

COPY



COG Operating LLC

Lea County, NM (NAD27 NME)

9418 JV-P Vaca Draw

4H

OH

Survey: MWD #1

Standard Survey Report

22 April, 2014

HOBBS OCD

JUN 19 2014

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JUL 16 2014



Wellplanning Survey Report

COPY

Company: COG Operating LLC
Project: Lea County, NM (NAD27 NME)
Site: 9418 JV-P Vaca Draw
Well: 4H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well 4H
TVD Reference: WELL @ 3438.7usft (Original Well Elev)
MD Reference: WELL @ 3438.7usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Lea County, NM (NAD27 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:	9418 JV-P Vaca Draw		
Site Position:		Northing:	419,780.50 usft
From:	Map	Easting:	741,734.30 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 9' 8.058 N
		Longitude:	103° 33' 8.114 W
		Grid Convergence:	0.42 "

Well:	4H		
Well Position	+N-S	0.0 usft	Northing:
	+E-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 9' 6.035 N
		Longitude:	103° 33' 48.774 W
		Ground Level:	3,420.7 usft

Wellbore:	OH		
Magnetics:	Model Name	Sample Date	Declination
	IGRF2010	10/16/2013	7.29
		Dip Angle	60.06
		Field Strength	48,340
		(nT)	

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
		Direction	(°)
		178.09	

Survey Program	Date 4/22/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	8,800.0	GYRO (OH)	MWD
8,833.0	13,918.0	MWD #1 (OH)	MWD
			Description
			MWD - Standard
			MWD - Standard

Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
8,800.0	1.58	215.08	8,798.8	-18.3	-65.3	17.3	0.00	0.00	0.00
8,833.0	1.50	216.30	8,831.8	-19.0	-65.6	18.0	0.26	-0.24	3.76
8,865.0	3.10	189.10	8,863.7	-20.2	-66.2	19.2	5.92	5.00	-85.00
8,896.0	6.60	172.30	8,894.6	-22.8	-66.1	21.6	12.07	11.28	-54.19
8,927.0	9.40	173.20	8,925.3	-27.1	-65.6	26.1	9.04	9.03	2.90
8,958.0	12.80	174.20	8,956.7	-33.2	-64.9	32.2	10.64	10.63	3.13
8,990.0	16.00	174.00	8,985.7	-40.9	-64.1	39.9	10.32	10.32	-0.65
9,022.0	18.30	172.30	9,017.3	-50.3	-63.0	49.3	7.36	7.19	-5.31
9,053.0	20.70	169.80	9,048.5	-60.5	-61.3	59.5	8.19	7.74	-8.06
9,084.0	23.60	168.70	9,075.2	-72.0	-59.2	71.0	9.45	9.35	-3.55



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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,116.0	26.90	169.40	9,104.2	-85.4	-56.6	84.5	10.35	10.31	2.19
9,147.0	29.10	169.20	9,131.6	-99.7	-53.9	98.8	7.10	7.10	-0.65
9,179.0	32.10	168.40	9,159.1	-115.6	-50.7	114.8	9.46	9.38	-2.50
9,210.0	35.30	168.70	9,184.9	-132.5	-47.3	131.7	10.34	10.32	0.87
9,242.0	37.90	168.30	9,210.6	-151.2	-43.5	150.5	8.16	8.13	-1.25
9,273.0	40.10	167.60	9,234.7	-170.3	-39.4	169.6	7.24	7.10	-2.26
9,305.0	42.70	167.30	9,258.7	-190.9	-34.8	180.3	8.15	8.13	-0.94
9,337.0	46.10	166.10	9,281.5	-212.7	-29.6	212.2	10.84	10.63	-3.75
9,368.0	49.60	164.70	9,302.3	-234.9	-23.8	234.5	11.78	11.28	-4.52
9,399.0	53.50	164.10	9,321.6	-258.3	-17.3	258.0	12.67	12.58	-1.94
9,431.0	57.50	164.60	9,339.7	-283.7	-10.2	283.5	12.57	12.50	1.56
9,462.0	60.80	165.10	9,355.6	-308.4	-3.2	309.3	11.05	10.97	1.61
9,494.0	63.60	165.10	9,370.5	-336.6	4.0	336.8	8.44	8.44	0.00
9,525.0	66.40	166.10	9,383.8	-364.0	11.0	364.1	9.49	9.03	3.23
9,557.0	69.40	166.20	9,395.6	-392.8	18.1	393.0	9.38	9.38	0.31
9,587.0	72.10	165.10	9,405.5	-420.2	25.1	420.5	9.64	9.00	-3.67
9,619.0	75.00	165.10	9,414.6	-449.9	33.0	450.3	9.06	9.06	0.00
9,650.0	77.80	165.80	9,421.9	-479.0	40.6	479.6	9.30	9.03	2.26
9,681.0	79.90	165.60	9,427.9	-508.5	48.1	509.2	6.80	6.77	-0.65
9,713.0	81.50	165.20	9,433.0	-539.0	56.1	539.9	5.15	5.00	-1.25
9,745.0	85.10	165.80	9,436.8	-569.8	64.1	570.7	11.32	11.25	1.25
9,776.0	88.80	166.40	9,438.4	-599.8	71.6	600.9	12.21	11.94	2.58
9,802.0	90.20	168.00	9,439.5	-722.7	99.5	724.2	1.69	1.11	1.27
9,996.0	89.40	167.50	9,439.8	-814.5	119.4	816.3	1.00	-0.85	-0.53
10,091.0	89.30	171.30	9,440.9	-907.9	138.9	910.0	4.00	-0.11	4.00
10,185.0	89.80	173.20	9,441.7	-1,001.0	149.6	1,003.3	2.09	0.53	2.02
10,280.0	90.50	174.50	9,441.4	-1,095.5	159.7	1,097.9	1.55	0.74	1.37
10,375.0	90.00	177.70	9,441.0	-1,190.2	166.2	1,192.7	3.41	-0.53	3.37
10,469.0	88.60	180.40	9,442.1	-1,284.2	167.8	1,286.7	3.24	-1.49	2.87
10,563.0	88.40	181.10	9,444.5	-1,378.2	166.5	1,380.6	0.77	-0.21	0.74
10,658.0	69.40	182.30	9,446.4	-1,473.1	163.7	1,475.5	1.64	1.05	1.26
10,752.0	89.30	181.80	9,447.5	-1,567.0	160.3	1,569.4	0.54	-0.11	-0.53
10,847.0	90.50	182.30	9,447.7	-1,662.0	157.0	1,664.3	1.37	1.26	0.53
10,941.0	93.00	183.80	9,444.8	-1,755.8	152.0	1,758.0	3.10	2.66	1.80
11,035.0	60.50	182.90	9,441.9	-1,849.6	146.5	1,851.7	2.83	-2.66	-0.96
11,129.0	88.00	181.80	9,443.1	-1,943.5	142.6	1,945.5	2.91	-2.66	-1.17
11,223.0	88.10	181.60	9,446.3	-2,037.4	139.8	2,039.4	0.24	0.11	-0.21
11,317.0	89.10	181.10	9,448.6	-2,131.3	137.6	2,133.3	1.19	1.06	-0.53
11,412.0	89.70	180.50	9,449.6	-2,226.3	136.3	2,228.2	0.89	0.63	-0.63
11,507.0	90.80	182.20	9,449.2	-2,321.3	134.0	2,323.1	2.13	1.16	1.79
11,601.0	91.00	182.30	9,447.7	-2,415.2	130.4	2,417.0	0.24	0.21	0.11
11,695.0	90.20	182.50	9,446.6	-2,509.1	126.4	2,510.8	0.88	-0.85	0.21
11,790.0	90.10	181.90	9,446.5	-2,604.0	122.8	2,605.7	0.64	-0.11	-0.63



