



15- 40737

April 27, 2016

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

NM OIL CONSERVATION
ARTESIA DISTRICT

JUL 29 2016

RECEIVED

Attn: Kanicia Castillo

RE: **Puckett 12 Federal No 008H**

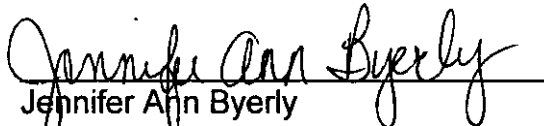
Please find enclosed a copy of the survey from 0' to 2020' ran on the above referenced well.

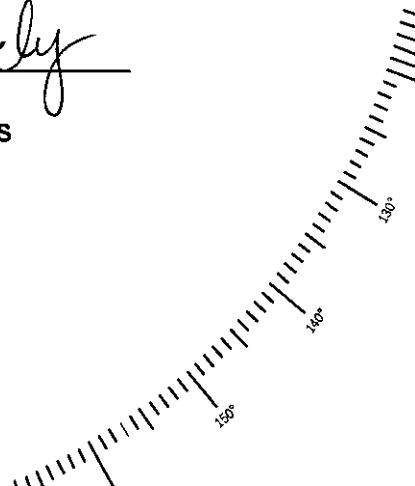
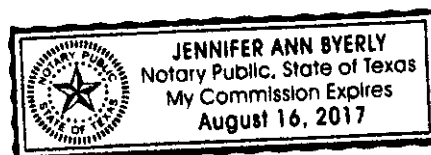
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 27th day of April,
A.D., 2016, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: Concho

Lease/Well: Puckett 12 Federal No/008H

Rig Name: Silver Oak 3

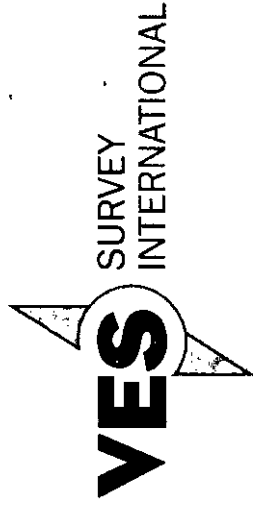
State/County: New Mexico/Eddy

VS-Azi: 0.00 Degrees

Latitude: 32.84235, Longitude: -103.81604

Grid North = True North -0.28 degs (NAD 27)

Grid Correction Applied = -0.28 degs



Depth Reference : RKB = 18 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 4/27/2016 / 14:37

