

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

NM OIL CONSERVATION
State of New Mexico ARTESIA DISTRICT
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015- 42938	Pool Code 3250	Pool Name Atoka; Glorieta-Xeso
Property Code 38907	Property Name LEE 3 FEE	Well Number 3H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3336'

Surface Location									
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	3	19-S	26-E		150	SOUTH	2310	EAST	EDDY

Bottom Hole Location If Different From Surface									
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
2	3	19-S	26-E		330	NORTH	2310	EAST	EDDY

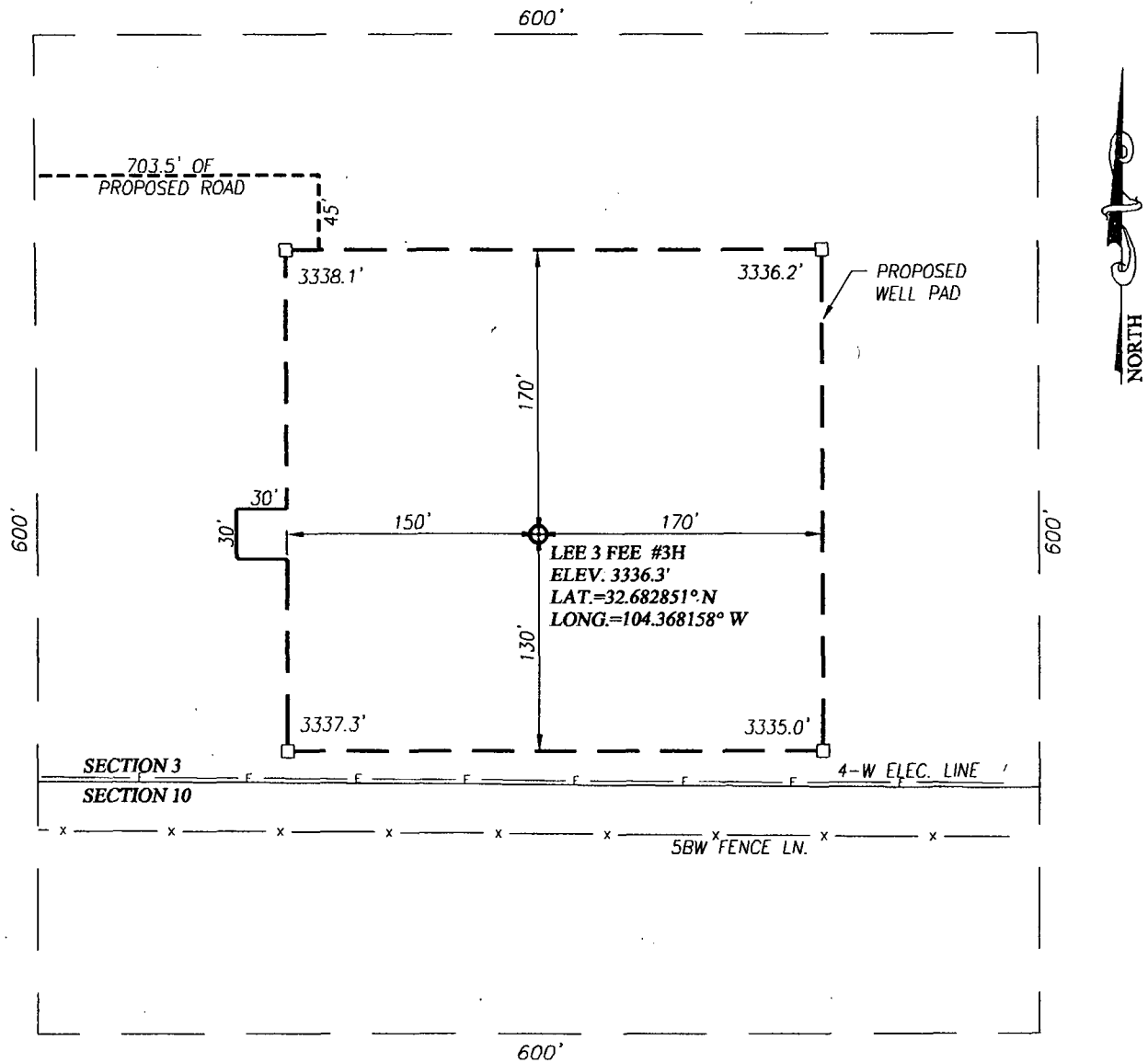
Dedicated Acres 159.23	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

NAD 83 NME BOTTOM HOLE LOCATION Y= 616987.1 N X= 530415.8 E LAT.=32.696135° N LONG.=104.368837° W LOT 1	NAD 27 NME BOTTOM HOLE LOCATION Y= 616925.3 N X= 489236.9 E LAT.=32.696021° N LONG.=104.368320° W LOT 3	A LOT 2 B LOT 1 C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ BA BB BC BD BE BF BG BH BI BJ BK BL BM BN BO BP BQ BR BS BT BU BV BW BX BY BZ CA CB CC CD CE CF CG CH CI CJ CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DD DE DF DG DH DI DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER ES ET EU EV EW EX EY EZ FA FB FC FD FE FF FG FH FI FJ FK FL FM FN FO FP FQ FR FS FT FU FV FW FX FY FZ GA GB GC GD GE GF GG GH GI GJ GK GL GM GN GO GP GQ GR GS GT GU GV GW GX GY GZ HA HB HC HD HE HF HG HH HI HJ HK HL HM HN HO HP HQ HR HS HT HU HV HW HX HY HZ IA IB IC ID IE IF IG IH II IJ IK IL IM IN IO IP IQ IR IS IT IU IV IW IX IY IZ JA JB JC JD JE JF JG JH JI JJ JK JL JM JN JO JP JQ JR JS JT JU JV JW JX JY JZ KA KB KC KD KE KF KG KH KI KJ KK KL KM KN KO KP KQ KR KS KT KU KV KW KX KY KZ LA LB LC LD LE LF LG LH LI LJ LK LL LM LN LO LP LQ LR LS LT LU LV LW LX LY LZ MA MB MC MD ME MF MG MH MI MJ MK ML MM MN MO MP MQ MR MS MT MU MV MW MX MY MZ NA NB NC ND NE NF NG NH NI NJ NK NL NM NN NO NP NQ NR NS NT NU NV NW NX NY NZ OA OB OC OD OE OF OG OH OI OJ OK OL OM ON OO OP OQ OR OS OT OU OV OW OX OY OZ PA PB PC PD PE PF PG PH PI PJ PK PL PM PN PO PP PQ PR PS PT PU PV PW PX PY PZ QA QB QC QD QE QF QG QH QI QJ QK QL QM QN QO QP QQ QR QS QT QU QV QW QX QY QZ RA RB RC RD RE RF RG RH RI RJ RK RL RM RN RO RP RQ RR RS RT RU RV RW RX RY RZ SA SB SC SD SE SF SG SH SI SJ SK SL SM SN SO SP SQ SR SS ST SU SV SW SX SY SZ TA TB TC TD TE TF TG TH TI TJ TK TL TM TN TO TP TQ TR TS TT TU TV TW TX TY TZ UA UB UC UD UE UF UG UH UI UJ UK UL UM UN UO UP UQ UR US UT UU UV UW UX UY UZ VA VB VC VD VE VF VG VH VI VJ VK VL VM VN VO VP VQ VR VS VT VU VV VW VX VY VZ WA WB WC WD WE WF WG WH WI WJ WK WL WM WN WO WP WQ WR WS WT WU WV WW WX WY WZ XA XB XC XD XE XF XG XH XI XJ XK XL XM XN XO XP XQ XR XS XT XU XV XW XX XY XZ YA YB YC YD YE YF YG YH YI YJ YK YL YM YN YO YP YQ YR YS YT YU YV YW YX YY YZ ZA ZB ZC ZD ZE ZF ZG ZH ZI ZJ ZK ZL ZM ZN ZO ZP ZQ ZR ZS ZT ZU ZV ZW ZX ZY ZZ	OPERATOR CERTIFICATION I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. 2-4-15 Date <i>Kelly J. Holly</i> Signature Kelly J. Holly Printed Name kholly@concho.com E-mail Address SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. SEPTEMBER 16, 2014 Date of Survey <i>Ronald J. Eidson</i> Signature & Seal of Professional Surveyor 3239 REGISTERED PROFESSIONAL SURVEYOR <i>Ronald J. Eidson</i> 01/19/2015 Certificate Number Gary G. Eidson 12641 Ronald J. Eidson 3239 LSL REV. 1/13/15 JWSC W.O.: 14.11.0919
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Estimated
Completed
Interval:
330 FSL
2310 FEL

