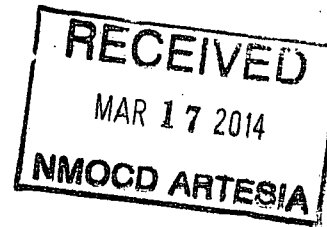


A GYRO TECHNOLOGIES INC. COMPANY

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

January 23, 2014

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, TX 79701



30-015-~~22913~~
39640

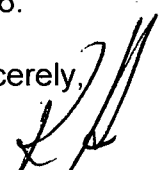
Attn: Kanicia Castillo

Re: **Patton 5 Fee No 007H**

Please find enclosed a copy of the survey from 0' to 2,254' ran on the above referenced well.

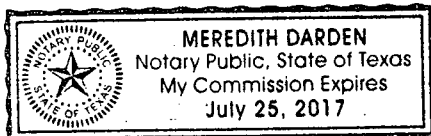
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

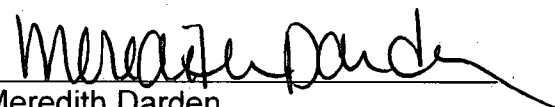
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 23rd day of January
A.D., 2014, by Keith Havelka.




Meredith Darden
Notary Public, State of Texas



Company: COG Operating - Concho
Lease/Well: Patton 5 Fee/No 007H
Location: Sec 5 T19S R26E
Rig Name: Silver Oak 3
State/County: New Mexico/Eddy
Latitude: 32.69, Longitude: -104.41
GRID North is 0.04 Degrees West of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: patton 5 fee #7h-de_01.ut

