



15- 41139

I Eric Warner certify that I am employed by VES Survey International. That I did on the day(s) of 03/04/16 through 03/04/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 1,293.00 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Concho for the Electra FED No Well # 101H API # 30-015-41139 in Eddy County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services

A handwritten signature in black ink, appearing to read "Eric Warner", is written over a horizontal line.

Eric Warner
Service Technician
Vaughn Energy Services



March 10, 2016

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

NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 23 2016

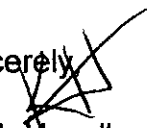
RECEIVED

Attn: Kanicia Castillo

RE: **Electra Federal No 101H**

Please find enclosed a copy of the survey from 0' to 1293' ran on the above referenced well.

Sincerely,

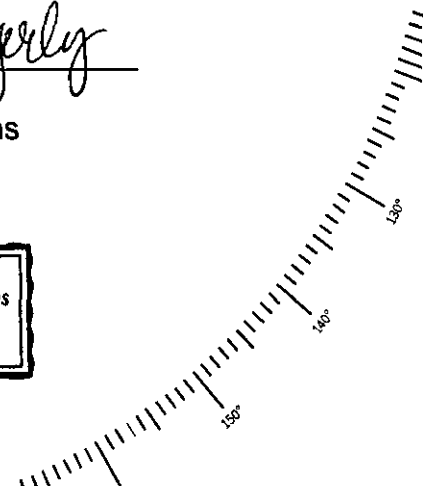
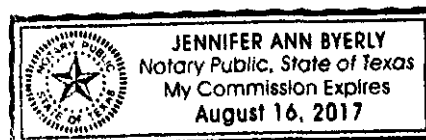

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 10th day of March, A.D., 2016, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas

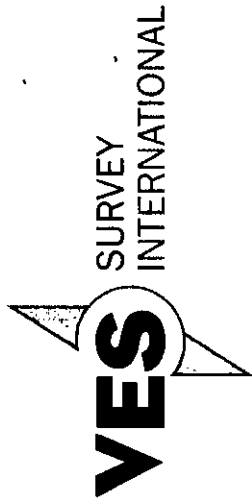
VES Survey International
P.O. Box 261021, Corpus Christi, Texas 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com





Company: Concho
Lease/Well: Electra Federal No /101H

Rig Name: Silver Oak 3
State/County: New Mexico/Eddy
VS-Azi: 0.00 Degrees
Latitude: 32.85430, Longitude: -103.95170
Grid North = True North -0.21 degs (NAD 27)
Grid Correction Applied = -0.21 degs



Depth Reference : RKB= 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: electra fed com #101h.ut

