

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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
August 1, 2011

Permit 295378

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701		2. OGRID Number 229137
		3. API Number 30-015-48244
4. Property Code 308269	5. Property Name WAY SOUTH STATE COM	6. Well No. 704H

7. Surface Location

UL - Lot G	Section 31	Township 26S	Range 28E	Lot Idn 4	Feet From 240	N/S Line S	Feet From 1365	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot A	Section 19	Township 26S	Range 28E	Lot Idn A	Feet From 200	N/S Line N	Feet From 1310	E/W Line E	County Eddy
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9. Pool Information

PURPLE SAGE;WOLFCAMP (GAS)	98220
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3099
16. Multiple N	17. Proposed Depth 21797	18. Formation Wolfcamp	19. Contractor	20. Spud Date
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☐ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	500	400	0
Int1	12.25	9.625	40	8900	2400	0
Prod	8.5	5.5	20	21797	3450	8500

Casing/Cement Program: Additional Comments

Drill 17-1/2" hole to 500' into the Rustler. Run 13-3/8" 54.5# J55 STC casing to TD and cement to surface in one stage. Will set in Rustler and cover water depth. Drill 12-1/4" hole to ~8,900' with Brine. Run 9-5/8" 40# L-80 casing to TD and cement to surface in one stage. Drill 8-3/4" vertical hole, curve & lateral to 21,797' with Oil base mud. Run 5-1/2" 20# P110 BTC casing to TD and cement to 8,500' in one stage.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	5000	Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.

Signature:

Printed Name: Electronically filed by Robyn Russell	Approved By: Kurt Simmons	
Title: Regulatory Compliance Lead	Title: Petroleum Specialist - A	
Email Address: robyn.m.russell@conocophillips.com	Approved Date: 5/13/2021	Expiration Date: 5/13/2023
Date: 4/27/2021	Phone: 432-685-4385	Conditions of Approval Attached

OIL CONSERVATION DIVISION

DISTRICT I

1625 N. FRENCH DR., BOBBS, NM 88240
Phone: (575) 383-6101 Fax: (575) 383-0720

DISTRICT II

811 S. FIRST ST., ARTESIA, NM 86210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III

1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6176 Fax: (505) 334-6170

DISTRICT IV

1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3490 Fax: (505) 476-3462

State of New Mexico
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	Pool Code 98220	Pool Name Purple Sage; Wolfcamp
Property Code	Property Name WAY SOUTH STATE COM	Well Number 704H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3099.1'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
4	31	26-S	28-E		240	SOUTH	1365	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
A	19	26-S	28-E		200	NORTH	1310	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
767.59			

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
PROPOSED BOTTOM
HOLE LOCATION
Y=376429.7 N
X=606727.3 E
LAT.=32.034710° N
LONG.=104.122311° W

NAD 83 NME
SURFACE LOCATION
Y=364031.9 N
X=606674.4 E
LAT.=32.000629° N
LONG.=104.122560° W

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.

Signature: Mayte Reyes Date: 12/3/18

Printed Name: Mayte Reyes

E-mail Address: mreyes1@concho.com

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.

Date of Survey: JULY 18, 2018

Signature & Seal of Professional Surveyor: Chad L. Harcrow

Certificate No. CHAD HARCROW 17777
W.O. #18-746 DRAWN BY: CD

STATE

As per State Land Office Lot 5: 23.76 Lot 4: 23.83

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Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

GAS CAPTURE PLAN

Date: 5/13/2021

☒ Original

Operator & OGRID No.: [229137] COG OPERATING LLC

☐ Amended - Reason for
Amendment:

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
WAY SOUTH STATE COM #704H	30-015-48244	G-31-26S-28E	0240S 1365E	3900	None	Gas will connect on well pad. It will require additional line to connect to the facility but the amount is unknown currently. Processing Plant Location: Sec 35, Blk 57, T2S, Culberson County, TX

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to ETC Texas Pipeline, Ltd. and will be connected to ETC Texas Pipeline, Ltd. Low Pressure gathering system located in Eddy County, New Mexico. It will require 0' of pipeline to connect the facility to Low Pressure gathering system. COG OPERATING LLC provides (periodically) to ETC Texas Pipeline, Ltd. a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, COG OPERATING LLC and ETC Texas Pipeline, Ltd. have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at ETC Texas Pipeline, Ltd. Processing Plant located in Sec. 31, Twn. 26S, Rng. 28E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on ETC Texas Pipeline, Ltd. system at that time. Based on current information, it is COG OPERATING LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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Santa Fe, NM 87505

Form APD Comments

Permit 295378

PERMIT COMMENTS

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701		API Number: 30-015-48244
		Well: WAY SOUTH STATE COM #704H

Created By	Comment	Comment Date
mreyes4	COG Operating has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore we do not believe that an H2S Contingency Plan would be necessary.	4/22/2021

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Form APD Conditions

Permit 295378

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701	API Number: 30-015-48244
	Well: WAY SOUTH STATE COM #704H

OCD Reviewer	Condition
ksimmons	Notify OCD 24 hours prior to casing & cement
ksimmons	Will require a File As Drilled C-102 and a Directional Survey with the C-104
ksimmons	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud
kpickford	Will require a pit permit, since closed loop is not being used
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system
kpickford	Surface casing must be set 25' below top of Rustler Anhydrite or salt in order to seal off protectable water

Way South State Com 704H

Casing and Cement

<u>String</u>	<u>Hole Size</u>	<u>Csg OD</u>	<u>PPE</u>	<u>Depth</u>	<u>Sx Cement</u>	<u>TOC</u>
Surface	17-1/2"	13-3/8"	54.5#	500'	400	0'
Intermediate	12-1/4"	9-5/8"	40#	8,900'	2,400	0'
Production	8-1/2"	5-1/2"	20#	21,797'	3,450	8,500'

Well Plan

Drill 17-1/2" hole to 500' into the Rustler. Run 13-3/8" 54.5# J55 STC casing to TD and cement to surface in one stage. Will set in Rustler and cover water depth.

Drill 12-1/4" hole to ~8,900' with Brine. Run 9-5/8" 40# L-80 casing to TD and cement to surface in one stage.

Drill 8-3/4" vertical hole, curve & lateral to 21,797' with Oil base mud. Run 5-1/2" 20# P110 BTC casing to TD and cement to 8,500' in one stage.

Well Control

After setting 13-3/8" casing and installing 3000 psi casing head, NU 13-5/8" Cameron BOP. Test annular and casing to 1500 psi and other BOP equipment to 3000 psi.

After setting 9-5/8" casing and installing 5000 psi casing spool, NU 13-5/8" Cameron BOP. Test annular to 2500 psi and other BOP equipment to 5000 psi.