VES Survey International
Midland, TX

432-563-5444

Surveyor: Andrew Askew

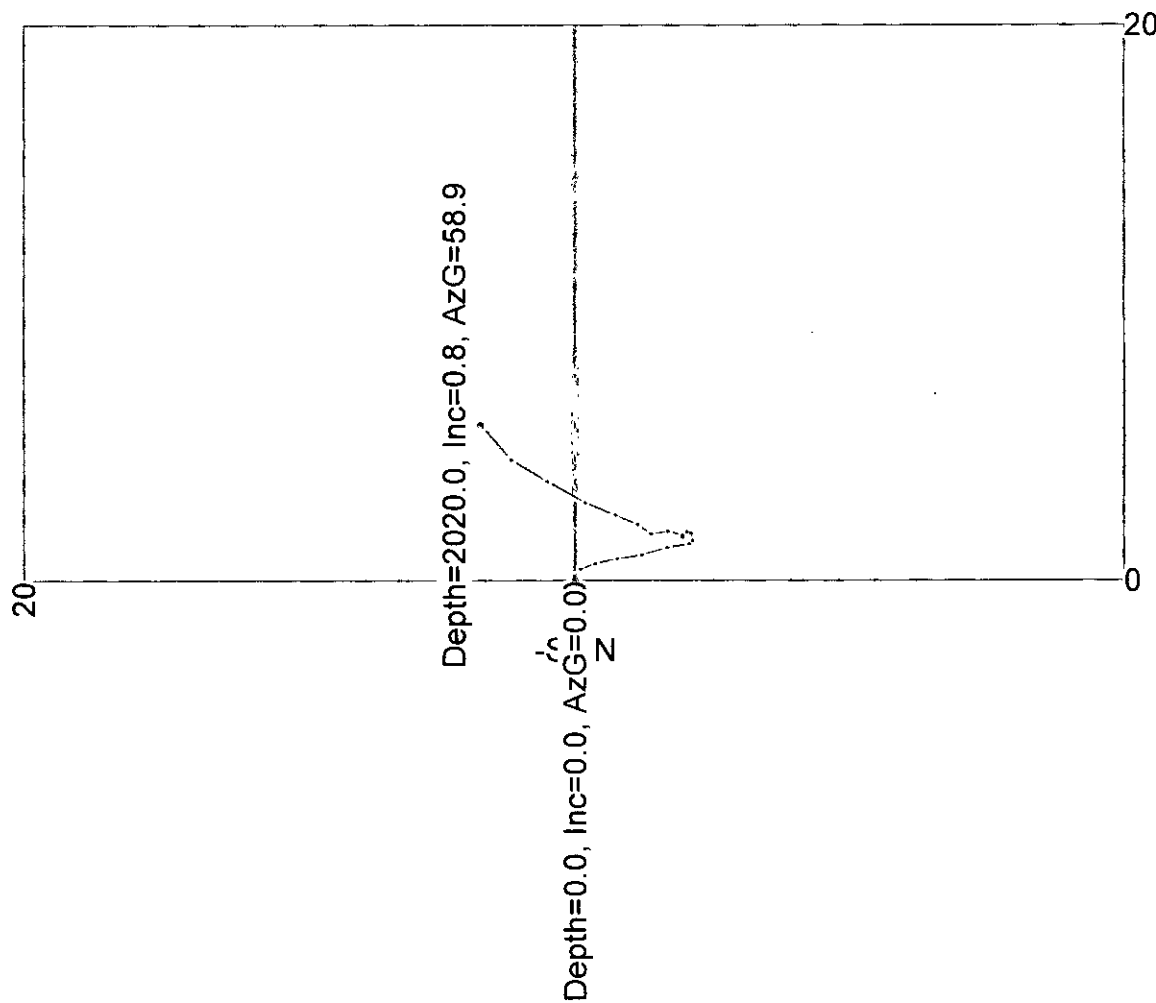
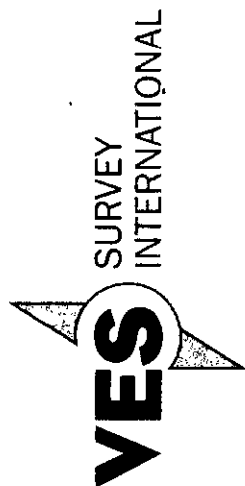
Puckett 12 Federal No 008H / API 30-015-40737

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	0.19	84.19	100.00	0.02	0.16	0.02	0.17	84.19	0.19
200.00	0.30	161.55	200.00	-0.21	0.41	-0.21	0.46	117.23	0.31
300.00	0.36	155.54	300.00	-0.74	0.62	-0.74	0.97	139.94	0.07
400.00	0.59	176.07	399.99	-1.53	0.79	-1.53	1.72	152.90	0.28
500.00	0.46	166.56	499.99	-2.44	0.91	-2.44	2.60	159.45	0.15
600.00	0.62	161.77	599.99	-3.35	1.18	-3.35	3.55	160.61	0.17
700.00	0.32	188.47	699.98	-4.14	1.31	-4.14	4.34	162.47	0.37
800.00	0.24	50.61	799.98	-4.28	1.43	-4.28	4.51	161.52	0.53
900.00	0.14	127.50	899.98	-4.22	1.69	-4.22	4.55	158.13	0.25
1000.00	0.27	348.42	999.98	-4.07	1.75	-4.07	4.43	156.76	0.39
1100.00	0.18	248.38	1099.98	-3.90	1.56	-3.90	4.20	158.26	0.35
1200.00	0.27	77.13	1199.98	-3.91	1.64	-3.91	4.24	157.20	0.45
1300.00	0.57	347.42	1299.98	-3.37	1.77	-3.37	3.81	152.34	0.63
1400.00	0.15	1.70	1399.98	-2.76	1.66	-2.76	3.22	148.95	0.43
1500.00	0.57	44.04	1499.97	-2.28	2.01	-2.28	3.04	138.58	0.47
1600.00	0.51	358.65	1599.97	-1.48	2.35	-1.48	2.77	122.25	0.42

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
1700.00	0.92	35.50	1699.96	-0.38	2.80	-0.38	2.83	97.75	0.60
1800.00	0.90	22.56	1799.95	1.00	3.57	1.00	3.71	74.37	- 0.21
1900.00	0.86	39.03	1899.94	2.30	4.34	2.30	4.91	62.04	0.26
2020.00	0.79	58.94	2019.93	3.43	5.62	3.43	6.58	58.60	0.24