Minimum Curvature Method

Report Date/Time: 3/10/2016 / 16:32

VES Survey International
West Texas
432-563-5444

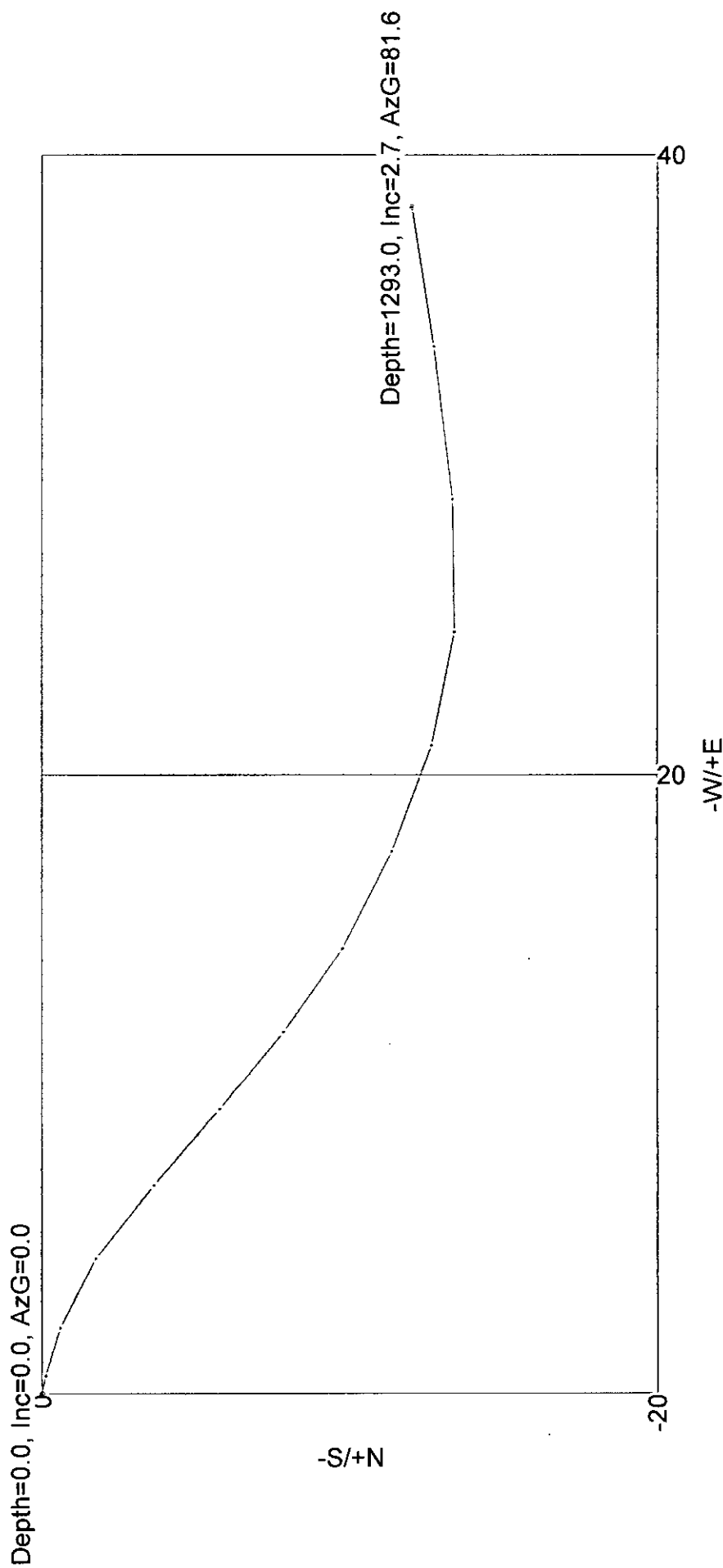
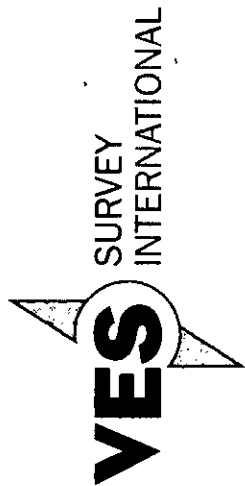
Surveyor: Eric Warner

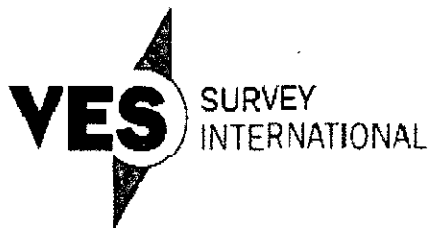
Electra Federal No 101H / API 30-015-41139

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	0.67	102.04	100.00	-0.12	0.57	-0.12	0.59	102.04	0.67
200.00	1.15	110.18	199.98	-0.59	2.09	-0.59	2.17	105.79	0.49
300.00	1.72	122.61	299.95	-1.75	4.30	-1.75	4.64	112.12	0.65
400.00	1.79	133.32	399.91	-3.63	6.70	-3.63	7.62	118.44	0.33
500.00	1.99	128.16	499.85	-5.77	9.20	-5.77	10.86	122.10	0.26
600.00	1.72	131.01	599.80	-7.83	11.69	-7.83	14.07	123.79	0.28
700.00	2.08	120.89	699.75	-9.74	14.38	-9.74	17.37	124.11	0.49
800.00	1.99	112.84	799.68	-11.34	17.53	-11.34	20.88	122.90	0.30
900.00	2.20	108.68	899.62	-12.63	20.95	-12.63	24.46	121.09	0.26
1000.00	2.11	93.99	999.55	-13.37	24.60	-13.37	28.00	118.53	0.56
1100.00	2.80	85.55	1099.45	-13.31	28.87	-13.31	31.79	114.75	0.78
1200.00	2.90	80.50	1199.33	-12.70	33.80	-12.70	36.11	110.60	0.27
1293.00	2.71	81.62	1292.22	-11.99	38.30	-11.99	40.14	107.39	0.21