COG Operating L L C

Eddy County, NM (NAD 27 NME)

Sec. 31, T 26 S, R 28- E

Way South State Com 704H

Wellbore #1

Plan #1

Anticollision Report

11 December, 2018





Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 19,999.96 u
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Circular Conic
Casing Method:	Not applied

Survey Tool Program		Date	12/11/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	21,796.28	Plan #1 (Wellbore #1)	MWD	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						
Sec. 31, T 26 S, R 28- E						
Way South State Com 705H - Wellbore #1 - Plan #1	2,000.00	2,000.00	30.00	21.30	3.449	CC
Way South State Com 705H - Wellbore #1 - Plan #1	21,796.92	21,580.58	396.99	-58.10	0.872	Level 1, ES, SF
Way South State Com 706H - Wellbore #1 - Plan #1	1,966.33	1,967.33	60.00	51.45	7.018	CC
Way South State Com 706H - Wellbore #1 - Plan #1	2,000.00	2,000.98	60.00	51.30	6.896	ES
Way South State Com 706H - Wellbore #1 - Plan #1	21,796.92	21,774.88	670.17	215.68	1.475	Level 3, SF

Offset Design												Sec. 31, T 26 S, R 28- E - Way South State Com 705H - Wellbore #1 - Plan #1		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 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	-90.00	0.00	-30.00	30.00								
100.00	100.00	100.00	100.00	0.08	0.08	-90.00	0.00	-30.00	30.00	29.84	0.16	190.674					
200.00	200.00	200.00	200.00	0.30	0.30	-90.00	0.00	-30.00	30.00	29.39	0.61	49.434					
300.00	300.00	300.00	300.00	0.53	0.53	-90.00	0.00	-30.00	30.00	28.94	1.06	28.398					
400.00	400.00	400.00	400.00	0.75	0.75	-90.00	0.00	-30.00	30.00	28.49	1.51	19.921					
500.00	500.00	500.00	500.00	0.98	0.98	-90.00	0.00	-30.00	30.00	28.04	1.96	15.342					
600.00	600.00	600.00	600.00	1.20	1.20	-90.00	0.00	-30.00	30.00	27.60	2.40	12.474					
700.00	700.00	700.00	700.00	1.43	1.43	-90.00	0.00	-30.00	30.00	27.15	2.85	10.510					
800.00	800.00	800.00	800.00	1.65	1.65	-90.00	0.00	-30.00	30.00	26.70	3.30	9.080					
900.00	900.00	900.00	900.00	1.88	1.88	-90.00	0.00	-30.00	30.00	26.25	3.75	7.992					
1,000.00	1,000.00	1,000.00	1,000.00	2.10	2.10	-90.00	0.00	-30.00	30.00	25.80	4.20	7.138					
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	-90.00	0.00	-30.00	30.00	25.35	4.65	6.448					
1,200.00	1,200.00	1,200.00	1,200.00	2.55	2.55	-90.00	0.00	-30.00	30.00	24.90	5.10	5.880					
1,300.00	1,300.00	1,300.00	1,300.00	2.78	2.78	-90.00	0.00	-30.00	30.00	24.45	5.55	5.404					
1,400.00	1,400.00	1,400.00	1,400.00	3.00	3.00	-90.00	0.00	-30.00	30.00	24.00	6.00	4.999					
1,500.00	1,500.00	1,500.00	1,500.00	3.23	3.23	-90.00	0.00	-30.00	30.00	23.55	6.45	4.651					
1,600.00	1,600.00	1,600.00	1,600.00	3.45	3.45	-90.00	0.00	-30.00	30.00	23.10	6.90	4.348					
1,700.00	1,700.00	1,700.00	1,700.00	3.67	3.67	-90.00	0.00	-30.00	30.00	22.65	7.35	4.082					
1,800.00	1,800.00	1,800.00	1,800.00	3.90	3.90	-90.00	0.00	-30.00	30.00	22.20	7.80	3.846					
1,900.00	1,900.00	1,900.00	1,900.00	4.12	4.12	-90.00	0.00	-30.00	30.00	21.75	8.25	3.637					
2,000.00	2,000.00	2,000.00	2,000.00	4.35	4.35	-90.00	0.00	-30.00	30.00	21.30	8.70	3.449	CC				
2,100.00	2,100.00	2,099.64	2,099.63	4.57	4.54	-91.81	-0.97	-30.87	30.88	21.77	9.11	3.390					