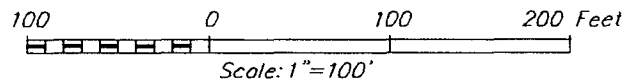
Accepted for Record
RD 01/19/2015



NOTE:
1) SEE "LOCATION VERIFICATION MAP"
FOR PROPOSED ROAD LOCATION.

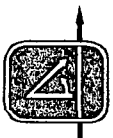
DIRECTIONS TO LEE 3 FEE #3H:

FROM THE INTERSECTION OF US. 285 AND CO. RD. 38 GO EAST ON CO. RD. 38 APPROX. 1.0 MILE TO CO. RD. 34 (LAKEWOOD) TURN RIGHT AND GO SOUTH APPROX. 1.9 MILES TO CALICHE LSE RD. TURN LEFT AND GO EAST 0.4 MILES THEN ROAD BENDS RIGHT GO SOUTH 176' TO PROPOSED ROAD FOLLOW ROAD STAKES EAST 703.5' THEN TURN RIGHT AND GO SOUTH 45' TO THE LOCATION.



COG OPERATING, LLC

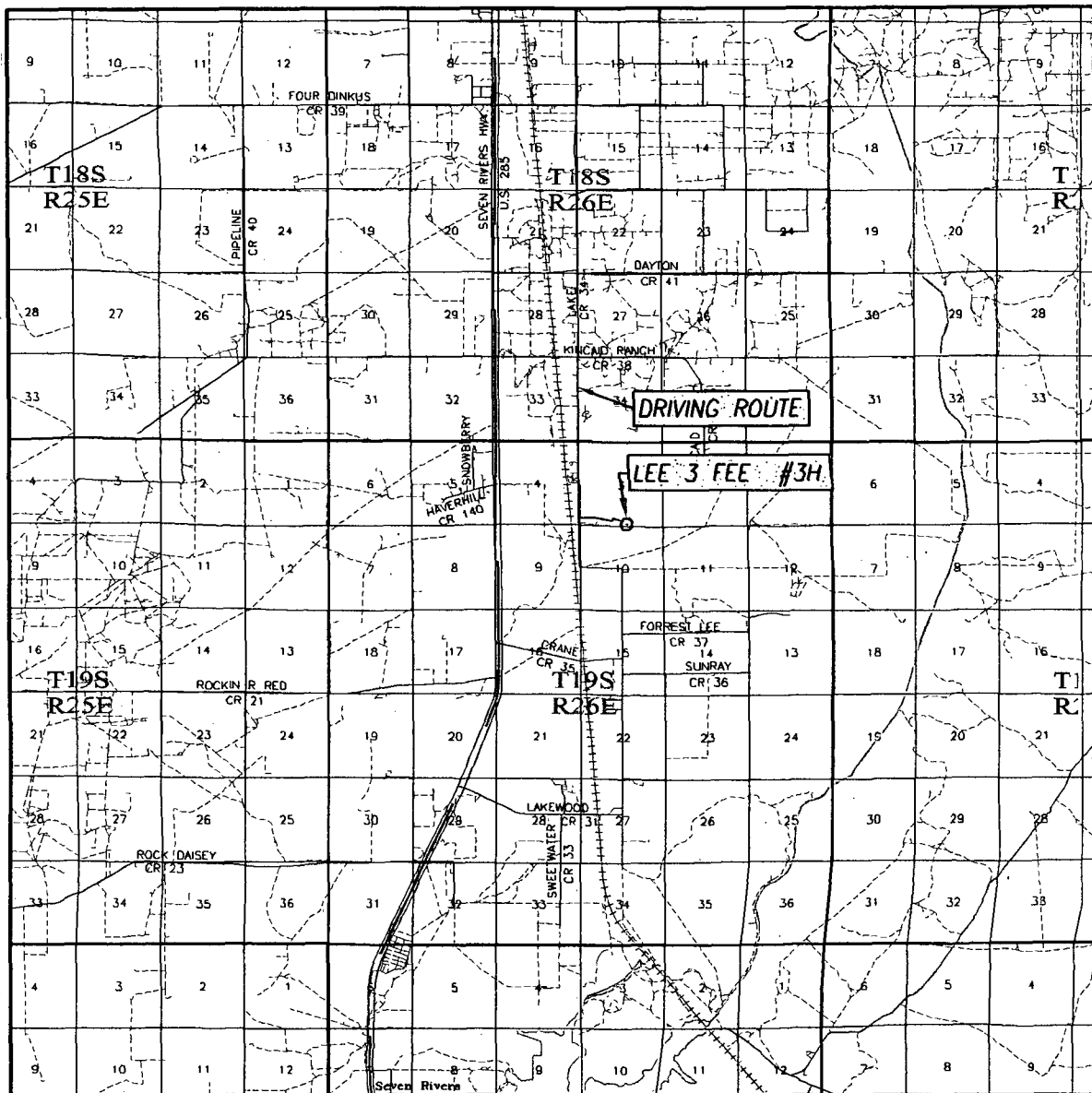
LEE 3 FEE #3H WELL
LOCATED 150 FEET FROM THE SOUTH LINE
AND 2310 FEET FROM THE EAST LINE OF SECTION 3,
TOWNSHIP 19 SOUTH, RANGE 26 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Survey Date: 9/16/14	CAD Date: 10/2/14	Drawn By: LSL
W.O. No.: 14110919	Rev: .	Rel. W.O.: Sheet 1 of 1

