	182.57	8,091.5	5,093.5	-3,997.3	-180.0	4,001.3	1.74	372,147.98	621,793.37
11,973.0	89.52	182.22	8,092.2	5,094.2	-4,092.2	-184.0	4,096.3	0.38	372,053.07	621,789.40
12,067.0	91.19	182.31	8,091.7	5,093.7	-4,186.1	-187.7	4,190.3	1.78	371,959.15	621,785.68
12,162.0	89.87	182.48	8,090.8	5,092.8	-4,281.0	-191.7	4,285.3	1.40	371,864.24	621,781.71
12,256.0	90.84	182.57	8,090.2	5,092.2	-4,374.9	-195.8	4,379.3	1.04	371,770.33	621,777.57
12,296.0	90.92	182.57	8,089.6	5,091.6	-4,414.9	-197.6	4,419.3	0.20	371,730.38	621,775.78
12,350.0	90.92	182.57	8,088.7	5,090.7	-4,468.8	-200.0	4,473.3	0.00	371,676.44	621,773.36



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Site:	Diamondback 22 State Com	MD Reference:	KB = 17' @ 2998.0usft (Original Well Elev)
Well:	#1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,620.0	7,615.6	6.0	72.3	KOP - 7620.0 'MD, 7615.6 'TVD, 203.98 'AZI, 5.19 'INC, 6.0 'N, 72.3 'E
8,561.0	8,089.3	-686.4	14.2	LP - 8561.0 'MD, 8089.3 'TVD, 183.47 'AZI, 90.13 'INC, -686.4 'N, 14.2 'E
12,350.0	8,088.7	-4,468.8	-200.0	BHL - 12350.0 'MD, 8088.7 'TVD, 182.57 'AZI, 90.92 'INC, -4468.8 'N, -200.0 'E

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------



Project: Eddy County(NAD83)
Site: Diamondback 22 State Con
Well: #1H
Wellbore: OH
Plan: Post Gyro Plan #2 (#1H/OH)



Azimuths to Grid North
True North: -0.14°
Magnetic North: 7.58°

Magnetic Field
Strength: 48425.8snT
Dip Angle: 59.93°
Date: 2/2/2012
Model: IGRF200510

PATHFINDER
A Schlumberger Company

PROJECT DETAILS: Eddy County(NAD83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid

WELL DETAILS: #1H

Ground Elevation: 2381.0
RKB Elevation: KB = 17' @ 2998.0usft (Original Well Elev)
Rig Name: Original Well Elev