Minimum Curvature Method

Report Date/Time: 1/23/2014 / 08:14

Vaughn Energy Services

West Texas

Surveyor: Chris Bankson

432-563-5444

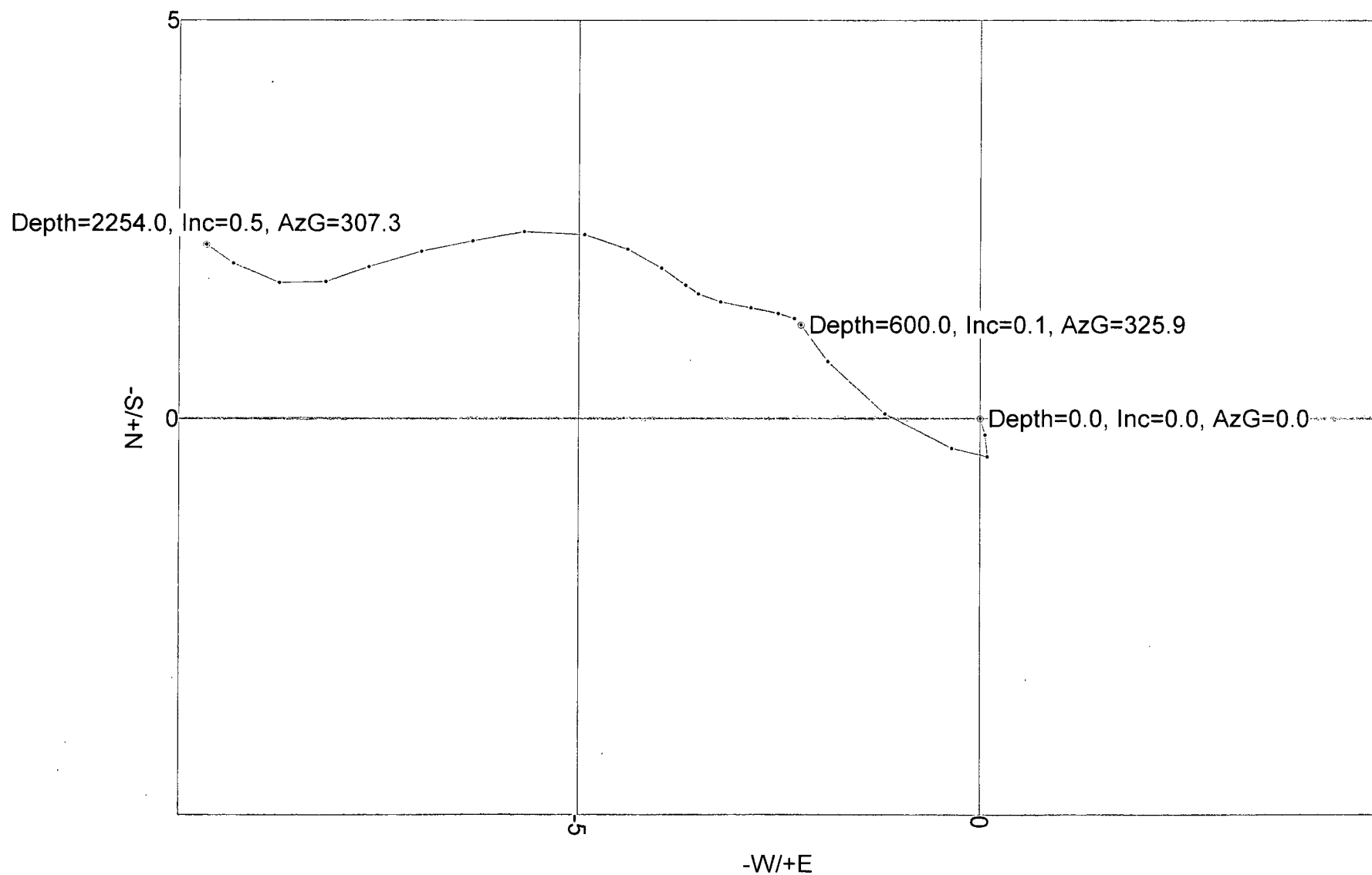
Patton 5 Fee No 007H / API 30-015-39640

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	0.25	163.56	100.00	-0.21	0.06	-0.21	0.22	163.56	0.25
200.00	0.09	205.13	200.00	-0.48	0.09	-0.48	0.49	169.38	0.19
300.00	0.51	292.84	300.00	-0.38	-0.35	-0.38	0.52	223.26	0.52
400.00	0.56	301.91	399.99	0.06	-1.18	0.06	1.19	272.72	0.10
500.00	0.57	323.78	499.99	0.72	-1.89	0.72	2.03	290.70	0.21
600.00	0.08	325.89	599.99	1.18	-2.23	1.18	2.52	297.83	0.49
700.00	0.06	292.30	699.99	1.25	-2.31	1.25	2.63	298.47	0.05
800.00	0.19	286.47	799.99	1.32	-2.52	1.32	2.84	297.67	0.13
900.00	0.21	278.16	899.99	1.39	-2.86	1.39	3.18	295.99	0.04
1000.00	0.23	283.11	999.99	1.46	-3.24	1.46	3.55	294.35	0.03
1100.00	0.11	303.95	1099.98	1.56	-3.51	1.56	3.85	294.00	0.13
1200.00	0.11	305.47	1199.98	1.67	-3.67	1.67	4.04	294.51	0.00
1300.00	0.32	305.54	1299.98	1.89	-3.97	1.89	4.40	295.44	0.21
1400.00	0.24	290.88	1399.98	2.13	-4.40	2.13	4.88	295.80	0.10
1500.00	0.41	287.64	1499.98	2.31	-4.93	2.31	5.45	295.08	0.16
1600.00	0.48	260.28	1599.98	2.35	-5.68	2.35	6.15	292.43	0.22
1700.00	0.28	259.85	1699.98	2.23	-6.33	2.23	6.71	289.42	0.20
1800.00	0.48	257.75	1799.97	2.10	-6.98	2.10	7.29	286.74	0.21

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	0.31	247.62	1899.97	1.91	-7.64	1.91	7.88	284.01	0.18
2000.00	0.35	253.87	1999.97	1.72	-8.19	1.72	8.37	281.86	0.05
2100.00	0.34	283.82	2099.97	1.71	-8.76	1.71	8.93	281.01	0.18
2200.00	0.38	302.07	2199.97	1.95	-9.33	1.95	9.53	281.81	0.12
2254.00	0.49	307.33	2253.96	2.19	-9.66	2.19	9.91	282.74	0.21



Vaughn Energy Services
West Texas
Surveyor: Chris Bankson
432-563-5444
Patton 5 Fee No 007H / API 30-015-39640



VES Survey Date: 12/29/2013



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

January 8, 2014

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Patton 5 Fee #7H
982' FSL & 330' FWL
Sec. 5, T19S, R26E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

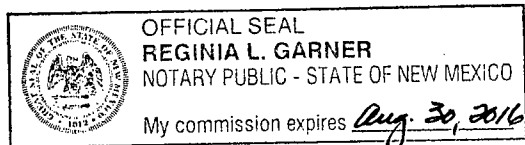
A handwritten signature in black ink, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 8th day of January, 2014.