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE LOCATION VERIFICATION MAP

SEC. 3 TWP. 19-S RGE. 26-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 150' FSL & 2310' FEL

ELEVATION 3336'

OPERATOR COG OPERATING, LLC

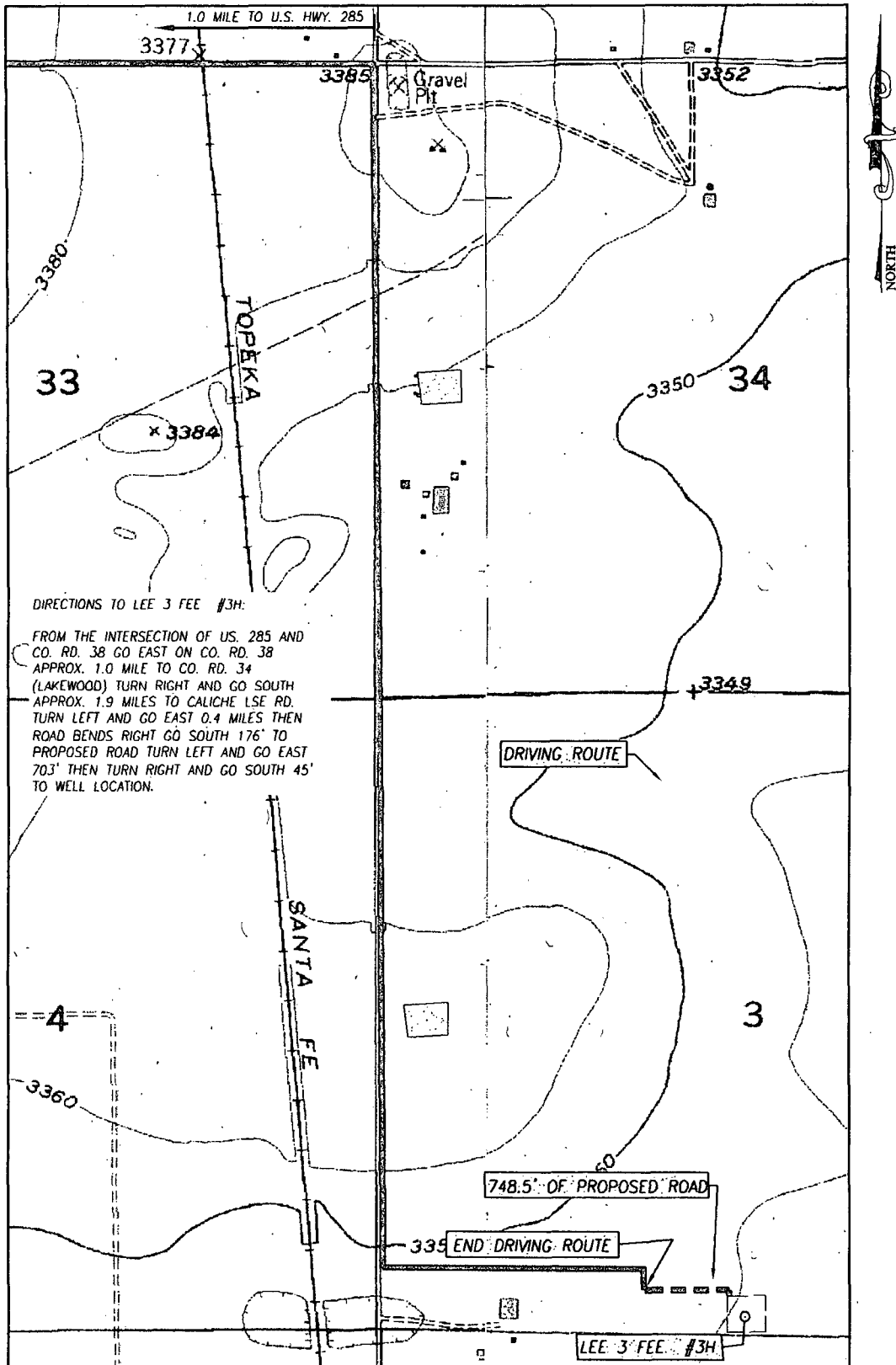
LEASE LEE 3 FEE

PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

LOCATION VERIFICATION MAP



SEC. 3 TWP. 19-S RGE. 26-E
 COUNTY EDDY STATE NEW MEXICO
 DESCRIPTION 150' FSL & 2310' FEL
 ELEVATION 3336'
 OPERATOR COG OPERATING, LLC
 LEASE LEE 3 FEE
 U.S.G.S. TOPOGRAPHIC MAP
 LAKE MCMILLAN N. M. SURVEY N.M.P.M.

SCALE: 1" = 1000' DAYTON, N.M. - 10' CONTOUR INTERVAL:
 LAKE MCMILLAN NORTH, N.M. - 10'



PROVIDING SURVEYING SERVICES
 SINCE 1946
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 TBPLS# 10021000



COG Operating LLC

Eddy County, NM (NAD27 NME)

Lee 3 Fee

#3H

WB1

Plan: Plan #1 01-26-15

Surface: 150' FSL, 2310' FEL, Sec 3, T19S, R26E, Unit O

PP: 330' FSL, 2310' FEL, Sec 3, T19S, R26E, Unit O

BHL: 330' FNL, 2310' FEL, Sec 3, T19S, R26E, Unit B

Standard Planning Report

26 January, 2015





Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating LLC	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB' @ 3354.00usft (Silver Oak 3)
Site:	Lee 3 Fee	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1-01-26-15		

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:	Lee 3 Fee		
Site Position:		Northing:	612,139.80 usft
From:	Map	Easting:	488,590.40 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 40' 58.31847 N
		Longitude:	104° 22' 13.49969 W
		Grid Convergence:	-0.02 °

Well:	#3H		
Well Position	+N/-S	-5.70 usft	Northing:
	+E/-W	695.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			3,336.00 usft

Wellbore:	WB1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	1/26/2015	7.61
			Dip Angle
			(°)
			60.38
			Field Strength
			(nT)
			48,371

