

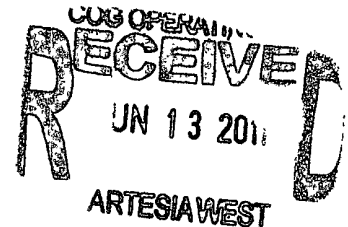
PATRIOT DRILLING, LLC

30-015-36372

OPERATOR: COG Operating, LLC.
WELL/LEASE: Really Scary Federal Com # 3-H
COUNTY: Eddy Co., New Mexico
Sec. 33, T24S, R28E

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
230	1	2,217	2 1/2
322	3/4	2,281	2 1/2
623	3/4	2,396	2
923	1 1/5	2,933	1 1/2
1,208	1	2,471	1
1,393	3/4	2,946	1/2
1,582	1/2	4,326	1/4
1,741	1 1/2	4,799	1/2
1,900	3	5,277	1/2
1,956	2 3/4	5,778	1/2
2,026	2 1/2	6,347	2 1/4
2,123	2 1/4	6,631	2 3/4

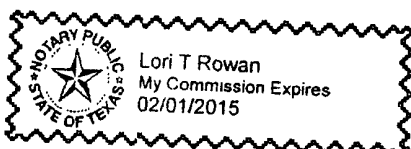


Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 9th day of June, 2011 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

Willow Lake
Eddy County, NM
Really Scary Federal #3H
VH - Job #32K0511482

Survey: Actual

SDI Standard Survey Report

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

Richardson

Notarized this date 30th of June, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling
Directional Drilling Operations

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Really Scary Federal #3H
Project:	Willow Lake	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Really Scary Federal #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0511482	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0511482	Database:	EDM-Regulatory

Project:	Willow Lake		
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:	403,498 21 usft	Latitude: 32° 6' 32 400 N
From:	Lat/Long	Easting:	589,895 33 usft	Longitude: 104° 2' 34 800 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16"	Grid Convergence: 0 15 °

Well:	Really Scary Federal #3H, Directional (Pathfinder)			
Well Position	+N/-S	0 0 usft	Northing:	424,763 63 usft
	+E/-W	0 0 usft	Easting:	574,345 61 usft
Position Uncertainty	0 0 usft	Wellhead Elevation:	usft	Ground Level: 0 0 usft

Wellbore:	VH - Job #32K0511482				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	5/23/2011	7 83	60 04	48,555

Design:	VH - Job #32K0511482			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0 0	0 0	0 0	359 09

Survey Program	Date	7/6/2011		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100 0	8,500 0	Actual (VH - Job #32K0511482)	Keeper	Keeper Gyro

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 19	155 72	100 0	-0 2	0 1	155 72	0 2
200 0	0 32	155 61	200 0	-0 6	0 3	155 67	0 6
300 0	0 12	199 66	300 0	-0 9	0 3	159 96	1 0
400 0	0 11	10 01	400 0	-0 9	0 3	161 08	1 0
500 0	0 12	112 29	500 0	-0 9	0 4	153 58	1 0
600 0	0 20	126 41	600 0	-1 0	0 7	146 47	1 2
700 0	0 71	116 17	700 0	-1 4	1 4	135 38	1 9
800 0	0 65	126 83	800 0	-2 0	2 4	130 04	3 1
900 0	0 88	159 62	900 0	-3 1	3 1	134 63	4 3
1,000 0	0 82	143 58	1,000 0	-4 3	3 8	138 96	5 8
1,100 0	0 65	113 61	1,100 0	-5 2	4 7	137 44	7 0

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Really Scary Federal #3H
Project:	Willow Lake	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Really Scary Federal #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0511482	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0511482	Database:	EDM-Regulatory

