



December 30, 2014

30-015-41027

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

Attn: Kanicia Castillo

RE: Dodd Federal Unit 651

Please find enclosed a copy of the survey from 0.00' to 905.00' 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.

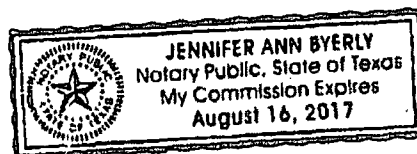
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 30 day of December, A.D., 2014, by Keith Havelka.

Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating
Lease/Well: Dodd Federal Unit/651

Location: Sec 22 T17S R29E

Rig Name: Basic 38

State/County: New Mexico/Eddy

Latitude: 32.82, Longitude: -104.05

GRID North is 0.15 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : 13 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 12/30/2014 / 14:33

VES Survey International

West Texas

(432) 563-5444

Surveyor: Noe Garza

Dodd Federal Unit 651 / API 30-015-41027

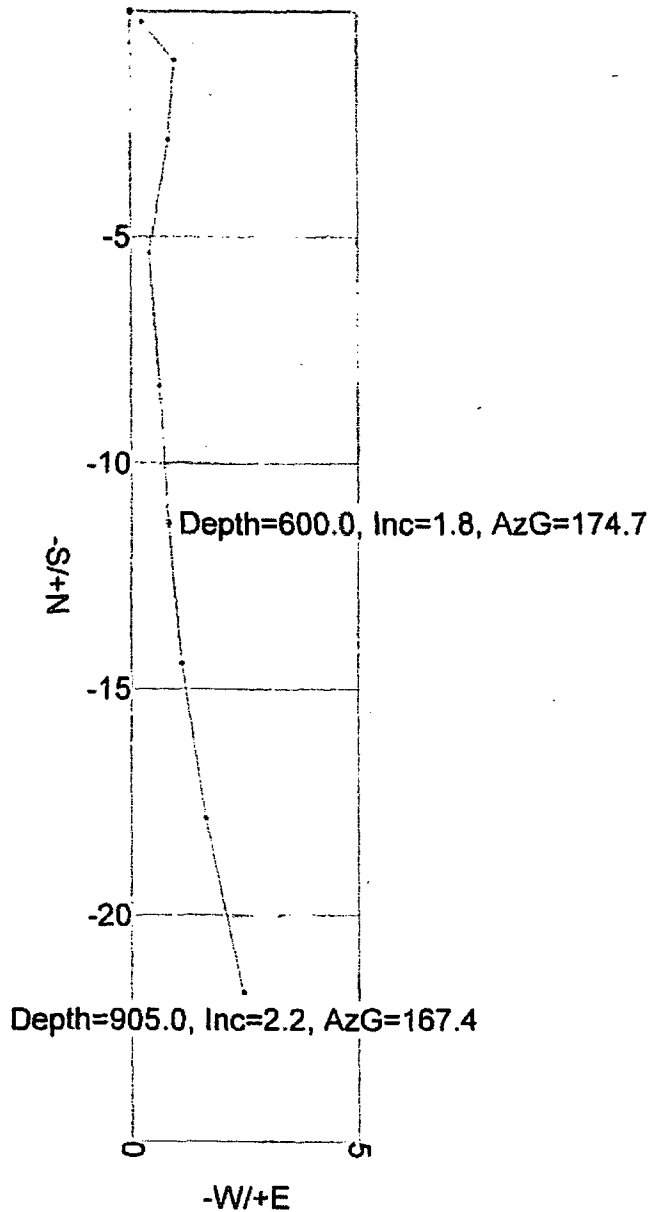
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.41	131.80	100.00	-0.24	0.26	-0.24	0.35	131.80	0.41
200.00	0.88	144.73	199.99	-1.10	0.97	-1.10	1.47	138.53	0.49
300.00	1.44	208.07	299.98	-2.83	0.83	-2.83	2.95	163.75	1.30
400.00	1.63	172.95	399.94	-5.35	0.41	-5.35	5.37	175.61	0.94
500.00	1.74	178.40	499.90	-8.28	0.63	-8.28	8.31	175.66	0.19
600.00	1.76	174.68	599.86	-11.33	0.81	-11.33	11.36	175.90	0.11
700.00	1.83	174.51	699.80	-14.44	1.11	-14.44	14.48	175.62	0.07
800.00	2.12	168.57	799.74	-17.84	1.63	-17.84	17.91	174.79	0.35
905.00	2.23	167.36	904.67	-21.73	2.46	-21.73	21.87	173.55	0.12



VES Survey International
West Texas
(432) 563-5444
Surveyor: Noe Garza
Dodd Federal Unit 651 / API 30-015-41027



Depth=0.0, Inc=0.0, AzG=0.0



VES Survey Date: 12/17/2014

OPERATOR COG Operating LLC
WELL/LEASE Dodd Federal Unit #651
COUNTY Eddy Co., NM.