Wellplanning
Survey Report

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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,864.0	89.10	181.70	9,447.2	-2,698.0	119.8	2,699.8	1.08	-1.08	-0.21
11,978.0	90.60	180.60	9,447.4	-2,792.0	117.9	2,793.5	1.98	1.60	-1.17
12,072.0	83.10	183.00	9,444.4	-2,885.9	115.0	2,887.3	3.69	2.68	2.55
12,168.0	90.40	183.20	9,441.5	-2,979.7	109.9	2,981.0	2.88	-2.87	0.21
12,261.0	90.20	183.60	9,441.0	-3,074.5	104.1	3,075.8	0.87	-0.21	0.63
12,355.0	88.90	179.10	9,441.8	-3,168.4	101.7	3,169.6	5.19	-1.38	-5.00
12,449.0	88.00	178.40	9,444.3	-3,262.4	103.8	3,263.6	1.21	-0.98	-0.74
12,543.0	87.30	178.10	9,448.1	-3,356.2	108.6	3,357.5	0.81	-0.74	-0.32
12,637.0	89.30	178.40	9,450.9	-3,450.2	108.5	3,451.5	2.15	2.13	0.32
12,732.0	89.50	178.30	9,451.9	-3,545.1	112.2	3,548.4	0.24	0.21	-0.11
12,826.0	90.40	179.00	9,452.0	-3,639.1	114.5	3,640.4	1.21	0.98	0.74
12,920.0	89.60	178.00	9,452.0	-3,733.1	116.9	3,734.4	1.36	-0.85	-1.06
13,014.0	90.30	178.30	9,452.1	-3,827.0	120.0	3,828.4	0.81	0.74	0.32
13,108.0	90.60	178.40	9,451.4	-3,921.0	122.7	3,922.4	0.34	0.32	0.11
13,203.0	90.50	178.10	9,450.4	-4,015.9	125.6	4,017.4	0.33	-0.11	-0.32
13,297.0	90.60	178.10	9,449.5	-4,109.9	128.7	4,111.4	0.11	0.11	0.00
13,391.0	89.10	178.60	9,449.0	-4,203.8	131.4	4,205.4	0.75	-0.53	0.53
13,486.0	89.10	178.10	9,449.6	-4,298.8	134.1	4,300.4	1.18	-1.05	-0.53
13,580.0	88.30	178.70	9,451.8	-4,392.7	136.7	4,394.3	1.06	-0.85	0.64
13,674.0	91.10	179.60	9,452.3	-4,486.7	138.1	4,488.3	3.13	2.88	0.96
13,768.0	92.70	179.50	9,449.1	-4,580.6	138.9	4,582.3	1.71	1.70	-0.11
13,867.0	92.70	179.60	9,444.5	-4,678.5	139.7	4,681.1	0.10	0.00	0.10
13,918.0	92.70	179.60	9,442.1	-4,730.5	140.0	4,732.1	0.00	0.00	0.00

PBHL 9418 JP Vaca Draw #4H

Checked By: _____ Approved By: _____ Date: _____



NEXUS

DIRECTIONAL SOLUTIONS, L.P.