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 0	0 14	130 58	1,200 0	-5 5	5 3	135 61	7 6
1,300 0	0 25	142 07	1,300 0	-5 7	5 6	135 71	8 0
1,400 0	0 31	100 20	1,400 0	-5 9	6 0	134 81	8 4
1,500 0	0 34	79 79	1,500 0	-5 9	6 5	132 23	8 8
1,600 0	0 43	87 17	1,600 0	-5 9	7 2	129 13	9 3
1,700 0	1 45	104 52	1,699 9	-6 2	8 8	124 98	10 7
1,800 0	2 32	102 53	1,799 9	-6 9	12 0	119 94	13 8
1,900 0	2 49	103 69	1,899 8	-7 9	16 1	116 05	17 9
2,000 0	2 27	106 52	1,999 7	-8 9	20 1	113 99	22 0
2,100 0	2 21	107 90	2,099 6	-10 1	23 8	112 96	25 9
2,200 0	2 43	107 91	2,199 5	-11 3	27 7	112 28	29 9
2,300 0	2 35	105 75	2,299 5	-12 5	31 7	111 62	34 1
2,400 0	1 55	111 43	2,399 4	-13 6	34 9	111 29	37 5
2,500 0	1 41	118 90	2,499 4	-14 7	37 2	111 53	40 0
2,600 0	1 31	125 45	2,599 3	-15 9	39 2	112 11	42 4
2,700 0	1 31	126 85	2,699 3	-17 3	41 1	112 82	44 6
2,800 0	1 28	132 26	2,799 3	-18 7	42 8	113 62	46 7
2,900 0	1 35	135 53	2,899 3	-20 3	44 5	114 55	48 9
3,000 0	1 32	131 90	2,999 2	-21 9	46 2	115 41	51 1
3,100 0	1 46	131 42	3,099 2	-23 5	48 0	116 14	53 4
3,200 0	1 27	130 33	3,199 2	-25 1	49 8	116 76	55 7
3,300 0	1 19	130 77	3,299 2	-26 5	51 4	117 27	57 8
3,400 0	1 13	128 78	3,399 1	-27 8	53 0	117 69	59 8
3,500 0	1 06	132 75	3,499 1	-29 0	54 4	118 09	61 7
3,600 0	1 00	130 83	3,599 1	-30 2	55 8	118 47	63 4
3,700 0	0 83	127 62	3,699 1	-31 3	57 0	118 74	65 0
3,800 0	0 51	128 64	3,799 1	-32 0	57 9	118 90	66 1
3,900 0	0 27	133 08	3,899 1	-32 4	58 4	119 02	66 8
4,000 0	0 19	176 31	3,999 1	-32 7	58 6	119 19	67 1
4,100 0	0 31	289 99	4,099 1	-32 8	58 4	119 34	67 0
4,200 0	0 14	198 31	4,199 1	-32 8	58 1	119 48	66 7
4,300 0	0 22	198 77	4,299 1	-33 1	58 0	119 75	66 8
4,400 0	0 19	233 96	4,399 1	-33 4	57 8	120 04	66 7
4,500 0	0 28	233 54	4,499 1	-33 7	57 4	120 36	66 6
4,600 0	0 47	228 67	4,599 1	-34 1	56 9	120 89	66 4
4,700 0	0 61	214 98	4,699 1	-34 8	56 3	121 69	66 2
4,800 0	0 69	218 03	4,799 1	-35 7	55 7	122 67	66 1
4,900 0	0 70	230 08	4,899 1	-36 6	54 8	123 70	65 9
5,000 0	0 66	230 71	4,999 0	-37 3	53 9	124 69	65 6
5,100 0	0 72	231 23	5,099 0	-38 1	53 0	125 71	65 2
5,200 0	0 74	223 94	5,199 0	-38 9	52 0	126 80	65 0
5,300 0	0 73	221 49	5,299 0	-39 9	51 2	127 93	64 9
5,400 0	0 72	215 91	5,399 0	-40 9	50 4	129 05	64 8
5,500 0	0 84	212 34	5,499 0	-42 0	49 6	130 24	65 0