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
2,200.00	2,200.00	2,199.62	2,199.60	4.80	4.72	-94.07	-2.28	-32.02	32.11	22.59	9.51	3.375	
2,300.00	2,300.00	2,299.61	2,299.57	5.02	4.90	-96.16	-3.58	-33.18	33.38	23.46	9.92	3.364	
2,400.00	2,400.00	2,399.59	2,399.54	5.25	5.08	-98.10	-4.89	-34.34	34.69	24.36	10.33	3.358	
2,500.00	2,500.00	2,499.58	2,499.51	5.47	5.27	-99.89	-6.19	-35.50	36.04	25.29	10.75	3.354	
2,600.00	2,600.00	2,599.56	2,599.48	5.70	5.47	-101.55	-7.50	-36.66	37.42	26.26	11.16	3.352	
2,700.00	2,700.00	2,699.55	2,699.45	5.92	5.66	-103.10	-8.80	-37.82	38.83	27.25	11.58	3.353	
2,800.00	2,800.00	2,799.53	2,799.42	6.15	5.86	-104.53	-10.10	-38.98	40.27	28.27	12.01	3.355	
2,900.00	2,900.00	2,899.52	2,899.39	6.37	6.06	-105.87	-11.41	-40.14	41.73	29.30	12.43	3.358	
3,000.00	3,000.00	2,999.50	2,999.36	6.60	6.26	-107.11	-12.71	-41.30	43.22	30.36	12.86	3.362	
3,100.00	3,100.00	3,099.49	3,099.32	6.82	6.46	-108.27	-14.02	-42.46	44.72	31.43	13.28	3.366	
3,200.00	3,200.00	3,199.47	3,199.29	7.05	6.67	-109.35	-15.32	-43.62	46.23	32.52	13.71	3.372	
3,300.00	3,300.00	3,299.46	3,299.26	7.27	6.87	-110.37	-16.63	-44.78	47.77	33.62	14.14	3.377	
3,400.00	3,400.00	3,399.44	3,399.23	7.50	7.08	-111.32	-17.93	-45.94	49.32	34.74	14.58	3.383	
3,500.00	3,500.00	3,499.43	3,499.20	7.72	7.29	-112.22	-19.23	-47.09	50.88	35.87	15.01	3.390	
3,600.00	3,600.00	3,599.41	3,599.17	7.95	7.50	-113.06	-20.54	-48.25	52.45	37.00	15.44	3.396	
3,700.00	3,700.00	3,699.40	3,699.14	8.17	7.71	-113.85	-21.84	-49.41	54.03	38.15	15.88	3.403	
3,800.00	3,800.00	3,799.38	3,799.11	8.40	7.92	-114.59	-23.15	-50.57	55.62	39.31	16.32	3.409	
3,900.00	3,900.00	3,899.37	3,899.08	8.62	8.13	-115.30	-24.45	-51.73	57.23	40.47	16.75	3.416	
4,000.00	4,000.00	3,999.35	3,999.05	8.84	8.35	-115.96	-25.76	-52.89	58.84	41.64	17.19	3.422	
4,100.00	4,100.00	4,099.33	4,099.02	9.07	8.56	-116.59	-27.06	-54.05	60.45	42.82	17.63	3.429	
4,200.00	4,200.00	4,199.32	4,198.99	9.29	8.78	-117.19	-28.36	-55.21	62.08	44.01	18.07	3.435	
4,300.00	4,300.00	4,299.30	4,298.96	9.52	8.99	-117.76	-29.67	-56.37	63.71	45.20	18.51	3.442	
4,400.00	4,400.00	4,399.29	4,398.93	9.74	9.21	-118.30	-30.97	-57.53	65.34	46.39	18.95	3.448	
4,500.00	4,500.00	4,499.27	4,498.90	9.97	9.42	-118.81	-32.28	-58.69	66.99	47.59	19.39	3.454	
4,600.00	4,600.00	4,599.26	4,598.87	10.19	9.64	-119.30	-33.58	-59.85	68.63	48.80	19.83	3.460	
4,700.00	4,700.00	4,699.24	4,698.84	10.42	9.86	-119.76	-34.89	-61.01	70.28	50.01	20.28	3.466	
4,800.00	4,800.00	4,799.23	4,798.81	10.64	10.08	-120.21	-36.19	-62.16	71.94	51.22	20.72	3.472	
4,900.00	4,900.00	4,899.21	4,898.78	10.87	10.30	-120.63	-37.49	-63.32	73.60	52.44	21.16	3.478	
5,000.00	5,000.00	4,999.20	4,998.75	11.09	10.51	-121.03	-38.80	-64.48	75.27	53.66	21.61	3.484	
5,100.00	5,100.00	5,099.18	5,098.72	11.32	10.73	-121.42	-40.10	-65.64	76.93	54.88	22.05	3.489	
5,200.00	5,200.00	5,199.17	5,198.69	11.54	10.95	-121.79	-41.41	-66.80	78.60	56.11	22.49	3.494	
5,300.00	5,300.00	5,299.15	5,298.65	11.77	11.17	-122.15	-42.71	-67.96	80.28	57.34	22.94	3.500	
5,400.00	5,400.00	5,399.14	5,398.62	11.99	11.39	-122.49	-44.01	-69.12	81.96	58.57	23.38	3.505	
5,500.00	5,500.00	5,499.12	5,498.59	12.22	11.61	-122.82	-45.32	-70.28	83.64	59.81	23.83	3.510	
5,600.00	5,600.00	5,599.11	5,598.56	12.44	11.83	-123.13	-46.62	-71.44	85.32	61.04	24.27	3.515	
5,700.00	5,699.98	5,696.26	5,695.66	12.64	12.05	70.62	-49.10	-73.64	88.02	63.33	24.69	3.565	
5,777.24	5,777.12	5,772.70	5,771.97	12.77	12.23	72.00	-52.41	-76.58	91.12	66.13	24.99	3.646	
5,800.00	5,799.84	5,795.43	5,794.65	12.81	12.28	72.59	-53.42	-77.48	91.98	66.90	25.09	3.667	
5,900.00	5,899.65	5,895.27	5,894.32	12.98	12.51	75.04	-57.84	-81.41	95.87	70.38	25.49	3.762	
6,000.00	5,999.46	5,995.11	5,993.99	13.15	12.74	77.29	-62.26	-85.34	99.92	74.03	25.89	3.860	
6,100.00	6,099.27	6,094.96	6,093.66	13.32	12.97	79.37	-66.68	-89.27	104.11	77.82	26.29	3.960	
6,200.00	6,199.08	6,194.80	6,193.33	13.50	13.20	81.28	-71.10	-93.20	108.43	81.73	26.70	4.061	
6,300.00	6,298.89	6,294.65	6,293.00	13.68	13.44	83.05	-75.52	-97.13	112.86	85.75	27.11	4.162	
6,400.00	6,398.70	6,394.49	6,392.66	13.86	13.67	84.68	-79.94	-101.06	117.39	89.86	27.53	4.264	
6,500.00	6,498.50	6,494.33	6,492.33	14.04	13.91	86.19	-84.37	-104.99	122.01	94.06	27.95	4.366	
6,600.00	6,598.31	6,594.18	6,592.00	14.23	14.14	87.59	-88.79	-108.92	126.70	98.34	28.37	4.467	
6,700.00	6,698.12	6,694.02	6,691.67	14.41	14.38	88.89	-93.21	-112.85	131.47	102.68	28.79	4.567	
6,800.00	6,797.93	6,793.86	6,791.34	14.60	14.61	90.09	-97.63	-116.78	136.30	107.08	29.21	4.665	
6,900.00	6,897.74	6,893.71	6,891.00	14.79	14.85	91.22	-102.05	-120.71	141.18	111.54	29.64	4.763	
7,000.00	6,997.55	6,993.55	6,990.67	14.99	15.09	92.26	-106.47	-124.64	146.11	116.04	30.07	4.859	
7,100.00	7,097.36	7,093.39	7,090.34	15.18	15.32	93.24	-110.89	-128.57	151.09	120.59	30.51	4.953	
7,200.00	7,197.17	7,193.24	7,190.01	15.38	15.56	94.16	-115.31	-132.50	156.12	125.18	30.94	5.046	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,300.00	7,296.97	7,293.08	7,289.68	15.58	15.80	95.02	-119.73	-136.43	161.18	129.80	31.38	5.137	
7,400.00	7,396.78	7,392.93	7,389.35	15.78	16.04	95.83	-124.16	-140.36	166.27	134.45	31.82	5.226	
7,500.00	7,496.59	7,492.77	7,489.01	15.98	16.28	96.58	-128.58	-144.29	171.39	139.14	32.26	5.314	
7,600.00	7,596.40	7,592.61	7,588.68	16.18	16.52	97.30	-133.00	-148.22	176.54	143.85	32.70	5.399	