A handwritten signature in black ink, appearing to read "Regina L. Garner".

Notary Public

PATTON 5 FEE # 7H

Date	Depth	Deviation	Direction
12/26/2013	238	0.20	0.00
12/26/2013	482	0.10	0.00
12/27/2013	724	0.40	0.00
12/27/2013	1127	0.50	0.00
12/28/2013	1381	0.40	0.00
12/29/2013	1630	0.70	0.00
12/29/2013	1880	0.50	0.00
12/30/2013	2318	0.50	297.90
12/30/2013	2349	0.50	281.50
12/30/2013	2380	1.20	147.90
12/30/2013	2411	2.40	141.20
12/30/2013	2443	4.10	137.40
12/30/2013	2474	5.70	130.10
12/30/2013	2505	7.30	123.60
12/30/2013	2536	9.10	116.70
12/30/2013	2567	11.50	112.00
12/31/2013	2630	16.70	110.80
12/31/2013	2661	21.50	111.70
12/31/2013	2692	26.10	112.40
12/31/2013	2723	30.00	112.00
12/31/2013	2754	33.80	109.90
12/31/2013	2785	37.30	107.00
12/31/2013	2816	41.80	104.20
12/31/2013	2848	46.90	102.30
12/31/2013	2878	52.00	101.20
12/31/2013	2909	56.60	100.90
12/31/2013	2941	60.50	98.30
12/31/2013	2972	64.90	97.60
12/31/2013	3034	73.80	94.00
12/31/2013	3065	77.90	92.90
12/31/2013	3097	81.50	91.90
12/31/2013	3128	84.80	91.10
1/1/2014	3148	86.80	90.80
1/1/2014	3179	89.60	90.00
1/1/2014	3210	90.10	89.80
1/1/2014	3273	89.90	89.70
1/1/2014	3366	89.50	89.00
1/1/2014	3459	89.00	88.00
1/1/2014	3553	89.30	87.40
1/1/2014	3646	89.90	86.50
1/1/2014	3741	91.40	85.40
1/1/2014	3834	92.40	84.80
1/1/2014	3927	94.10	85.60

Date	Depth	Deviation	Direction
1/1/2014	4021	95.30	85.50
1/2/2014	4115	95.70	87.00
1/3/2014	4302	95.30	91.20
1/3/2014	4396	93.20	91.70
1/3/2014	4489	91.20	91.10
1/3/2014	4583	88.90	90.50
1/3/2014	4677	87.90	90.40
1/3/2014	4771	86.90	90.10
1/3/2014	4865	86.40	90.90
1/3/2014	4957	87.40	91.10
1/3/2014	5052	87.50	90.80
1/3/2014	5145	88.00	91.00
1/3/2014	5239	88.60	91.60
1/3/2014	5332	90.90	90.40
1/3/2014	5426	90.90	90.40
1/4/2014	5519	89.50	89.90
1/4/2014	5612	88.30	89.50
1/4/2014	5705	86.90	90.40
1/4/2014	5799	88.60	90.30
1/4/2014	5893	90.10	89.70
1/4/2014	5987	91.20	89.90
1/4/2014	6080	90.50	89.70
1/4/2014	6174	91.30	89.70
1/4/2014	6268	90.80	89.10
1/4/2014	6362	91.60	88.80
1/5/2014	6456	91.30	88.30
1/5/2014	6550	91.60	88.40
1/5/2014	6644	91.10	87.80
1/5/2014	6738	90.90	87.70
1/5/2014	6832	91.10	87.80
1/5/2014	6925	91.00	89.30
1/5/2014	7018	90.50	89.70
1/5/2014	7112	91.20	91.50
1/5/2014	7206	91.10	91.30
1/5/2014	7273	91.20	90.90

