

COG OPERATING LLC

APR 21 2014

ARTESIA WEST

PATRIOT DRILLING, LLC

OPERATOR:

COG Operating, LLC

WELL/LEASE:

Really Scary Fed # 4 H

COUNTY:

Eddy Co., NM

Sec. 33, T24S, R28E

30-015-41670

STATE OF NEW MEXICO

DEVIATION REPORT

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
372	1	3,632	1
622	1 1/2	4,105	1/2
906	1 1/2	4,616	1 3/4
1,191	1 1/2	5,087	1 1/2
1,518	1 1/2	5,517	1 3/4
1,950	1 1/4	5,943	2
2,332	2 1/4	6,385	1 1/4
2,725	1/2	6,853	2
3,199	1 1/4	7,355	2 1/4

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 30 2014

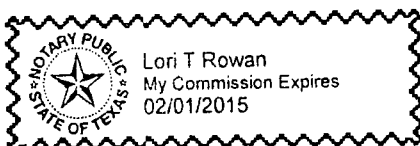
RECEIVED

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-
President

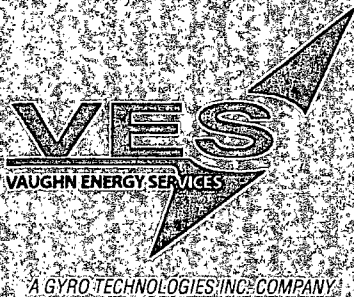
The foregoing instrument was acknowledged before me on this 17th day of March, 2014 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2015



Lori T. Rowan

Notary Public for Ector Co., Texas



P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

March 26, 2014

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 30 2014

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

RECEIVED

Attn: Kanicia Castillo

RE: Really Scary Federal No. 004H

Please find enclosed a copy of the survey from 0.00' to 7541.00' ran on the above referenced well.

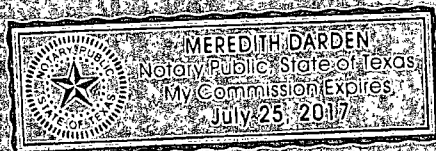
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §

COUNTY OF NUECES §

This instrument was acknowledged before me on the 26th day of March, A.D., 2014, by Keith Havelka.




Meredith Darden
Notary Public, State of Texas



Company: COG Operating, LLC (Concho)
Lease/Well: Really Scary Federal /No. 004H
Location: 2 mile from Malaga
Rig Name: Patriot 2
State/County: New Mexico/Eddy
Latitude: 32.17, Longitude: -104.09
GRID North is 0.13 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 16 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...ary federal 4h_gyro survey.ut

Minimum Curvature Method

Report Date/Time: 3/26/2014 / 13:45

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Gene Heiss

Really Scary Federal No. 004H / API 30-015-41670

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 30 2014
RECEIVED

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.46	230.93	100.00	-0.25	-0.31	-0.25	0.40	230.93	0.46
200.00	0.81	222.34	199.99	-1.02	-1.09	-1.02	1.49	226.90	0.36
300.00	1.17	180.00	299.98	-2.57	-1.56	-2.57	3.00	211.37	0.79
400.00	1.24	178.54	399.96	-4.67	-1.54	-4.67	4.92	198.21	0.07
500.00	1.16	155.71	499.94	-6.68	-1.09	-6.68	6.77	189.28	0.48
600.00	1.15	130.15	599.92	-8.25	0.10	-8.25	8.25	179.34	0.51
700.00	0.90	136.26	699.90	-9.47	1.41	-9.47	9.57	171.55	0.27
800.00	1.24	143.01	799.88	-10.91	2.60	-10.91	11.21	166.57	0.36
900.00	1.24	135.13	899.86	-12.54	4.02	-12.54	13.17	162.21	0.17
1000.00	1.25	141.16	999.83	-14.16	5.47	-14.16	15.18	158.87	0.13
1100.00	1.57	145.53	1099.80	-16.14	6.93	-16.14	17.56	156.76	0.34
1200.00	1.61	125.18	1199.77	-18.08	8.85	-18.08	20.13	153.91	0.56
1300.00	1.52	145.06	1299.73	-19.97	10.76	-19.97	22.69	151.69	0.55
1400.00	1.32	123.04	1399.70	-21.69	12.48	-21.69	25.02	150.07	0.58
1500.00	1.33	122.67	1499.67	-22.94	14.42	-22.94	27.10	147.84	0.01
1600.00	1.16	134.12	1599.65	-24.27	16.13	-24.27	29.14	146.40	0.30
1700.00	1.15	132.42	1699.63	-25.65	17.59	-25.65	31.10	145.56	0.04
1800.00	1.36	109.74	1799.61	-26.73	19.45	-26.73	33.05	143.96	0.53

