

OPERATOR COG Operating
WELL/LEASE Dodd Federal #573
COUNTY Eddy Co., NM

STATE OF NEW MEXICO
DEVIATION REPORT

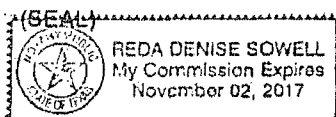
417	1.00
683	1.00
956	1.40
1018	2.20
1082	3.40
1145	3.40
1208	2.80
1271	2.30
1461	3.20
1524	3.70
1597	3.30
1650	3.20
1714	3.10
1777	2.30
2220	2.30
2283	3.00
2346	3.30
2410	3.10
2473	2.90
2536	3.10
2789	3.30
2853	2.90
2916	2.80
2979	2.60
3042	2.80
3106	2.50
3422	2.90
3549	2.80
3675	2.50
3802	2.60
3928	2.70
4055	2.50
4181	2.40
4340	2.50

SIGNED BY: *Ron Scandolari*

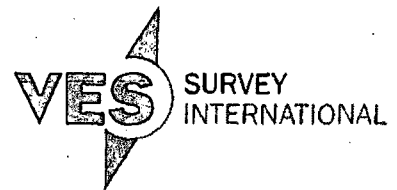
RON SCANDOLARI, VP-CONTRACT DRILLING

STATE OF TEXAS
COUNTY OF MIDLAND

ON THIS 11 DAY OF November, 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



November 18, 2014

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

Attn: Kanicia Castillo

RE: Dodd Federal Unit 573

Please find enclosed a copy of the survey from 0.00' to 800.00' 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,

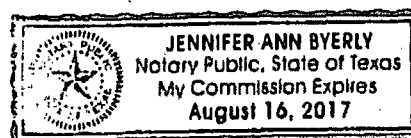
A handwritten signature in black ink, appearing to read "Keith Havelka", is written over the word "Sincerely,".

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 18 day of November A.D., 2014, by Keith Havelka.

A handwritten signature in black ink, appearing to read "Jennifer Ann Byerly", is written over the printed name and title.
Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating
Lease/Well: Dodd Federal Unit #573
Location: Sec 10 T17S R29E
Rig Name: Basic 38
State/County: New Mexico/Eddy
Latitude: 32.84, Longitude: -104.07
GRID North is 0.15 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 13 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: dodd federal unit #573-da_01.ut