EOF



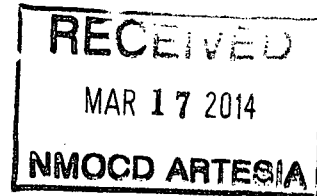
COG Operating LLC

Eddy County, NM (NAD 27 NME)

Patton 5 Fee

#7H

WB1/Job #1311728



Survey: Phoenix MWD Survey

Phoenix Final Survey Report

06 January, 2014





Phoenix Technology Services
Phoenix Final Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3381.00usft (Silver Oak 3)
Site:	Patton 5 Fee	MD Reference:	KB @ 3381.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	WB1/Job #1311728	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	GCR DB

Project:	Eddy County, NM (NAD 27 NME)		
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:	Patton 5 Fee		
Site Position:	From: Map	Northing:	613,610.70 usft
		Easting:	475,920.20 usft
		Latitude:	32° 41' 12.80582 N
		Longitude:	104° 24' 41.76182 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Grid Convergence:	-0.04 °

Well:	#7H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
		0.00 usft	Wellhead Elevation:
Position Uncertainty			Ground Level:

Wellbore:	WB1/Job #1311728		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010_14	12/16/13	7.70
			Dip Angle
			(°)
			Field Strength
			(nT)
			60.41
			48,551

Design:	Surveys (Silver Oak 3)		
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
			Direction
			(°)
			90.16

Survey Program:	Date: 01/06/14		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.00	2,254.00	VES Gyro Surveys (WB1/Job #1311728)	VES-ISCWSA-GYRO-3
2,287.00	7,342.00	Phoenix MWD Survey (WB1/Job #131172)	MWD
			Description
			Biaxial Semi-Cont. Gyro
			MWD - Standard

Survey:			
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)
2,254.00	0.49	307.33	2,253.96
			N/S (usft)
			2.19
			E/W (usft)
			-9.66
			V. Sec (usft)
			-9.67
			DLeg (°/100usft)
			0.00
Tie-on to Gyro			
2,287.00	0.40	278.50	2,286.96
			2.29
			-9.89
			-9.89
			0.72
First Phoenix MWD Survey			
2,318.00	0.50	297.90	2,317.96
			2.37
			-10.11
			-10.12
			0.58
2,349.00	0.50	281.50	2,348.96
			2.46
			-10.36
			-10.37
			0.46
2,380.00	1.20	147.90	2,379.96
			2.21
			-10.32
			-10.33
			5.12
2,411.00	2.40	141.20	2,410.94
			1.43
			-9.75
			-9.75
			3.92
2,443.00	4.10	137.40	2,442.89
			0.07
			-8.55
			-8.55
			5.35
2,474.00	5.70	130.10	2,473.78
			-1.74
			-6.62
			-6.62
			5.53
2,505.00	7.30	123.60	2,504.58
			-3.82
			-3.81
			-3.79
			5.67



Phoenix Technology Services
Phoenix Final Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3381.00usft (Silver Oak 3)
Site:	Patton 5 Fee	MD Reference:	KB @ 3381.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	WB1/Job #1311728	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	GCR-DB