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.47	136.67	1899.58	-28.06	21.44	-28.06	35.31	142.62	0.67
2000.00	1.56	128.95	1999.54	-29.85	23.38	-29.85	37.91	141.93	0.22
2100.00	2.45	118.59	2099.48	-31.73	26.31	-31.73	41.22	140.33	0.95
2200.00	3.18	110.53	2199.36	-33.72	30.79	-33.72	45.67	137.60	0.83
2300.00	2.25	111.26	2299.25	-35.41	35.23	-35.41	49.95	135.15	0.93
2400.00	1.08	126.73	2399.20	-36.69	37.82	-36.69	52.69	134.13	1.24
2500.00	0.51	172.31	2499.19	-37.70	38.64	-37.70	53.98	134.29	0.81
2600.00	0.38	191.59	2599.19	-38.46	38.63	-38.46	54.51	134.88	0.19
2700.00	0.50	172.26	2699.19	-39.22	38.62	-39.22	55.04	135.44	0.19
2800.00	0.31	185.24	2799.18	-39.92	38.65	-39.92	55.56	135.92	0.21
2900.00	0.57	161.52	2899.18	-40.66	38.79	-40.66	56.19	136.35	0.32
3000.00	0.67	155.59	2999.18	-41.67	39.19	-41.67	57.20	136.76	0.12
3100.00	0.88	148.91	3099.17	-42.86	39.83	-42.86	58.51	137.10	0.23
3200.00	0.86	184.68	3199.16	-44.27	40.17	-44.27	59.77	137.78	0.54
3300.00	0.90	169.65	3299.14	-45.78	40.25	-45.78	60.96	138.68	0.23
3400.00	0.88	211.15	3399.13	-47.21	39.99	-47.21	61.87	139.74	0.63
3500.00	0.48	193.34	3499.13	-48.28	39.49	-48.28	62.38	140.72	0.45
3600.00	0.87	208.54	3599.12	-49.36	39.03	-49.36	62.93	141.67	0.43
3700.00	0.31	191.83	3699.11	-50.29	38.61	-50.29	63.41	142.49	0.59
3800.00	0.28	191.41	3799.11	-50.79	38.51	-50.79	63.74	142.83	0.03
3900.00	0.22	7.02	3899.11	-50.84	38.48	-50.84	63.77	142.88	0.49
4000.00	0.16	129.77	3999.11	-50.75	38.61	-50.75	63.77	142.73	0.33
4100.00	0.14	199.39	4099.11	-50.95	38.68	-50.95	63.97	142.79	0.17
4200.00	0.43	151.41	4199.11	-51.40	38.82	-51.40	64.41	142.93	0.35
4300.00	0.43	159.24	4299.11	-52.08	39.13	-52.08	65.14	143.08	0.06
4400.00	0.51	153.42	4399.10	-52.82	39.47	-52.82	65.94	143.24	0.10
4500.00	0.73	135.14	4499.10	-53.67	40.11	-53.67	67.01	143.23	0.29
4600.00	1.21	138.79	4599.08	-54.92	41.26	-54.92	68.69	143.08	0.48
4700.00	1.45	133.64	4699.06	-56.59	42.87	-56.59	70.99	142.85	0.27
4800.00	1.51	134.12	4799.02	-58.38	44.73	-58.38	73.55	142.54	0.06