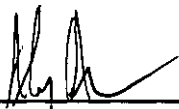
VES Survey International
Midland, TX
432-563-5444
Surveyor: Andrew Askew
Puckett 12 Federal No 008H / API 30-015-40737



-W/+E
V.E.S. Survey Date: 4/21/2016



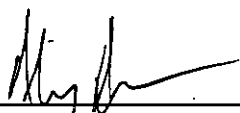
I Andy Askew certify that I am employed by VES Survey International. That I did on the day(s) of 04/21/16 through 04/21/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 2,020.00 feet; that the data is true, correct, complete and within the limitations of 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 Puckett 12 Federal Well # 8H API # 30-015-40737 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 VES Survey International.



Andy Askew
Service Technician
VES Survey International



I Andy Askew certify that I am employed by VES Survey International. That I did on the day(s) of 04/21/16 through 04/21/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 2,020.00 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 Puckett 12 Federal Well # 8H API # 30-015-40737 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 VES Survey International.



Andy Askew
Service Technician
VES Survey International



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

May 5, 2016

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

RE: Puckett 12 Federal 8H
43' FSL & 590' FEL
Sec. 12, T17S, R31E
Eddy County, New Mexico

Dear Sir,

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

Very truly yours,

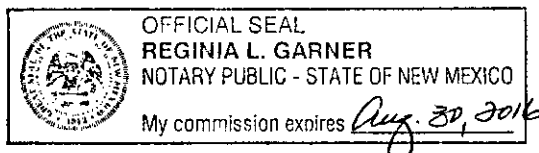
A handwritten signature in black ink, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 5th day of May, 2016.

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

Notary Public

Puckett 12 Federal 8H

Date	Depth	Deviation	Direction
4/19/2016	208	0.10	
4/19/2016	447	0.50	
4/19/2016	683	0.40	
4/20/2016	935	0.70	
4/21/2016	1175	0.80	
4/21/2016	1672	1.10	
4/22/2016	2113	0.90	57.40
4/22/2016	2144	1.00	56.80
4/22/2016	2238	2.10	87.70
4/22/2016	2331	3.50	94.90
4/23/2016	2424	3.90	97.40
4/23/2016	2517	4.00	103.40
4/23/2016	2611	4.00	106.50
4/23/2016	2704	4.00	107.20
4/23/2016	2797	3.90	95.00
4/23/2016	2891	3.80	96.60
4/23/2016	2984	3.60	99.80
4/23/2016	3079	3.70	103.80
4/23/2016	3171	3.70	108.30
4/23/2016	3264	4.00	98.10
4/23/2016	3357	4.10	100.50
4/23/2016	3544	4.30	101.70
4/23/2016	3637	4.80	85.90
4/23/2016	3730	5.30	85.40
4/24/2016	3824	5.10	92.20
4/24/2016	3917	5.50	95.30
4/24/2016	4011	4.50	97.20
4/24/2016	4104	4.60	97.90
4/24/2016	4197	4.80	97.40
4/24/2016	4290	5.00	101.00
4/24/2016	4384	5.10	101.40
4/24/2016	4478	4.00	105.10
4/24/2016	4571	4.00	104.20
4/24/2016	4664	4.30	105.80
4/24/2016	4758	4.00	95.60
4/24/2016	4851	4.00	93.60
4/24/2016	4944	4.10	96.90
4/24/2016	5038	4.00	98.80
4/25/2016	5224	3.30	89.90
4/25/2016	5318	3.30	84.40
4/25/2016	5411	1.80	97.40
4/25/2016	5503	0.40	99.20
4/25/2016	5596	3.40	355.50