Design:	Plan #1-01-26-15		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			7.05

Plan Sections											
Measured:	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target	
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)		
(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		
2,780.38	0.00	0.00	2,780.38	0.00	0.00	0.00	0.00	0.00	0.00		
3,603.11	90.50	359.42	3,301.23	525.39	-5.32	11.00	11.00	0.00	359.42		
7,869.30	90.50	359.42	3,264.00	4,791.20	-48.50	0.00	0.00	0.00	0.00	PBHL-Lee 3 Fee #3H	



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating LLC	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site:	Lee 3 Fee	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan # 1.01-26-15		

Planned 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
2,780.38	0.00	0.00	2,780.38	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 11°/100° Build									
2,800.00	2.16	359.42	2,800.00	0.37	0.00	0.37	11.00	11.00	0.00
2,900.00	13.16	359.42	2,898.95	13.68	-0.14	13.55	11.00	11.00	0.00
3,000.00	24.16	359.42	2,993.55	45.62	-0.46	45.22	11.00	11.00	0.00
3,100.00	35.16	359.42	3,080.32	95.02	-0.96	94.18	11.00	11.00	0.00
3,200.00	46.16	359.42	3,156.06	160.07	-1.62	158.66	11.00	11.00	0.00
3,226.94	49.12	359.42	3,174.21	179.98	-1.82	178.39	11.00	11.00	0.00
PP Lee 3 Fee #3H									
3,300.00	57.16	359.42	3,218.00	238.38	-2.41	236.28	11.00	11.00	0.00
3,400.00	68.16	359.42	3,263.86	327.07	-3.31	324.19	11.00	11.00	0.00
3,500.00	79.16	359.42	3,291.95	422.88	-4.28	419.15	11.00	11.00	0.00
3,573.98	87.30	359.42	3,300.67	496.27	-5.02	491.90	11.00	11.00	0.00
TL 3305' TVD @ 0° VZ 90.5° Inc									
3,600.00	90.16	359.42	3,301.25	522.28	-5.29	517.69	11.00	11.00	0.00
3,603.11	90.50	359.42	3,301.23	525.39	-5.32	520.77	10.98	10.98	0.00
Hold 90.5° Inc, 359.42° Azm									
3,700.00	90.50	359.42	3,300.38	622.28	-6.30	616.80	0.00	0.00	0.00
3,800.00	90.50	359.42	3,299.51	722.27	-7.31	715.91	0.00	0.00	0.00
3,900.00	90.50	359.42	3,298.64	822.26	-8.32	815.02	0.00	0.00	0.00
4,000.00	90.50	359.42	3,297.77	922.25	-9.34	914.13	0.00	0.00	0.00
4,100.00	90.50	359.42	3,296.89	1,022.24	-10.35	1,013.24	0.00	0.00	0.00
4,200.00	90.50	359.42	3,296.02	1,122.23	-11.36	1,112.35	0.00	0.00	0.00
4,300.00	90.50	359.42	3,295.15	1,222.22	-12.37	1,211.46	0.00	0.00	0.00
4,400.00	90.50	359.42	3,294.28	1,322.21	-13.38	1,310.58	0.00	0.00	0.00
4,500.00	90.50	359.42	3,293.40	1,422.20	-14.40	1,409.69	0.00	0.00	0.00
4,600.00	90.50	359.42	3,292.53	1,522.19	-15.41	1,508.80	0.00	0.00	0.00
4,700.00	90.50	359.42	3,291.66	1,622.19	-16.42	1,607.91	0.00	0.00	0.00
4,800.00	90.50	359.42	3,290.78	1,722.18	-17.43	1,707.02	0.00	0.00	0.00
4,900.00	90.50	359.42	3,289.91	1,822.17	-18.45	1,806.13	0.00	0.00	0.00
5,000.00	90.50	359.42	3,289.04	1,922.16	-19.46	1,905.24	0.00	0.00	0.00
5,100.00	90.50	359.42	3,288.17	2,022.15	-20.47	2,004.35	0.00	0.00	0.00
5,200.00	90.50	359.42	3,287.29	2,122.14	-21.48	2,103.46	0.00	0.00	0.00
5,300.00	90.50	359.42	3,286.42	2,222.13	-22.49	2,202.57	0.00	0.00	0.00
5,400.00	90.50	359.42	3,285.55	2,322.12	-23.51	2,301.68	0.00	0.00	0.00
5,500.00	90.50	359.42	3,284.68	2,422.11	-24.52	2,400.80	0.00	0.00	0.00
5,600.00	90.50	359.42	3,283.80	2,522.11	-25.53	2,499.91	0.00	0.00	0.00
5,700.00	90.50	359.42	3,282.93	2,622.10	-26.54	2,599.02	0.00	0.00	0.00
5,800.00	90.50	359.42	3,282.06	2,722.09	-27.55	2,698.13	0.00	0.00	0.00
5,900.00	90.50	359.42	3,281.19	2,822.08	-28.57	2,797.24	0.00	0.00	0.00
6,000.00	90.50	359.42	3,280.31	2,922.07	-29.58	2,896.35	0.00	0.00	0.00
6,100.00	90.50	359.42	3,279.44	3,022.06	-30.59	2,995.46	0.00	0.00	0.00
6,200.00	90.50	359.42	3,278.57	3,122.05	-31.60	3,094.57	0.00	0.00	0.00
6,300.00	90.50	359.42	3,277.69	3,222.04	-32.62	3,193.68	0.00	0.00	0.00
6,400.00	90.50	359.42	3,276.82	3,322.03	-33.63	3,292.79	0.00	0.00	0.00
6,500.00	90.50	359.42	3,275.95	3,422.03	-34.64	3,391.91	0.00	0.00	0.00
6,600.00	90.50	359.42	3,275.08	3,522.02	-35.65	3,491.02	0.00	0.00	0.00
6,700.00	90.50	359.42	3,274.20	3,622.01	-36.66	3,590.13	0.00	0.00	0.00
6,800.00	90.50	359.42	3,273.33	3,722.00	-37.68	3,689.24	0.00	0.00	0.00
6,900.00	90.50	359.42	3,272.46	3,821.99	-38.69	3,788.35	0.00	0.00	0.00
7,000.00	90.50	359.42	3,271.59	3,921.98	-39.70	3,887.46	0.00	0.00	0.00
7,100.00	90.50	359.42	3,270.71	4,021.97	-40.71	3,986.57	0.00	0.00	0.00
7,200.00	90.50	359.42	3,269.84	4,121.96	-41.73	4,085.68	0.00	0.00	0.00

Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating LLC	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site:	Lee 3 Fee	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 01:26-15		