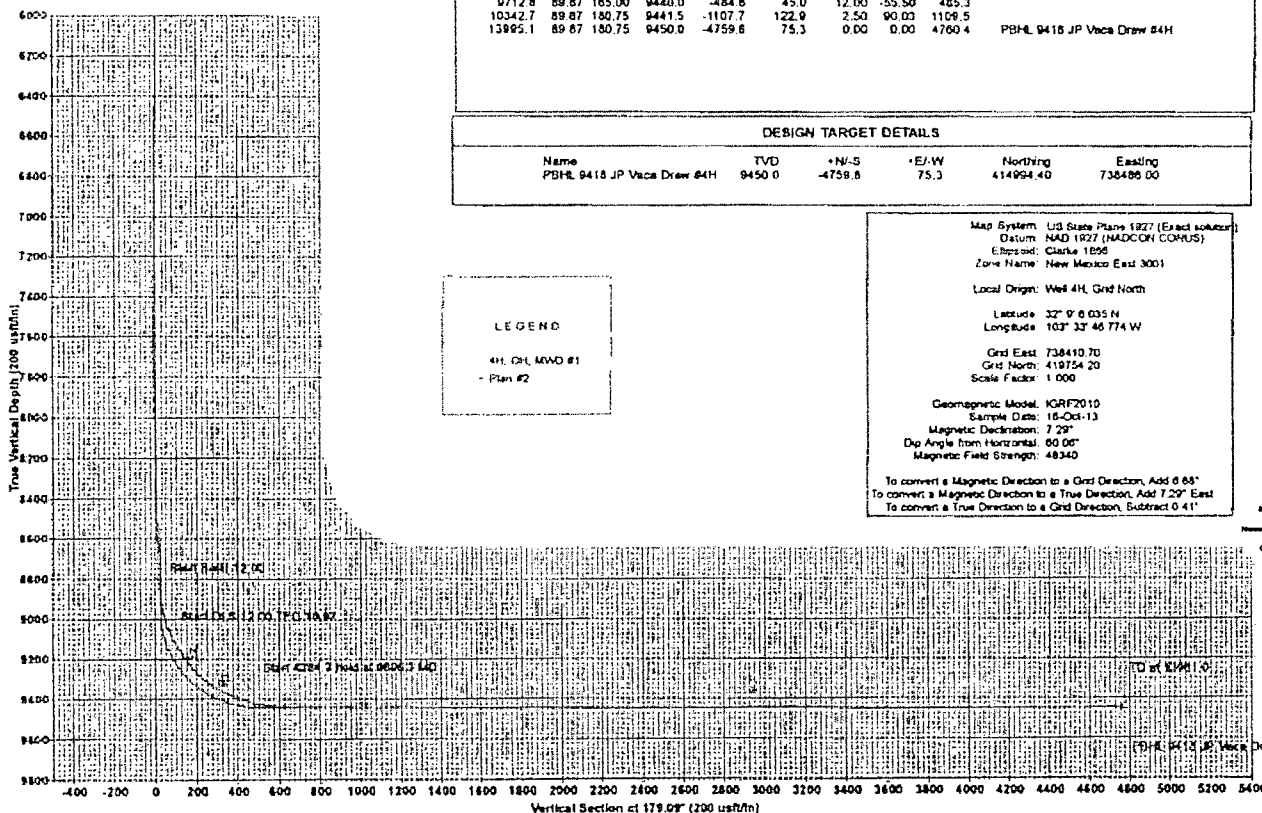


Azimuth to Grid North
True North: -0.41°
Magnetic North: 0.65°

Magnetic Field
To convert a Magnetic Direction to a Grid Direction, Add 6.885 length, 48335 East
To convert a True Direction to a Grid Direction, Subtract 0.41°
Date: 10/16/2013
Model: KGRF2010

9418 JV-P Vaca Draw 4H
Lea County, NM (NAD27 NME)
Northing: (Y) 419754.20
Easting: (X) 738410.70
Plan #2

WELL DETAILS:									
WELL @ 3438.7usft (Original Well Elev)									
+N-S	+E-W	Northing	Easting	Latitude	Longitude				
0.0	0.0	419754.20	738410.70	32° 9' 0.035" N	103° 33' 46.774" W				
SECTION DETAILS									
MD	Inc	Art	TVD	+N-S	+E-W	Diag	TFact	VSect	Target
8900.0	1.54	220.49	8898.7	-20.5	-67.0	0.00	0.00	19.4	
8971.3	1.54	220.49	8970.0	-21.9	-66.2	0.00	0.00	20.8	
9712.8	89.87	185.00	9440.0	-484.6	45.0	12.00	-55.50	-485.3	
10342.7	89.87	180.75	9441.5	-1107.7	122.9	2.50	90.03	1109.5	
13995.1	89.87	180.75	9450.0	-4759.8	75.3	0.00	0.00	4760.4	PBHL 9418 JP Vaca Draw 84H
DESIGN TARGET DETAILS									
Name	TVD	+N-S	+E-W	Northing	Easting				
PBHL 9418 JP Vaca Draw 84H	9450.0	-4759.8	75.3	419994.40	738486.00				



LEGEND

4H, CH, MWD #1
- Plan #2

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Elevation: Geoid 1996
Zone Name: New Mexico East 3001