4900.00	1.10	134.21	4899.00	-59.96	46.37	-59.96	75.80	142.29	0.41
5000.00	1.07	129.25	4998.98	-61.22	47.78	-61.22	77.66	142.03	0.10
5100.00	1.31	156.77	5098.96	-62.86	48.95	-62.86	79.67	142.09	0.61
5200.00	0.97	139.99	5198.94	-64.56	49.95	-64.56	81.63	142.27	0.47
5300.00	1.21	163.62	5298.92	-66.23	50.79	-66.23	83.46	142.51	0.50
5400.00	1.01	161.93	5398.90	-68.08	51.36	-68.08	85.28	142.97	0.20
5500.00	1.41	165.26	5498.88	-70.10	51.95	-70.10	87.25	143.46	0.40
5600.00	1.29	159.74	5598.85	-72.34	52.65	-72.34	89.47	143.95	0.18
5700.00	1.19	158.47	5698.83	-74.36	53.42	-74.36	91.56	144.31	0.10

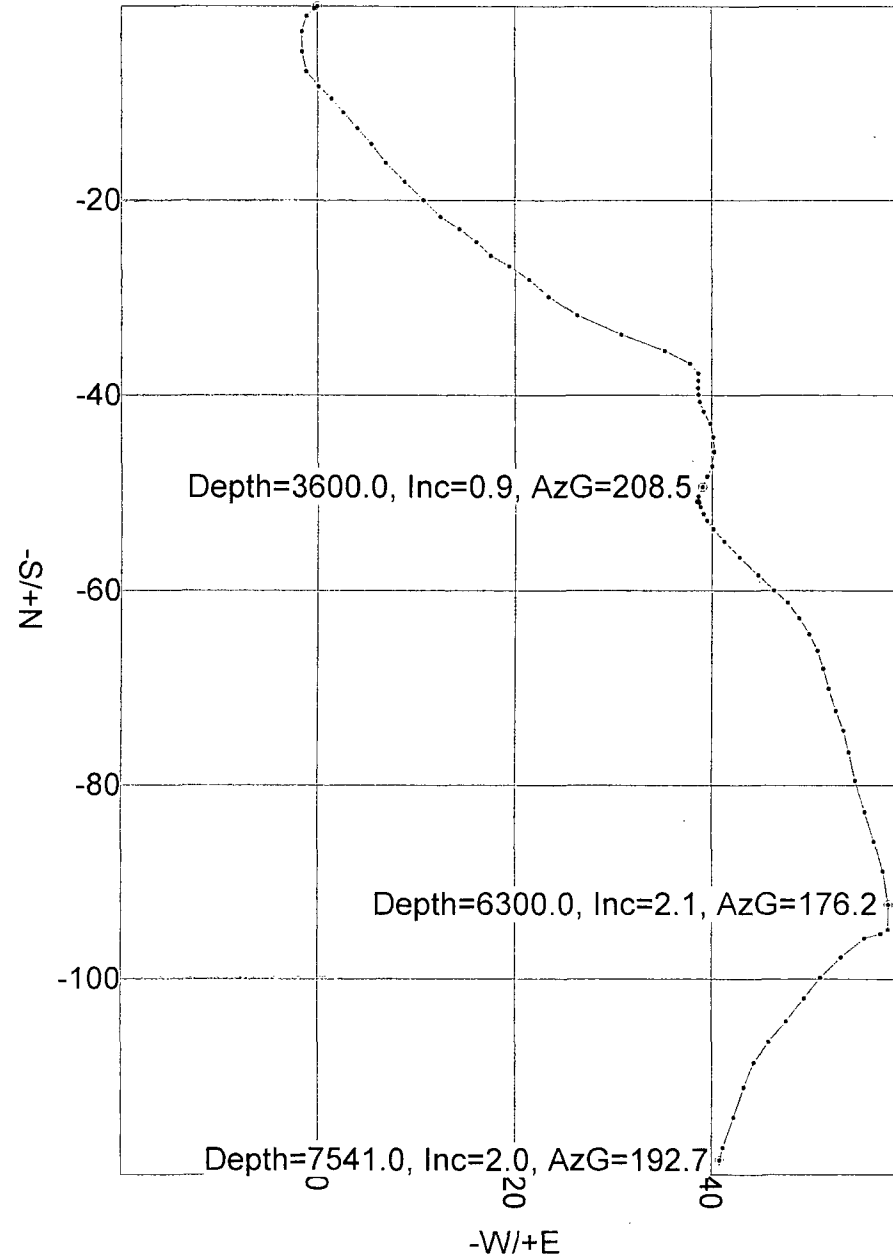
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.46	172.00	5798.80	-76.59	53.98	-76.59	93.70	144.83	0.41
5900.00	1.96	163.88	5898.76	-79.50	54.63	-79.50	96.46	145.50	0.56
6000.00	1.89	162.77	5998.70	-82.72	55.59	-82.72	99.66	146.10	0.08
6100.00	1.78	163.01	6098.65	-85.78	56.54	-85.78	102.73	146.61	0.11
6200.00	1.90	165.10	6198.60	-88.86	57.42	-88.86	105.80	147.13	0.14
6300.00	2.10	176.25	6298.54	-92.30	57.96	-92.30	108.99	147.87	0.44
6400.00	0.85	190.96	6398.50	-94.86	57.94	-94.86	111.16	148.58	1.30
6500.00	0.79	294.52	6498.50	-95.31	57.17	-95.31	111.14	149.04	1.29
6600.00	1.42	234.74	6598.48	-95.74	55.53	-95.74	110.68	149.89	1.23
6700.00	2.10	226.38	6698.43	-97.72	53.19	-97.72	111.26	151.44	0.72
6800.00	1.32	221.20	6798.39	-99.84	51.11	-99.84	112.17	152.89	0.80
6900.00	1.76	214.42	6898.35	-101.98	49.48	-101.98	113.35	154.11	0.48
7000.00	1.69	220.41	6998.30	-104.36	47.66	-104.36	114.73	155.45	0.19
7100.00	1.54	220.67	7098.27	-106.50	45.83	-106.50	115.95	156.72	0.15
7200.00	1.49	209.29	7198.23	-108.65	44.32	-108.65	117.35	157.81	0.30
7300.00	1.65	195.46	7298.19	-111.18	43.30	-111.18	119.31	158.72	0.41
7400.00	2.00	201.83	7398.14	-114.19	42.27	-114.19	121.76	159.69	0.40
7500.00	1.72	197.10	7498.09	-117.25	41.18	-117.25	124.27	160.65	0.32
7541.00	2.01	192.75	7539.07	-118.53	40.84	-118.53	125.37	160.99	0.79



Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Gene Heiss
Really Scary Federal No. 004H / API 30-015-41670



Depth=0.0, Inc=0.0, AzG=0.0



VES SURVEY DATE: 03/09/2014



Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Really Scary Federal Well 4H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Site:	Really Scary Federal	MD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Well:	Really Scary Federal Well 4H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	EDM 5000.1 Ddatabase

Project:	Eddy County, New Mexico		
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:	Really Scary Federal		
Site Position:		Northing:	424,584.80 usft
From:	Map	Easting:	575,068.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 10' 1.44460260 N
		Longitude:	104° 5' 26.64033535 W
		Grid Convergence:	0.13 °

Well:	Really Scary Federal Well 4H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 10' 1.44460260 N
		Longitude:	104° 5' 26.64033535 W
		Ground Level:	3,000.70 usft

Wellbore:	Original Hole		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	1/24/2014	(°)
			7.50
			Dip Angle
			(°)
			59.98
			Field Strength
			(nT)
			48,267

Design:	Surveys Original Hole		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			3.63

Survey Program	Date 3/18/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	7,541.00	Gyro (Original Hole)	NS-GYRO-MS
7,600.00	12,789.00	MWD TIP=7541 MD (Original Hole)	MWD
			Description
			North sensing gyrocompassing m/s
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude	
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting			
(usft)			(usft)			(usft)	(usft)			
0.00	0.00	0.00	0.00	0.00	0.00	424,584.80	575,068.10	32° 10' 1.44460260 N	104° 5' 26.64033535 W	
100.00	0.46	230.93	100.00	-0.25	-0.31	424,584.55	575,067.79	32° 10' 1.44210571 N	104° 5' 26.64396783 W	
Gyro										
200.00	0.81	222.34	199.99	-1.03	-1.10	424,583.77	575,067.00	32° 10' 1.43444893 N	104° 5' 26.65315274 W	
300.00	1.17	180.00	299.98	-2.57	-1.58	424,582.23	575,066.53	32° 10' 1.41918511 N	104° 5' 26.65873201 W	
400.00	1.24	178.54	399.96	-4.67	-1.55	424,580.12	575,066.55	32° 10' 1.39837621 N	104° 5' 26.65846641 W	
500.00	1.16	155.71	499.94	-6.68	-1.10	424,578.12	575,067.00	32° 10' 1.37853103 N	104° 5' 26.65335395 W	
600.00	1.15	130.15	599.92	-8.25	0.08	424,576.55	575,068.18	32° 10' 1.36297056 N	104° 5' 26.63962701 W	
700.00	0.90	136.26	699.90	-9.46	1.39	424,575.34	575,069.49	32° 10' 1.35092254 N	104° 5' 26.62441784 W	
800.00	1.24	143.01	799.88	-10.89	2.58	424,573.90	575,070.69	32° 10' 1.33672752 N	104° 5' 26.61056398 W	
900.00	1.24	135.13	899.86	-12.53	4.00	424,572.27	575,072.10	32° 10' 1.32055406 N	104° 5' 26.59415154 W	



Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Really Scary Federal Well 4H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Site:	Really Scary Federal	MD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Well:	Really Scary Federal Well 4H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	EDM 5000.1 Ddatabase