STATE OF NEW MEXICO
DEVIATION REPORT

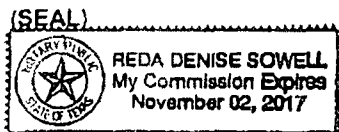
232	0.00
639	1.25
905	2.23
1017	2.10
1080	0.80
1143	1.20
1207	2.60
1270	3.10
1491	6.30
1555	5.60
1618	5.20
1681	4.80
1744	5.40
1807	6.10
2536	7.20
2630	6.30
2757	6.20
2884	6.10
3010	5.90
3137	6.00
3516	6.20
3643	6.70
3896	7.00
4023	6.50
4150	6.70
4555	6.60

SIGNED BY: *R. Scandolari*

RON SCANDOLARI, VP-CONTRACT DRILLING

STATE OF TEXAS
COUNTY OF MIDLAND

ON THIS 12 DAY OF January, ²⁰¹⁵~~2014~~, BEFORE ME, R SOWELL, A NOTARY
PUBLIC, PERSONALLY APPEARED RON SCANDOLARI, WHO ACKNOWLEDGED AND EXECUTED
THIS DOCUMENT. WITNESS MY HAND AND OFFICIAL SEAL.



Reda Denise Sowell
NOTARY PUBLIC



COG Operating LLC

Eddy County, NM (NAD27 NME)

Dodd Federal Unit

#651

WB1 / Job #1412537

Design: Surveys (Basic 38)

Standard Survey Report

22 December, 2014



PHOENIX
TECHNOLOGY SERVICES



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #651
Project:	Eddy County NM (NAD27 NME)	TVD Reference:	KB @ 3603.00usft (Basic 38)
Site:	Dodd Federal Unit	MD Reference:	KB @ 3603.00usft (Basic 38)
Well:	#651	North Reference:	Grid
Wellbore:	WB1 / Job #1412537	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Basic 38)	Database:	Compass 5000 GCR

Project:	Eddy 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:	Dodd Federal Unit		
Site Position:		Northing:	669,009.70 usft
From:	Map	Easting:	585,704.90 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 19.97600 N
		Longitude:	104° 3' 15.44871 W
		Grid Convergence:	0.15 °

Well:	#651		
Well Position	+N-S	0.00 usft	Northing:
	+E-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 49' 12.99355 N
		Longitude:	104° 3' 14.24958 W
		Ground Level:	3,591.00 usft

Wellbore:	WB1 / Job #1412537		
Magnetico	Model Name	Sample Date	Declination
	IGRF2010_14	12/12/2014	7.42
			60.67
			48.571

Design:	Surveys (Basic 38)		
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
			316.88

Survey Program	Date 12/21/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	905.00	VES Gyro Survey (WB1 / Job #1412537)	NS-GYRO-MS
905.00	4,555.00	Phoenix MWD Survey (WB1 / Job #14125)	PHX+MWD+IGRF
			North sensing gyrocompassing m/s
			PHX+MWD+IGRF v3: standard declination

Survey	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)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	100.00	0.41	131.80	100.00	-0.24	0.27	-0.36	0.41	0.41	0.00
	200.00	0.88	144.73	199.99	-1.10	0.98	-1.47	0.49	0.47	12.93
	300.00	1.44	208.07	299.98	-2.84	0.83	-2.64	1.31	0.56	63.34
	400.00	1.63	172.95	399.94	-5.36	0.41	-4.19	0.94	0.19	-35.12
	500.00	1.74	178.40	499.90	-8.29	0.63	-6.48	0.19	0.11	5.45
	600.00	1.76	174.68	599.85	-11.34	0.81	-8.83	0.12	0.02	-3.72
	700.00	1.83	174.51	699.80	-14.45	1.11	-11.31	0.07	0.07	-0.17
	800.00	2.12	168.57	799.74	-17.86	1.63	-14.15	0.35	0.29	-5.94
	905.00	2.23	167.36	904.67	-21.75	2.46	-17.56	0.11	0.10	-1.15



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #851
Project:	Eddy County, NM (NAD27/NME)	TVD Reference:	KB @ 3603.00usft (Basic 38)
Site:	Dodd Federal Unit	MD Reference:	KB @ 3603.00usft (Basic 38)
Well:	#651	North Reference:	Grid
Wellbore:	WB1 / Job #1412537	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Basic 38)	Database:	Compass 5000 GCR