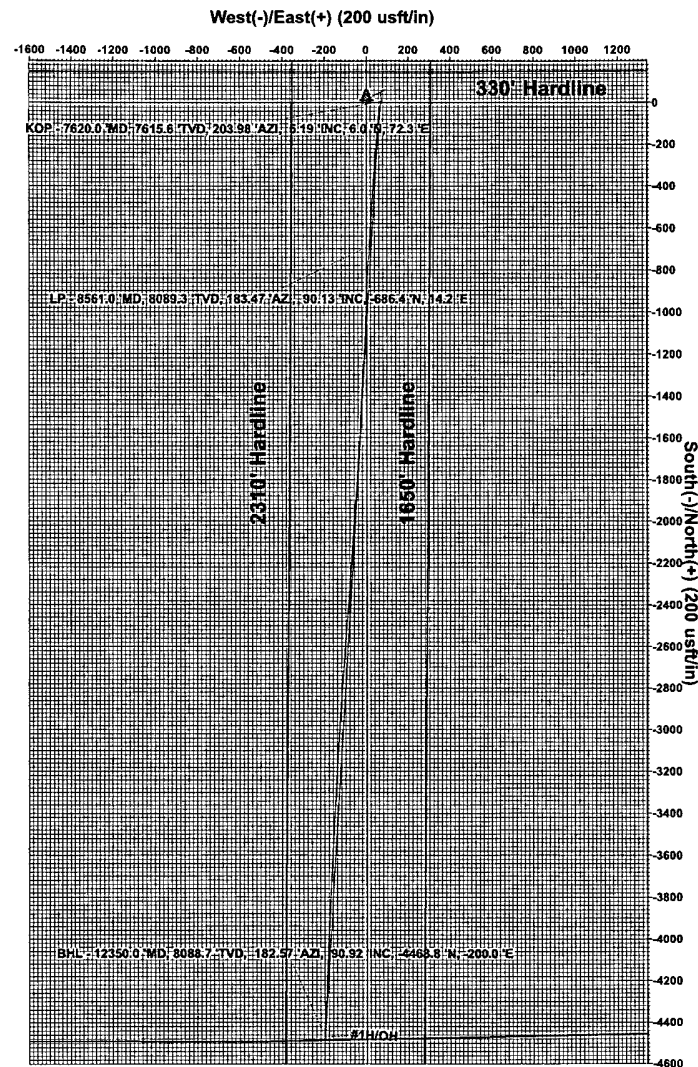
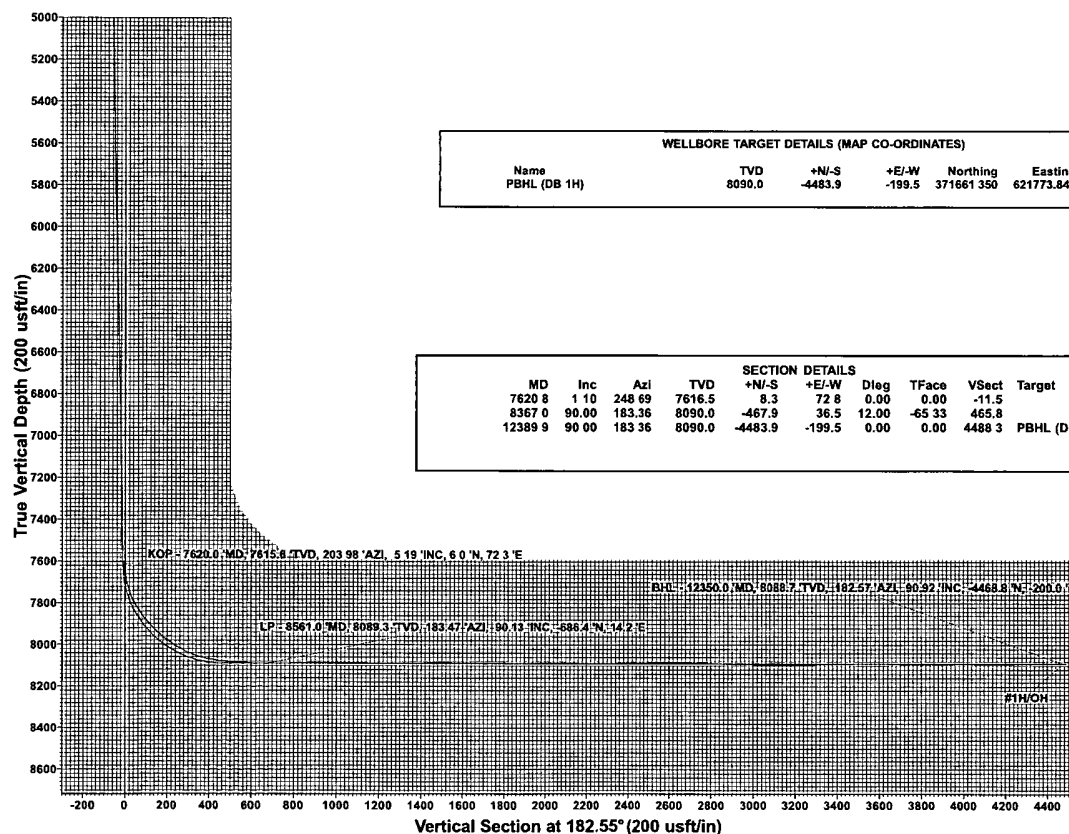
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Spot
0.0	0.0	376145.242	621973.383	32° 2' 1.811 N	104° 4' 23.204 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL (DB 1H)	8090.0	-4483.9	-199.5	371661.350	621773.840	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VSect	Target
7620.8	1.10	248.69	7616.5	8.3	72.8	0.00	0.00	-11.5	
8367.0	90.00	183.36	8090.0	-467.9	36.5	12.00	-65.33	465.8	
12389.9	90.00	183.36	8090.0	-4483.9	-199.5	0.00	0.00	4488.3	PBHL (DB 1H)



EOW

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

Created By: Michael Trout Date: 16.01, March 14 2012

Checked: _____ Date: _____

COG Operating LLC
Eddy County(NAD83)
Diamondback 22 State Con
#1H
Original Well Elev
OH
Post Gyro Plan #2