Minimum Curvature Method

Report Date/Time: 11/18/2014 / 13:54

VES Survey International

West Texas

(432) 563-5444

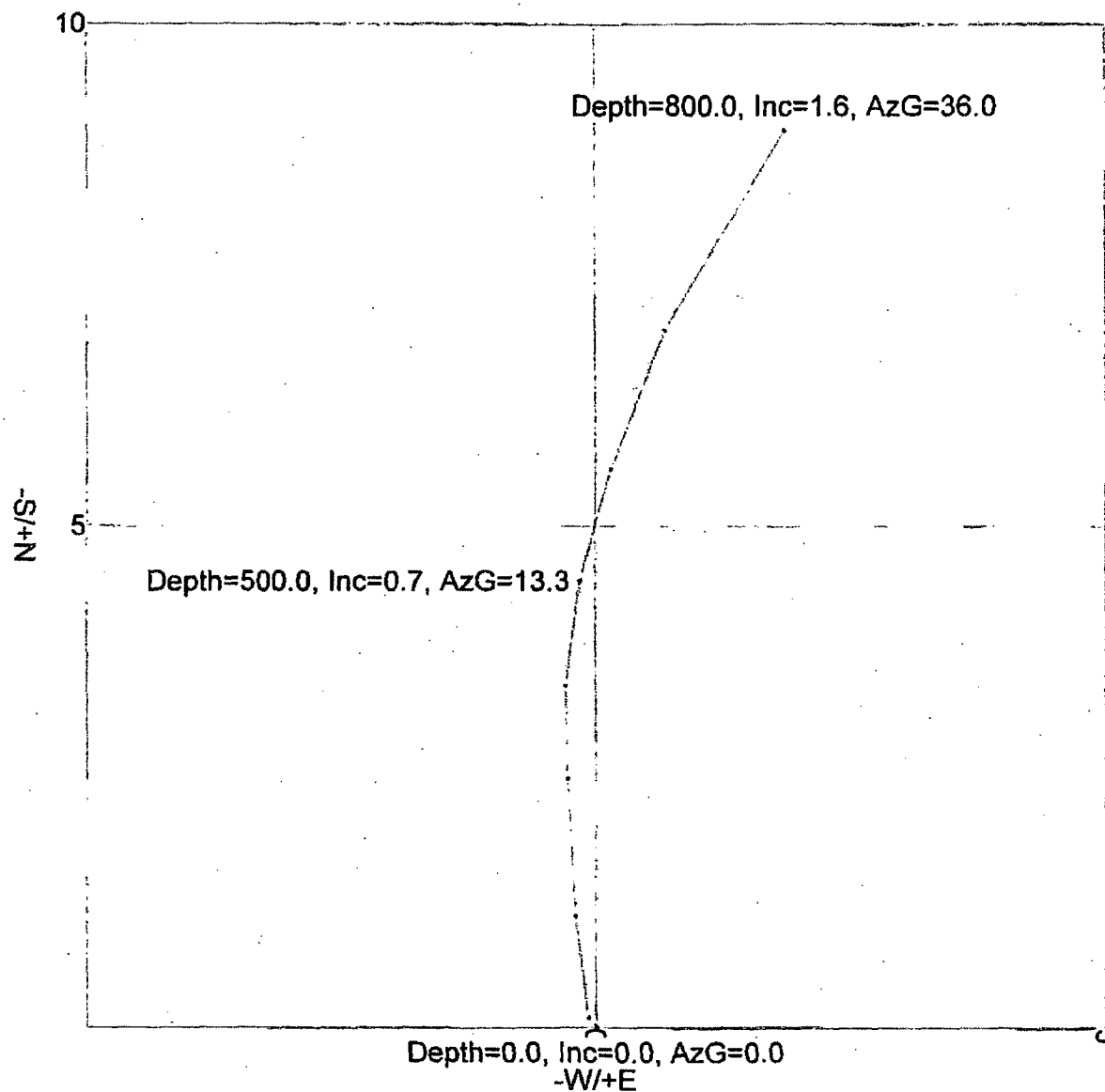
Surveyor: Chris Bankson

Dodd Federal Unit #573 / API 30-015-40355

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	0.14	324.98	100.00	0.10	-0.07	0.10	0.12	324.98	0.14
200.00	1.05	356.35	199.99	1.11	-0.20	1.11	1.13	350.05	0.94
300.00	0.53	358.42	299.98	2.49	-0.27	2.49	2.51	353.89	0.53
400.00	0.51	359.04	399.98	3.40	-0.29	3.40	3.41	355.18	0.02
500.00	0.71	13.26	499.97	4.45	-0.15	4.45	4.45	358.04	0.25
600.00	0.62	17.79	599.97	5.57	0.15	5.57	5.57	1.59	0.10
700.00	1.09	23.15	699.96	6.96	0.69	6.96	6.99	5.69	0.48
800.00	1.56	36.04	799.93	8.93	1.87	8.93	9.12	11.81	0.56



VES Survey International
West Texas
(432) 563-5444
Surveyor: Chris Bankson
Dodd Federal Unit #573 / API 30-015-40355



VES Survey Date: 11/7/2014



COG Operating LLC

Eddy County, NM (NAD27 NME)

Dodd Federal Unit

#573

WB#1 Job #1412156

Design: Surveys (Basic 38)

Standard Survey Report

11 November, 2014





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #573
Project:	Eddy County, NM (NAD27, NME)	TVD Reference:	KB @ 3591.00usft (Basic 38)
Site:	Dodd Federal Unit	MD Reference:	KB @ 3591.00usft (Basic 38)
Well:	#573	North Reference:	Grid
Wellbore:	WB#1 Job #1412156	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:	Map	Northings:	669,009.70 usft
From:		Easting:	585,704.90 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 19.97500 N
		Longitude:	104° 3' 15.44871 W
		Grid Convergence:	0.15 "

Well:	#573		
Well Position	+N-S	0.00 usft	Northings:
	+E-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 50' 40.70699 N
		Longitude:	104° 3' 56.78514 W
		Ground Level:	3,579.00 usft

Wellbore:	WB#1 Job #1412156		
Magnetics:	Model Name	Sample Date	Declination
	IGRF2010_14	10/29/2014	7.45
			Dip Angle
			60.59
			Field Strength
			48,697

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
			Direction
			(°)
			119.42