Survey									
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Vertical	Dogleg	Build	Turn
Depth	($^{\circ}$)	($^{\circ}$)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	($^{\circ}$ /100usft)	($^{\circ}$ /100usft)	($^{\circ}$ /100usft)
Tie-on to VES Gyro Survey									
1,017.00	2.10	165.00	1,016.59	-25.86	3.47	-21.25	0.14	-0.12	-2.11
First Phoenix MWD Survey									
1,080.00	0.80	204.10	1,079.57	-27.38	3.59	-22.44	2.48	-2.06	62.06
1,143.00	1.20	293.40	1,142.56	-27.52	2.80	-22.00	2.28	0.63	141.75
1,207.00	2.60	307.90	1,206.52	-26.36	1.04	-19.95	2.30	2.19	22.66
1,270.00	3.10	314.50	1,269.45	-24.29	-1.30	-16.84	0.95	0.79	10.48
1,333.00	3.80	311.80	1,332.33	-21.70	-4.07	-13.06	1.14	1.11	-4.29
1,396.00	4.90	313.70	1,395.15	-18.45	-7.57	-8.29	1.76	1.75	3.02
1,428.00	5.30	320.10	1,427.02	-16.37	-9.51	-5.45	2.17	1.25	20.00
1,491.00	6.30	318.80	1,489.70	-11.54	-13.65	0.91	1.60	1.59	-2.06
1,555.00	5.60	318.20	1,553.35	-6.57	-18.05	7.54	1.10	-1.09	-0.94
1,618.00	5.20	317.30	1,616.07	-2.18	-22.03	13.47	0.65	-0.63	-1.43
1,681.00	4.80	317.00	1,678.83	1.84	-25.77	18.96	0.64	-0.63	-0.48
1,744.00	5.40	322.20	1,741.59	6.11	-29.38	24.55	1.20	0.95	8.25
1,807.00	6.10	321.40	1,804.27	11.07	-33.29	30.83	1.12	1.11	-1.27
1,871.00	6.10	320.10	1,867.91	16.34	-37.59	37.62	0.22	0.00	-2.03
1,934.00	6.20	320.20	1,930.54	21.52	-41.91	44.36	0.16	0.16	0.16
1,997.00	6.90	319.60	1,993.13	27.02	-46.54	51.53	1.12	1.11	-0.95
2,061.00	5.70	319.60	2,056.68	32.79	-51.46	59.10	0.31	-0.31	0.00
2,123.00	6.20	319.80	2,118.29	38.10	-55.96	66.06	0.81	-0.81	0.32
2,187.00	6.20	320.80	2,181.91	43.42	-60.38	72.96	0.17	0.00	1.56
2,251.00	7.60	317.90	2,245.45	49.24	-65.40	80.64	2.25	2.19	-4.53
2,346.00	8.40	319.40	2,339.52	59.17	-74.12	93.85	0.87	0.84	1.58
2,441.00	8.10	319.10	2,433.54	69.49	-83.02	107.47	0.32	-0.32	-0.32
2,536.00	7.20	319.50	2,527.69	79.08	-91.27	120.11	0.95	-0.95	0.42
2,630.00	6.30	320.00	2,621.04	87.51	-98.41	131.14	0.96	-0.96	0.53
2,757.00	6.20	320.90	2,747.29	98.17	-107.22	144.94	0.11	-0.08	0.71
2,884.00	6.10	322.60	2,873.56	108.85	-115.64	158.50	0.16	-0.08	1.34
3,010.00	5.90	324.60	2,998.87	119.45	-123.46	171.58	0.23	-0.16	1.59
3,137.00	6.00	319.50	3,125.18	129.82	-131.55	184.67	0.42	0.08	-4.02
3,263.00	6.10	315.20	3,250.48	139.57	-140.54	197.94	0.37	0.08	-3.41
3,390.00	6.30	318.90	3,376.74	149.61	-149.88	211.65	0.35	0.16	2.91
3,517.00	6.20	321.00	3,502.98	160.19	-158.78	225.46	0.20	-0.08	1.65
3,643.00	6.70	321.00	3,628.19	171.19	-167.68	239.58	0.40	0.40	0.00
3,770.00	7.10	323.10	3,754.27	183.23	-177.06	254.77	0.37	0.31	1.65
3,896.00	7.00	319.40	3,879.31	195.29	-186.73	270.18	0.37	-0.08	-2.94
4,023.00	6.50	315.90	4,005.43	206.32	-196.77	285.10	0.51	-0.39	-2.76
4,150.00	6.70	315.20	4,131.59	216.74	-206.99	299.69	0.17	0.16	-0.55
4,276.00	6.60	319.00	4,256.75	227.42	-216.92	314.27	0.36	-0.08	3.02
4,403.00	6.60	322.70	4,382.90	238.74	-226.13	328.83	0.33	0.00	2.91
4,504.00	6.60	322.50	4,483.24	247.96	-233.18	340.38	0.02	0.00	-0.20
Final Phoenix MWD Survey									



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #651
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3603.00usft (Basic 38)
Site:	Dodd Federal Unit	MD Reference:	KB @ 3603.00usft (Basic 38)
Well:	#651	North Reference:	Grid
Wellbore:	WB1 / Job #1412537	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Basic 38)	Database:	Compass 5000 GCR

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)
4,555.00	6.60	322.50	4,533.90	252.61	-236.75	346.21	0.00	0.00	0.00
Projection to TD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
905.00	904.67	-21.75	2.46	Tie-on to VES Gyro Survey
1,017.00	1,016.59	-25.86	3.47	First Phoenix MWD Survey
4,504.00	4,483.24	247.96	-233.18	Final Phoenix MWD Survey
4,555.00	4,533.90	252.61	-236.75	Projection to TD

Checked By: _____ Approved By: _____ Date: _____