VES Survey International
West Texas
432-563-5444
Surveyor: Eric Warner
Electra Federal No 101H / API 30-015-41139





I Eric Warner certify that I am employed by VES Survey International. That I did on the day(s) of 03/04/16 through 03/04/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 1,293.00 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Concho for the Electra FED No Well # 101H API # 30-015-41139 in Eddy County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services

A handwritten signature in cursive script, appearing to read "Eric Warner", is written over a horizontal line.

Eric Warner
Service Technician
Vaughn Energy Services



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

March 18, 2016

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

RE: Electra Federal Com #101H
660' FNL & 330' FEL
Sec. 10, T17S, R30E
Eddy County, New Mexico

Dear Sir,

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

Very truly yours,

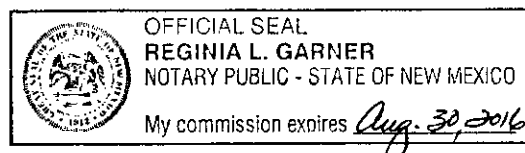
A handwritten signature in cursive script, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 18th day of March, 2016.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".

Notary Public

Electra Federal Com #101H

Date	Depth	Deviation	Direction
3/2/2016	172	0.40	
3/2/2016	350	2.70	
3/3/2016	464	2.20	
3/3/2016	690	2.20	
3/3/2016	942	2.30	
3/3/2016	1068	3.30	
3/4/2016	1162	3.10	
3/5/2016	1411	2.00	84.50
3/5/2016	1600	5.40	80.90
3/5/2016	1694	6.60	83.10
3/5/2016	1784	5.00	82.60
3/5/2016	1978	4.60	83.80
3/5/2016	2072	4.60	88.90
3/5/2016	2167	4.50	90.30
3/5/2016	2261	4.40	87.80
3/5/2016	2356	4.30	89.10
3/5/2016	2450	4.00	93.90
3/5/2016	2545	5.00	85.80
3/5/2016	2639	5.50	82.50
3/5/2016	2734	4.80	89.80
3/6/2016	2828	4.70	89.70
3/6/2016	2923	4.90	92.60
3/6/2016	3017	5.30	90.40
3/6/2016	3111	4.80	93.40
3/6/2016	3206	4.60	76.70
3/6/2016	3300	4.90	99.80
3/6/2016	3395	4.40	99.10
3/6/2016	3489	4.70	77.90
3/6/2016	3584	5.30	70.20
3/6/2016	3678	4.70	80.30
3/6/2016	3773	4.80	86.60
3/6/2016	3867	5.00	88.60
3/6/2016	3962	5.60	88.90
3/6/2016	4056	5.10	92.40
3/6/2016	4151	3.80	99.70
3/6/2016	4245	3.40	104.60
3/7/2016	4340	3.60	95.60
3/7/2016	4434	3.80	91.10
3/7/2016	4529	4.10	92.50
3/7/2016	4623	3.20	100.80
3/7/2016	4717	1.80	85.90
3/7/2016	4812	1.20	355.40