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
2,536.00	9.10	116.70	2,535.26	-6.01	0.03	0.04	6.61
2,567.00	11.50	112.00	2,565.76	-8.27	5.08	5.10	8.20
2,598.00	14.00	110.20	2,595.99	-10.72	11.47	11.50	8.16
2,630.00	16.70	110.80	2,626.85	-13.69	19.40	19.44	8.45
2,661.00	21.50	111.70	2,656.13	-17.38	28.85	28.90	15.51
2,692.00	26.10	112.40	2,684.49	-22.08	40.44	40.50	14.87
2,723.00	30.00	112.00	2,711.84	-27.58	53.93	54.01	12.60
2,754.00	33.80	109.90	2,738.16	-33.42	69.23	69.32	12.77
2,785.00	37.30	107.00	2,763.38	-39.11	86.33	86.44	12.53
2,816.00	41.80	104.20	2,787.27	-44.39	105.34	105.46	15.61
2,848.00	46.90	102.30	2,810.15	-49.50	127.11	127.24	16.47
2,879.00	52.00	101.20	2,830.30	-54.29	150.16	150.31	16.67
2,910.00	56.60	100.90	2,848.38	-59.11	174.86	175.03	14.86
2,941.00	60.50	98.30	2,864.56	-63.50	200.93	201.11	14.47
2,972.00	64.90	97.60	2,878.77	-67.31	228.21	228.39	14.33
3,003.00	69.60	96.00	2,890.76	-70.69	256.59	256.78	15.89
3,034.00	73.80	94.00	2,900.49	-73.25	285.90	286.10	14.87
3,065.00	77.90	92.90	2,908.07	-75.05	315.90	316.10	13.67
3,097.00	81.50	91.90	2,913.79	-76.37	347.35	347.56	11.66
3,129.00	84.80	91.10	2,917.60	-77.20	379.10	379.32	10.61
3,148.00	86.80	90.80	2,918.99	-77.51	398.05	398.26	10.64
3,179.00	89.60	90.00	2,919.97	-77.73	429.03	429.24	9.39
3,210.00	90.10	89.80	2,920.05	-77.68	460.03	460.24	1.74
3,273.00	89.90	89.70	2,920.05	-77.40	523.03	523.24	0.35
3,366.00	89.50	89.00	2,920.54	-76.35	616.02	616.23	0.87
3,460.00	89.00	88.00	2,921.77	-73.88	709.98	710.18	1.19
3,553.00	89.30	87.40	2,923.15	-70.15	802.89	803.09	0.72
3,647.00	89.90	86.50	2,923.80	-65.15	896.76	896.93	1.15
3,741.00	91.40	85.40	2,922.74	-58.51	990.51	990.67	1.98
3,834.00	92.40	84.80	2,919.65	-50.57	1,083.12	1,083.26	1.25
3,927.00	94.10	85.60	2,914.38	-42.80	1,175.64	1,175.75	2.02
4,021.00	95.30	85.50	2,906.68	-35.54	1,269.04	1,269.13	1.28
4,115.00	95.70	87.00	2,897.67	-29.42	1,362.40	1,362.48	1.64
4,209.00	96.20	89.70	2,887.92	-26.72	1,455.85	1,455.92	2.91
4,302.00	95.30	91.20	2,878.60	-27.45	1,548.37	1,548.44	1.87
4,396.00	93.20	91.70	2,871.64	-29.82	1,642.08	1,642.16	2.30
4,489.00	91.20	91.10	2,868.07	-32.09	1,734.98	1,735.06	2.25
4,583.00	88.90	90.50	2,867.99	-33.41	1,828.96	1,829.05	2.53
4,677.00	87.90	90.40	2,870.61	-34.14	1,922.92	1,923.01	1.07
4,772.00	86.90	90.10	2,874.92	-34.56	2,017.82	2,017.91	1.10
4,865.00	86.40	91.00	2,880.35	-35.45	2,110.66	2,110.75	1.11
4,958.00	87.40	91.10	2,885.38	-37.15	2,203.50	2,203.60	1.08
5,052.00	87.50	90.80	2,889.57	-38.71	2,297.40	2,297.50	0.34
5,145.00	88.00	91.00	2,893.22	-40.17	2,390.32	2,390.42	0.58



Phoenix Technology Services

Phoenix Final Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3381.00usft (Silver Oak 3)
Site:	Patton 5 Fee	MD Reference:	KB @ 3381.00usft (Silver Oak 3)
Well:	#7H	North Reference:	Grid
Wellbore:	WB1/Job #1311728	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 3)	Database:	GCR DB