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Really Scary Federal #3H
Project:	Willow Lake	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Really Scary Federal #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0511482	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0511482	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 83	208 60	5,599 0	-43 2	48 9	131 50	65.2	
5,700 0	0 94	204 87	5,699 0	-44 6	48 2	132 81	65 7	
5,800 0	0 93	201 70	5,799 0	-46 1	47 5	134 14	66 2	
5,900 0	1 21	212 13	5,899 0	-47 8	46 7	135 67	66 8	
6,000 0	1 17	211 46	5,998 9	-49 5	45 6	137 38	67 3	
6,100 0	1 20	227 73	6,098 9	-51 1	44 3	139 10	67 6	
6,200 0	1 09	285.25	6,198 9	-51 6	42 6	140 45	66 9	
6,300 0	1 79	305 79	6,298 9	-50 4	40 4	141 29	64 6	
6,400 0	1 73	309 12	6,398 8	-48 5	37 9	141 98	61 6	
6,500 0	1 84	313 16	6,498 8	-46 5	35 6	142 54	58 5	
6,600 0	2 49	317 39	6,598 7	-43 8	33 0	143 02	54 8	
6,700 0	3 22	345 89	6,698 6	-39 5	30 8	142 02	50 1	
6,800 0	3 44	343 77	6,798 4	-33 9	29 3	139 14	44 8	
6,900 0	4 22	326 07	6,898 2	-27 9	26 4	136 61	38 4	
7,000 0	4 03	327 21	6,997.9	-21 9	22 4	134 32	31 4	
7,100 0	2 31	322 60	7,097 8	-17 4	19 3	131 95	26 0	
7,200 0	1 49	322 51	7,197 7	-14 7	17 3	130 41	22 7	
7,300 0	1 49	319.67	7,297 7	-12 7	15 7	129 04	20 2	
7,400 0	1 49	302 20	7,397 6	-11 0	13 7	128 77	17 6	
7,500 0	1 77	328 59	7,497 6	-9 0	11 8	127 32	14 9	
7,600 0	2 81	351 53	7,597 5	-5 3	10 6	116 31	11 9	
7,700 0	2 39	2 57	7,697 4	-0 8	10 4	94 17	10 4	
7,800 0	1 42	329 21	7,797 4	2 4	9 8	76 35	10 1	
7,900 0	1 84	272 33	7,897 3	3 5	7 6	65 16	8 4	
8,000 0	1 88	276 24	7,997 3	3 8	4 4	49 25	5 8	
8,100.0	1 87	282 76	8,097 2	4 3	1 1	14 91	4 5	
8,200 0	1 89	283 06	8,197 2	5 0	-2 1	337 83	5 4	
8,300 0	2 08	282 32	8,297 1	5 8	-5 4	316 85	7 9	
8,400 0	3 08	302 56	8,397 0	7 6	-9 5	308 85	12 2	
8,500 0	2 07	315 19	8,496 9	10 4	-13 0	308 53	16 6	



Project: Willow Lake
Eddy County, NM
Well: Really Scary Federal #3H
Wellbore: VH - Job #32K0511482
Design: VH - Job #32K0511482



Azimuths to Grid North
True North -0 13°
Magnetic North 7 70°

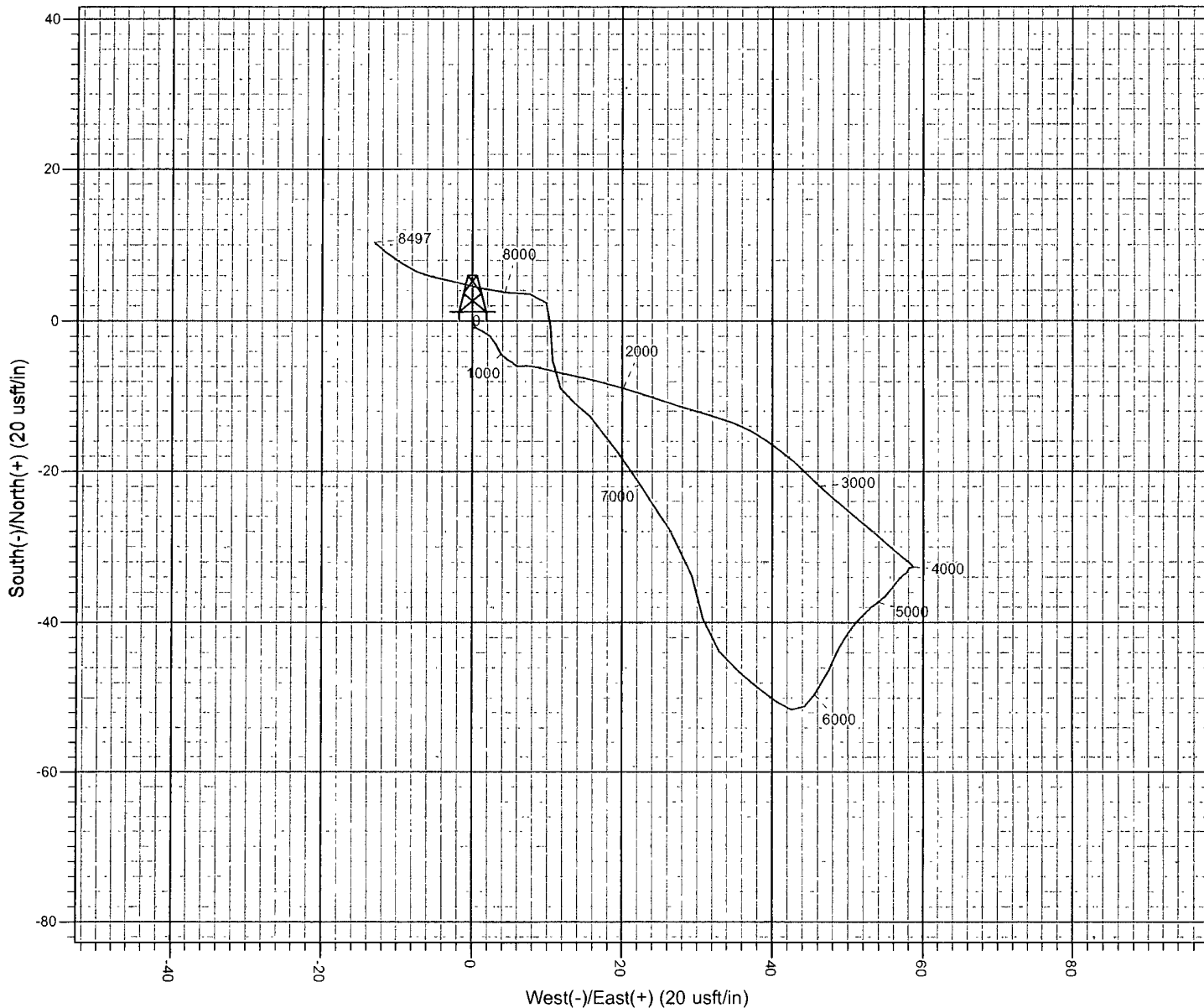
Magnetic Field
Strength 48555 4snT
Dip Angle 60 04°
Date 5/23/2011
Model IGRF2010