Date	Depth	Deviation	Direction
4/25/2016	5627	6.00	359.90
4/25/2016	5659	9.00	0.70
4/25/2016	5665	1.40	358.00
4/25/2016	5690	12.40	1.40
4/25/2016	5721	16.00	1.00
4/25/2016	5783	23.80	357.90
4/25/2016	5814	26.70	3574.00
4/25/2016	5845	28.20	358.40
4/25/2016	5907	32.40	360.00
4/25/2016	5938	34.40	2.00
4/25/2016	5970	37.20	4.00
4/26/2016	6064	47.20	2.00
4/26/2016	6157	56.60	0.10
4/26/2016	6249	68.00	359.60
4/26/2016	6343	76.50	0.20
4/26/2016	6406	81.10	0.60
4/26/2016	6408	86.60	359.30
4/26/2016	6437	83.30	360.00
4/26/2016	6623	94.30	358.30
4/27/2016	6691	95.50	357.60
4/27/2016	6753	93.10	358.70
4/27/2016	6847	91.40	359.60
4/27/2016	6940	90.20	0.30
4/27/2016	7033	91.20	0.30
4/27/2016	7127	89.80	0.30
4/27/2016	7221	90.40	0.10
4/28/2016	7315	90.50	359.90
4/28/2016	7408	88.40	359.90
4/28/2016	7502	90.80	0.10
4/28/2016	7595	88.70	0.10
4/28/2016	7689	90.20	0.10
4/28/2016	7782	40.10	0.80
4/28/2016	7875	92.20	1.20
4/28/2016	7968	92.70	0.40
4/28/2016	8062	91.60	359.50
4/28/2016	8155	90.90	358.50
4/28/2016	8249	90.90	358.20
4/29/2016	8342	90.70	358.00
4/29/2016	8435	90.20	358.40
4/29/2016	8539	90.40	358.80
4/29/2016	8716	91.10	359.40
4/29/2016	8809	91.60	359.20
4/29/2016	8902	92.80	359.50
4/29/2016	8996	90.90	359.30
4/29/2016	9090	90.90	359.40

Date	Depth	Deviation	Direction
4/29/2016	9183	90.40	359.90
4/30/2016	9277	90.10	0.30
4/30/2016	9370	89.30	0.40
4/30/2016	9557	90.60	1.20
4/30/2016	9650	92.20	1.60
4/30/2016	9743	90.70	0.40
4/30/2016	9836	90.20	358.90
5/1/2016	9930	91.30	358.90
5/1/2016	10023	90.20	359.80
5/1/2016	10116	91.20	359.80
5/1/2016	10209	90.20	359.40
5/1/2016	10302	91.00	359.40
5/1/2016	10396	90.00	359.80
5/1/2016	10459	90.50	360.00
5/1/2016	10583	91.30	0.10
5/1/2016	10676	91.00	359.30



NM OIL CONSERVATION
ARTESIA DISTRICT
JUL 29 2016

RECEIVED

COG Operating LLC

Eddy County, NM (NAD-27 2015)

Puckett 12 Federal #8H

API #: 30-015-40737

SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P

PP: 330' FSL, 348' FEL, Sec 12, T17S, R31E, Unit P

BHL: 349' FNL, 348' FEL, Sec 12, T17S, R31E, Unit A

Design: BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A

Standard Survey Report

01 May, 2016



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3984.00usft (Silver Oak 3)
Site:	Puckett 12 Federal #8H	MD Reference:	KB @ 3984.00usft (Silver Oak 3)
Well:	SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P	North Reference:	Grid
Wellbore:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	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	Puckett 12 Federal #8H		
Site Position:		Northing:	670,399.30 usft
From:	Map	Easting:	658,913.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	32° 50' 30.996 N
		Longitude:	103° 48' 57.311 W
		Grid Convergence:	0.28 °

Well	SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P		
Well Position	+N/-S	0.00 usft	Northing: 670,399.30 usft
	+E/-W	0.00 usft	Easting: 658,913.50 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Ground Level:	3,966.00 usft

Wellbore	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A		
Magnetics	Model Name	Sample Date	Declination
	IGRF2015	4/8/2016	7.24
			Dip Angle
			60.60
			Field Strength
			48,398

Design	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A		
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
			(°)
			2.48

Survey Program	Date 5/1/2016		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.00	2,020.00	VES Gyro #1 (BHL: 350' FNL, 350' FEL, S	VES-ISCWSA-GYRO-3
2,113.00	10,818.00	TDS MWD #2 (BHL: 350' FNL, 350' FEL, S	MWD
			Description
			Biaxial Semi-Cont. Gyro
			MWD - Standard

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	0.19	84.19	100.00	0.02	0.16	0.02	0.19	0.19	0.00
200.00	0.30	161.55	200.00	-0.21	0.41	-0.20	0.32	0.11	77.36
300.00	0.36	155.54	300.00	-0.75	0.63	-0.72	0.07	0.06	-6.01
400.00	0.59	176.07	399.99	-1.55	0.79	-1.51	0.28	0.23	20.53
500.00	0.46	166.56	499.99	-2.45	0.92	-2.41	0.16	-0.13	-9.51
600.00	0.62	161.77	599.99	-3.36	1.18	-3.30	0.17	0.16	-4.79