Local Origin: Well 4H, Grid North

Latitude: 32° 9' 0.035" N
Longitude: 103° 33' 46.774" W

Grid East: 738410.70
Grid North: 419754.20
Scale Factor: 1.000

Geomagnetic Model: KGRF2010

Sample Date: 15-Oct-13

Magnetic Declination: 7.29°

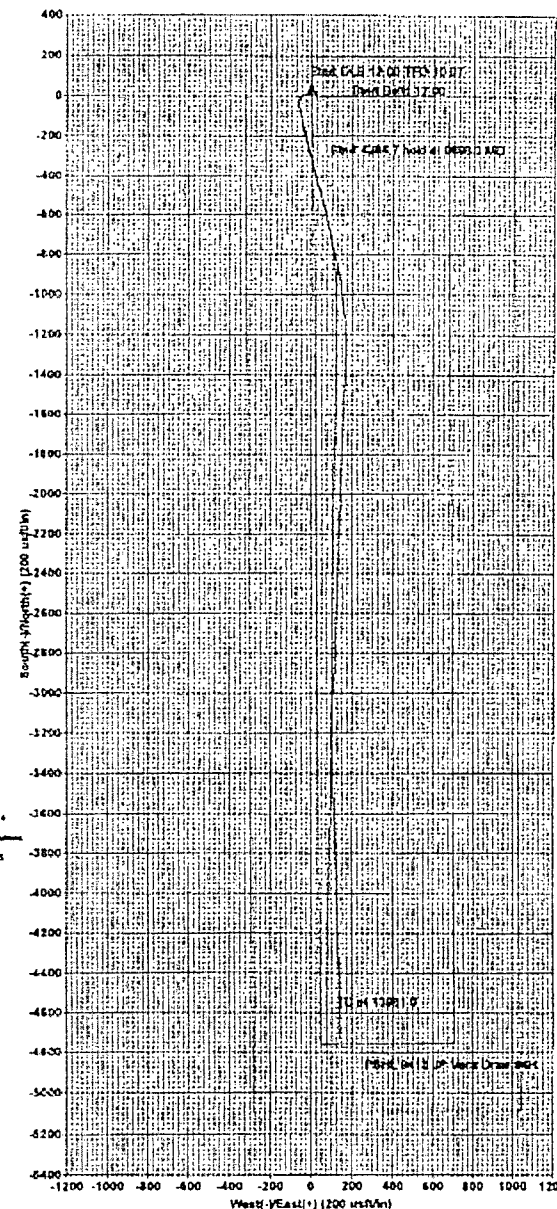
Dip Angle from Horizontal: 60.06°

Magnetic Field Strength: 48340

To convert a Magnetic Direction to a Grid Direction, Add 6.88°
To convert a Magnetic Direction to a True Direction, Add 7.29° East
To convert a True Direction to a Grid Direction, Subtract 0.41°

Well Stop
8.51, April 22, 2014

Notes: Directional Solution
3053 CH 120
Chasco TX 79705

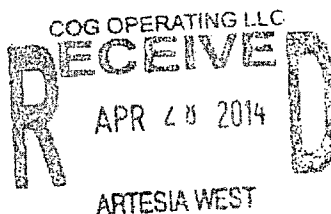


COPY

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



April 14, 2014

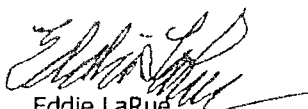
COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: 9418 JB-P Vaca Draw #4H
190' FNL & 1650' FWL
Sec. 10, T25S, R33E
Lea County, New Mexico

Dear Sir,

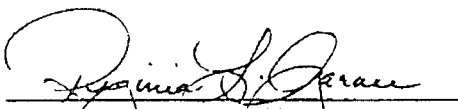
The attached is the Deviation Survey for the above captioned well.

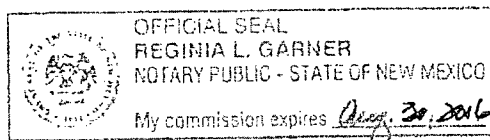
Very truly yours,


Eddie LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 14th day of April, 2014.


Regina L. Garner
Notary Public



COPY

9418 JV-P Vaca Draw #4H

Date	Depth	Deviation	Direction
3/13/2014	143	0.60	0.00
3/13/2014	406	0.20	0.00
3/13/2014	584	0.50	0.00
3/13/2014	864	0.40	0.00
3/14/2014	1166	1.70	0.00
3/16/2014	1463	0.60	0.00
3/16/2014	1651	0.50	0.00
3/16/2014	1840	0.30	258.60
3/16/2014	2029	0.20	225.50
3/16/2014	2218	0.20	110.80
3/16/2014	2406	0.20	33.10
3/16/2014	2595	0.20	0.00
3/16/2014	2972	0.20	0.00
3/16/2014	3161	0.60	0.00
3/17/2014	3352	0.50	0.00
3/17/2014	3542	0.30	0.00
3/17/2014	3731	0.50	327.60
3/17/2014	3917	0.60	308.70
3/17/2014	4107	0.30	0.00
3/17/2014	4296	1.00	0.00
3/18/2014	4485	0.70	0.00
3/18/2014	4673	1.10	0.00
3/18/2014	4962	1.00	152.00
3/18/2014	5051	0.50	0.00
3/20/2014	5341	0.10	0.00
3/20/2014	5782	0.50	0.00
3/20/2014	6222	0.50	0.00
3/21/2014	6628	0.20	0.00
3/21/2014	7070	0.30	0.00
3/21/2014	7513	1.00	0.00
3/21/2014	7963	1.30	0.00
3/21/2014	8215	2.10	0.00
3/22/2014	8297	2.50	0.00
3/22/2014	8391	1.60	0.00
3/22/2014	8486	1.70	0.00
3/22/2014	8580	1.80	0.00
3/22/2014	8674	1.90	0.00
3/22/2014	8989	1.10	0.00
3/22/2014	9214	1.40	0.00
3/23/2014	9367	1.40	0.00
3/24/2014	9555	1.30	0.00
3/24/2014	9776	2.20	0.00
3/24/2014	9872	2.90	0.00