Survey Program:	Date: 11/11/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	800.00	VES Gyro Surveys (WB#1 Job #1412156)	NS-GYRO-MS
924.00	4,421.00	Phoenix MWD Survey (WB#1 Job #14121)	PHX+MWD+IGRF
			Description
			North sensing gyrocompassing m/s
			PHX+MWD+IGRF v3 standard declination

Survey:			
Measured	Inclination	Azimuth	Vertical
Depth	(°)	(°)	Depth
(usft)			(usft)
			+N-S
			(usft)
			+E-W
			(usft)
			Vertical
			Section
			(usft)
			Doglog
			Rate
			(°/100usft)
			Build
			Rate
			(°/100usft)
			Turn
			Rate
			(°/100usft)
0.00	0.00	0.00	0.00
100.00	0.14	324.98	100.00
200.00	1.05	356.35	199.99
300.00	0.53	358.42	299.98
400.00	0.51	359.04	399.98
500.00	0.71	13.26	499.97
600.00	0.62	17.79	599.97
700.00	1.09	23.15	699.96
800.00	1.56	36.04	799.93
			8.93
			1.87
			-2.76
			0.55
			0.47
			12.89

Tie-on to VES Gyro



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #573
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3591.00usft (Basic 38)
Site:	Dodd Federal Unit	MD Reference:	KB @ 3591.00usft (Basic 38)
Well:	#573	North Reference:	Grid
Wellbore:	WB#1 Job #1412156	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)
924.00	1.10	42.30	923.90	11.18	3.66	-2.30	0.39	-0.37	5.05
First Phoenix MWD Survey									
956.00	1.40	88.40	955.89	11.41	4.26	-1.90	3.18	0.94	144.06
987.00	2.00	105.20	986.87	11.28	5.16	-1.05	2.50	1.94	54.19
1,018.00	2.70	111.10	1,017.85	10.88	6.36	0.20	2.39	2.26	19.03
1,082.00	3.40	114.60	1,081.76	9.54	9.49	3.58	1.13	1.09	5.47
1,145.00	3.40	119.90	1,144.65	7.84	12.81	7.31	0.50	0.00	8.41
1,208.00	2.80	121.60	1,207.55	6.10	15.74	10.72	0.96	-0.95	2.70
1,272.00	2.30	119.00	1,271.49	4.66	18.20	13.56	0.80	-0.78	-4.06
1,335.00	2.60	124.40	1,334.43	3.24	20.48	16.25	0.60	0.48	8.57
1,398.00	3.00	131.10	1,397.36	1.35	22.90	19.29	0.82	0.63	10.63
1,461.00	3.20	117.90	1,460.27	-0.56	25.70	22.66	1.17	0.32	-20.95
1,524.00	3.70	116.40	1,523.15	-2.29	29.07	26.45	0.81	0.79	-2.38
1,588.00	3.30	124.60	1,587.03	-4.25	32.44	30.35	1.00	-0.63	12.81
1,651.00	3.20	126.20	1,649.93	-6.32	35.35	33.90	0.21	-0.16	2.54
1,714.00	3.10	127.10	1,712.84	-8.39	38.13	37.33	0.18	-0.16	1.43
1,778.00	2.30	127.70	1,776.77	-10.22	40.53	40.32	1.25	-1.25	0.94
1,841.00	2.20	123.90	1,839.72	-11.56	42.53	42.77	0.28	-0.16	-6.03
1,904.00	1.80	121.10	1,902.68	-12.85	44.38	44.97	0.65	-0.63	-4.44
1,967.00	2.00	123.70	1,965.64	-13.97	46.14	47.05	0.35	0.32	4.13
2,031.00	2.00	124.90	2,029.60	-15.23	47.99	49.28	0.07	0.00	1.88
2,094.00	1.70	124.60	2,092.57	-16.39	49.66	51.30	0.48	-0.48	-0.48
2,157.00	2.30	129.10	2,155.53	-17.72	51.41	53.48	0.98	0.95	7.14
2,220.00	2.30	131.60	2,218.48	-19.35	53.33	55.96	0.16	0.00	3.97
2,283.00	3.00	130.70	2,281.41	-21.27	55.53	58.82	1.11	1.11	-1.43
2,346.00	3.30	124.20	2,344.32	-23.36	58.28	62.24	0.74	0.48	-10.32
2,410.00	3.10	128.70	2,408.22	-25.48	61.15	65.78	0.50	-0.31	7.03
2,473.00	2.90	126.60	2,471.13	-27.49	63.76	69.04	0.36	-0.32	-3.33
2,536.00	3.10	130.10	2,534.05	-29.54	66.34	72.30	0.43	0.32	5.56
2,599.00	3.00	125.30	2,596.96	-31.59	68.99	75.61	0.44	-0.16	-7.62
2,663.00	3.00	117.70	2,660.87	-33.34	71.84	78.95	0.62	0.00	-11.88
2,726.00	2.80	118.30	2,723.79	-34.83	74.66	82.14	0.32	-0.32	0.95
2,789.00	3.30	128.80	2,786.70	-36.70	77.43	85.47	1.19	-0.79	16.67
2,850.00	2.90	125.90	2,847.61	-38.70	80.04	88.73	0.70	-0.56	-4.75
2,916.00	2.80	129.40	2,913.53	-40.71	82.64	91.98	0.30	-0.15	5.30
2,979.00	2.60	130.40	2,976.46	-42.61	84.92	94.90	0.33	-0.32	1.59
3,042.00	2.80	129.60	3,039.39	-44.52	87.19	97.82	0.32	0.32	-1.27
3,106.00	2.50	122.50	3,103.32	-46.26	89.57	100.75	0.69	-0.47	-11.09
3,169.00	2.60	119.40	3,166.26	-47.70	91.98	103.55	0.27	0.16	-4.92
3,232.00	2.70	119.30	3,229.19	-49.04	94.56	106.46	0.34	0.16	-6.51
3,295.00	2.90	121.70	3,292.12	-50.51	97.26	109.53	0.59	0.32	10.16
3,359.00	2.70	125.30	3,356.04	-52.23	99.87	112.65	0.42	-0.31	5.63
3,422.00	2.90	126.00	3,418.97	-54.03	102.37	115.71	0.32	0.32	1.11