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3984.00usft (Silver Oak 3)
Site:	Puckett 12 Federal #8H	MD Reference:	KB @ 3984.00usft (Silver Oak 3)
Well:	SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P	North Reference:	Grid
Wellbore:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	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	0.32	188.47	699.98	-4.15	1.31	-4.09	0.36	-0.30	26.70
800.00	0.24	50.61	799.98	-4.29	1.43	-4.22	0.52	-0.08	-137.86
900.00	0.14	127.50	899.98	-4.23	1.69	-4.15	0.25	-0.10	76.89
1,000.00	0.27	348.42	999.98	-4.08	1.74	-4.00	0.39	0.13	-139.08
1,100.00	0.18	248.38	1,099.98	-3.90	1.55	-3.83	0.35	-0.09	-100.04
1,200.00	0.27	77.13	1,199.98	-3.91	1.63	-3.83	0.45	0.09	-171.25
1,300.00	0.57	347.42	1,299.98	-3.37	1.75	-3.29	0.63	0.30	-89.71
1,400.00	0.15	1.70	1,399.98	-2.75	1.65	-2.68	0.43	-0.42	14.28
1,500.00	0.57	44.04	1,499.97	-2.27	2.00	-2.18	0.47	0.42	42.34
1,600.00	0.51	358.65	1,599.97	-1.46	2.33	-1.36	0.42	-0.06	-45.39
1,700.00	0.92	35.50	1,699.96	-0.36	2.79	-0.24	0.60	0.41	36.85
1,800.00	0.90	22.56	1,799.95	1.01	3.55	1.17	0.21	-0.02	-12.94
1,900.00	0.86	39.03	1,899.94	2.32	4.33	2.51	0.26	-0.04	16.47
2,020.00	0.79	58.94	2,019.93	3.45	5.60	3.69	0.24	-0.06	16.59
TIE-IN to VES Gyro									
2,113.00	0.90	57.40	2,112.92	4.17	6.77	4.46	0.12	0.12	-1.66
First TDS MWD Survey									
2,144.00	1.00	56.80	2,143.91	4.45	7.20	4.76	0.32	0.32	-1.94
2,238.00	2.10	87.70	2,237.88	4.97	9.61	5.38	1.43	1.17	32.87
2,331.00	3.50	94.90	2,330.76	4.80	14.14	5.40	1.55	1.51	7.74
2,424.00	3.90	97.40	2,423.57	4.15	20.10	5.01	0.46	0.43	2.69
2,517.00	4.00	103.40	2,516.35	2.99	26.40	4.13	0.46	0.11	6.45
2,611.00	4.00	106.50	2,610.12	1.30	32.73	2.71	0.23	0.00	3.30
2,704.00	4.00	107.20	2,702.89	-0.58	38.94	1.10	0.05	0.00	0.75
2,797.00	3.90	95.00	2,795.67	-1.82	45.19	0.14	0.91	-0.11	-13.12
2,891.00	3.80	96.60	2,889.46	-2.45	51.47	-0.23	0.16	-0.11	1.70
2,984.00	3.60	99.80	2,982.27	-3.31	57.40	-0.82	0.31	-0.22	3.44
3,079.00	3.70	103.80	3,077.08	-4.54	63.32	-1.80	0.29	0.11	4.21
3,171.00	3.70	108.30	3,168.88	-6.18	69.02	-3.19	0.32	0.00	4.89
3,264.00	4.00	98.10	3,261.68	-7.58	75.08	-4.33	0.80	0.32	-10.97
3,357.00	4.10	100.50	3,354.44	-8.65	81.56	-5.11	0.21	0.11	2.58
3,450.00	4.00	101.40	3,447.21	-9.89	88.01	-6.08	0.13	-0.11	0.97
3,544.00	4.30	101.70	3,540.96	-11.26	94.67	-7.15	0.32	0.32	0.32
3,637.00	4.80	85.90	3,633.68	-11.69	101.97	-7.26	1.45	0.54	-16.99
3,730.00	5.30	85.70	3,726.31	-11.09	110.13	-6.31	0.54	0.54	-0.22
3,824.00	5.10	92.20	3,819.93	-10.92	118.64	-5.78	0.66	-0.21	6.91
3,917.00	5.50	95.30	3,912.53	-11.49	127.21	-5.98	0.53	0.43	3.33
4,011.00	4.50	97.20	4,006.17	-12.37	135.35	-6.50	1.08	-1.06	2.02
4,104.00	4.60	97.90	4,098.88	-13.34	142.66	-7.15	0.12	0.11	0.75
4,197.00	4.80	97.40	4,191.57	-14.35	150.22	-7.84	0.22	0.22	-0.54
4,290.00	5.00	101.00	4,284.23	-15.63	158.05	-8.77	0.39	0.22	3.87