COPY

Date	Depth	Deviation	Direction
3/24/2014	9935	3.10	0.00
3/24/2014	10030	2.40	0.00
3/24/2014	10125	2.70	0.00
3/24/2014	10220	2.80	0.00
3/25/2014	10341	2.70	0.00
3/25/2014	10498	2.00	0.00
3/25/2014	10662	2.10	0.00
3/25/2014	10812	1.50	0.00
3/25/2014	10970	0.50	0.00
3/26/2014	11225	0.60	0.00
3/26/2014	11502	3.00	0.00
3/26/2014	11633	3.40	0.00
3/26/2014	11787	3.10	0.00
3/26/2014	11945	0.60	0.00
3/27/2014	12227	3.00	0.00
3/27/2014	12456	2.90	0.00
4/2/2014	8865	3.10	189.10
4/3/2014	8896	6.60	172.30
4/3/2014	8927	9.40	173.20
4/3/2014	8959	12.80	174.20
4/3/2014	8990	16.00	174.00
4/4/2014	9022	18.30	172.30
4/4/2014	9053	20.70	169.80
4/4/2014	9084	23.60	168.70
4/4/2014	9116	26.90	169.40
4/4/2014	9147	29.10	169.20
4/4/2014	9179	32.10	114.80
4/4/2014	9210	35.30	168.70
4/4/2014	9242	37.90	168.30
4/4/2014	9273	40.10	167.60
4/4/2014	9337	46.10	166.10
4/4/2014	9399	53.50	164.10
4/4/2014	9431	57.50	164.60
4/5/2014	9462	60.10	165.10
4/5/2014	9494	63.60	165.10
4/5/2014	9525	66.40	166.10
4/5/2014	9587	72.10	165.10
4/5/2014	9619	75.00	165.10
4/5/2014	9650	77.80	165.80
4/6/2014	9681	79.90	165.60
4/6/2014	9713	81.50	165.20
4/6/2014	9745	85.10	165.60
4/6/2014	9776	88.80	166.40
4/6/2014	9902	90.20	168.00
4/6/2014	9996	89.40	167.50

COPY

Date	Depth	Deviation	Direction
4/6/2014	10091	89.30	171.30
4/6/2014	10280	90.50	174.50
4/6/2014	10327	90.00	177.70
4/6/2014	10469	88.60	180.40
4/6/2014	10563	88.40	181.10
4/6/2014	10752	89.30	181.80
4/7/2014	10847	90.50	182.30
4/7/2014	10947	93.00	183.80
4/7/2014	11035	90.50	182.90
4/7/2014	11129	88.00	181.80
4/7/2014	11223	88.10	181.60
4/7/2014	11318	89.10	181.10
4/7/2014	11412	89.70	180.50
4/7/2014	11507	90.80	182.20
4/7/2014	11695	90.20	182.50
4/7/2014	11790	90.10	181.90
4/7/2014	11884	89.10	181.70
4/7/2014	11978	90.60	180.60
4/8/2014	12167	90.40	183.20
4/8/2014	12261	90.20	183.80
4/8/2014	12355	88.90	179.10
4/8/2014	12449	88.00	178.40
4/8/2014	12543	87.30	178.10
4/8/2014	12637	89.30	178.40
4/8/2014	12732	89.50	178.30
4/8/2014	12826	90.40	179.00
4/8/2014	12920	89.60	178.00
4/8/2014	13014	90.30	178.30
4/9/2014	13108	90.60	178.40
4/9/2014	13203	90.50	178.10
4/9/2014	13297	90.60	178.10
4/9/2014	13391	90.10	178.60
4/9/2014	13486	89.10	178.10
4/9/2014	13580	88.30	178.70
4/9/2014	13674	91.10	179.90
4/9/2014	13768	92.70	179.50

COPY



A GYRO TECHNOLOGIES INC. COMPANY

P.O. Box 281021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

April 3, 2014

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

Attn: Kanicia Castillo

RE: Vaca Draw 9418 JV-9 No. 004H

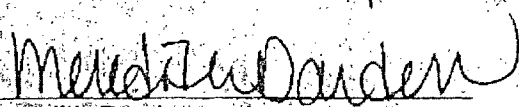
Please find enclosed a copy of the survey from 0:00' to 12448:00' ran on the above referenced well.

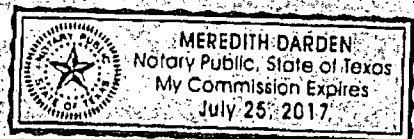
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 3rd day of April, A.D., 2014, by Keith Havelka.