WELL DETAILS: Really Scary Federal #3H

WELL @ 0.0usft (Original Well Elev)

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	424763.63	574345.61	32° 10' 3.230 N	104° 5' 35.041 W	



PROJECT DETAILS: Willow Lake
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

SITE DETAILS Eddy County, NM
Site Centre Latitude: 32° 6' 32.400 N
Longitude: 104° 2' 34.800 W
Positional Uncertainty: 0.0
Convergence: 0.15
Local North: Grid

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING, LLC.
REALLY SCARY FEDERAL #3H
EDDY COUNTY, NM
Rig: PATRIOT 2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: JEFF CORBETT
TODD PISCIOTTA

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.10.3.2321 N LON: 104.5.35.0402 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 574345.7000 Y: 424763.8000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.70° EAST TO GRID
Vertical Section Plane: 359.09
Survey Vert. Reference: 17.00' Rotary Table To Ground
Altitude: 3006.00' Ground To MSL

Survey Calculations by RX5 V6.03E using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
THE FOLLOWING ARE SCIENTIFIC DRILLING GYRO SURVEYS.										
100.00	0.19	155.72	100.00	0.00	-0.14	0.14 S	0.04 E	0.15@	165.64	0.00
200.00	0.32	155.61	200.00	100.00	-0.55	0.55 S	0.22 E	0.59@	158.13	0.13
300.00	0.12	199.66	300.00	100.00	-0.91	0.90 S	0.30 E	0.95@	161.58	0.25
400.00	0.11	10.01	400.00	100.00	-0.91	0.91 S	0.28 E	0.95@	162.72	0.23
500.00	0.12	112.29	500.00	100.00	-0.86	0.85 S	0.40 E	0.94@	155.08	0.18
600.00	0.20	126.41	600.00	100.00	-1.00	0.99 S	0.63 E	1.18@	147.52	0.09
700.00	0.71	116.17	699.99	100.00	-1.39	1.37 S	1.33 E	1.91@	135.88	0.52
800.00	0.65	126.83	799.99	100.00	-2.02	1.98 S	2.34 E	3.07@	130.30	0.14
900.00	0.88	159.62	899.98	100.00	-3.09	3.04 S	3.06 E	4.32@	134.84	0.49
1000.00	0.82	143.58	999.97	100.00	-4.40	4.34 S	3.75 E	5.74@	139.15	0.24
1100.00	0.65	113.61	1099.96	100.00	-5.22	5.14 S	4.70 E	6.96@	137.59	0.41
1200.00	0.14	130.58	1199.96	100.00	-5.53	5.45 S	5.31 E	7.61@	135.74	0.52
1300.00	0.25	142.07	1299.95	100.00	-5.79	5.70 S	5.54 E	7.95@	135.83	0.12
1400.00	0.31	100.20	1399.95	100.00	-6.01	5.92 S	5.94 E	8.38@	134.92	0.21
1500.00	0.34	79.79	1499.95	100.00	-6.02	5.92 S	6.50 E	8.79@	132.33	0.12
1600.00	0.43	87.17	1599.95	100.00	-5.96	5.84 S	7.16 E	9.24@	129.22	0.10
1700.00	1.45	104.52	1699.94	100.00	-6.28	6.14 S	8.76 E	10.70@	125.04	1.05
1800.00	2.32	102.53	1799.88	100.00	-7.09	6.90 S	11.96 E	13.81@	119.98	0.87
1900.00	2.49	103.69	1899.79	100.00	-8.11	7.85 S	16.05 E	17.87@	116.07	0.18
2000.00	2.27	106.52	1999.71	100.00	-9.25	8.93 S	20.06 E	21.96@	114.00	0.25
2100.00	2.21	107.90	2099.63	100.00	-10.46	10.09 S	23.79 E	25.84@	112.97	0.08