Planned 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)
7,300.00	90.50	359.42	3,268.97	4,221.95	-42.74	4,184.79	0.00	0.00	0.00
7,400.00	90.50	359.42	3,268.10	4,321.94	-43.75	4,283.90	0.00	0.00	0.00
7,500.00	90.50	359.42	3,267.22	4,421.94	-44.76	4,383.02	0.00	0.00	0.00
7,600.00	90.50	359.42	3,266.35	4,521.93	-45.77	4,482.13	0.00	0.00	0.00
7,700.00	90.50	359.42	3,265.48	4,621.92	-46.79	4,581.24	0.00	0.00	0.00
7,800.00	90.50	359.42	3,264.60	4,721.91	-47.80	4,680.35	0.00	0.00	0.00
7,869.30	90.50	359.42	3,264.00	4,791.20	-48.50	4,749.03	0.00	0.00	0.00
TD at 7869.30' MD - PBHL Lee 3 Fee #3H									

Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude Longitude
PP-Lee 3 Fee #3H	- plan hits target center	0.00	360.00	3,174.23	180.00	-1.82	612,314.10	489,283.58	32° 41' 0.04561 N 104° 22' 5.38973 W
PBHL-Lee 3 Fee #3H	- plan hits target center	-90.40	0.07	3,264.00	4,791.20	-48.50	616,925.30	489,236.90	32° 41' 45.67623 N 104° 22' 5.95369 W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,573.98	3,300.67	TL, 3305' TVD @ 0 VZ, 90.5° Inc		-0.50	359.79	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
2,780.38	2,780.38	0.00	0.00	KOP, Begin 11"/100' Build
3,603.11	3,301.23	525.39	-5.32	Hold 90.5° Inc, 359.42° Azm
7,869.30	3,264.00	4,791.20	-48.50	TD at 7869.30' MD



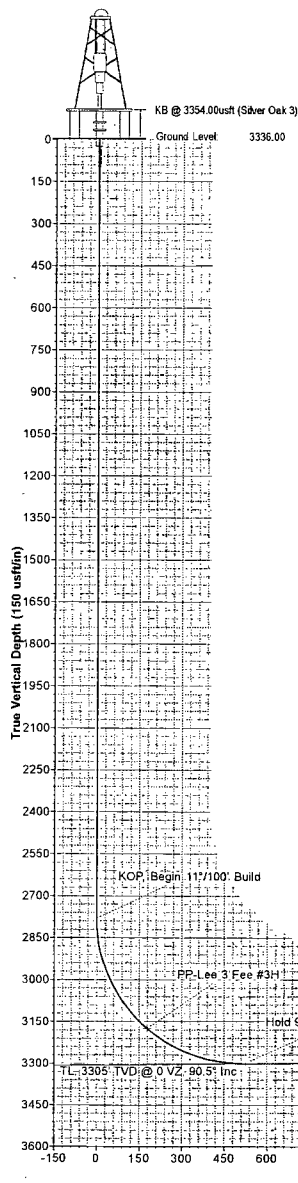
Project: Eddy County, NM (NAD27 NME)
Site: Lee 3 Fee
Well: #3H
Wellbore: WB1
Design: Plan #1 01-26-15
Rig: Silver Oak 3



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Azimuths to Grid North
True North: 0.02°
Magnetic North: 7.63°
Magnetic Field
Strength: 48370.7nT
Dip Angle: 60.38°
Date: 1/26/2015
Model: IGRF2015



WELL DETAILS									
	+N/-S	+E/-W	North	East	Latitude	Longitude			
	0.00	0.00	612134.10	489285.40	32° 40' 58.26439 N	104° 22' 5.36772 W			

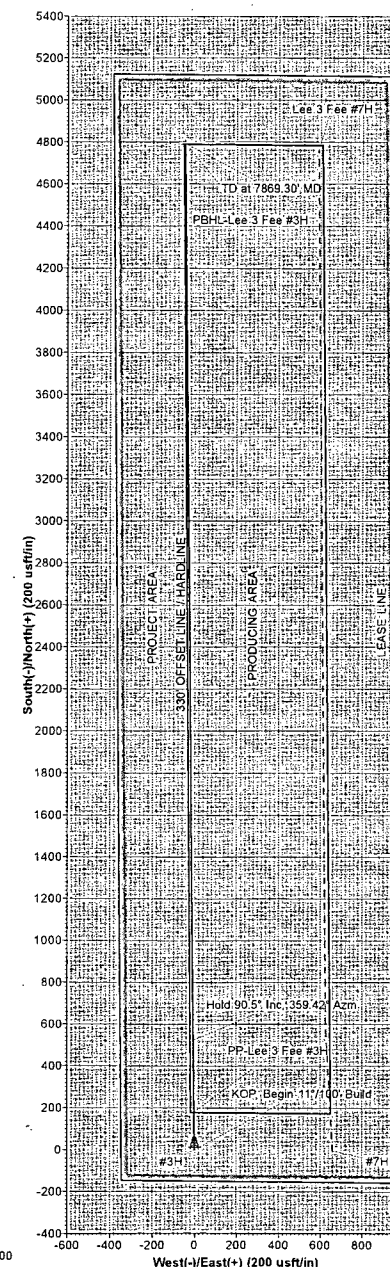
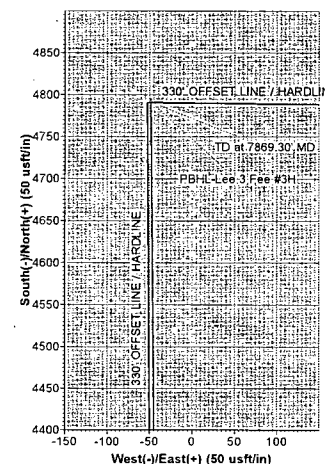
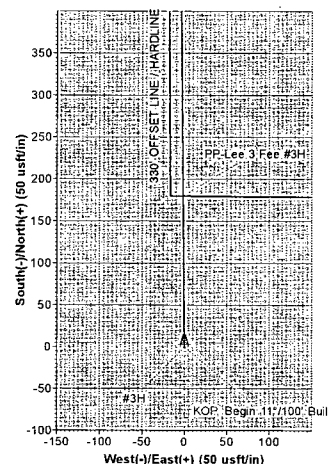
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2780.38	0.00	0.00	2780.38	0.00	0.00	0.00	0.00	0.00
3	3603.11	90.50	359.42	3301.23	525.39	-5.32	11.00	359.42	520.76
4	7869.30	90.50	359.42	3264.00	4791.20	-48.50	0.00	0.00	4749.03

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	North	East	Latitude	Longitude	Shape	
PP-Lee 3 Fee #3H	3174.23	180.00	-1.82	612314.10	489283.58	32° 41' 0.04561 N	104° 22' 5.38973 W	Point	
PBHL-Lee 3 Fee #3H	3264.00	4791.20	-48.50	616925.30	489236.90	32° 41' 45.67623 N	104° 22' 5.95369 W	Point	