Meredith Darden
Notary Public, State of Texas



Company: COG OPERATING, LLC

Lease/Well: Vaca Draw 9418 JV-P/No. 004H



Rig Name: SILVER OAK 12

State/County: NEW MEXICO /LEA

Latitude: 32.15, Longitude: -103.56

GRID North is 0.41 Degrees East of True North

VS-Azi: 0.45 Degrees



Depth Reference : RKB= 18FT

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: 9418 VACA DRAW 4H.ut

Minimum Curvature Method

Report Date/Time: 4/3/2014 / 10:54

VES Survey International

West, Texas

432-563-5444

Surveyor: Javier Estrada

Vaca Draw 9418 JV-9 No. 004H / API 30-025-41623

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	0.13	82.84	100.00	0.01	0.12	0.02	0.12	82.84	0.13
200.00	0.16	116.98	200.00	-0.03	0.36	-0.03	0.36	95.53	0.09
300.00	0.24	121.51	300.00	-0.21	0.66	-0.20	0.69	107.48	0.08
400.00	0.05	67.30	400.00	-0.30	0.88	-0.29	0.93	108.87	0.22
500.00	0.08	58.46	500.00	-0.25	0.99	-0.24	1.02	103.99	0.04
600.00	0.09	18.70	600.00	-0.13	1.08	-0.12	1.08	96.81	0.06
700.00	0.18	345.46	700.00	0.10	1.06	0.11	1.07	84.39	0.12
800.00	0.26	313.07	800.00	0.41	0.86	0.42	0.95	64.33	0.14
900.00	0.52	309.68	900.00	0.86	0.34	0.86	0.92	21.70	0.27
1000.00	1.21	306.63	999.98	1.78	-0.86	1.77	1.98	334.28	0.69
1100.00	1.64	296.12	1099.95	3.04	-2.99	3.02	4.26	315.48	0.50
1200.00	1.31	300.09	1199.92	4.24	-5.26	4.20	6.76	308.87	0.34
1300.00	0.99	309.53	1299.90	5.37	-6.92	5.31	8.76	307.79	0.37
1400.00	0.67	303.60	1399.89	6.24	-8.07	6.18	10.21	307.70	0.34
1500.00	0.57	284.78	1499.88	6.69	-9.04	6.62	11.25	306.50	0.22
1600.00	0.46	288.56	1599.88	6.95	-9.90	6.87	12.10	305.04	0.11
1700.00	0.42	281.56	1699.88	7.16	-10.64	7.06	12.82	303.88	0.07
1800.00	0.20	275.16	1799.87	7.24	-11.18	7.15	13.31	302.92	0.22

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	0.17	248.86	1899.87	7.20	-11.49	7.11	13.56	302.07	0.09
2000.00	0.29	225.57	1999.87	6.97	-11.80	6.88	13.71	300.55	0.15
2100.00	0.13	248.14	2099.87	6.75	-12.09	6.66	13.84	299.18	0.18
2200.00	0.07	173.16	2199.87	6.65	-12.18	6.55	13.88	298.63	0.13
2300.00	0.09	236.09	2299.87	6.54	-12.24	6.45	13.88	298.13	0.09
2400.00	0.07	51.46	2399.87	6.54	-12.26	6.44	13.89	298.07	0.16
2500.00	0.20	8.21	2499.87	6.75	-12.19	6.65	13.93	298.96	0.16
2600.00	0.08	349.70	2599.87	6.98	-12.18	6.89	14.04	299.83	0.13
2700.00	0.30	326.28	2699.87	7.27	-12.33	7.17	14.32	300.51	0.23
2800.00	0.22	330.34	2799.87	7.65	-12.58	7.56	14.72	301.33	0.08
2900.00	0.42	334.47	2899.87	8.16	-12.83	8.06	15.20	302.44	0.20
3000.00	0.40	305.65	2999.87	8.69	-13.27	8.59	15.87	303.22	0.21
3100.00	0.34	327.52	3099.86	9.15	-13.72	9.04	16.49	303.69	0.15
3200.00	0.38	342.08	3199.86	9.71	-13.98	9.60	17.02	304.79	0.10
3300.00	0.42	349.52	3299.86	10.39	-14.15	10.28	17.55	306.29	0.07
3400.00	0.35	14.85	3399.86	11.05	-14.13	10.94	17.94	308.01	0.18
3500.00	0.46	7.91	3499.86	11.74	-14.00	11.63	18.27	309.98	0.11
3600.00	0.49	12.52	3599.86	12.55	-13.85	12.44	18.69	312.16	0.05
3700.00	0.38	292.95	3699.85	13.09	-14.06	12.98	19.21	312.94	0.56
3800.00	0.56	284.38	3799.85	13.34	-14.84	13.22	19.95	311.95	0.20
3900.00	0.49	284.54	3899.84	13.57	-15.73	13.44	20.77	310.78	0.07
4000.00	0.52	304.27	3999.84	13.93	-16.51	13.80	21.60	310.15	0.17
4100.00	0.64	284.84	4099.83	14.32	-17.42	14.19	22.56	309.42	0.23
4200.00	0.49	288.53	4199.83	14.60	-18.37	14.46	23.46	308.49	0.16
4300.00	0.89	262.49	4299.82	14.64	-19.53	14.48	24.41	306.84	0.50
4400.00	0.76	240.09	4399.81	14.20	-20.88	14.04	25.25	304.23	0.34
4500.00	0.59	201.64	4499.80	13.40	-21.64	13.22	25.45	301.76	0.47
4600.00	0.72	187.58	4599.80	12.29	-21.91	12.12	25.13	299.29	0.21
4700.00	1.43	158.14	4699.78	10.51	-21.53	10.34	23.96	296.01	0.88
4800.00	1.62	151.04	4799.74	8.11	-20.38	7.95	21.94	291.71	0.27
4900.00	0.92	152.76	4899.72	6.16	-19.33	6.01	20.29	287.68	0.70
5000.00	0.64	142.33	4999.71	5.00	-18.62	4.86	19.28	285.04	0.31
5100.00	0.41	160.55	5099.71	4.22	-18.16	4.08	18.64	283.09	0.29
5200.00	0.37	185.73	5199.70	3.56	-18.07	3.42	18.42	281.14	0.17
5300.00	0.32	214.60	5299.70	3.00	-18.26	2.86	18.51	279.34	0.18
5400.00	0.15	253.31	5399.70	2.74	-18.55	2.59	18.75	278.40	0.23
5500.00	0.16	205.84	5499.70	2.58	-18.73	2.43	18.91	277.84	0.12
5600.00	0.22	218.19	5599.70	2.31	-18.90	2.16	19.04	276.96	0.07
5700.00	0.25	280.50	5699.70	2.20	-19.23	2.05	19.36	276.52	0.24