2200.00	2.43	107.91	2199.55	100.00	-11.77	11.33 S	27.64 E	29.88@	112.29	0.22
2300.00	2.35	105.75	2299.46	100.00	-13.04	12.54 S	31.63 E	34.03@	111.62	0.12
2400.00	1.55	111.43	2399.40	100.00	-14.14	13.59 S	34.87 E	37.42@	111.29	0.82
2500.00	1.41	118.90	2499.37	100.00	-15.27	14.68 S	37.20 E	39.99@	111.53	0.24

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING, LLC.
REALLY SCARY FEDERAL #3H
EDDY COUNTY, NM
RIG:PATRIOT 2

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
2600.00	1.31	125.45	2599.34	100.00	-16.56	15.94 S	39.21 E	42.33@	112.12	0.19
2700.00	1.31	126.85	2699.31	100.00	-17.93	17.28 S	41.06 E	44.55@	112.83	0.03
2800.00	1.28	132.26	2799.29	100.00	-19.40	18.72 S	42.80 E	46.71@	113.63	0.13
2900.00	1.35	135.53	2899.26	100.00	-21.02	20.31 S	44.45 E	48.87@	114.56	0.10
3000.00	1.32	131.90	2999.24	100.00	-22.65	21.92 S	46.13 E	51.08@	115.42	0.09
3100.00	1.46	131.42	3099.21	100.00	-24.29	23.53 S	47.95 E	53.41@	116.15	0.14
3200.00	1.27	130.33	3199.18	100.00	-25.88	25.09 S	49.75 E	55.72@	116.77	0.19
3300.00	1.19	130.77	3299.15	100.00	-27.30	26.49 S	51.38 E	57.80@	117.28	0.08
3400.00	1.13	128.78	3399.13	100.00	-28.62	27.79 S	52.93 E	59.78@	117.70	0.07
3500.00	1.06	132.75	3499.12	100.00	-29.89	29.03 S	54.38 E	61.64@	118.10	0.10
3600.00	1.00	130.83	3599.10	100.00	-31.11	30.23 S	55.72 E	63.39@	118.48	0.07
3700.00	0.83	127.62	3699.09	100.00	-32.14	31.24 S	56.95 E	64.96@	118.75	0.18
3800.00	0.51	128.64	3799.08	100.00	-32.88	31.96 S	57.87 E	66.11@	118.91	0.32
3900.00	0.27	133.08	3899.08	100.00	-33.32	32.40 S	58.39 E	66.78@	119.02	0.24
4000.00	0.19	176.31	3999.08	100.00	-33.65	32.73 S	58.58 E	67.10@	119.19	0.19
4100.00	0.31	289.99	4099.08	100.00	-33.72	32.80 S	58.33 E	66.92@	119.35	0.42
4200.00	0.14	198.31	4199.08	100.00	-33.74	32.82 S	58.04 E	66.68@	119.49	0.34
4300.00	0.22	198.77	4299.08	100.00	-34.04	33.12 S	57.94 E	66.74@	119.75	0.08
4400.00	0.19	233.96	4399.07	100.00	-34.31	33.40 S	57.74 E	66.71@	120.05	0.13
4500.00	0.28	233.54	4499.07	100.00	-34.55	33.64 S	57.41 E	66.55@	120.37	0.09
4600.00	0.47	228.67	4599.07	100.00	-34.96	34.06 S	56.91 E	66.32@	120.90	0.19
4700.00	0.61	214.98	4699.07	100.00	-35.66	34.77 S	56.30 E	66.17@	121.70	0.19
4800.00	0.69	218.03	4799.06	100.00	-36.56	35.68 S	55.62 E	66.08@	122.68	0.09
4900.00	0.70	230.08	4899.05	100.00	-37.41	36.54 S	54.78 E	65.85@	123.71	0.15
5000.00	0.66	230.71	4999.05	100.00	-38.15	37.30 S	53.87 E	65.52@	124.70	0.04
5100.00	0.72	231.23	5099.04	100.00	-38.89	38.06 S	52.93 E	65.19@	125.72	0.06
5200.00	0.74	223.94	5199.03	100.00	-39.74	38.92 S	51.99 E	64.94@	126.82	0.09
5300.00	0.73	221.49	5299.02	100.00	-40.67	39.86 S	51.12 E	64.82@	127.94	0.03