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3984.00usft (Silver Oak 3)
Site:	Puckett 12 Federal #8H	MD Reference:	KB @ 3984.00usft (Silver Oak 3)
Well:	SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P	North Reference:	Grid
Wellbore:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	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)	
4,384.00	5.10	101.40	4,377.86	-17.23	166.17	-10.03	0.11	0.11	0.43	
4,478.00	4.00	105.10	4,471.56	-18.91	173.43	-11.39	1.21	-1.17	3.94	
4,571.00	4.00	104.20	4,564.34	-20.55	179.71	-12.76	0.07	0.00	-0.97	
4,664.00	4.30	105.80	4,657.09	-22.30	186.21	-14.22	0.35	0.32	1.72	
4,758.00	4.00	95.60	4,750.85	-23.58	192.86	-15.21	0.85	-0.32	-10.85	
4,851.00	4.00	93.60	4,843.62	-24.10	199.33	-15.45	0.15	0.00	-2.15	
4,944.00	4.10	96.90	4,936.39	-24.70	205.86	-15.77	0.27	0.11	3.55	
5,038.00	4.00	98.80	5,030.15	-25.61	212.44	-16.39	0.18	-0.11	2.02	
5,131.00	3.90	101.80	5,122.93	-26.75	218.74	-17.26	0.25	-0.11	3.23	
5,224.00	3.30	89.90	5,215.75	-27.39	224.52	-17.65	1.03	-0.65	-12.80	
5,318.00	3.30	88.40	5,309.60	-27.31	229.92	-17.34	0.09	0.00	-1.60	
5,411.00	1.80	97.40	5,402.50	-27.43	234.05	-17.27	1.66	-1.61	9.68	
5,503.00	0.40	99.20	5,494.48	-27.66	235.80	-17.43	1.52	-1.52	1.96	
5,534.00	0.10	53.50	5,525.48	-27.66	235.93	-17.43	1.09	-0.97	-147.42	
5,565.00	1.40	358.10	5,556.48	-27.27	235.94	-17.04	4.34	4.19	-178.71	
5,596.00	3.40	355.50	5,587.45	-25.98	235.85	-15.75	6.46	6.45	-8.39	
5,627.00	6.00	359.20	5,618.34	-23.44	235.76	-13.22	8.44	8.39	11.94	
5,659.00	9.00	0.70	5,650.06	-19.26	235.76	-9.04	9.39	9.38	4.69	
5,690.00	12.40	1.40	5,680.52	-13.51	235.88	-3.29	10.98	10.97	2.26	
5,721.00	16.00	1.00	5,710.57	-5.91	236.03	4.31	11.62	11.61	-1.29	
5,752.00	19.90	359.70	5,740.05	3.64	236.08	13.86	12.65	12.58	-4.19	
5,783.00	23.80	357.90	5,768.82	15.18	235.82	25.37	12.76	12.58	-5.81	
5,814.00	26.70	357.40	5,796.86	28.39	235.28	38.54	9.38	9.35	-1.61	
5,845.00	28.20	358.40	5,824.37	42.67	234.76	52.78	5.06	4.84	3.23	
5,876.00	30.10	359.30	5,851.44	57.76	234.46	67.85	6.29	6.13	2.90	
5,907.00	32.40	0.00	5,877.94	73.84	234.36	83.91	7.51	7.42	2.26	
5,938.00	34.40	2.00	5,903.82	90.90	234.67	100.97	7.36	6.45	6.45	
5,970.00	37.20	4.00	5,929.77	109.59	235.66	119.68	9.48	8.75	6.25	
6,001.00	40.60	3.80	5,953.89	129.01	236.98	139.14	10.98	10.97	-0.65	
6,032.00	44.00	3.10	5,976.82	149.83	238.23	160.00	11.07	10.97	-2.26	
6,064.00	47.20	2.00	5,999.21	172.67	239.24	182.86	10.30	10.00	-3.44	
6,095.00	50.20	0.90	6,019.66	195.95	239.83	206.14	10.04	9.68	-3.55	
6,126.00	53.30	359.80	6,038.85	220.29	239.97	230.47	10.38	10.00	-3.55	
6,157.00	56.60	0.10	6,056.65	245.66	239.95	255.82	10.67	10.65	0.97	
6,187.00	60.10	0.30	6,072.39	271.20	240.04	281.33	11.68	11.67	0.67	
6,206.90	62.67	0.37	6,081.92	288.66	240.14	298.78	12.91	12.90	0.33	
As-Drilled PP										
6,218.00	64.10	0.40	6,086.90	298.59	240.21	308.70	12.91	12.90	0.32	
6,249.00	68.00	359.60	6,099.48	326.91	240.20	337.00	12.80	12.58	-2.58	
6,280.00	71.50	359.60	6,110.21	355.99	240.00	366.04	11.29	11.29	0.00	
6,312.00	74.10	359.70	6,119.67	386.56	239.81	396.57	8.13	8.13	0.31	