COPY

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	0.15	310.33	5799.70	2.32	-19.54	2.17	19.68	276.77	0.14
5900.00	0.36	278.52	5899.70	2.45	-19.95	2.29	20.10	277.00	0.25
6000.00	0.28	289.27	5999.70	2.58	-20.50	2.42	20.66	277.17	0.10
6100.00	0.42	254.08	6099.69	2.58	-21.09	2.39	21.24	276.92	0.25
6200.00	0.60	282.77	6199.69	2.58	-21.95	2.40	22.10	276.69	0.31
6300.00	0.64	309.91	6299.68	3.05	-22.89	2.87	23.10	277.59	0.29
6400.00	0.44	299.89	6399.68	3.60	-23.66	3.42	23.93	278.66	0.22
6500.00	0.51	298.42	6499.68	4.01	-24.38	3.81	24.71	279.33	0.07
6600.00	0.63	295.90	6599.67	4.46	-25.27	4.26	25.66	280.01	0.12
6700.00	0.76	317.74	6699.66	5.19	-26.21	4.99	26.72	281.20	0.29
6800.00	0.77	318.32	6799.66	6.19	-27.11	5.98	27.80	282.86	0.01
6900.00	0.75	326.65	6899.65	7.24	-27.92	7.02	28.84	284.54	0.11
7000.00	0.65	314.88	6999.64	8.12	-28.61	7.90	29.74	285.85	0.24
7100.00	0.50	314.18	7099.64	8.76	-29.27	8.53	30.55	286.67	0.04
7200.00	0.63	289.19	7199.63	9.25	-30.10	9.02	31.49	287.09	0.27
7300.00	0.61	284.79	7299.63	9.57	-31.13	9.32	32.57	287.08	0.05
7400.00	0.76	278.19	7399.62	9.80	-32.29	9.54	33.75	286.88	0.16
7500.00	0.72	273.01	7499.61	9.92	-33.57	9.66	35.00	286.47	0.07
7600.00	0.83	260.47	7599.60	9.84	-34.90	9.56	36.26	285.74	0.20
7700.00	1.29	255.14	7699.58	9.43	-36.71	9.14	37.90	284.40	0.48
7800.00	1.35	247.95	7799.56	8.69	-38.89	8.39	39.85	282.60	0.18
7900.00	3.25	239.68	7899.47	6.82	-42.44	6.49	42.98	279.13	1.92
8000.00	2.84	232.71	7999.33	3.88	-46.86	3.52	47.02	274.74	0.55
8100.00	2.64	229.33	8099.22	0.88	-50.58	0.48	50.59	270.99	0.26
8200.00	2.47	226.25	8199.12	-2.12	-53.89	-2.54	53.93	267.75	0.22
8300.00	2.19	220.44	8299.03	-5.06	-56.69	-5.51	56.91	264.90	0.37
8400.00	2.06	214.01	8398.96	-8.01	-58.93	-8.47	59.47	262.26	0.27
8500.00	1.86	212.67	8498.91	-10.86	-60.81	-11.33	61.77	259.88	0.20
8600.00	1.77	207.67	8598.86	-13.59	-62.40	-14.08	63.86	257.72	0.18
8700.00	1.51	211.40	8698.82	-16.08	-63.80	-16.58	65.80	255.85	0.27
8800.00	1.58	215.08	8798.78	-18.33	-65.28	-18.85	67.81	254.31	0.12
8900.00	1.54	220.49	8898.74	-20.48	-66.94	-21.01	70.01	252.99	0.15
9000.00	1.30	222.51	8998.71	-22.33	-68.58	-22.87	72.12	251.96	0.25
9100.00	1.39	226.73	9098.68	-24.00	-70.22	-24.55	74.21	251.13	0.13
9200.00	1.05	228.70	9198.66	-25.43	-71.80	-26.00	76.17	250.49	0.34
9300.00	0.92	237.64	9298.65	-26.47	-73.16	-27.04	77.80	250.11	0.20
9400.00	1.64	244.29	9398.62	-27.52	-75.13	-28.11	80.02	249.88	0.74
9500.00	1.78	252.34	9498.58	-28.62	-77.91	-29.23	83.00	249.83	0.28
9600.00	1.87	258.63	9598.53	-29.41	-80.99	-30.04	86.16	250.04	0.22