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
5,239.00	88.60	90.60	2,896.01	-41.48	2,484.26	2,484.37	0.77	
5,332.00	90.90	90.40	2,896.41	-42.29	2,577.25	2,577.36	2.48	
5,426.00	90.90	90.40	2,894.94	-42.95	2,671.24	2,671.35	0.00	
5,519.00	89.50	89.90	2,894.61	-43.19	2,764.24	2,764.35	1.60	
5,612.00	88.30	89.50	2,896.40	-42.70	2,857.22	2,857.32	1.36	
5,706.00	86.90	90.40	2,900.33	-42.62	2,951.13	2,951.24	1.77	
5,799.00	88.60	90.30	2,903.98	-43.19	3,044.05	3,044.16	1.83	
5,893.00	90.10	89.70	2,905.05	-43.19	3,138.04	3,138.15	1.72	
5,987.00	91.20	89.90	2,903.98	-42.86	3,232.04	3,232.14	1.19	
6,080.00	90.50	89.70	2,902.60	-42.54	3,325.02	3,325.13	0.78	
6,174.00	91.30	89.70	2,901.13	-42.04	3,419.01	3,419.11	0.85	
6,268.00	90.80	89.10	2,899.40	-41.06	3,512.99	3,513.09	0.83	
6,362.00	91.60	88.80	2,897.44	-39.34	3,606.95	3,607.05	0.91	
6,456.00	91.30	88.30	2,895.06	-36.96	3,700.89	3,700.98	0.62	
6,550.00	91.60	88.40	2,892.68	-34.25	3,794.82	3,794.90	0.34	
6,644.00	91.10	87.80	2,890.46	-31.14	3,888.74	3,888.82	0.83	
6,738.00	90.90	87.70	2,888.82	-27.45	3,982.66	3,982.72	0.24	
6,832.00	91.10	87.80	2,887.18	-23.76	4,076.57	4,076.62	0.24	
6,925.00	91.00	89.30	2,885.48	-21.41	4,169.52	4,169.57	1.62	
7,019.00	90.50	89.70	2,884.25	-20.59	4,263.51	4,263.55	0.68	
7,112.00	91.20	91.50	2,882.87	-21.56	4,356.49	4,356.53	2.08	
7,206.00	91.10	91.30	2,880.98	-23.86	4,450.44	4,450.49	0.24	
7,272.00	91.20	90.90	2,879.66	-25.12	4,516.42	4,516.47	0.62	
Last Phoenix MWD Survey								
7,342.00	91.20	90.90	2,878.19	-26.22	4,586.39	4,586.45	0.00	
Projection to TD								

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,254.00	2,253.96	2.19	-9.66	Tie-on to GYRO
2,287.00	2,286.96	2.29	-9.89	First Phoenix MWD Survey
7,272.00	2,879.66	-25.12	4,516.42	Last Phoenix MWD Survey
7,342.00	2,878.19	-26.22	4,586.39	Projection to TD

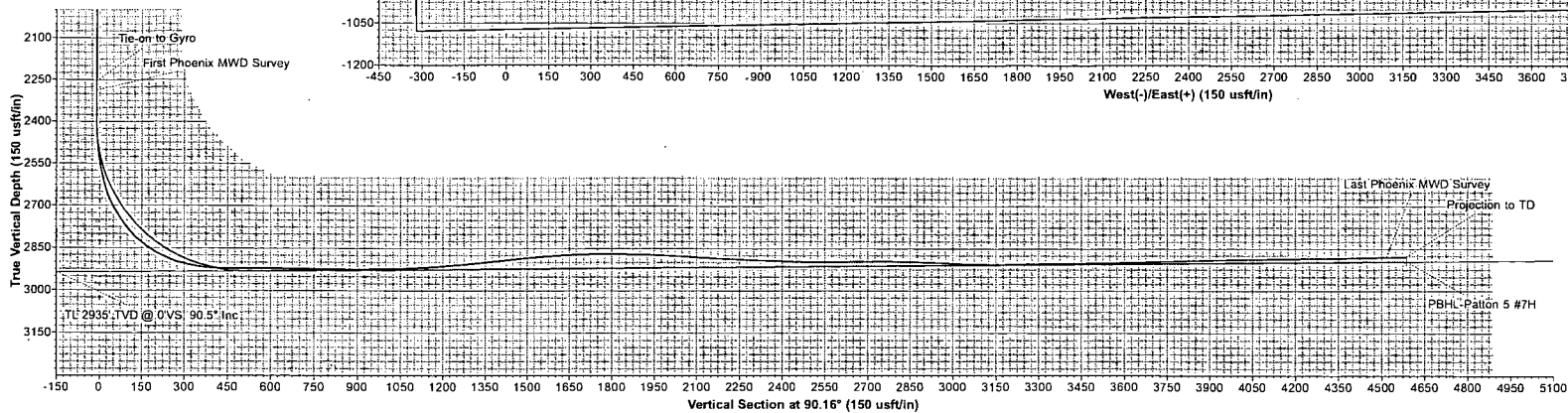
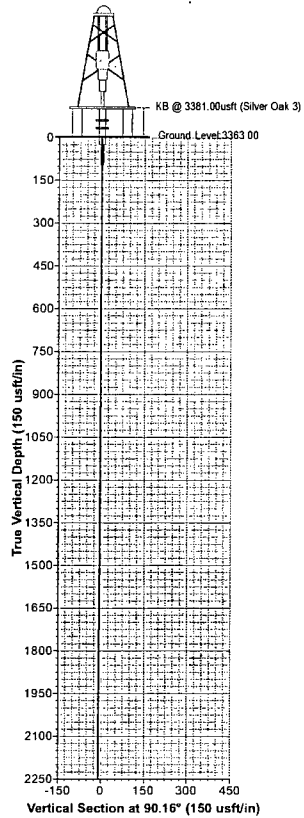
Checked By: _____ Approved By: _____ Date: _____