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING, LLC.
 REALLY SCARY FEDERAL #3H
 EDDY COUNTY, NM
 RIG: PATRIOT 2

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
5400.00	0.72	215.91	5399.01	100.00	-41.64	40.85 S	50.33 E	64.82@	129.06	0.07
5500.00	0.84	212.34	5499.01	100.00	-42.76	41.97 S	49.57 E	64.95@	130.26	0.13
5600.00	0.83	208.60	5598.99	100.00	-44.00	43.23 S	48.83 E	65.22@	131.52	0.06
5700.00	0.94	204.87	5698.98	100.00	-45.37	44.61 S	48.14 E	65.63@	132.82	0.12
5800.00	0.93	201.70	5798.97	100.00	-46.86	46.11 S	47.50 E	66.19@	134.15	0.05
5900.00	1.21	212.13	5898.95	100.00	-48.49	47.76 S	46.63 E	66.75@	135.68	0.34
** TIE-IN TO SCIENTIFIC DRILLING GYRO SURVEY @ 6000' MD.										
6000.00	1.17	211.46	5998.93	100.00	-50.24	49.52 S	45.54 E	67.28@	137.40	0.04
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6018.00	1.85	331.23	6016.93	18.00	-50.14	49.42 S	45.30 E	67.04@	137.49	14.64
6049.00	8.88	354.05	6047.77	31.00	-47.31	46.60 S	44.81 E	64.65@	136.12	23.26
6081.00	14.42	357.00	6079.10	32.00	-40.86	40.16 S	44.35 E	59.83@	132.16	17.41
6113.00	19.61	357.18	6109.69	32.00	-31.50	30.81 S	43.88 E	53.61@	125.08	16.22
6145.00	24.01	358.44	6139.39	32.00	-19.62	18.93 S	43.44 E	47.38@	113.55	13.83
6177.00	26.64	359.45	6168.32	32.00	-5.93	5.25 S	43.19 E	43.51@	96.93	8.33
6208.00	28.75	0.10	6195.76	31.00	8.47	9.16 N	43.14 E	44.10@	78.01	6.88
6240.00	31.39	359.00	6223.45	32.00	24.50	25.19 N	43.00 E	49.84@	59.64	8.43
6271.00	34.47	357.89	6249.47	31.00	41.35	42.03 N	42.54 E	59.80@	45.34	10.12
6303.00	36.58	357.19	6275.51	32.00	59.94	60.61 N	41.74 E	73.59@	34.55	6.71
6334.00	38.34	357.05	6300.12	31.00	78.78	79.44 N	40.79 E	89.30@	27.18	5.68
6366.00	40.27	358.59	6324.88	32.00	99.04	99.69 N	40.03 E	107.43@	21.88	6.76
6397.00	43.26	0.57	6348.00	31.00	119.69	120.33 N	39.88 E	126.77@	18.34	10.54
6429.00	46.52	0.76	6370.67	32.00	142.26	142.91 N	40.15 E	148.45@	15.69	10.20
6460.00	49.95	0.03	6391.31	31.00	165.37	166.03 N	40.30 E	170.85@	13.64	11.20
6492.00	53.82	358.84	6411.06	32.00	190.54	191.20 N	40.05 E	195.35@	11.83	12.44
6524.00	56.81	357.69	6429.27	32.00	216.85	217.50 N	39.25 E	221.01@	10.23	9.80
6555.00	59.09	357.24	6445.72	31.00	243.11	243.75 N	38.08 E	246.70@	8.88	7.46
6587.00	61.29	357.21	6461.63	32.00	270.86	271.48 N	36.74 E	273.95@	7.71	6.88