Date	Depth	Deviation	Direction
3/7/2016	4875	3.10	296.50
3/7/2016	4906	5.30	287.80
3/7/2016	4938	8.00	282.80
3/7/2016	4969	10.80	280.20
3/7/2016	5001	13.70	278.20
3/7/2016	5032	16.60	276.30
3/7/2016	5064	19.30	274.60
3/7/2016	5095	21.80	272.20
3/8/2016	5221	31.70	266.80
3/8/2016	5253	33.50	266.80
3/8/2016	5284	36.30	266.10
3/8/2016	5316	40.40	266.00
3/8/2016	5347	45.10	266.80
3/8/2016	5378	49.50	268.70
3/8/2016	5410	53.50	270.40
3/8/2016	5473	60.40	270.70
3/9/2016	5536	68.00	396.60
3/9/2016	5567	72.40	268.90
3/9/2016	5598	75.80	268.60
3/9/2016	5630	77.30	269.00
3/9/2016	5661	79.80	269.60
3/9/2016	5693	83.00	270.10
3/9/2016	5724	83.50	270.80
3/9/2016	5756	85.30	270.60
3/10/2016	5856	89.80	270.40
3/10/2016	5951	90.30	271.00
3/10/2016	6045	90.50	271.10
3/10/2016	6139	90.00	270.70
3/10/2016	6234	90.50	271.90
3/10/2016	6328	90.50	271.40
3/10/2016	6423	91.20	270.80
3/11/2016	6517	91.60	270.60
3/11/2016	6612	92.20	270.00
3/11/2016	6706	90.70	269.00
3/11/2016	6801	91.00	269.30
3/11/2016	6990	92.00	269.80
3/11/2016	7084	91.70	268.90
3/11/2016	7179	92.00	269.50
3/11/2016	7272	91.60	269.50
3/11/2016	7368	92.00	269.90
3/11/2016	7464	90.70	269.20
3/12/2016	7651	90.00	269.00
3/12/2016	7745	90.50	269.70
3/12/2016	7840	90.60	270.20
3/12/2016	7934	91.10	269.30

Date	Depth	Deviation	Direction
3/12/2016	8029	91.50	269.70
3/12/2016	8123	91.50	270.10
3/12/2016	8218	93.10	272.30
3/12/2016	8312	91.50	271.20
3/12/2016	8501	90.60	270.80
3/12/2016	8595	90.30	270.30
3/12/2016	8689	90.50	268.40
3/12/2016	8754	90.30	269.30
3/13/2016	8878	90.60	269.90
3/13/2016	8973	90.40	269.10
3/13/2016	9067	90.70	269.70
3/13/2016	9162	91.10	290.50
3/13/2016	9257	91.60	271.00
3/13/2016	9351	91.30	270.30
3/13/2016	9445	90.50	268.60
3/13/2016	9540	90.70	267.90
3/13/2016	9728	90.70	267.80
3/13/2016	9823	91.50	268.30
3/13/2016	9918	92.20	268.80



COG Operating LLC

Eddy County, NM (NAD-27 2015)

Electra Federal #101H

SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A

PP: 663' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A

30-015-41139

BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D

Design: BHL: 671' FNL, 360' FWL, Sec 10, T17S, R30E, Unit D

Standard Survey Report

14 March, 2016





TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3747.00usft (Silver Oak 3)
Site:	Electra Federal #101H	MD Reference:	KB @ 3747.00usft (Silver Oak 3)
Well:	SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A	North Reference:	Grid
Wellbore:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM (NAD-27 2015)		
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	Electra Federal #101H				
Site Position:		Northing:	674,730.30 usft	Latitude:	32° 51' 15.609 N
From:	Map	Easting:	617,182.50 usft	Longitude:	103° 57' 6.262 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	0.21 °

Well	SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A					
Well Position	+N/-S	0.00 usft	Northing:	674,730.30 usft	Latitude:	32° 51' 15.609 N
	+E/-W	0.00 usft	Easting:	617,182.50 usft	Longitude:	103° 57' 6.262 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,729.00 usft

Wellbore	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/10/2015	7.34	60.60	48,426

Design	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	269.87	

Survey Program	Date 3/14/2016				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,293.00	VES Gyro #1 (BHL: 660' FNL, 350' FWL, S	VES-ISCWSA-GYRO-3	Biaxial Semi-Cont. Gyro	
1,411.00	10,078.00	TDS MWD #1 (BHL: 660' FNL, 350' FWL,	MWD	MWD - Standard	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.67	102.04	100.00	-0.12	0.57	-0.57	0.67	0.67	0.00	
200.00	1.15	110.18	199.98	-0.59	2.09	-2.08	0.50	0.48	8.14	
300.00	1.72	122.61	299.95	-1.75	4.29	-4.29	0.65	0.57	12.43	
400.00	1.79	133.32	399.91	-3.63	6.69	-6.68	0.33	0.07	10.71	
500.00	1.99	128.16	499.85	-5.77	9.19	-9.18	0.26	0.20	-5.16	
600.00	1.72	131.01	599.80	-7.83	11.69	-11.67	0.29	-0.27	2.85	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3747.00usft (Silver Oak 3)
Site:	Electra Federal #101H	MD Reference:	KB @ 3747.00usft (Silver Oak 3)
Well:	SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A	North Reference:	Grid
Wellbore:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Database:	EDM 5000.1 Single User Db