LEGEND									
--- #7H, WB1, Plan #4 01-05-15 V0									
--- Plan #1 01-26-15									

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001
Local Origin: Well #3H, Grid North
Latitude: 32° 40' 58.26439 N
Longitude: 104° 22' 5.36772 W
Grid East: 489285.40
Grid North: 612134.10
Scale Factor: 1.000
Geomagnetic Model: IGRF2015
Sample Date: 26-Jan-15
Magnetic Declination: 7.61°
Dip Angle from Horizontal: 60.38°
Magnetic Field Strength: 48371
To convert a Magnetic Direction to a Grid Direction, Add 7.63°
To convert a Magnetic Direction to a True Direction, Add 7.61° East
To convert a True Direction to a Grid Direction, Add 0.02°

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
3306.67	3573.98	TL 3305 TVD @ 0 VZ, 90.5° Inc	-0.50	359.79





COG Operating LLC

Eddy County, NM (NAD27 NME)

Lee 3 Fee

#3H

WB1

Plan #1 01-26-15

Anticollision Report

26 January, 2015



PHOENIX
TECHNOLOGY SERVICES



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Reference Site:	Lee 3 Fee	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 01-26-15	Offset TVD Reference:	Offset Datum

Reference	Plan #1 01-26-15		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 1/26/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.00	7,869.30	Plan #1 01-26-15 (WB1)	MWD
			Description
			MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Lee 3 Fee						
#7H - WB1 - Plan #4 01-05-15	3,687.71	3,784.43	638.56	612.02	24.062 CC	
#7H - WB1 - Plan #4 01-05-15	7,869.30	7,933.04	644.17	468.59	3.669 ES, SF	

Offset Design Lee 3 Fee - #7H - WB1 - Plan #4 01-05-15												
Survey Program: 10-MWD												
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	90.45	-5.20	659.90	659.92			
100.00	100.00	98.00	98.00	0.09	0.09	90.45	-5.20	659.90	659.92	659.74	0.18	3,618.691
200.00	200.00	198.00	198.00	0.32	0.31	90.45	-5.20	659.90	659.92	659.29	0.63	1,048.583
300.00	300.00	298.00	298.00	0.54	0.54	90.45	-5.20	659.90	659.92	658.84	1.08	611.673
400.00	400.00	398.00	398.00	0.77	0.76	90.45	-5.20	659.90	659.92	658.39	1.53	431.769
500.00	500.00	498.00	498.00	0.99	0.99	90.45	-5.20	659.90	659.92	657.94	1.98	333.640
600.00	600.00	598.00	598.00	1.22	1.21	90.45	-5.20	659.90	659.92	657.49	2.43	271.855
700.00	700.00	698.00	698.00	1.44	1.44	90.45	-5.20	659.90	659.92	657.04	2.88	229.378
800.00	800.00	798.00	798.00	1.67	1.66	90.45	-5.20	659.90	659.92	656.59	3.33	198.381
900.00	900.00	898.00	898.00	1.89	1.89	90.45	-5.20	659.90	659.92	656.14	3.78	174.764
1,000.00	1,000.00	998.00	998.00	2.12	2.11	90.45	-5.20	659.90	659.92	655.69	4.23	156.172
1,100.00	1,100.00	1,098.00	1,098.00	2.34	2.34	90.45	-5.20	659.90	659.92	655.25	4.68	141.155
1,200.00	1,200.00	1,198.00	1,198.00	2.56	2.56	90.45	-5.20	659.90	659.92	654.80	5.12	128.773
1,300.00	1,300.00	1,298.00	1,298.00	2.79	2.78	90.45	-5.20	659.90	659.92	654.35	5.57	118.388
1,400.00	1,400.00	1,398.00	1,398.00	3.01	3.01	90.45	-5.20	659.90	659.92	653.90	6.02	109.553
1,500.00	1,500.00	1,498.00	1,498.00	3.24	3.23	90.45	-5.20	659.90	659.92	653.45	6.47	101.946
1,600.00	1,600.00	1,598.00	1,598.00	3.46	3.46	90.45	-5.20	659.90	659.92	653.00	6.92	95.326
1,700.00	1,700.00	1,698.00	1,698.00	3.69	3.68	90.45	-5.20	659.90	659.92	652.55	7.37	89.513
1,800.00	1,800.00	1,798.00	1,798.00	3.91	3.91	90.45	-5.20	659.90	659.92	652.10	7.82	84.369
1,900.00	1,900.00	1,898.00	1,898.00	4.14	4.13	90.45	-5.20	659.90	659.92	651.65	8.27	79.784
2,000.00	2,000.00	1,998.00	1,998.00	4.36	4.36	90.45	-5.20	659.90	659.92	651.20	8.72	75.671
2,100.00	2,100.00	2,098.00	2,098.00	4.59	4.58	90.45	-5.20	659.90	659.92	650.75	9.17	71.982
2,200.00	2,200.00	2,198.00	2,198.00	4.81	4.81	90.45	-5.20	659.90	659.92	650.30	9.62	68.599
2,300.00	2,300.00	2,298.00	2,298.00	5.04	5.03	90.45	-5.20	659.90	659.92	649.85	10.07	65.536
2,400.00	2,400.00	2,398.00	2,398.00	5.26	5.26	90.45	-5.20	659.90	659.92	649.40	10.52	62.736

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County NM (NAD27 NME)	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Reference Site:	Lee 3 Fee	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1.01-26-15	Offset TVD Reference:	Offset Datum