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING, LLC.
REALLY SCARY FEDERAL #3H
EDDY COUNTY, NM
RIG:PATRIOT 2

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
6618.00	63.93	356.54	6475.89	31.00	298.36	298.96 N	35.24 E	301.03@	6.72	8.73
6649.00	67.18	357.07	6488.71	31.00	326.56	327.13 N	33.67 E	328.86@	5.88	10.60
6680.00	69.82	357.58	6500.07	31.00	355.38	355.94 N	32.32 E	357.41@	5.19	8.65
6712.00	73.34	358.32	6510.18	32.00	385.73	386.28 N	31.24 E	387.54@	4.62	11.22
6744.00	76.85	358.14	6518.41	32.00	416.65	417.18 N	30.28 E	418.28@	4.15	10.98
6779.00	80.46	358.79	6525.30	35.00	450.96	451.48 N	29.36 E	452.43@	3.72	10.47
6810.00	81.60	358.58	6530.13	31.00	481.58	482.09 N	28.66 E	482.94@	3.40	3.74
6842.00	83.71	358.79	6534.22	32.00	513.31	513.82 N	27.93 E	514.58@	3.11	6.63
6873.00	86.70	358.87	6536.81	31.00	544.20	544.70 N	27.30 E	545.38@	2.87	9.65
6904.00	88.02	358.48	6538.24	31.00	575.16	575.66 N	26.59 E	576.27@	2.64	4.44
6936.00	87.85	358.30	6539.39	32.00	607.14	607.62 N	25.69 E	608.17@	2.42	0.77
6968.00	88.37	358.24	6540.45	32.00	639.12	639.59 N	24.72 E	640.07@	2.21	1.64
6999.00	89.78	358.75	6540.95	31.00	670.11	670.58 N	23.91 E	671.00@	2.04	4.84
7063.00	90.57	358.92	6540.75	64.00	734.11	734.56 N	22.61 E	734.91@	1.76	1.26
7126.00	89.87	358.32	6540.51	63.00	797.11	797.54 N	21.09 E	797.82@	1.51	1.46
7189.00	90.57	358.35	6540.27	63.00	860.10	860.52 N	19.26 E	860.73@	1.28	1.11
7252.00	91.45	357.76	6539.16	63.00	923.08	923.47 N	17.12 E	923.63@	1.06	1.68
7315.00	90.84	357.88	6537.90	63.00	986.05	986.41 N	14.73 E	986.52@	0.86	0.99
7378.00	91.71	358.81	6536.50	63.00	1049.03	1049.37 N	12.91 E	1049.45@	0.70	2.02
7441.00	90.04	358.12	6535.54	63.00	1112.02	1112.33 N	11.22 E	1112.39@	0.58	2.87
7505.00	89.08	358.16	6536.03	64.00	1176.00	1176.30 N	9.14 E	1176.33@	0.45	1.50
7568.00	89.34	357.25	6536.90	63.00	1238.98	1239.24 N	6.62 E	1239.26@	0.31	1.50
7631.00	89.78	358.50	6537.38	63.00	1301.96	1302.19 N	4.28 E	1302.20@	0.19	2.10
7695.00	89.52	358.10	6537.77	64.00	1365.95	1366.17 N	2.38 E	1366.17@	0.10	0.75
7789.00	89.34	357.38	6538.71	94.00	1459.92	1460.09 N	1.32 W	1460.09@	359.95	0.79
7883.00	90.04	357.59	6539.22	94.00	1553.88	1553.99 N	5.45 W	1554.00@	359.80	0.78
7977.00	89.60	357.24	6539.51	94.00	1647.84	1647.90 N	9.69 W	1647.93@	359.66	0.60
8071.00	90.04	358.47	6539.81	94.00	1741.82	1741.83 N	13.20 W	1741.88@	359.57	1.39