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)
700.00	2.08	120.89	699.74	-9.74	14.38	-14.36	0.49	0.36	-10.12
800.00	1.99	112.84	799.68	-11.35	17.54	-17.51	0.30	-0.09	-8.05
900.00	2.20	108.68	899.62	-12.64	20.96	-20.93	0.26	0.21	-4.16
1,000.00	2.11	93.99	999.55	-13.38	24.61	-24.58	0.56	-0.09	-14.69
1,100.00	2.80	85.55	1,099.45	-13.32	28.88	-28.85	0.78	0.69	-8.44
1,200.00	2.90	80.50	1,199.33	-12.71	33.81	-33.78	0.27	0.10	-5.05
1,293.00	2.71	81.62	1,292.22	-12.00	38.31	-38.28	0.21	-0.20	1.20
TIE-IN to VES Gyro									
1,411.00	2.00	84.50	1,410.12	-11.40	43.12	-43.09	0.61	-0.60	2.44
First TDS MWD Survey									
1,505.00	2.90	80.30	1,504.03	-10.84	47.09	-47.07	0.98	0.96	-4.47
1,600.00	5.40	80.90	1,598.77	-9.73	53.88	-53.86	2.63	2.63	0.63
1,694.00	6.60	83.10	1,692.26	-8.38	63.61	-63.59	1.30	1.28	2.34
1,789.00	5.00	82.60	1,786.77	-7.19	73.14	-73.12	1.69	-1.68	-0.53
1,883.00	4.60	82.50	1,880.44	-6.17	80.93	-80.92	0.43	-0.43	-0.11
1,978.00	4.60	83.80	1,975.13	-5.26	88.50	-88.49	0.11	0.00	1.37
2,072.00	4.60	88.90	2,068.83	-4.78	96.01	-96.00	0.43	0.00	5.43
2,167.00	4.50	90.30	2,163.53	-4.73	103.55	-103.54	0.16	-0.11	1.47
2,261.00	4.40	87.80	2,257.25	-4.61	110.84	-110.83	0.23	-0.11	-2.66
2,356.00	4.30	89.10	2,351.97	-4.42	118.04	-118.03	0.15	-0.11	1.37
2,450.00	4.00	93.90	2,445.73	-4.58	124.84	-124.83	0.49	-0.32	5.11
2,545.00	5.00	85.80	2,540.43	-4.51	132.27	-132.26	1.24	1.05	-8.53
2,639.00	5.50	82.50	2,634.04	-3.62	140.82	-140.82	0.62	0.53	-3.51
2,734.00	4.80	89.80	2,728.66	-3.01	149.31	-149.31	1.01	-0.74	7.68
2,828.00	4.70	89.70	2,822.33	-2.98	157.10	-157.09	0.11	-0.11	-0.11
2,923.00	4.90	92.60	2,917.00	-3.14	165.04	-165.03	0.33	0.21	3.05
3,017.00	5.30	90.40	3,010.63	-3.35	173.39	-173.39	0.47	0.43	-2.34
3,111.00	4.80	93.40	3,104.26	-3.62	181.66	-181.65	0.60	-0.53	3.19
3,206.00	4.60	96.70	3,198.94	-4.30	189.41	-189.40	0.35	-0.21	3.47
3,300.00	4.90	99.80	3,292.62	-5.42	197.11	-197.10	0.42	0.32	3.30
3,395.00	4.40	99.10	3,387.31	-6.69	204.71	-204.69	0.53	-0.53	-0.74
3,489.00	4.70	77.90	3,481.02	-6.45	212.03	-212.02	1.81	0.32	-22.55
3,584.00	5.30	70.20	3,575.66	-4.15	219.97	-219.96	0.95	0.63	-8.11
3,678.00	4.70	80.30	3,669.30	-2.03	227.85	-227.84	1.13	-0.64	10.74
3,773.00	4.80	86.60	3,763.98	-1.14	235.65	-235.65	0.56	0.11	6.63
3,867.00	5.00	88.60	3,857.63	-0.80	243.68	-243.67	0.28	0.21	2.13
3,962.00	5.60	88.90	3,952.23	-0.61	252.45	-252.45	0.63	0.63	0.32
4,056.00	5.10	92.40	4,045.82	-0.70	261.21	-261.21	0.63	-0.53	3.72
4,151.00	3.80	99.70	4,140.53	-1.41	268.53	-268.53	1.49	-1.37	7.68
4,245.00	3.40	104.60	4,234.34	-2.63	274.30	-274.29	0.54	-0.43	5.21
4,340.00	3.60	95.60	4,329.17	-3.63	279.99	-279.98	0.61	0.21	-9.47