Offset Design Lee 3 Fee #7H - WB1 - Plan #4.01-05-15											Offset Site Error:	0.00 usft
Survey Program: 0-MWD											Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Footface (ft)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
2,500.00	2,500.00	2,498.00	2,498.00	5.49	5.48	90.45	-5.20	659.90	659.92	648.95	10.97	60.165
2,600.00	2,600.00	2,598.00	2,598.00	5.71	5.71	90.45	-5.20	659.90	659.92	648.50	11.42	57.796
2,700.00	2,700.00	2,698.00	2,698.00	5.94	5.93	90.45	-5.20	659.90	659.92	648.05	11.87	55.607
2,780.38	2,780.38	2,778.38	2,778.38	6.12	6.11	90.45	-5.20	659.90	659.92	647.69	12.23	53.964
2,800.00	2,800.00	2,798.00	2,798.00	6.16	6.16	91.06	-5.20	659.90	659.93	647.61	12.32	53.577
2,850.00	2,849.79	2,847.79	2,847.79	6.28	6.27	91.42	-5.20	659.90	660.02	647.47	12.55	52.610
2,900.00	2,898.95	2,900.86	2,900.83	6.40	6.39	92.13	-3.94	659.83	660.21	647.42	12.79	51.624
2,950.00	2,947.02	2,956.64	2,956.17	6.53	6.52	92.87	2.90	659.43	660.26	647.21	13.05	50.601
3,000.00	2,993.55	3,013.44	3,011.42	6.65	6.66	93.59	15.89	658.68	660.11	646.80	13.32	49.567
3,050.00	3,038.12	3,071.19	3,065.82	6.78	6.81	94.28	35.18	657.57	659.76	646.17	13.59	48.539
3,100.00	3,080.32	3,129.84	3,118.52	6.96	6.96	94.92	60.79	656.10	659.18	645.26	13.92	47.361
3,150.00	3,119.75	3,189.28	3,168.65	7.19	7.17	95.52	92.61	654.26	658.34	643.98	14.35	45.863
3,200.00	3,156.06	3,249.40	3,215.34	7.47	7.45	96.06	130.39	652.08	657.24	642.32	14.92	44.065
3,250.00	3,188.91	3,310.06	3,257.70	7.81	7.82	96.53	173.68	649.59	655.86	640.24	15.63	41.968
3,300.00	3,218.00	3,371.10	3,294.95	8.22	8.28	96.93	221.90	646.81	654.21	637.71	16.50	39.655
3,350.00	3,243.06	3,432.33	3,326.39	8.69	8.84	97.24	274.32	643.78	652.28	634.75	17.53	37.213
3,400.00	3,263.86	3,493.59	3,351.47	9.22	9.49	97.47	330.08	640.57	650.09	631.38	18.71	34.741
3,450.00	3,280.21	3,554.69	3,369.78	9.81	10.23	97.62	388.24	637.21	647.66	627.62	20.04	32.319
3,500.00	3,291.95	3,615.45	3,381.10	10.45	11.04	97.68	447.80	633.78	645.02	623.54	21.48	30.023
3,550.00	3,298.99	3,675.71	3,385.39	11.13	11.88	97.65	507.78	630.32	642.20	619.19	23.01	27.908
3,603.11	3,301.23	3,719.84	3,385.14	11.89	12.50	97.74	551.84	628.06	639.72	615.34	24.38	26.237
3,687.71	3,300.49	3,784.43	3,384.57	13.15	13.39	97.75	616.41	626.53	638.56	612.02	26.54	24.062 CC
3,700.00	3,300.38	3,796.72	3,384.47	13.34	13.57	97.75	628.70	626.42	638.58	611.67	26.90	23.736
3,800.00	3,299.51	3,896.72	3,383.59	14.91	15.13	97.75	728.70	625.52	638.69	608.66	30.03	21.266
3,900.00	3,298.64	3,996.72	3,382.72	16.54	16.74	97.74	828.69	624.62	638.80	605.53	33.27	19.198
4,000.00	3,297.77	4,096.72	3,381.85	18.20	18.40	97.74	928.68	623.72	638.92	602.32	36.60	17.458
4,100.00	3,296.89	4,196.72	3,380.98	19.90	20.08	97.74	1,028.67	622.83	639.03	599.05	39.98	15.983
4,200.00	3,296.02	4,296.72	3,380.10	21.62	21.79	97.74	1,128.66	621.93	639.15	595.73	43.41	14.722
4,300.00	3,295.15	4,396.72	3,379.23	23.36	23.52	97.74	1,228.66	621.03	639.26	592.38	46.88	13.636
4,400.00	3,294.28	4,496.72	3,378.36	25.11	25.27	97.74	1,328.65	620.14	639.37	589.00	50.38	12.692
4,500.00	3,293.40	4,596.72	3,377.48	26.87	27.03	97.74	1,428.64	619.24	639.49	585.59	53.90	11.865
4,600.00	3,292.53	4,696.72	3,376.61	28.64	28.79	97.73	1,528.63	618.34	639.60	582.16	57.44	11.136
4,700.00	3,291.66	4,796.72	3,375.74	30.42	30.57	97.73	1,628.63	617.44	639.72	578.72	60.99	10.489
4,800.00	3,290.78	4,896.72	3,374.87	32.21	32.35	97.73	1,728.62	616.55	639.83	575.27	64.56	9.911
4,900.00	3,289.91	4,996.72	3,373.99	34.00	34.14	97.73	1,828.61	615.65	639.94	571.80	68.14	9.392
5,000.00	3,289.04	5,096.72	3,373.12	35.80	35.93	97.73	1,928.60	614.75	640.06	568.33	71.73	8.923
5,100.00	3,288.17	5,196.72	3,372.25	37.60	37.73	97.73	2,028.59	613.85	640.17	564.85	75.32	8.499
5,200.00	3,287.29	5,296.72	3,371.38	39.40	39.53	97.73	2,128.58	612.96	640.28	561.36	78.93	8.112
5,300.00	3,286.42	5,396.72	3,370.50	41.21	41.33	97.72	2,228.58	612.06	640.40	557.86	82.54	7.759
5,400.00	3,285.55	5,496.72	3,369.63	43.02	43.13	97.72	2,328.57	611.16	640.51	554.36	86.15	7.435
5,500.00	3,284.68	5,596.72	3,368.76	44.83	44.94	97.72	2,428.56	610.26	640.63	550.85	89.77	7.136
5,600.00	3,283.80	5,696.72	3,367.89	46.64	46.75	97.72	2,528.55	609.37	640.74	547.34	93.40	6.860
5,700.00	3,282.93	5,796.72	3,367.01	48.46	48.57	97.72	2,628.55	608.47	640.85	543.83	97.02	6.605
5,800.00	3,282.06	5,896.72	3,366.14	50.28	50.38	97.72	2,728.54	607.57	640.97	540.31	100.66	6.368
5,900.00	3,281.19	5,996.72	3,365.27	52.09	52.19	97.72	2,828.53	606.68	641.08	536.79	104.29	6.147
6,000.00	3,280.31	6,096.72	3,364.39	53.91	54.01	97.72	2,928.52	605.78	641.19	533.27	107.93	5.941
6,100.00	3,279.44	6,196.72	3,363.52	55.73	55.83	97.71	3,028.51	604.88	641.31	529.74	111.56	5.748
6,200.00	3,278.57	6,296.72	3,362.65	57.56	57.65	97.71	3,128.51	603.98	641.42	526.22	115.21	5.568
6,300.00	3,277.69	6,396.72	3,361.78	59.38	59.47	97.71	3,228.50	603.09	641.54	522.69	118.85	5.398
6,400.00	3,276.82	6,496.72	3,360.90	61.20	61.29	97.71	3,328.49	602.19	641.65	519.16	122.49	5.238
6,500.00	3,275.95	6,596.72	3,360.03	63.03	63.11	97.71	3,428.48	601.29	641.76	515.62	126.14	5.088
6,600.00	3,275.08	6,696.72	3,359.16	64.85	64.93	97.71	3,528.48	600.39	641.88	512.09	129.79	4.946