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,000.00	1.25	141.16	999.84	-14.14	5.45	424,570.66	575,073.55	32° 10' 1.30452506 N	104° 5' 26.57735441 W
1,100.00	1.57	145.53	1,099.80	-16.12	6.90	424,568.68	575,075.01	32° 10' 1.28490782 N	104° 5' 26.56042748 W
1,200.00	1.61	125.18	1,199.77	-18.06	8.83	424,566.74	575,076.93	32° 10' 1.26567802 N	104° 5' 26.53809934 W
1,300.00	1.52	145.06	1,299.73	-19.96	10.74	424,564.84	575,078.84	32° 10' 1.24686576 N	104° 5' 26.51595325 W
1,400.00	1.32	123.04	1,399.70	-21.67	12.46	424,563.13	575,080.56	32° 10' 1.22985254 N	104° 5' 26.49592746 W
1,500.00	1.33	122.67	1,499.67	-22.93	14.40	424,561.87	575,082.51	32° 10' 1.21739461 N	104° 5' 26.47336117 W
1,600.00	1.16	134.12	1,599.65	-24.26	16.11	424,560.54	575,084.21	32° 10' 1.20418318 N	104° 5' 26.45357623 W
1,700.00	1.15	132.42	1,699.63	-25.64	17.57	424,559.16	575,085.68	32° 10' 1.19047769 N	104° 5' 26.43653986 W
1,800.00	1.36	109.74	1,799.61	-26.72	19.43	424,558.08	575,087.54	32° 10' 1.17977048 N	104° 5' 26.41495435 W
1,900.00	1.47	136.67	1,899.58	-28.05	21.43	424,556.75	575,089.53	32° 10' 1.16652546 N	104° 5' 26.39175401 W
2,000.00	1.56	128.95	1,999.54	-29.84	23.37	424,554.96	575,091.47	32° 10' 1.14878015 N	104° 5' 26.36924511 W
2,100.00	2.45	118.59	2,099.48	-31.72	26.30	424,553.08	575,094.41	32° 10' 1.13012368 N	104° 5' 26.33514337 W
2,200.00	3.18	110.53	2,199.36	-33.71	30.78	424,551.09	575,098.88	32° 10' 1.11027495 N	104° 5' 26.28314081 W
2,300.00	2.25	111.26	2,299.25	-35.40	35.21	424,549.40	575,103.31	32° 10' 1.09350537 N	104° 5' 26.23168086 W
2,400.00	1.08	126.73	2,399.20	-36.67	37.79	424,548.13	575,105.89	32° 10' 1.08082541 N	104° 5' 26.20164225 W
2,500.00	0.51	172.31	2,499.19	-37.68	38.60	424,547.12	575,106.71	32° 10' 1.07086454 N	104° 5' 26.19218815 W
2,600.00	0.38	191.59	2,599.19	-38.44	38.60	424,546.36	575,106.70	32° 10' 1.06328506 N	104° 5' 26.19229048 W
2,700.00	0.50	172.26	2,699.19	-39.20	38.59	424,545.60	575,106.69	32° 10' 1.05579168 N	104° 5' 26.19240178 W
2,800.00	0.31	185.24	2,799.18	-39.90	38.62	424,544.90	575,106.73	32° 10' 1.04884617 N	104° 5' 26.19202398 W
2,900.00	0.57	161.52	2,899.18	-40.64	38.76	424,544.16	575,106.86	32° 10' 1.04150843 N	104° 5' 26.19049655 W
3,000.00	0.67	155.59	2,999.18	-41.65	39.16	424,543.15	575,107.26	32° 10' 1.03156185 N	104° 5' 26.18587751 W
3,100.00	0.88	148.91	3,099.17	-42.84	39.79	424,541.96	575,107.90	32° 10' 1.01977071 N	104° 5' 26.17848426 W
3,200.00	0.86	184.68	3,199.16	-44.24	40.13	424,540.56	575,108.23	32° 10' 1.00585306 N	104° 5' 26.17462010 W
3,300.00	0.90	169.65	3,299.14	-45.76	40.21	424,539.04	575,108.31	32° 10' 0.99080333 N	104° 5' 26.17373080 W
3,400.00	0.88	211.15	3,399.13	-47.19	39.95	424,537.61	575,108.06	32° 10' 0.97665924 N	104° 5' 26.17674817 W
3,500.00	0.48	193.34	3,499.13	-48.26	39.46	424,536.54	575,107.56	32° 10' 0.96613288 N	104° 5' 26.18252193 W
3,600.00	0.87	208.54	3,599.12	-49.33	39.00	424,535.47	575,107.10	32° 10' 0.95550935 N	104° 5' 26.18789447 W
3,700.00	0.31	191.83	3,699.11	-50.27	38.58	424,534.53	575,106.69	32° 10' 0.94629800 N	104° 5' 26.19278410 W
3,800.00	0.28	191.41	3,799.11	-50.77	38.48	424,534.03	575,106.58	32° 10' 0.94130962 N	104° 5' 26.19400494 W
3,900.00	0.22	7.02	3,899.11	-50.82	38.45	424,533.98	575,106.56	32° 10' 0.94082555 N	104° 5' 26.19429562 W
4,000.00	0.16	129.77	3,999.11	-50.72	38.58	424,534.08	575,106.69	32° 10' 0.94182442 N	104° 5' 26.19277142 W
4,100.00	0.14	199.39	4,099.11	-50.92	38.65	424,533.88	575,106.75	32° 10' 0.93979849 N	104° 5' 26.19200011 W
4,200.00	0.43	151.41	4,199.11	-51.37	38.79	424,533.43	575,106.89	32° 10' 0.93539414 N	104° 5' 26.19039455 W
4,300.00	0.43	159.24	4,299.11	-52.05	39.10	424,532.75	575,107.21	32° 10' 0.92865399 N	104° 5' 26.18677588 W
4,400.00	0.51	153.42	4,399.10	-52.80	39.43	424,532.00	575,107.54	32° 10' 0.92123523 N	104° 5' 26.18293132 W
4,500.00	0.73	135.14	4,499.10	-53.65	40.08	424,531.15	575,108.19	32° 10' 0.91281315 N	104° 5' 26.17540908 W
4,600.00	1.21	138.79	4,599.08	-54.89	41.23	424,529.91	575,109.33	32° 10' 0.90045802 N	104° 5' 26.16212111 W
4,700.00	1.45	133.64	4,699.06	-56.56	42.84	424,528.24	575,110.94	32° 10' 0.88392001 N	104° 5' 26.14341939 W
4,800.00	1.51	134.12	4,799.02	-58.35	44.70	424,526.45	575,112.80	32° 10' 0.86615987 N	104° 5' 26.12180950 W
4,900.00	1.10	134.21	4,899.00	-59.94	46.33	424,524.86	575,114.44	32° 10' 0.85042218 N	104° 5' 26.10284220 W
5,000.00	1.07	129.25	4,998.98	-61.20	47.75	424,523.60	575,115.85	32° 10' 0.83792059 N	104° 5' 26.08645866 W
5,100.00	1.31	156.77	5,098.96	-62.84	48.92	424,521.96	575,117.02	32° 10' 0.82165255 N	104° 5' 26.07284419 W
5,200.00	0.97	139.99	5,198.94	-64.54	49.91	424,520.26	575,118.02	32° 10' 0.80481887 N	104° 5' 26.06131208 W
5,300.00	1.21	163.62	5,298.92	-66.20	50.76	424,518.60	575,118.86	32° 10' 0.78835900 N	104° 5' 26.05156024 W
5,400.00	1.01	161.93	5,398.90	-68.05	51.33	424,516.75	575,119.43	32° 10' 0.77002934 N	104° 5' 26.04496421 W
5,500.00	1.41	165.26	5,498.88	-70.08	51.91	424,514.72	575,120.02	32° 10' 0.74994907 N	104° 5' 26.03819501 W
5,600.00	1.29	159.74	5,598.85	-72.32	52.62	424,512.48	575,120.72	32° 10' 0.72770764 N	104° 5' 26.03007719 W
5,700.00	1.19	158.47	5,698.83	-74.34	53.39	424,510.46	575,121.49	32° 10' 0.70768050 N	104° 5' 26.02116188 W
5,800.00	1.46	172.00	5,798.80	-76.57	53.95	424,508.23	575,122.05	32° 10' 0.68562377 N	104° 5' 26.01472407 W
5,900.00	1.96	163.88	5,898.76	-79.48	54.60	424,505.32	575,122.70	32° 10' 0.65686586 N	104° 5' 26.00721356 W
6,000.00	1.89	162.77	5,998.70	-82.69	55.56	424,502.11	575,123.66	32° 10' 0.62499891 N	104° 5' 25.99609128 W
6,100.00	1.78	163.01	6,098.65	-85.75	56.50	424,499.05	575,124.61	32° 10' 0.59469153 N	104° 5' 25.98520901 W
6,200.00	1.90	165.10	6,198.60	-88.84	57.38	424,495.96	575,125.49	32° 10' 0.56411848 N	104° 5' 25.97505102 W
6,300.00	2.10	176.25	6,298.54	-92.27	57.93	424,492.53	575,126.03	32° 10' 0.53015874 N	104° 5' 25.96878769 W
6,400.00	0.85	190.96	6,398.50	-94.83	57.91	424,489.97	575,126.01	32° 10' 0.50485831 N	104° 5' 25.96910135 W