7,700.00	7,696.21	7,692.46	7,688.35	16.39	16.76	97.97	-137.42	-152.15	181.72	148.58	33.14	5.483	
7,800.00	7,796.02	7,792.30	7,788.02	16.59	17.00	98.61	-141.84	-156.08	186.92	153.34	33.59	5.565	
7,900.00	7,895.83	7,892.14	7,887.69	16.80	17.24	99.21	-146.26	-160.01	192.15	158.11	34.04	5.646	
8,000.00	7,995.63	7,991.99	7,987.36	17.01	17.48	99.78	-150.68	-163.94	197.39	162.91	34.48	5.724	
8,100.00	8,095.44	8,091.83	8,087.02	17.22	17.72	100.32	-155.10	-167.87	202.65	167.72	34.93	5.801	
8,200.00	8,195.25	8,191.67	8,186.69	17.43	17.96	100.84	-159.52	-171.80	207.93	172.55	35.39	5.876	
8,300.00	8,295.06	8,291.52	8,286.36	17.64	18.20	101.32	-163.95	-175.73	213.23	177.39	35.84	5.949	
8,400.00	8,394.87	8,391.36	8,386.03	17.85	18.44	101.79	-168.37	-179.66	218.54	182.24	36.29	6.021	
8,500.00	8,494.68	8,491.21	8,485.70	18.07	18.68	102.23	-172.79	-183.59	223.86	187.11	36.75	6.091	
8,600.00	8,594.49	8,591.05	8,585.37	18.28	18.92	102.65	-177.21	-187.52	229.20	191.99	37.21	6.160	
8,700.00	8,694.30	8,689.61	8,683.78	18.50	19.15	103.32	-180.48	-191.49	234.64	196.99	37.65	6.232	
8,800.00	8,794.10	8,789.45	8,776.92	18.72	19.32	106.85	-171.21	-196.34	241.81	203.78	38.04	6.357	
8,846.64	8,840.65	8,824.99	8,817.41	18.82	19.39	109.46	-162.28	-198.87	246.54	208.33	38.20	6.453	
8,850.00	8,844.01	8,827.92	8,820.24	18.82	19.39	111.08	-161.53	-199.05	246.93	208.71	38.21	6.462	
8,900.00	8,893.99	8,870.98	8,861.32	18.93	19.45	-103.57	-149.00	-201.93	253.29	214.91	38.38	6.599	
8,950.00	8,943.82	8,913.18	8,900.55	19.03	19.50	-83.67	-133.77	-204.95	260.60	222.06	38.53	6.763	
9,000.00	8,993.13	8,954.63	8,937.87	19.11	19.55	-77.84	-116.04	-208.11	268.62	229.96	38.66	6.948	
9,050.00	9,041.54	8,995.40	8,973.22	19.19	19.59	-73.95	-96.02	-211.39	277.17	238.39	38.78	7.147	
9,100.00	9,088.68	9,035.56	9,006.55	19.26	19.63	-70.84	-73.88	-214.76	286.05	247.16	38.89	7.356	
9,150.00	9,134.20	9,075.19	9,037.83	19.32	19.67	-68.23	-49.81	-218.22	295.09	256.10	38.98	7.570	
9,200.00	9,177.75	9,114.35	9,067.02	19.38	19.70	-66.00	-23.95	-221.74	304.12	265.05	39.07	7.783	
9,250.00	9,219.00	9,150.00	9,091.99	19.43	19.73	-64.14	1.27	-225.02	313.05	273.89	39.16	7.994	
9,300.00	9,257.62	9,191.50	9,119.01	19.50	19.75	-62.43	32.52	-228.91	321.68	282.43	39.25	8.196	
9,350.00	9,293.34	9,229.59	9,141.74	19.57	19.78	-61.04	62.87	-232.54	329.97	290.62	39.35	8.386	
9,400.00	9,325.87	9,267.43	9,162.26	19.66	19.90	-59.87	94.44	-236.18	337.83	298.28	39.55	8.541	
9,450.00	9,354.98	9,300.00	9,178.22	19.77	20.02	-58.94	122.65	-239.33	345.22	305.43	39.79	8.676	
9,500.00	9,380.43	9,342.53	9,196.58	19.91	20.20	-58.16	160.78	-243.45	351.94	311.83	40.11	8.773	
9,550.00	9,402.03	9,379.87	9,210.33	20.08	20.38	-57.58	195.30	-247.06	358.09	317.62	40.46	8.850	
9,600.00	9,419.63	9,417.13	9,221.76	20.28	20.58	-57.19	230.58	-250.63	363.57	322.71	40.86	8.898	
9,650.00	9,433.08	9,450.00	9,229.92	20.51	20.76	-56.93	262.26	-253.74	368.39	327.11	41.27	8.925	
9,700.00	9,442.29	9,491.56	9,237.60	20.78	21.02	-56.90	302.90	-257.62	372.43	330.63	41.79	8.911	
9,750.00	9,447.17	9,528.80	9,241.95	21.07	21.26	-57.00	339.73	-261.02	375.77	333.44	42.33	8.877	
9,777.03	9,448.00	9,550.00	9,243.36	21.24	21.41	-57.13	360.80	-262.92	377.28	334.63	42.65	8.846	
9,800.00	9,448.17	9,566.12	9,243.90	21.39	21.52	-57.30	376.84	-264.34	378.64	335.73	42.91	8.823	
9,900.00	9,448.88	9,689.74	9,244.81	22.13	22.41	-57.79	500.27	-270.40	382.89	338.35	44.54	8.596	
10,000.00	9,449.60	9,791.25	9,245.53	22.99	23.30	-57.81	601.78	-270.55	383.02	336.73	46.29	8.275	
10,100.00	9,450.31	9,891.25	9,246.24	23.95	24.28	-57.82	701.78	-270.69	383.13	334.90	48.23	7.944	
10,200.00	9,451.03	9,991.25	9,246.95	25.02	25.35	-57.82	801.78	-270.83	383.25	332.88	50.37	7.609	
10,300.00	9,451.75	10,091.25	9,247.66	26.16	26.50	-57.83	901.77	-270.97	383.37	330.70	52.66	7.279	
10,400.00	9,452.46	10,191.25	9,248.36	27.38	27.73	-57.84	1,001.77	-271.11	383.48	328.38	55.11	6.959	
10,500.00	9,453.18	10,291.25	9,249.07	28.67	29.01	-57.85	1,101.77	-271.25	383.60	325.92	57.68	6.651	
10,600.00	9,453.89	10,391.25	9,249.78	30.01	30.35	-57.86	1,201.77	-271.39	383.72	323.36	60.36	6.357	
10,700.00	9,454.61	10,491.25	9,250.49	31.40	31.74	-57.87	1,301.76	-271.53	383.84	320.70	63.14	6.079	
10,800.00	9,455.32	10,591.25	9,251.20	32.83	33.18	-57.88	1,401.76	-271.66	383.95	317.95	66.00	5.817	
10,900.00	9,456.04	10,691.25	9,251.90	34.30	34.64	-57.89	1,501.76	-271.80	384.07	315.13	68.94	5.571	
11,000.00	9,456.75	10,791.25	9,252.61	35.80	36.14	-57.90	1,601.76	-271.94	384.19	312.24	71.94	5.340	
11,100.00	9,457.47	10,891.25	9,253.32	37.33	37.67	-57.91	1,701.75	-272.08	384.31	309.30	75.00	5.124	
11,200.00	9,458.18	10,991.25	9,254.03	38.89	39.23	-57.92	1,801.75	-272.22	384.42	306.31	78.11	4.921	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 705H - Wellbore #1 - Plan #1												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
11,300.00	9,458.90	11,091.25	9,254.74	40.46	40.80	-57.93	1,901.75	-272.36	384.54	303.27	81.27	4.732	
11,400.00	9,459.62	11,191.25	9,255.44	42.06	42.40	-57.94	2,001.74	-272.50	384.66	300.19	84.46	4.554	
11,500.00	9,460.33	11,291.25	9,256.15	43.68	44.02	-57.95	2,101.74	-272.63	384.77	297.08	87.69	4.388	
11,600.00	9,461.05	11,391.25	9,256.86	45.31	45.65	-57.96	2,201.74	-272.77	384.89	293.94	90.96	4.232	
11,700.00	9,461.76	11,491.25	9,257.57	46.96	47.29	-57.97	2,301.74	-272.91	385.01	290.76	94.25	4.085	