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3747.00usft (Silver Oak 3)
Site:	Electra Federal #101H	MD Reference:	KB @ 3747.00usft (Silver Oak 3)
Well:	SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A	North Reference:	Grid
Wellbore:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Database:	EDM 5000.1 Single User Db

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)
4,434.00	3.80	91.10	4,422.97	-3.98	286.04	-286.03	0.37	0.21	-4.79
4,529.00	4.10	92.50	4,517.75	-4.19	292.58	-292.57	0.33	0.32	1.47
4,623.00	3.20	100.60	4,611.55	-4.82	298.52	-298.51	1.10	-0.96	8.62
4,717.00	1.80	85.90	4,705.46	-5.20	302.57	-302.56	1.63	-1.49	-15.64
4,812.00	1.20	355.40	4,800.44	-4.10	303.98	-303.97	2.29	-0.63	-95.26
4,843.00	1.60	323.40	4,831.43	-3.43	303.70	-303.69	2.78	1.29	-103.23
4,875.00	3.10	296.50	4,863.41	-2.68	302.66	-302.65	5.70	4.69	-84.06
4,906.00	5.30	287.80	4,894.32	-1.87	300.54	-300.54	7.37	7.10	-28.06
4,938.00	8.00	282.80	4,926.10	-0.93	296.96	-296.96	8.62	8.44	-15.63
4,969.00	10.80	280.20	4,956.68	0.07	292.00	-292.00	9.13	9.03	-8.39
5,001.00	13.70	278.20	4,987.95	1.14	285.30	-285.30	9.16	9.06	-6.25
5,032.00	16.60	276.30	5,017.87	2.15	277.26	-277.26	9.49	9.35	-6.13
5,064.00	19.30	274.60	5,048.31	3.07	267.44	-267.45	8.59	8.44	-5.31
5,095.00	21.80	272.20	5,077.34	3.71	256.58	-256.59	8.51	8.06	-7.74
5,127.00	24.40	269.70	5,106.77	3.90	244.03	-244.04	8.68	8.13	-7.81
5,158.00	27.00	268.10	5,134.70	3.63	230.60	-230.60	8.68	8.39	-5.16
5,190.00	29.50	267.20	5,162.89	3.01	215.46	-215.47	7.92	7.81	-2.81
5,221.00	31.70	266.80	5,189.57	2.18	199.71	-199.71	7.13	7.10	-1.29
5,253.00	33.50	266.80	5,216.53	1.22	182.49	-182.50	5.63	5.63	0.00
5,284.00	36.30	266.10	5,241.95	0.11	164.79	-164.79	9.12	9.03	-2.26
5,316.00	40.40	266.00	5,267.04	-1.25	144.99	-144.99	12.81	12.81	-0.31
5,347.00	45.10	266.80	5,289.80	-2.57	123.99	-123.99	15.26	15.16	2.58
5,378.00	49.30	268.70	5,310.85	-3.45	101.27	-101.26	14.27	13.55	6.13
5,410.00	53.50	270.40	5,330.82	-3.63	76.27	-76.26	13.77	13.13	5.31
5,441.00	57.30	271.20	5,348.42	-3.27	50.76	-50.75	12.44	12.26	2.58
5,473.00	60.40	270.70	5,364.97	-2.82	23.38	-23.38	9.78	9.69	-1.56
5,499.47	63.73	270.44	5,377.37	-2.59	0.00	0.00	12.61	12.58	-0.97
As-Drilled PP									
5,504.00	64.30	270.40	5,379.35	-2.56	-4.07	4.08	12.61	12.58	-0.94
5,536.00	68.00	269.60	5,392.29	-2.56	-33.33	33.34	11.79	11.56	-2.50
5,567.00	72.40	268.90	5,402.79	-2.95	-62.49	62.50	14.35	14.19	-2.26
5,598.00	75.80	268.60	5,411.28	-3.60	-92.29	92.30	11.01	10.97	-0.97
5,630.00	77.60	269.00	5,418.64	-4.25	-123.43	123.43	5.76	5.63	1.25
5,661.00	79.80	269.60	5,424.71	-4.62	-153.82	153.83	7.35	7.10	1.94
5,693.00	82.00	270.10	5,429.77	-4.70	-185.42	185.43	7.05	6.88	1.56
5,724.00	83.50	270.80	5,433.68	-4.46	-216.17	216.17	5.33	4.84	2.26
5,756.00	85.30	270.60	5,436.81	-4.07	-248.01	248.02	5.66	5.63	-0.63
5,787.00	87.60	270.30	5,438.73	-3.83	-278.95	278.95	7.48	7.42	-0.97
5,819.00	88.70	270.60	5,439.76	-3.58	-310.93	310.94	3.56	3.44	0.94
5,856.00	89.80	270.40	5,440.24	-3.25	-347.92	347.93	3.02	2.97	-0.54
5,951.00	90.30	271.00	5,440.16	-2.09	-442.92	442.92	0.82	0.53	0.63