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Really Scary Federal Well 4H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Site:	Really Scary Federal	MD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Well:	Really Scary Federal Well 4H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	EDM 5000.1 Ddatabase

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N/S (usft)	E/W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
6,500.00	0.79	294.52	6,498.50	-95.27	57.14	424,489.53	575,125.24	32° 10' 0.50050002 N	104° 5' 25.97805105 W	
6,600.00	1.42	234.74	6,598.48	-95.70	55.50	424,489.10	575,123.60	32° 10' 0.49628901 N	104° 5' 25.99713080 W	
6,700.00	2.10	226.38	6,698.43	-97.68	53.16	424,487.12	575,121.27	32° 10' 0.47675336 N	104° 5' 26.02438501 W	
6,800.00	1.32	221.20	6,798.39	-99.81	51.08	424,484.99	575,119.18	32° 10' 0.45571417 N	104° 5' 26.04869918 W	
6,900.00	1.76	214.42	6,898.35	-101.94	49.45	424,482.86	575,117.55	32° 10' 0.43463717 N	104° 5' 26.06768073 W	
7,000.00	1.69	220.41	6,998.31	-104.33	47.63	424,480.47	575,115.73	32° 10' 0.41102976 N	104° 5' 26.08896336 W	
7,100.00	1.54	220.67	7,098.27	-106.47	45.80	424,478.33	575,113.90	32° 10' 0.38987272 N	104° 5' 26.11032890 W	
7,200.00	1.49	209.29	7,198.23	-108.63	44.28	424,476.17	575,112.39	32° 10' 0.36859847 N	104° 5' 26.12797363 W	
7,300.00	1.65	195.46	7,298.19	-111.15	43.26	424,473.65	575,111.37	32° 10' 0.34366726 N	104° 5' 26.13990470 W	
7,400.00	2.00	201.83	7,398.14	-114.16	42.23	424,470.64	575,110.33	32° 10' 0.31392730 N	104° 5' 26.15199762 W	
7,500.00	1.72	197.10	7,498.09	-117.21	41.14	424,467.59	575,109.24	32° 10' 0.28372544 N	104° 5' 26.16476082 W	
7,541.00	2.01	192.75	7,539.07	-118.50	40.80	424,466.30	575,108.91	32° 10' 0.27097263 N	104° 5' 26.16874573 W	
7,600.00	1.20	203.20	7,598.05	-120.08	40.33	424,464.72	575,108.43	32° 10' 0.25537616 N	104° 5' 26.17427536 W	
MWD surveys										
7,632.00	2.80	0.30	7,630.04	-119.60	40.20	424,465.20	575,108.31	32° 10' 0.26006781 N	104° 5' 26.17575162 W	
7,663.00	6.70	8.10	7,660.92	-117.05	40.46	424,467.74	575,108.56	32° 10' 0.28528320 N	104° 5' 26.17267300 W	
7,695.00	9.50	7.40	7,692.60	-112.59	41.06	424,472.21	575,109.17	32° 10' 0.32948447 N	104° 5' 26.16553734 W	
7,726.00	14.10	6.30	7,722.94	-106.29	41.81	424,478.51	575,109.91	32° 10' 0.39175123 N	104° 5' 26.15671350 W	
7,758.00	18.70	6.00	7,753.63	-97.31	42.77	424,487.49	575,110.88	32° 10' 0.48060749 N	104° 5' 26.14525726 W	
7,789.00	22.90	6.00	7,782.60	-86.37	43.92	424,498.43	575,112.03	32° 10' 0.58890329 N	104° 5' 26.13158587 W	
7,821.00	26.40	6.00	7,811.68	-73.10	45.32	424,511.70	575,113.42	32° 10' 0.72020900 N	104° 5' 26.11500967 W	
7,852.00	30.30	5.30	7,838.96	-58.45	46.76	424,526.35	575,114.86	32° 10' 0.86512449 N	104° 5' 26.09783368 W	
7,884.00	34.10	3.20	7,866.03	-41.45	48.01	424,543.35	575,116.11	32° 10' 1.03334448 N	104° 5' 26.08288112 W	
7,916.00	36.10	2.80	7,892.21	-23.07	48.97	424,561.73	575,117.07	32° 10' 1.21515933 N	104° 5' 26.07121453 W	
7,948.00	39.40	2.80	7,917.51	-3.51	49.93	424,581.29	575,118.03	32° 10' 1.40875935 N	104° 5' 26.05958659 W	
7,979.00	44.70	2.80	7,940.52	17.22	50.94	424,602.02	575,119.04	32° 10' 1.61389830 N	104° 5' 26.04722852 W	
8,011.00	48.70	2.80	7,962.46	40.48	52.08	424,625.28	575,120.18	32° 10' 1.84402521 N	104° 5' 26.03338528 W	
8,043.00	52.10	3.90	7,982.86	65.09	53.52	424,649.89	575,121.63	32° 10' 2.08753953 N	104° 5' 26.01591231 W	
8,062.00	54.37	3.21	7,994.23	80.28	54.47	424,665.08	575,122.57	32° 10' 2.23784577 N	104° 5' 26.00454450 W	
330 Hard line intercept @ 8062 MD 330 FSL 906 FEL										
8,074.00	55.80	2.80	8,001.10	90.10	54.98	424,674.90	575,123.09	32° 10' 2.33507610 N	104° 5' 25.99828546 W	
8,106.00	58.90	2.10	8,018.36	117.02	56.13	424,701.82	575,124.24	32° 10' 2.60141524 N	104° 5' 25.98421414 W	
8,138.00	62.60	2.40	8,033.99	144.91	57.23	424,729.71	575,125.33	32° 10' 2.87743455 N	104° 5' 25.97071633 W	
8,169.00	66.70	3.50	8,047.26	172.88	58.68	424,757.68	575,126.78	32° 10' 3.15421472 N	104° 5' 25.95315922 W	
8,201.00	70.60	4.90	8,058.91	202.60	60.86	424,787.40	575,128.97	32° 10' 3.44825570 N	104° 5' 25.92693368 W	
8,241.00	73.90	4.20	8,071.10	240.57	63.88	424,825.37	575,131.98	32° 10' 3.82395806 N	104° 5' 25.89080717 W	
8,273.00	76.70	4.20	8,079.22	271.44	66.15	424,856.24	575,134.25	32° 10' 4.12937290 N	104° 5' 25.86362580 W	
8,304.00	78.70	3.90	8,085.83	301.65	68.29	424,886.45	575,136.39	32° 10' 4.42830701 N	104° 5' 25.83794980 W	
8,336.00	81.60	3.50	8,091.30	333.11	70.32	424,917.91	575,138.42	32° 10' 4.73959365 N	104° 5' 25.81346117 W	
8,368.00	84.50	3.50	8,095.17	364.81	72.26	424,949.61	575,140.36	32° 10' 5.05328782 N	104° 5' 25.79007017 W	
8,400.00	87.30	3.50	8,097.46	396.67	74.21	424,981.46	575,142.31	32° 10' 5.36849755 N	104° 5' 25.76656611 W	
8,431.00	90.30	3.90	8,098.11	427.59	76.21	425,012.39	575,144.31	32° 10' 5.67449853 N	104° 5' 25.74248693 W	
8,495.00	91.10	3.90	8,097.33	491.44	80.56	425,076.24	575,148.66	32° 10' 6.30625079 N	104° 5' 25.69017094 W	
8,590.00	90.10	2.40	8,096.33	586.28	85.78	425,171.08	575,153.88	32° 10' 7.24477989 N	104° 5' 25.62695337 W	
8,685.00	88.30	2.40	8,097.66	681.19	89.76	425,265.99	575,157.86	32° 10' 8.18389243 N	104° 5' 25.57818403 W	
8,780.00	89.00	1.70	8,099.90	776.10	93.16	425,360.90	575,161.26	32° 10' 9.12309859 N	104° 5' 25.53616681 W	
8,876.00	89.90	1.70	8,100.82	872.05	96.00	425,456.85	575,164.11	2° 10' 10.07261586 N	104° 5' 25.50051439 W	
8,971.00	90.60	1.70	8,100.40	967.01	98.82	425,551.81	575,166.92	2° 10' 11.01228044 N	104° 5' 25.46523168 W	
9,066.00	91.50	1.00	8,098.66	1,061.96	101.06	425,646.76	575,169.16	2° 10' 11.95195223 N	104° 5' 25.43670144 W	
9,162.00	90.80	1.70	8,096.74	1,157.92	103.32	425,742.72	575,171.42	2° 10' 12.90148729 N	104° 5' 25.40787170 W	
9,257.00	91.10	1.40	8,095.16	1,252.87	105.89	425,837.67	575,173.99	2° 10' 13.84111057 N	104° 5' 25.37548450 W	
9,352.00	89.40	1.70	8,094.75	1,347.83	108.46	425,932.63	575,176.56	2° 10' 14.78082063 N	104° 5' 25.34309404 W	
9,447.00	90.30	1.40	8,095.00	1,442.79	111.03	426,027.59	575,179.13	2° 10' 15.72056118 N	104° 5' 25.31070257 W	
9,542.00	89.40	2.10	8,095.24	1,537.75	113.93	426,122.55	575,182.03	2° 10' 16.66019503 N	104° 5' 25.27445487 W	
9,638.00	89.90	1.40	8,095.83	1,633.70	116.86	426,218.50	575,184.97	2° 10' 17.60971200 N	104° 5' 25.23782572 W	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Really Scary Federal Well 4H
Project:	Eddy County, New Mexico	TVD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Site:	Really Scary Federal	MD Reference:	RKB=3000.7+17 @ 3017.70usft (Patriot 2)
Well:	Really Scary Federal Well 4H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	EDM 5000.1 Ddatabase