11,800.00	9,462.48	11,591.25	9,258.28	48.62	48.95	-57.98	2,401.73	-273.05	385.13	287.56	97.56	3.947	
11,900.00	9,463.19	11,691.25	9,258.98	50.29	50.62	-57.99	2,501.73	-273.19	385.24	284.34	100.90	3.818	
12,000.00	9,463.91	11,791.25	9,259.69	51.97	52.30	-58.00	2,601.73	-273.33	385.36	281.10	104.26	3.696	
12,100.00	9,464.62	11,891.25	9,260.40	53.66	53.98	-58.01	2,701.73	-273.47	385.48	277.84	107.64	3.581	
12,200.00	9,465.34	11,991.25	9,261.11	55.36	55.68	-58.02	2,801.72	-273.61	385.60	274.56	111.04	3.473	
12,300.00	9,466.05	12,091.25	9,261.82	57.06	57.39	-58.03	2,901.72	-273.74	385.71	271.27	114.45	3.370	
12,400.00	9,466.77	12,191.25	9,262.52	58.78	59.10	-58.04	3,001.72	-273.88	385.83	267.96	117.87	3.273	
12,500.00	9,467.49	12,291.25	9,263.23	60.50	60.82	-58.05	3,101.71	-274.02	385.95	264.64	121.31	3.181	
12,600.00	9,468.20	12,391.25	9,263.94	62.22	62.54	-58.06	3,201.71	-274.16	386.07	261.30	124.76	3.094	
12,700.00	9,468.92	12,491.25	9,264.65	63.95	64.27	-58.07	3,301.71	-274.30	386.18	257.96	128.22	3.012	
12,800.00	9,469.63	12,591.25	9,265.36	65.69	66.01	-58.08	3,401.71	-274.44	386.30	254.61	131.70	2.933	
12,900.00	9,470.35	12,691.25	9,266.06	67.43	67.75	-58.08	3,501.70	-274.58	386.42	251.24	135.18	2.859	
13,000.00	9,471.06	12,791.25	9,266.77	69.18	69.49	-58.09	3,601.70	-274.71	386.54	247.87	138.67	2.788	
13,100.00	9,471.78	12,891.25	9,267.48	70.92	71.24	-58.10	3,701.70	-274.85	386.65	244.49	142.16	2.720	
13,200.00	9,472.49	12,991.25	9,268.19	72.68	72.99	-58.11	3,801.70	-274.99	386.77	241.10	145.67	2.655	
13,300.00	9,473.21	13,091.25	9,268.90	74.43	74.75	-58.12	3,901.69	-275.13	386.89	237.71	149.18	2.593	
13,400.00	9,473.92	13,191.25	9,269.60	76.19	76.51	-58.13	4,001.69	-275.27	387.01	234.31	152.70	2.534	
13,500.00	9,474.64	13,291.25	9,270.31	77.96	78.27	-58.14	4,101.69	-275.41	387.12	230.90	156.22	2.478	
13,600.00	9,475.36	13,391.25	9,271.02	79.72	80.03	-58.15	4,201.69	-275.55	387.24	227.49	159.76	2.424	
13,700.00	9,476.07	13,491.25	9,271.73	81.49	81.80	-58.16	4,301.68	-275.68	387.36	224.07	163.29	2.372	
13,800.00	9,476.79	13,591.25	9,272.44	83.26	83.57	-58.17	4,401.68	-275.82	387.48	220.65	166.83	2.323	
13,900.00	9,477.50	13,691.25	9,273.14	85.03	85.34	-58.18	4,501.68	-275.96	387.59	217.22	170.38	2.275	
14,000.00	9,478.22	13,791.25	9,273.85	86.81	87.12	-58.19	4,601.67	-276.10	387.71	213.79	173.92	2.229	
14,100.00	9,478.93	13,891.25	9,274.56	88.59	88.89	-58.20	4,701.67	-276.24	387.83	210.35	177.48	2.185	
14,200.00	9,479.65	13,991.25	9,275.27	90.36	90.67	-58.21	4,801.67	-276.38	387.95	206.91	181.04	2.143	
14,300.00	9,480.36	14,091.25	9,275.98	92.14	92.45	-58.22	4,901.67	-276.52	388.07	203.47	184.60	2.102	
14,400.00	9,481.08	14,191.25	9,276.68	93.93	94.23	-58.23	5,001.66	-276.66	388.18	200.02	188.16	2.063	
14,500.00	9,481.79	14,291.25	9,277.39	95.71	96.02	-58.24	5,101.66	-276.79	388.30	196.57	191.73	2.025	
14,600.00	9,482.51	14,391.25	9,278.10	97.50	97.80	-58.25	5,201.66	-276.93	388.42	193.12	195.30	1.989	
14,700.00	9,483.23	14,491.25	9,278.81	99.28	99.59	-58.26	5,301.66	-277.07	388.54	189.67	198.87	1.954	
14,800.00	9,483.94	14,591.25	9,279.52	101.07	101.38	-58.27	5,401.65	-277.21	388.65	186.21	202.45	1.920	
14,900.00	9,484.66	14,691.25	9,280.22	102.86	103.16	-58.27	5,501.65	-277.35	388.77	182.75	206.03	1.887	
15,000.00	9,485.37	14,791.25	9,280.93	104.65	104.96	-58.28	5,601.65	-277.49	388.89	179.28	209.61	1.855	
15,100.00	9,486.09	14,891.25	9,281.64	106.44	106.75	-58.29	5,701.64	-277.63	389.01	175.82	213.19	1.825	
15,200.00	9,486.80	14,991.25	9,282.35	108.24	108.54	-58.30	5,801.64	-277.76	389.13	172.35	216.78	1.795	
15,300.00	9,487.52	15,091.25	9,283.06	110.03	110.33	-58.31	5,901.64	-277.90	389.24	168.88	220.36	1.766	
15,400.00	9,488.23	15,191.25	9,283.76	111.83	112.13	-58.32	6,001.64	-278.04	389.36	165.41	223.95	1.739	
15,500.00	9,488.95	15,291.25	9,284.47	113.62	113.92	-58.33	6,101.63	-278.18	389.48	161.93	227.54	1.712	
15,600.00	9,489.66	15,391.25	9,285.18	115.42	115.72	-58.34	6,201.63	-278.32	389.60	158.46	231.14	1.686	
15,700.00	9,490.38	15,491.25	9,285.89	117.22	117.52	-58.35	6,301.63	-278.46	389.71	154.98	234.73	1.660	
15,800.00	9,491.10	15,591.25	9,286.60	119.01	119.32	-58.36	6,401.63	-278.60	389.83	151.50	238.33	1.636	
15,900.00	9,491.81	15,691.25	9,287.30	120.81	121.11	-58.37	6,501.62	-278.73	389.95	148.02	241.93	1.612	
16,000.00	9,492.53	15,791.25	9,288.01	122.61	122.91	-58.38	6,601.62	-278.87	390.07	144.54	245.53	1.589	
16,100.00	9,493.24	15,891.24	9,288.72	124.41	124.71	-58.39	6,701.62	-279.01	390.19	141.06	249.13	1.566	
16,200.00	9,493.96	15,991.24	9,289.43	126.22	126.52	-58.40	6,801.62	-279.15	390.30	137.57	252.73	1.544	
16,300.00	9,494.67	16,091.24	9,290.14	128.02	128.32	-58.41	6,901.61	-279.29	390.42	134.09	256.34	1.523	
16,400.00	9,495.39	16,191.24	9,290.84	129.82	130.12	-58.42	7,001.61	-279.43	390.54	130.60	259.94	1.502	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
16,500.00	9,496.10	16,291.24	9,291.55	131.62	131.92	-58.43	7,101.61	-279.57	390.66	127.11	263.55	1.482	Level 3
16,600.00	9,496.82	16,391.24	9,292.26	133.43	133.73	-58.43	7,201.60	-279.71	390.77	123.62	267.15	1.463	Level 3
16,700.00	9,497.53	16,491.24	9,292.97	135.23	135.53	-58.44	7,301.60	-279.84	390.89	120.13	270.76	1.444	Level 3
16,800.00	9,498.25	16,591.24	9,293.68	137.04	137.34	-58.45	7,401.60	-279.98	391.01	116.64	274.37	1.425	Level 3