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3747.00usft (Silver Oak 3)
Site:	Electra Federal #101H	MD Reference:	KB @ 3747.00usft (Silver Oak 3)
Well:	SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A	North Reference:	Grid
Wellbore:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Database:	EDM 5000.1 Single User Db

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)
6,045.00	90.50	271.10	5,439.51	-0.37	-536.90	536.90	0.24	0.21	0.11
6,139.00	90.00	270.70	5,439.09	1.11	-630.88	630.88	0.68	-0.53	-0.43
6,234.00	90.50	270.90	5,438.68	2.43	-725.87	725.87	0.57	0.53	0.21
6,328.00	90.50	271.40	5,437.86	4.32	-819.85	819.84	0.53	0.00	0.53
6,423.00	91.20	270.80	5,436.45	6.14	-914.82	914.81	0.97	0.74	-0.63
6,517.00	91.60	270.60	5,434.15	7.29	-1,008.79	1,008.77	0.48	0.43	-0.21
6,612.00	92.20	270.00	5,431.00	7.79	-1,103.73	1,103.71	0.89	0.63	-0.63
6,706.00	90.70	269.00	5,428.63	6.97	-1,197.69	1,197.68	1.92	-1.60	-1.06
6,801.00	91.00	269.30	5,427.22	5.56	-1,292.67	1,292.66	0.45	0.32	0.32
6,895.00	91.40	268.30	5,425.25	3.59	-1,386.63	1,386.62	1.15	0.43	-1.06
6,990.00	92.00	268.80	5,422.43	1.19	-1,481.56	1,481.55	0.82	0.63	0.53
7,084.00	91.70	268.90	5,419.39	-0.70	-1,575.49	1,575.49	0.34	-0.32	0.11
7,179.00	92.00	269.50	5,416.33	-2.02	-1,670.43	1,670.43	0.71	0.32	0.63
7,273.00	91.60	269.50	5,413.38	-2.84	-1,764.38	1,764.38	0.43	-0.43	0.00
7,368.00	92.00	269.90	5,410.39	-3.34	-1,859.33	1,859.33	0.60	0.42	0.42
7,462.00	90.70	269.20	5,408.18	-4.08	-1,953.30	1,953.30	1.57	-1.38	-0.74
7,557.00	91.30	270.10	5,406.52	-4.66	-2,048.28	2,048.29	1.14	0.63	0.95
7,651.00	90.00	269.00	5,405.45	-5.40	-2,142.27	2,142.28	1.81	-1.38	-1.17
7,745.00	90.50	269.70	5,405.04	-6.46	-2,236.26	2,236.27	0.92	0.53	0.74
7,840.00	90.60	270.20	5,404.13	-6.55	-2,331.26	2,331.27	0.54	0.11	0.53
7,934.00	91.10	269.30	5,402.74	-6.96	-2,425.24	2,425.25	1.10	0.53	-0.96
8,029.00	91.50	269.70	5,400.58	-7.79	-2,520.22	2,520.23	0.60	0.42	0.42
8,123.00	91.50	270.10	5,398.12	-7.95	-2,614.18	2,614.20	0.43	0.00	0.43
8,218.00	93.10	272.30	5,394.31	-5.96	-2,709.08	2,709.08	2.86	1.68	2.32
8,312.00	91.50	271.20	5,390.53	-3.10	-2,802.95	2,802.95	2.07	-1.70	-1.17