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude Longitude		
9,733.00	89.70	2.80	8,096.16	1,728.63	120.34	426,313.43	575,188.45	2° 10' 18.54912904 N	104° 5' 25.19483057 W	
9,828.00	89.90	2.80	8,096.49	1,823.52	124.98	426,408.32	575,193.09	2° 10' 19.48805248 N	104° 5' 25.13834400 W	
9,923.00	90.40	3.50	8,096.25	1,918.37	130.20	426,503.17	575,198.31	2° 10' 20.42665903 N	104° 5' 25.07511556 W	
10,018.00	89.00	4.20	8,096.74	2,013.16	136.58	426,597.96	575,204.69	2° 10' 21.36450844 N	104° 5' 24.99841295 W	
10,113.00	89.90	4.20	8,097.65	2,107.90	143.54	426,692.69	575,211.64	2° 10' 22.30193091 N	104° 5' 24.91497647 W	
10,208.00	88.00	3.90	8,099.40	2,202.64	150.25	426,787.44	575,218.35	2° 10' 23.23938723 N	104° 5' 24.83443698 W	
10,304.00	88.20	3.50	8,102.58	2,298.38	156.44	426,883.18	575,224.54	2° 10' 24.18679682 N	104° 5' 24.75988048 W	
10,399.00	88.50	3.50	8,105.31	2,393.17	162.24	426,977.97	575,230.34	2° 10' 25.12467898 N	104° 5' 24.68993840 W	
10,494.00	89.20	3.50	8,107.22	2,487.97	168.04	427,072.77	575,236.14	2° 10' 26.06275636 N	104° 5' 24.61998135 W	
10,590.00	91.00	4.20	8,107.05	2,583.75	174.48	427,168.55	575,242.58	2° 10' 27.01047369 N	104° 5' 24.54246866 W	
10,685.00	91.50	3.90	8,104.98	2,678.49	181.19	427,263.29	575,249.29	2° 10' 27.94790405 N	104° 5' 24.46192968 W	
10,781.00	91.00	3.50	8,102.89	2,774.27	187.38	427,359.07	575,255.49	2° 10' 28.89560644 N	104° 5' 24.38734802 W	
10,876.00	88.90	3.50	8,102.97	2,869.08	193.18	427,453.88	575,261.28	2° 10' 29.83382556 N	104° 5' 24.31737865 W	
10,971.00	89.20	3.20	8,104.54	2,963.91	198.73	427,548.71	575,266.84	2° 10' 30.77211897 N	104° 5' 24.25030264 W	
11,067.00	89.70	2.40	8,105.47	3,059.79	203.42	427,644.59	575,271.52	2° 10' 31.72087701 N	104° 5' 24.19321961 W	
11,162.00	90.10	2.80	8,105.63	3,154.69	207.73	427,739.49	575,275.83	2° 10' 32.65996270 N	104° 5' 24.14058126 W	
11,257.00	90.30	2.80	8,105.30	3,249.58	212.37	427,834.38	575,280.47	2° 10' 33.59888540 N	104° 5' 24.08408899 W	
11,352.00	90.80	2.40	8,104.39	3,344.47	216.68	427,929.27	575,284.78	2° 10' 34.53792809 N	104° 5' 24.03145227 W	
11,448.00	91.30	2.40	8,102.63	3,440.37	220.70	428,025.17	575,288.80	2° 10' 35.48689382 N	104° 5' 23.98216196 W	
11,543.00	89.70	2.40	8,101.80	3,535.28	224.68	428,120.08	575,292.78	2° 10' 36.42606887 N	104° 5' 23.93337989 W	
11,638.00	91.30	2.80	8,100.97	3,630.18	228.99	428,214.98	575,297.09	2° 10' 37.36509141 N	104° 5' 23.88074398 W	
11,733.00	90.40	2.10	8,099.56	3,725.08	233.05	428,309.88	575,301.15	2° 10' 38.30417726 N	104° 5' 23.83100130 W	
11,829.00	91.00	2.10	8,098.39	3,821.01	236.57	428,405.81	575,304.67	2° 10' 39.25343654 N	104° 5' 23.78754837 W	
11,924.00	89.60	1.70	8,097.89	3,915.95	239.71	428,500.75	575,307.82	2° 10' 40.19296588 N	104° 5' 23.74840208 W	
12,019.00	89.90	2.10	8,098.31	4,010.90	242.86	428,595.70	575,310.97	2° 10' 41.13252138 N	104° 5' 23.70925415 W	
12,114.00	89.40	2.40	8,098.89	4,105.82	246.59	428,690.62	575,314.70	2° 10' 42.07184626 N	104° 5' 23.66335928 W	
12,209.00	88.00	2.40	8,101.04	4,200.71	250.57	428,785.51	575,318.67	2° 10' 43.01082216 N	104° 5' 23.61458553 W	
12,304.00	88.50	1.70	8,103.94	4,295.61	253.97	428,880.41	575,322.07	2° 10' 43.94985208 N	104° 5' 23.57256534 W	
12,399.00	89.00	1.70	8,106.01	4,390.54	256.79	428,975.34	575,324.89	2° 10' 44.88930326 N	104° 5' 23.53728081 W	
12,495.00	89.20	0.70	8,107.52	4,486.51	258.80	429,071.31	575,326.90	2° 10' 45.83897116 N	104° 5' 23.51136405 W	
12,590.00	90.10	1.40	8,108.10	4,581.49	260.54	429,166.29	575,328.64	2° 10' 46.77889585 N	104° 5' 23.48860703 W	
12,686.00	90.60	0.70	8,107.52	4,677.47	262.30	429,262.27	575,330.40	2° 10' 47.72872120 N	104° 5' 23.46561029 W	
12,745.00	91.10	0.70	8,106.64	4,736.46	263.02	429,321.26	575,331.12	2° 10' 48.31248083 N	104° 5' 23.45567067 W	
12,789.00	91.10	0.70	8,105.80	4,780.45	263.55	429,365.25	575,331.66	2° 10' 48.74779602 N	104° 5' 23.44825857 W	
Survey projected to 12789.00 MD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		N-S (usft)	E-W (usft)	Comment	
100.00	100.00	-0.25	-0.31	Gyro	
7,600.00	7,598.05	-120.08	40.33	MWD surveys	
8,062.00	7,994.23	80.28	54.47	330 Hard line intercept @ 8062 MD 330 FSL 906 FEL	
12,789.00	8,105.80	4,780.45	263.55	Survey projected to 12789.00 MD	