16,900.00	9,498.97	16,691.24	9,294.38	138.84	139.14	-58.46	7,501.60	-280.12	391.13	113.14	277.98	1.407	Level 3
17,000.00	9,499.68	16,791.24	9,295.09	140.65	140.95	-58.47	7,601.59	-280.26	391.25	109.65	281.60	1.389	Level 3
17,100.00	9,500.40	16,891.24	9,295.80	142.45	142.75	-58.48	7,701.59	-280.40	391.36	106.16	285.21	1.372	Level 3
17,200.00	9,501.11	16,991.24	9,296.51	144.26	144.56	-58.49	7,801.59	-280.54	391.48	102.66	288.82	1.355	Level 3
17,300.00	9,501.83	17,091.24	9,297.22	146.07	146.37	-58.50	7,901.59	-280.68	391.60	99.16	292.44	1.339	Level 3
17,400.00	9,502.54	17,191.24	9,297.92	147.88	148.18	-58.51	8,001.58	-280.81	391.72	95.67	296.05	1.323	Level 3
17,500.00	9,503.26	17,291.24	9,298.63	149.68	149.98	-58.52	8,101.58	-280.95	391.84	92.17	299.67	1.308	Level 3
17,600.00	9,503.97	17,391.24	9,299.34	151.49	151.79	-58.53	8,201.58	-281.09	391.95	88.67	303.29	1.292	Level 3
17,700.00	9,504.69	17,491.24	9,300.05	153.30	153.60	-58.54	8,301.57	-281.23	392.07	85.17	306.90	1.278	Level 3
17,800.00	9,505.40	17,591.24	9,300.76	155.11	155.41	-58.55	8,401.57	-281.37	392.19	81.67	310.52	1.263	Level 3
17,900.00	9,506.12	17,691.24	9,301.46	156.92	157.22	-58.56	8,501.57	-281.51	392.31	78.17	314.14	1.249	Level 2
18,000.00	9,506.84	17,791.24	9,302.17	158.73	159.03	-58.56	8,601.57	-281.65	392.43	74.67	317.76	1.235	Level 2
18,100.00	9,507.55	17,891.24	9,302.88	160.54	160.84	-58.57	8,701.56	-281.79	392.54	71.16	321.38	1.221	Level 2
18,200.00	9,508.27	17,991.24	9,303.59	162.35	162.65	-58.58	8,801.56	-281.92	392.66	67.66	325.00	1.208	Level 2
18,300.00	9,508.98	18,091.24	9,304.30	164.16	164.46	-58.59	8,901.56	-282.06	392.78	64.16	328.63	1.195	Level 2
18,400.00	9,509.70	18,191.24	9,305.00	165.97	166.27	-58.60	9,001.56	-282.20	392.90	60.65	332.25	1.183	Level 2
18,500.00	9,510.41	18,291.24	9,305.71	167.78	168.09	-58.61	9,101.55	-282.34	393.02	57.15	335.87	1.170	Level 2
18,600.00	9,511.13	18,391.24	9,306.42	169.60	169.90	-58.62	9,201.55	-282.48	393.14	53.64	339.49	1.158	Level 2
18,700.00	9,511.84	18,491.24	9,307.13	171.41	171.71	-58.63	9,301.55	-282.62	393.25	50.13	343.12	1.146	Level 2
18,800.00	9,512.56	18,591.24	9,307.84	173.22	173.52	-58.64	9,401.55	-282.76	393.37	46.63	346.74	1.134	Level 2
18,900.00	9,513.27	18,691.24	9,308.54	175.03	175.34	-58.65	9,501.54	-282.89	393.49	43.12	350.37	1.123	Level 2
19,000.00	9,513.99	18,791.24	9,309.25	176.85	177.15	-58.66	9,601.54	-283.03	393.61	39.61	353.99	1.112	Level 2
19,100.00	9,514.71	18,891.24	9,309.96	178.66	178.96	-58.67	9,701.54	-283.17	393.73	36.11	357.62	1.101	Level 2
19,200.00	9,515.42	18,991.24	9,310.67	180.47	180.77	-58.68	9,801.53	-283.31	393.84	32.60	361.25	1.090	Level 2
19,300.00	9,516.14	19,091.24	9,311.38	182.29	182.59	-58.68	9,901.53	-283.45	393.96	29.09	364.87	1.080	Level 2
19,400.00	9,516.85	19,191.24	9,312.08	184.10	184.40	-58.69	10,001.53	-283.59	394.08	25.58	368.50	1.069	Level 2
19,500.00	9,517.57	19,291.24	9,312.79	185.91	186.22	-58.70	10,101.53	-283.73	394.20	22.07	372.13	1.059	Level 2
19,600.00	9,518.28	19,391.24	9,313.50	187.73	188.03	-58.71	10,201.52	-283.86	394.32	18.56	375.76	1.049	Level 2
19,700.00	9,519.00	19,491.24	9,314.21	189.54	189.84	-58.72	10,301.52	-284.00	394.44	15.05	379.39	1.040	Level 2
19,800.00	9,519.71	19,591.24	9,314.92	191.36	191.66	-58.73	10,401.52	-284.14	394.55	11.54	383.02	1.030	Level 2
19,900.00	9,520.43	19,691.24	9,315.62	193.17	193.47	-58.74	10,501.52	-284.28	394.67	8.03	386.65	1.021	Level 2
20,000.00	9,521.14	19,791.24	9,316.33	194.99	195.29	-58.75	10,601.51	-284.42	394.79	4.51	390.28	1.012	Level 2
20,100.00	9,521.86	19,891.24	9,317.04	196.80	197.10	-58.76	10,701.51	-284.56	394.91	1.00	393.91	1.003	Level 2
20,200.00	9,522.58	19,991.24	9,317.75	198.62	198.92	-58.77	10,801.51	-284.70	395.03	-2.51	397.54	0.994	Level 1
20,300.00	9,523.29	20,091.24	9,318.46	200.43	200.74	-58.78	10,901.51	-284.84	395.15	-6.02	401.17	0.985	Level 1
20,400.00	9,524.01	20,191.24	9,319.16	202.25	202.55	-58.79	11,001.50	-284.97	395.26	-9.54	404.80	0.976	Level 1
20,500.00	9,524.72	20,291.24	9,319.87	204.06	204.37	-58.79	11,101.50	-285.11	395.38	-13.05	408.43	0.968	Level 1
20,600.00	9,525.44	20,391.24	9,320.58	205.88	206.18	-58.80	11,201.50	-285.25	395.50	-16.56	412.06	0.960	Level 1
20,700.00	9,526.15	20,491.24	9,321.29	207.70	208.00	-58.81	11,301.49	-285.39	395.62	-20.08	415.70	0.952	Level 1
20,800.00	9,526.87	20,591.24	9,322.00	209.51	209.82	-58.82	11,401.49	-285.53	395.74	-23.59	419.33	0.944	Level 1
20,900.00	9,527.58	20,691.24	9,322.70	211.33	211.63	-58.83	11,501.49	-285.67	395.86	-27.11	422.96	0.936	Level 1
21,000.00	9,528.30	20,791.24	9,323.41	213.14	213.45	-58.84	11,601.49	-285.81	395.97	-30.62	426.59	0.928	Level 1
21,100.00	9,529.01	20,891.24	9,324.12	214.96	215.27	-58.85	11,701.48	-285.94	396.09	-34.14	430.23	0.921	Level 1
21,200.00	9,529.73	20,991.24	9,324.83	216.78	217.08	-58.86	11,801.48	-286.08	396.21	-37.65	433.86	0.913	Level 1
21,300.00	9,530.45	21,091.24	9,325.54	218.60	218.90	-58.87	11,901.48	-286.22	396.33	-41.17	437.50	0.906	Level 1
21,400.00	9,531.16	21,191.24	9,326.24	220.41	220.72	-58.88	12,001.48	-286.36	396.45	-44.68	441.13	0.899	Level 1
21,500.00	9,531.88	21,291.24	9,326.95	222.23	222.54	-58.89	12,101.47	-286.50	396.57	-48.20	444.76	0.892	Level 1
21,600.00	9,532.59	21,391.24	9,327.66	224.05	224.35	-58.89	12,201.47	-286.64	396.68	-51.72	448.40	0.885	Level 1