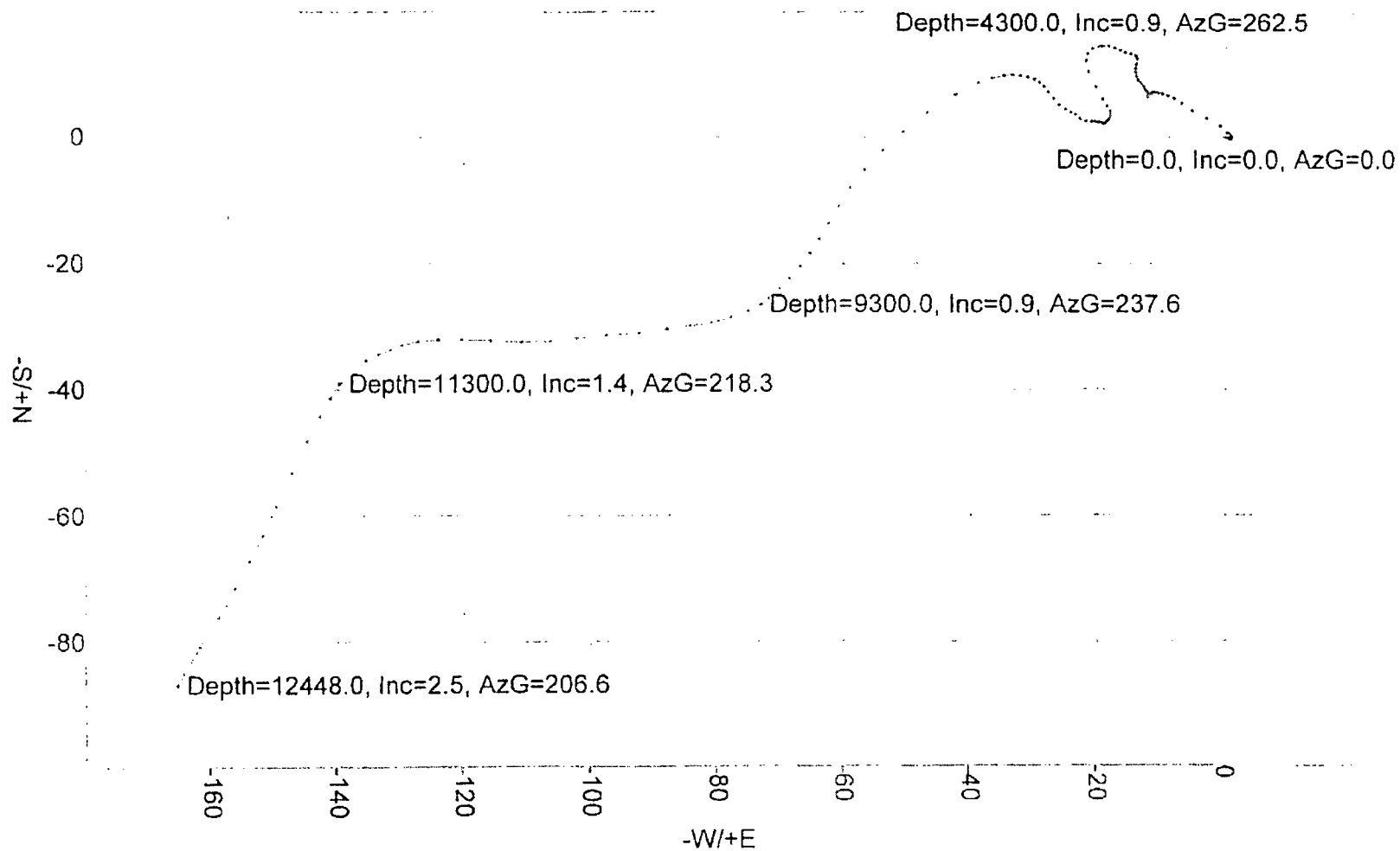
COPY

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
9700.00	2.04	263.11	9698.47	-29.94	-84.35	-30.60	89.51	250.46	0.23
9800.00	2.16	260.74	9798.40	-30.46	-87.98	-31.15	93.10	250.90	0.15
9900.00	2.98	262.49	9898.30	-31.10	-92.42	-31.83	97.52	251.40	0.82
10000.00	2.90	268.44	9998.17	-31.51	-97.53	-32.28	102.49	252.09	0.32
10100.00	2.38	261.43	10098.06	-31.89	-102.10	-32.69	106.97	252.65	0.61
10200.00	2.44	264.94	10197.97	-32.39	-106.28	-33.22	111.10	253.05	0.16
10300.00	2.72	272.24	10297.87	-32.48	-110.77	-33.35	115.43	253.66	0.43
10400.00	2.96	272.33	10397.75	-32.29	-115.72	-33.19	120.13	254.41	0.24
10500.00	2.28	272.24	10497.64	-32.10	-120.28	-33.05	124.49	255.06	0.68
10600.00	2.00	267.06	10597.57	-32.11	-124.01	-33.09	128.10	255.48	0.33
10700.00	1.72	261.10	10697.52	-32.44	-127.23	-33.43	131.30	255.70	0.34
10800.00	1.17	250.34	10797.49	-33.01	-129.67	-34.03	133.81	255.72	0.61
10900.00	1.21	251.66	10897.47	-33.69	-131.64	-34.72	136.88	255.65	0.05
11000.00	1.03	249.45	10997.45	-34.33	-133.48	-35.38	137.82	255.57	0.19
11100.00	1.67	239.95	11097.42	-35.38	-135.58	-36.44	140.12	255.38	0.68
11200.00	1.67	225.82	11197.38	-37.12	-137.88	-38.21	142.79	254.93	0.41
11300.00	1.41	218.35	11297.34	-39.11	-139.69	-40.20	145.07	254.36	0.33
11400.00	1.63	211.19	11397.31	-41.29	-141.20	-42.40	147.11	253.70	0.29
11500.00	2.22	207.34	11497.25	-44.23	-142.82	-45.35	149.51	252.79	0.60
11600.00	2.92	206.85	11597.15	-48.22	-144.86	-49.35	152.67	251.59	0.70
11700.00	3.51	205.64	11696.99	-53.25	-147.34	-54.41	156.66	250.13	0.60
11800.00	3.17	204.92	11796.82	-58.52	-149.82	-59.69	160.85	248.67	0.35
11900.00	2.64	205.75	11896.69	-63.10	-151.99	-64.29	164.57	247.45	0.52
12000.00	2.61	209.41	11996.59	-67.16	-154.11	-68.37	168.11	246.46	0.17
12100.00	2.91	206.59	12096.47	-71.41	-156.36	-72.64	171.90	245.45	0.33
12200.00	3.19	211.27	12196.33	-76.06	-158.95	-77.31	176.21	244.43	0.38
12300.00	3.17	213.80	12296.18	-80.75	-161.93	-82.01	180.95	243.60	0.14
12400.00	2.66	207.90	12396.05	-85.09	-164.55	-86.38	186.25	242.66	0.60
12448.00	2.48	206.65	12444.00	-87.00	-165.64	-88.30	187.01	242.27	0.38

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VES Survey International
West, Texas
432-563-5444
Surveyor: Javier Estrada
Vaca Draw 9418 JV-9 No. 004H / API 30-025-41623



VES Survey Date: 03/27/2014

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