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County - NM (NAD27 NME)	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Reference Site:	Lee 3 Fee	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1 01-26-15	Offset TVD Reference:	Offset Datum

Offset Design: Lee 3 Fee - #7H - WB1 - Plan #4 01-05-15												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Minimum	Separation	Warning	
Depth	Depth	Depth	Depth			Toolface	+N-S	Centres	Ellipses	Separation	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
6,700.00	3,274.20	6,796.72	3,358.29	66.68	66.76	97.71	3,628.47	599.50	641.99	508.56	133.44	4.811	
6,800.00	3,273.33	6,896.72	3,357.41	68.50	68.58	97.70	3,728.46	598.60	642.11	505.02	137.09	4.684	
6,900.00	3,272.46	6,996.72	3,356.54	70.33	70.41	97.70	3,828.45	597.70	642.22	501.48	140.74	4.563	
7,000.00	3,271.59	7,096.72	3,355.67	72.16	72.23	97.70	3,928.44	596.80	642.33	497.94	144.39	4.449	
7,100.00	3,270.71	7,196.72	3,354.80	73.99	74.06	97.70	4,028.44	595.91	642.45	494.40	148.04	4.340	
7,200.00	3,269.84	7,296.72	3,353.92	75.81	75.88	97.70	4,128.43	595.01	642.56	490.86	151.70	4.236	
7,300.00	3,268.97	7,396.72	3,353.05	77.64	77.71	97.70	4,228.42	594.11	642.67	487.32	155.35	4.137	
7,400.00	3,268.10	7,496.72	3,352.18	79.47	79.54	97.70	4,328.41	593.22	642.79	483.78	159.01	4.042	
7,500.00	3,267.22	7,596.72	3,351.31	81.30	81.36	97.69	4,428.40	592.32	642.90	480.24	162.67	3.952	
7,600.00	3,266.35	7,696.72	3,350.43	83.13	83.19	97.69	4,528.40	591.42	643.02	476.69	166.32	3.866	
7,700.00	3,265.48	7,796.72	3,349.56	84.96	85.02	97.69	4,628.39	590.52	643.13	473.15	169.98	3.784	
7,800.00	3,264.60	7,896.72	3,348.69	86.79	86.85	97.69	4,728.38	589.63	643.24	469.60	173.64	3.704	
7,816.60	3,264.46	7,913.32	3,348.54	87.10	87.15	97.69	4,744.98	589.48	643.26	469.01	174.25	3.692	
7,869.30	3,264.00	7,933.04	3,348.37	88.06	87.51	97.69	4,764.70	589.30	644.17	468.59	175.57	3.669 ES, SF	



Anticollision Report

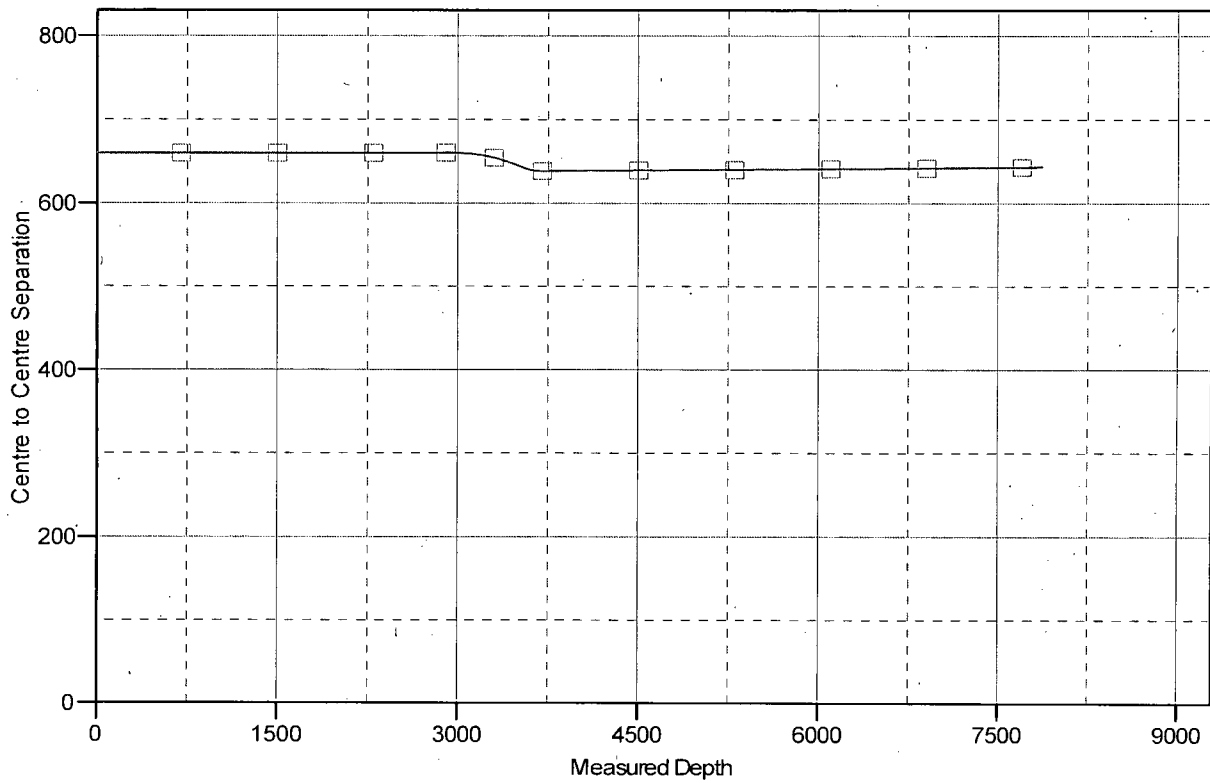


Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Reference Site:	Lee 3 Fee	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	#3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1.01-26-15	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3354.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #3H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.02°

Ladder Plot



LEGEND

— #7H, WB1, Plan #4 01-05-15 V0



Anticollision Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3354.00usft (Silver Oak 3)
Reference Site:	Lee 3 Fee	MD Reference:	KB @ 3354.00usft (Silver Oak 3)
Site Error:	0'00.0usft	North Reference:	Grid
Reference Well:	#3H	Survey Calculation Method:	Minimum Curvature
Well Error:	0'00.0usft	Output errors are at	2.00 sigma
Reference Wellbore:	WB1	Database:	Compass 5000 GCR
Reference Design:	Plan #1.01-26-15	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 3354.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #3H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: -0.02°