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Sec. 31, T 26 S, R 28- E - Way South State Com 705H - Wellbore #1 - Plan #1												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
21,700.00	9,533.31	21,491.24	9,328.37	225.86	226.17	-58.90	12,301.47	-286.78	396.80	-55.23	452.03	0.878	Level 1
21,752.70	9,533.68	21,543.94	9,328.74	226.64	227.13	-58.91	12,354.16	-286.85	396.86	-56.91	453.77	0.875	Level 1
21,796.92	9,534.00	21,580.58	9,329.00	227.30	227.79	-58.91	12,390.80	-286.90	396.99	-58.10	455.09	0.872	Level 1, ES, SF



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 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	1.00	1.00	0.00	0.00	-90.00	0.00	-60.00	60.00				
100.00	100.00	101.00	101.00	0.08	0.08	-90.00	0.00	-60.00	60.00	59.84	0.16	375.977	
200.00	200.00	201.00	201.00	0.30	0.31	-90.00	0.00	-60.00	60.00	59.39	0.61	98.503	
300.00	300.00	301.00	301.00	0.53	0.53	-90.00	0.00	-60.00	60.00	58.94	1.06	56.676	
400.00	400.00	401.00	401.00	0.75	0.76	-90.00	0.00	-60.00	60.00	58.49	1.51	39.783	
500.00	500.00	501.00	501.00	0.98	0.98	-90.00	0.00	-60.00	60.00	58.04	1.96	30.648	
600.00	600.00	601.00	601.00	1.20	1.20	-90.00	0.00	-60.00	60.00	57.59	2.41	24.925	
700.00	700.00	701.00	701.00	1.43	1.43	-90.00	0.00	-60.00	60.00	57.14	2.86	21.003	
800.00	800.00	801.00	801.00	1.65	1.65	-90.00	0.00	-60.00	60.00	56.69	3.31	18.147	
900.00	900.00	901.00	901.00	1.88	1.88	-90.00	0.00	-60.00	60.00	56.24	3.76	15.975	
1,000.00	1,000.00	1,001.00	1,001.00	2.10	2.10	-90.00	0.00	-60.00	60.00	55.79	4.21	14.267	
1,100.00	1,100.00	1,101.00	1,101.00	2.33	2.33	-90.00	0.00	-60.00	60.00	55.35	4.65	12.890	
1,200.00	1,200.00	1,201.00	1,201.00	2.55	2.55	-90.00	0.00	-60.00	60.00	54.90	5.10	11.754	
1,300.00	1,300.00	1,301.00	1,301.00	2.78	2.78	-90.00	0.00	-60.00	60.00	54.45	5.55	10.803	
1,400.00	1,400.00	1,401.00	1,401.00	3.00	3.00	-90.00	0.00	-60.00	60.00	54.00	6.00	9.994	
1,500.00	1,500.00	1,501.00	1,501.00	3.23	3.23	-90.00	0.00	-60.00	60.00	53.55	6.45	9.298	
1,600.00	1,600.00	1,601.00	1,601.00	3.45	3.45	-90.00	0.00	-60.00	60.00	53.10	6.90	8.692	
1,700.00	1,700.00	1,701.00	1,701.00	3.67	3.68	-90.00	0.00	-60.00	60.00	52.65	7.35	8.161	
1,800.00	1,800.00	1,801.00	1,801.00	3.90	3.90	-90.00	0.00	-60.00	60.00	52.20	7.80	7.691	
1,900.00	1,900.00	1,901.00	1,901.00	4.12	4.13	-90.00	0.00	-60.00	60.00	51.75	8.25	7.272	
1,966.33	1,966.33	1,967.33	1,967.33	4.27	4.28	-90.00	0.00	-60.00	60.00	51.45	8.55	7.018 CC	
2,000.00	2,000.00	2,000.98	2,000.98	4.35	4.35	-90.00	0.00	-60.00	60.00	51.30	8.70	6.896 ES	
2,100.00	2,100.00	2,100.08	2,100.07	4.57	4.54	-90.61	-0.66	-61.13	61.15	52.03	9.12	6.707	
2,200.00	2,200.00	2,200.07	2,200.04	4.80	4.73	-91.40	-1.53	-62.65	62.67	53.14	9.53	6.578	
2,300.00	2,300.00	2,300.05	2,300.01	5.02	4.92	-92.14	-2.40	-64.16	64.21	54.27	9.94	6.459	
2,400.00	2,400.00	2,400.03	2,399.98	5.25	5.11	-92.85	-3.27	-65.67	65.76	55.40	10.36	6.348	
2,500.00	2,500.00	2,500.02	2,499.95	5.47	5.30	-93.53	-4.15	-67.18	67.32	56.54	10.78	6.246	
2,600.00	2,600.00	2,600.00	2,599.92	5.70	5.50	-94.18	-5.02	-68.69	68.88	57.68	11.20	6.150	
2,700.00	2,700.00	2,699.99	2,699.89	5.92	5.70	-94.80	-5.89	-70.20	70.46	58.83	11.62	6.061	
2,800.00	2,800.00	2,799.97	2,799.86	6.15	5.90	-95.39	-6.76	-71.71	72.04	59.99	12.05	5.978	
2,900.00	2,900.00	2,899.96	2,899.83	6.37	6.11	-95.95	-7.64	-73.22	73.63	61.15	12.48	5.900	
3,000.00	3,000.00	2,999.94	2,999.80	6.60	6.31	-96.49	-8.51	-74.74	75.23	62.32	12.91	5.827	
3,100.00	3,100.00	3,099.93	3,099.77	6.82	6.52	-97.01	-9.38	-76.25	76.83	63.49	13.34	5.759	
3,200.00	3,200.00	3,199.91	3,199.74	7.05	6.73	-97.51	-10.25	-77.76	78.44	64.67	13.77	5.695	
3,300.00	3,300.00	3,299.90	3,299.70	7.27	6.94	-97.99	-11.13	-79.27	80.06	65.85	14.21	5.635	
3,400.00	3,400.00	3,399.88	3,399.67	7.50	7.15	-98.45	-12.00	-80.78	81.68	67.03	14.64	5.578	
3,500.00	3,500.00	3,499.87	3,499.64	7.72	7.36	-98.89	-12.87	-82.29	83.30	68.22	15.08	5.524	
3,600.00	3,600.00	3,599.85	3,599.61	7.95	7.57	-99.31	-13.74	-83.80	84.93	69.42	15.52	5.474	
3,700.00	3,700.00	3,699.84	3,699.58	8.17	7.78	-99.72	-14.61	-85.31	86.57	70.61	15.95	5.426	
3,800.00	3,800.00	3,799.82	3,799.55	8.40	8.00	-100.11	-15.49	-86.83	88.21	71.81	16.39	5.381	
3,900.00	3,900.00	3,899.81	3,899.52	8.62	8.21	-100.49	-16.36	-88.34	89.85	73.02	16.83	5.338	
4,000.00	4,000.00	3,999.79	3,999.49	8.84	8.43	-100.86	-17.23	-89.85	91.50	74.23	17.27	5.297	
4,100.00	4,100.00	4,099.78	4,099.46	9.07	8.64	-101.21	-18.10	-91.36	93.15	75.44	17.71	5.259	