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #573
Project:	Eddy County NM (NAD27 NME)	TVD Reference:	KB @ 3591.00usft (Basic 38)
Site:	Odd Federal Unit	MD Reference:	KB @ 3591.00usft (Basic 38)
Well:	#573	North Reference:	Grid
Wellbore:	WB#1 Job #1412155	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Basic 38)	Database:	Compass 5000 GCR

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)	
3,485.00	2.50	124.40	3,481.90	-55.74	104.79	118.68	0.65	-0.63	-2.54	
3,548.00	2.80	123.80	3,544.83	-57.37	107.21	121.56	0.48	0.48	-0.95	
3,612.00	2.70	119.30	3,608.75	-58.98	109.82	124.63	0.37	-0.16	-7.03	
3,675.00	2.50	121.50	3,671.69	-60.42	112.28	127.48	0.35	-0.32	3.49	
3,738.00	2.60	120.20	3,734.63	-61.86	114.69	130.29	0.18	0.16	-2.06	
3,802.00	2.60	121.60	3,798.56	-63.35	117.18	133.19	0.10	0.00	2.19	
3,865.00	2.80	126.20	3,861.49	-65.01	119.64	136.14	0.47	0.32	7.30	
3,928.00	2.70	126.50	3,924.42	-66.80	122.08	139.14	0.16	-0.16	0.48	
3,992.00	2.70	129.40	3,988.35	-68.65	124.45	142.13	0.21	0.00	4.53	
4,055.00	2.50	121.40	4,051.28	-70.31	126.77	144.96	0.66	-0.32	-12.70	
4,118.00	2.40	128.00	4,114.23	-71.84	128.98	147.64	0.47	-0.16	10.48	
4,181.00	2.40	129.30	4,177.17	-73.49	131.04	150.24	0.09	0.00	2.08	
4,245.00	2.50	129.10	4,241.11	-75.21	133.16	152.94	0.16	0.16	-0.31	
4,308.00	2.50	128.80	4,304.05	-76.94	135.30	155.65	0.02	0.00	-0.48	
4,371.00	2.50	122.30	4,366.99	-78.54	137.53	158.38	0.45	0.00	-10.32	
Last Phoenix MWD Survey										
4,421.00	2.50	122.30	4,416.94	-79.70	139.38	160.55	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/S (usft)	+E/W (usft)		
800.00	799.93	8.93	1.87	Tie-on to VES Gyro	
924.00	923.90	11.18	3.66	First Phoenix MWD Survey	
4,371.00	4,366.99	-78.54	137.53	Last Phoenix MWD Survey	
4,421.00	4,416.94	-79.70	139.38	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____