8,406.00	90.30	270.50	5,389.06	-1.70	-2,896.93	2,896.93	1.48	-1.28	-0.74
8,501.00	90.60	270.80	5,388.31	-0.62	-2,991.92	2,991.91	0.45	0.32	0.32
8,595.00	90.30	270.30	5,387.57	0.28	-3,085.91	3,085.90	0.62	-0.32	-0.53
8,689.00	89.50	268.40	5,387.74	-0.79	-3,179.90	3,179.89	2.19	-0.85	-2.02
8,784.00	90.30	269.30	5,387.90	-2.69	-3,274.88	3,274.88	1.27	0.84	0.95
8,878.00	90.60	269.90	5,387.17	-3.35	-3,368.87	3,368.87	0.71	0.32	0.64
8,973.00	90.40	269.10	5,386.34	-4.18	-3,463.87	3,463.87	0.87	-0.21	-0.84
9,067.00	90.70	269.70	5,385.43	-5.16	-3,557.86	3,557.86	0.71	0.32	0.64
9,162.00	91.10	270.50	5,383.94	-5.00	-3,652.84	3,652.85	0.94	0.42	0.84
9,257.00	91.60	271.00	5,381.70	-3.76	-3,747.81	3,747.81	0.74	0.53	0.53
9,351.00	91.30	270.30	5,379.32	-2.69	-3,841.77	3,841.77	0.81	-0.32	-0.74
9,445.00	90.50	268.60	5,377.85	-3.59	-3,935.75	3,935.75	2.00	-0.85	-1.81
9,540.00	90.70	267.90	5,376.85	-6.49	-4,030.70	4,030.71	0.77	0.21	-0.74
9,634.00	91.90	269.00	5,374.72	-9.03	-4,124.64	4,124.65	1.73	1.28	1.17
9,728.00	90.70	267.80	5,372.59	-11.66	-4,218.58	4,218.59	1.81	-1.28	-1.28
9,823.00	91.50	268.30	5,370.76	-14.89	-4,313.50	4,313.52	0.99	0.84	0.53



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3747.00usft (Silver Oak 3)
Site:	Electra Federal #101H	MD Reference:	KB @ 3747.00usft (Silver Oak 3)
Well:	SHL: 660' FNL, 330' FEL, Sec 10, T17S, R30E, Unit A	North Reference:	Grid
Wellbore:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 660' FNL, 350' FWL, Sec 10, T17S, R30E, Unit D	Database:	EDM 5000.1 Single User Db

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)
9,918.00	92.20	268.80	5,367.70	-17.29	-4,408.42	4,408.45	0.91	0.74	0.53
10,009.00	91.40	268.50	5,364.84	-19.44	-4,499.35	4,499.38	0.94	-0.88	-0.33
Final MWD Survey									
10,078.00	91.40	268.50	5,363.15	-21.24	-4,568.31	4,568.34	0.00	0.00	0.00
Projection to Bit/TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,293.00	1,292.22	-12.00	38.31	TIE-IN to VES Gyro
1,411.00	1,410.12	-11.40	43.12	First TDS MWD Survey
5,499.47	5,377.37	-2.59	0.00	As-Drilled PP
10,009.00	5,364.84	-19.44	-4,499.35	Final MWD Survey
10,078.00	5,363.15	-21.24	-4,568.31	Projection to Bit/TD

Checked By: _____ Approved By: _____ Date: _____