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8166.00	90.66	359.09	6539.23	95.00	1836.82	1836.81 N	15.23 W	1836.87@	359.53	0.92
8261.00	89.60	359.70	6539.01	95.00	1931.81	1931.80 N	16.23 W	1931.87@	359.52	1.29
8356.00	89.78	359.44	6539.52	95.00	2026.81	2026.79 N	16.94 W	2026.86@	359.52	0.33
8451.00	90.57	359.44	6539.23	95.00	2121.80	2121.79 N	17.87 W	2121.86@	359.52	0.83
8547.00	90.22	359.97	6538.57	96.00	2217.80	2217.78 N	18.37 W	2217.86@	359.53	0.66
8642.00	89.25	359.09	6539.01	95.00	2312.79	2312.78 N	19.15 W	2312.86@	359.53	1.38
8735.00	88.99	357.94	6540.44	93.00	2405.77	2405.73 N	21.56 W	2405.83@	359.49	1.27
8830.00	89.52	358.91	6541.68	95.00	2500.76	2500.69 N	24.17 W	2500.80@	359.45	1.16
8925.00	91.45	0.67	6540.87	95.00	2595.74	2595.68 N	24.51 W	2595.79@	359.46	2.75
9021.00	90.04	0.49	6539.62	96.00	2691.69	2691.66 N	23.54 W	2691.76@	359.50	1.48
9116.00	89.25	0.58	6540.21	95.00	2786.66	2786.65 N	22.66 W	2786.75@	359.53	0.84
9209.00	89.43	0.67	6541.28	93.00	2879.62	2879.64 N	21.64 W	2879.72@	359.57	0.22
9305.00	90.22	0.14	6541.58	96.00	2975.60	2975.64 N	20.96 W	2975.71@	359.60	0.99
9400.00	89.25	358.21	6542.02	95.00	3070.59	3070.62 N	22.33 W	3070.70@	359.58	2.27
9495.00	91.19	358.91	6541.65	95.00	3165.58	3165.59 N	24.72 W	3165.68@	359.55	2.17
9557.00	92.51	0.14	6539.65	62.00	3227.54	3227.55 N	25.23 W	3227.65@	359.55	2.91
9653.00	91.71	359.35	6536.11	96.00	3323.47	3323.48 N	25.66 W	3323.58@	359.56	1.17
9748.00	90.84	358.30	6534.00	95.00	3418.44	3418.44 N	27.61 W	3418.55@	359.54	1.44
9842.00	88.55	357.94	6534.50	94.00	3512.42	3512.38 N	30.69 W	3512.51@	359.50	2.47
9936.00	88.20	356.80	6537.17	94.00	3606.34	3606.24 N	35.00 W	3606.41@	359.44	1.27
10031.00	88.20	357.51	6540.15	95.00	3701.24	3701.07 N	39.71 W	3701.29@	359.39	0.75
10127.00	89.52	357.24	6542.06	96.00	3797.17	3796.95 N	44.11 W	3797.21@	359.33	1.40
10221.00	90.13	356.36	6542.35	94.00	3891.10	3890.80 N	49.36 W	3891.12@	359.27	1.14
10316.00	90.57	356.01	6541.77	95.00	3985.97	3985.59 N	55.68 W	3985.98@	359.20	0.59
10411.00	90.22	357.86	6541.11	95.00	4080.90	4080.45 N	60.76 W	4080.90@	359.15	1.98
10506.00	90.04	359.00	6540.90	95.00	4175.89	4175.41 N	63.36 W	4175.89@	359.13	1.22
10601.00	89.96	358.47	6540.90	95.00	4270.89	4270.39 N	65.46 W	4270.89@	359.12	0.56
10697.00	90.04	357.51	6540.90	96.00	4366.87	4366.33 N	68.82 W	4366.87@	359.10	1.00

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10793.00	88.72	357.68	6541.94	96.00	4462.83	4462.23 N	72.85 W	4462.83@	359.06	1.39
10864.00	88.72	357.07	6543.52	71.00	4533.78	4533.14 N	76.10 W	4533.78@	359.04	0.86
STRAIGHT LINE PROJECTION TO BIT @ 10925' MD.										
10925.04	88.72	357.07	6544.89	61.04	4594.77	4594.09 N	79.22 W	4594.77@	359.01	0.00

** The survey data at tie-in point was furnished by a recognized survey company and entered as submitted. Survey stations above the tie-in point represent recalculated data by PathFinder Energy Services, Inc. and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.