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3984.00usft (Silver Oak 3)
Site:	Puckett 12 Federal #8H	MD Reference:	KB @ 3984.00usft (Silver Oak 3)
Well:	SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P	North Reference:	Grid
Wellbore:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	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)	
6,343.00	76.50	0.20	6,127.53	416.54	239.79	426.53	7.90	7.74	1.61	
6,375.00	78.80	0.70	6,134.38	447.80	240.04	457.76	7.35	7.19	1.56	
6,406.00	81.10	0.60	6,139.79	478.32	240.38	488.27	7.43	7.42	-0.32	
6,437.00	83.30	0.00	6,144.00	509.03	240.54	518.96	7.35	7.10	-1.94	
6,468.00	86.60	359.30	6,146.72	539.90	240.35	549.80	10.88	10.65	-2.26	
6,499.00	89.10	358.70	6,147.89	570.87	239.81	580.71	8.29	8.06	-1.94	
6,530.00	90.40	358.50	6,148.02	601.86	239.05	611.64	4.24	4.19	-0.65	
6,623.00	94.30	358.30	6,144.21	694.73	236.46	704.31	4.20	4.19	-0.22	
6,691.00	95.50	357.60	6,138.40	762.44	234.04	771.85	2.04	1.76	-1.03	
6,753.00	93.70	358.70	6,133.43	824.20	232.04	833.47	3.40	-2.90	1.77	
6,847.00	91.40	359.60	6,129.25	918.09	230.65	927.21	2.63	-2.45	0.96	
6,940.00	90.20	0.30	6,127.95	1,011.08	230.57	1,020.11	1.49	-1.29	0.75	
7,033.00	91.20	0.30	6,126.81	1,104.07	231.06	1,113.03	1.08	1.08	0.00	
7,127.00	89.80	0.30	6,125.99	1,198.06	231.55	1,206.96	1.49	-1.49	0.00	
7,221.00	90.40	0.10	6,125.83	1,292.06	231.88	1,300.88	0.67	0.64	-0.21	
7,315.00	90.50	359.90	6,125.09	1,386.06	231.88	1,394.79	0.24	0.11	-0.21	
7,408.00	88.40	359.90	6,125.98	1,479.05	231.72	1,487.69	2.26	-2.26	0.00	
7,502.00	90.80	0.10	6,126.64	1,573.04	231.72	1,581.59	2.56	2.55	0.21	
7,595.00	88.70	0.10	6,127.04	1,666.03	231.88	1,674.51	2.26	-2.26	0.00	
7,689.00	90.20	0.10	6,127.95	1,760.03	232.04	1,768.42	1.60	1.60	0.00	
7,782.00	90.10	0.80	6,127.70	1,853.02	232.77	1,861.36	0.76	-0.11	0.75	
7,875.00	92.20	1.20	6,125.84	1,945.98	234.39	1,954.30	2.30	2.26	0.43	
7,968.00	92.70	0.40	6,121.86	2,038.89	235.69	2,047.18	1.01	0.54	-0.86	
8,062.00	91.60	359.50	6,118.33	2,132.82	235.61	2,141.02	1.51	-1.17	-0.96	
8,155.00	90.90	358.50	6,116.31	2,225.78	233.99	2,233.82	1.31	-0.75	-1.08	
8,249.00	90.90	358.20	6,114.83	2,319.73	231.28	2,327.57	0.32	0.00	-0.32	
8,342.00	90.70	358.00	6,113.53	2,412.67	228.20	2,420.29	0.30	-0.22	-0.22	
8,435.00	90.20	358.40	6,112.80	2,505.62	225.28	2,513.02	0.69	-0.54	0.43	
8,529.00	90.40	358.80	6,112.31	2,599.59	222.98	2,606.81	0.48	0.21	0.43	
8,622.00	91.00	358.90	6,111.17	2,692.57	221.11	2,699.61	0.65	0.65	0.11	
8,716.00	91.10	359.40	6,109.45	2,786.54	219.72	2,793.44	0.54	0.11	0.53	
8,809.00	91.60	359.20	6,107.26	2,879.51	218.58	2,886.27	0.58	0.54	-0.22	
8,902.00	92.80	359.50	6,103.69	2,972.43	217.53	2,979.06	1.33	1.29	0.32	
8,996.00	90.90	359.30	6,100.65	3,066.37	216.54	3,072.87	2.03	-2.02	-0.21	
9,090.00	90.90	359.40	6,099.18	3,160.35	215.48	3,166.72	0.11	0.00	0.11	
9,183.00	90.40	359.90	6,098.12	3,253.35	214.91	3,259.60	0.76	-0.54	0.54	
9,277.00	90.10	0.30	6,097.71	3,347.34	215.07	3,353.52	0.53	-0.32	0.43	
9,370.00	89.30	0.40	6,098.20	3,440.34	215.64	3,446.45	0.87	-0.86	0.11	
9,463.00	89.60	0.70	6,099.09	3,533.33	216.54	3,539.39	0.46	0.32	0.32	
9,557.00	90.60	1.20	6,098.93	3,627.32	218.09	3,633.36	1.19	1.06	0.53	
9,650.00	92.20	1.60	6,096.66	3,720.26	220.37	3,726.31	1.77	1.72	0.43	