COG Operating LLC
 Well: Really Scary Federal Well 4H
 Site: Really Scary Federal
 Project: Eddy County, New Mexico
 Design: rev1
 Rig: Patriot 2

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	7541.00	2.01	192.75	7539.07	-118.50	40.80	0.00	0.00	-115.68	Survey @ 7541.00 MD
2	7609.47	2.01	192.75	7607.50	-120.84	40.27	0.00	0.00	-118.05	KOP Begin 12"/100' build/turn
3	8383.15	90.86	3.11	8101.41	362.95	63.59	12.00	170.35	366.25	Begin 90.86° lateral
4	12808.11	90.86	3.11	8035.00	4780.90	303.50	0.00	0.00	4790.52	PBHL/TD

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
100.00	100.00	0.46	230.93	-0.25	-0.31	-0.27	0.40	Gyro
7598.05	7600.00	1.20	203.20	-120.08	40.33	-117.28	156.45	MWD surveys
7994.23	8062.00	54.37	3.21	80.28	54.47	83.57	358.17	330 Hard line intercept @ 8062 MD 330 FSL 906 FEL
8105.80	12789.00	91.10	0.70	4780.45	263.55	4787.54	5063.53	Survey projected to 12789.00 MD

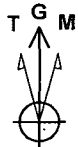
Surface Location: RKB=3000.7+17 @ 3017.70usft (Patriot 2)

US State Plane 1927 (Exact solution)

New Mexico East 3001

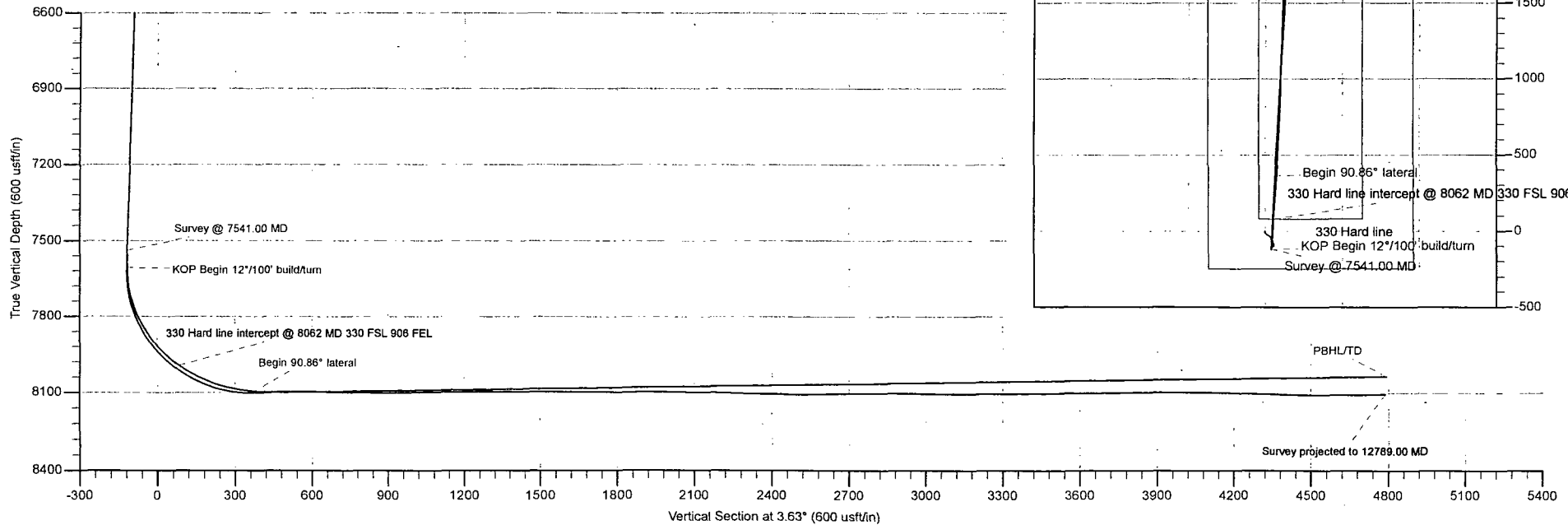
Northing Easting Latitude Longitude
 424584.80 575068.10 32° 10' 1.44460260 N 104° 5' 26.64033535 W

Total Correction (M +> G) To convert a Magnetic Direction to a Grid Direction, Add 7.37°



Azimuths to Grid North
 True North: -0.13°
 Magnetic North: 7.37°

Magnetic Field
 Strength: 48267.4snT
 Dip Angle: 59.98°
 Date: 1/24/2014
 Model: IGRF2010



8:06, March 18 2014