Project: Eddy County, NM (NAD 27 NME)
Site: Patton 5 Fee
Well: #7H
Wellbore: WB1/Job #1311728
Design: Plan #3 12-29-13
Rig: Silver Oak 3



Azimuths to Grid North
True North: 0.04°
Magnetic North: 7.74°
Magnetic Field
Strength: 48550.6snT
Dip Angle: 60.41°
Date: 12/16/2013
Model: IGRF2010_14



WELL DETAILS													
+N/-S		+E/-W		Northing		Ground Level		3363.00		Latitude		Longitude	
0.00		0.00		612951.80		476057.80				32° 41' 6.28658 N		104° 24' 40.14608 W	
SECTION DETAILS													
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target	Annotation		
1	2254.00	0.49	307.33	2253.96	2.19	-9.66	0.00	0.00	-8.67		Tie-in/Start Drop 2.00°/100'		
2	2276.50	0.00	0.00	2276.46	2.25	-9.74	2.00	180.00	-9.75		Hold Vertical		
3	2409.50	0.00	0.00	2409.46	2.25	-9.74	0.00	0.00	-9.75		KOP: Start Build 11.00°/100'		
4	3232.23	90.50	90.40	2930.31	-1.41	515.66	11.00	90.40	515.66		LP: Start Turn 2.00°/100'		
5	3244.37	90.50	90.16	2930.21	-1.47	527.81	2.00	-90.70	527.81		Hold 90.16° Azi		
6	7303.34	90.50	90.16	2895.00	-12.60	4586.60	0.00	0.00	4586.62	PBHL-Patton 5 #7H	TD at 7303.34		
DESIGN TARGET DETAILS													
Name				TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape		
PBHL-Patton 5 #7H				2895.00	-12.60	4586.60	612939.20	480644.40	32° 41' 6.19200 N	104° 23' 46.47853 W	Point		
- plan hits target center													

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001
Local Origin: Well #7H, Grid North
Latitude: 32° 41' 6.28658 N
Longitude: 104° 24' 40.14608 W
Grid East: 476057.80
Grid North: 612951.80
Scale Factor: 1.000
Geomagnetic Model: IGRF2010_14
Sample Date: 16-Dec-13
Magnetic Declination: 7.70°
Dip Angle from Horizontal: 60.41°
Magnetic Field Strength: 48551
To convert a Magnetic Direction to a Grid Direction, Add 7.74°
To convert a Magnetic Direction to a True Direction, Add 7.70° East
To convert a True Direction to a Grid Direction, Add 0.04°

FORMATION TOP DETAILS					
TVDPath	MDPath	Formation	DipAngle	DipDir	
2930.31	3232.23	TL 2935 TVD @ 0VS, 90.5° Inc	-0.50	90.16	
LEGEND					
— #7H, WB1/Job #1311728, Surveys (Silver Oak 3) V0					
— Plan #3 12-29-13					