TDS
Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P
Project:	Eddy County, NM (NAD-27 2015)	TVD Reference:	KB @ 3984.00usft (Silver Oak 3)
Site:	Puckett 12 Federal #8H	MD Reference:	KB @ 3984.00usft (Silver Oak 3)
Well:	SHL: 43' FSL, 590' FEL, Sec 12, T17S, R31E, Unit P	North Reference:	Grid
Wellbore:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 350' FNL, 350' FEL, Sec 12, T17S, R31E, Unit A	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)
9,743.00	90.70	0.40	6,094.30	3,813.21	221.99	3,819.24	2.07	-1.61	-1.29
9,836.00	90.20	358.90	6,093.57	3,906.20	221.42	3,912.13	1.70	-0.54	-1.61
9,930.00	91.30	358.90	6,092.34	4,000.18	219.62	4,005.93	1.17	1.17	0.00
10,023.00	90.20	359.80	6,091.12	4,093.16	218.56	4,098.78	1.53	-1.18	0.97
10,116.00	91.20	359.80	6,089.99	4,186.15	218.24	4,191.67	1.08	1.08	0.00
10,209.00	90.20	359.40	6,088.85	4,279.14	217.59	4,284.55	1.16	-1.08	-0.43
10,302.00	91.00	359.40	6,087.88	4,372.13	216.61	4,377.41	0.86	0.86	0.00
10,396.00	90.00	359.80	6,087.06	4,466.12	215.96	4,471.28	1.15	-1.06	0.43
10,489.00	90.50	0.00	6,086.65	4,559.12	215.79	4,564.19	0.58	0.54	0.22
10,583.00	91.30	0.10	6,085.18	4,653.11	215.88	4,658.09	0.86	0.85	0.11
10,676.00	91.00	359.30	6,083.31	4,746.09	215.39	4,750.96	0.92	-0.32	-0.86
10,739.00	91.20	359.20	6,082.10	4,809.07	214.56	4,813.85	0.35	0.32	-0.16
Final MWD Survey									
10,818.00	91.20	359.20	6,080.44	4,888.05	213.46	4,892.70	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)	
2,020.00	2,019.93	3.45	5.60	TIE-IN to VES Gyro
2,113.00	2,112.92	4.17	6.77	First TDS MWD Survey
6,206.90	6,081.92	288.66	240.14	As-Drilled PP
10,739.00	6,082.10	4,809.07	214.56	Final MWD Survey
10,818.00	6,080.44	4,888.05	213.46	Projection to Bit/TD

Checked By: _____ Approved By: _____ Date: _____