4,200.00	4,200.00	4,199.76	4,199.43	9.29	8.86	-101.55	-18.98	-92.87	94.80	76.65	18.15	5.222	
4,300.00	4,300.00	4,299.75	4,299.40	9.52	9.08	-101.88	-19.85	-94.38	96.46	77.86	18.60	5.187	
4,400.00	4,400.00	4,399.73	4,399.37	9.74	9.29	-102.19	-20.72	-95.89	98.12	79.08	19.04	5.154	
4,500.00	4,500.00	4,499.71	4,499.34	9.97	9.51	-102.50	-21.59	-97.40	99.78	80.30	19.48	5.122	
4,600.00	4,600.00	4,599.70	4,599.31	10.19	9.73	-102.80	-22.47	-98.91	101.45	81.52	19.92	5.092	
4,700.00	4,700.00	4,699.68	4,699.28	10.42	9.95	-103.08	-23.34	-100.43	103.12	82.75	20.37	5.063	
4,800.00	4,800.00	4,799.67	4,799.25	10.64	10.17	-103.36	-24.21	-101.94	104.79	83.98	20.81	5.035	
4,900.00	4,900.00	4,899.65	4,899.22	10.87	10.39	-103.63	-25.08	-103.45	106.46	85.20	21.26	5.008	
5,000.00	5,000.00	4,999.64	4,999.19	11.09	10.61	-103.89	-25.96	-104.96	108.14	86.44	21.70	4.983	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,100.00	5,100.00	5,099.62	5,099.16	11.32	10.83	-104.14	-26.83	-106.47	109.81	87.67	22.15	4.959	
5,200.00	5,200.00	5,199.61	5,199.13	11.54	11.05	-104.39	-27.70	-107.98	111.49	88.90	22.59	4.935	
5,300.00	5,300.00	5,299.59	5,299.10	11.77	11.27	-104.63	-28.57	-109.49	113.18	90.14	23.04	4.913	
5,400.00	5,400.00	5,399.58	5,399.07	11.99	11.49	-104.86	-29.45	-111.00	114.86	91.38	23.48	4.891	
5,500.00	5,500.00	5,499.56	5,499.03	12.22	11.71	-105.08	-30.32	-112.52	116.55	92.62	23.93	4.870	
5,600.00	5,600.00	5,599.55	5,599.00	12.44	11.93	-105.30	-31.19	-114.03	118.23	93.86	24.38	4.850	
5,700.00	5,699.98	5,695.62	5,695.02	12.64	12.15	88.36	-32.83	-116.86	121.47	96.68	24.79	4.900	
5,777.24	5,777.12	5,770.43	5,769.68	12.77	12.32	89.36	-35.18	-120.93	126.07	100.98	25.09	5.025	
5,800.00	5,799.84	5,793.13	5,792.32	12.81	12.38	89.80	-35.97	-122.30	127.59	102.40	25.18	5.067	
5,900.00	5,899.65	5,892.81	5,891.76	12.98	12.61	91.58	-39.45	-128.33	134.33	108.74	25.59	5.250	
6,000.00	5,999.46	5,992.50	5,991.21	13.15	12.84	93.20	-42.93	-134.35	141.18	115.19	25.99	5.432	
6,100.00	6,099.27	6,092.19	6,090.66	13.32	13.08	94.66	-46.40	-140.37	148.14	121.74	26.40	5.611	
6,200.00	6,199.08	6,191.88	6,190.10	13.50	13.31	96.00	-49.88	-146.39	155.19	128.37	26.81	5.788	
6,300.00	6,298.89	6,291.57	6,289.55	13.68	13.55	97.21	-53.36	-152.42	162.31	135.08	27.23	5.961	
6,400.00	6,398.70	6,391.26	6,389.00	13.86	13.79	98.33	-56.83	-158.44	169.50	141.85	27.65	6.131	
6,500.00	6,498.50	6,490.95	6,488.44	14.04	14.03	99.35	-60.31	-164.46	176.74	148.68	28.07	6.297	
6,600.00	6,598.31	6,590.64	6,587.89	14.23	14.27	100.29	-63.79	-170.48	184.04	155.55	28.49	6.460	
6,700.00	6,698.12	6,690.33	6,687.34	14.41	14.51	101.16	-67.26	-176.51	191.39	162.47	28.92	6.618	
6,800.00	6,797.93	6,790.02	6,786.78	14.60	14.75	101.97	-70.74	-182.53	198.77	169.43	29.35	6.773	
6,900.00	6,897.74	6,889.71	6,886.23	14.79	14.99	102.72	-74.22	-188.55	206.20	176.41	29.78	6.924	
7,000.00	6,997.55	6,989.40	6,985.68	14.99	15.23	103.41	-77.70	-194.57	213.65	183.43	30.22	7.071	
7,100.00	7,097.36	7,089.09	7,085.12	15.18	15.47	104.06	-81.17	-200.59	221.13	190.48	30.65	7.214	
7,200.00	7,197.17	7,188.78	7,184.57	15.38	15.71	104.67	-84.65	-206.62	228.64	197.55	31.09	7.354	
7,300.00	7,296.97	7,288.47	7,284.01	15.58	15.96	105.24	-88.13	-212.64	236.18	204.64	31.53	7.490	
7,400.00	7,396.78	7,388.15	7,383.46	15.78	16.20	105.77	-91.60	-218.66	243.73	211.76	31.98	7.622	
7,500.00	7,496.59	7,487.84	7,482.91	15.98	16.44	106.27	-95.08	-224.68	251.31	218.89	32.42	7.751	
7,600.00	7,596.40	7,587.53	7,582.35	16.18	16.69	106.74	-98.56	-230.71	258.90	226.03	32.87	7.876	
7,700.00	7,696.21	7,687.22	7,681.80	16.39	16.93	107.19	-102.03	-236.73	266.51	233.19	33.32	7.998	
7,800.00	7,796.02	7,786.91	7,781.25	16.59	17.18	107.61	-105.51	-242.75	274.14	240.37	33.77	8.117	
7,900.00	7,895.83	7,886.60	7,880.69	16.80	17.43	108.00	-108.99	-248.77	281.78	247.55	34.23	8.233	
8,000.00	7,995.63	7,986.29	7,980.14	17.01	17.67	108.38	-112.47	-254.80	289.43	254.75	34.68	8.346	
8,100.00	8,095.44	8,085.98	8,079.59	17.22	17.92	108.74	-115.94	-260.82	297.09	261.96	35.14	8.456	
8,200.00	8,195.25	8,185.67	8,179.03	17.43	18.16	109.08	-119.42	-266.84	304.77	269.17	35.59	8.562	
8,300.00	8,295.06	8,285.36	8,278.48	17.64	18.41	109.40	-122.90	-272.86	312.45	276.40	36.05	8.667	
8,400.00	8,394.87	8,385.05	8,377.93	17.85	18.66	109.71	-126.37	-278.88	320.14	283.63	36.51	8.768	
8,500.00	8,494.68	8,484.74	8,477.37	18.07	18.91	110.00	-129.85	-284.91	327.85	290.87	36.97	8.867	
8,600.00	8,594.49	8,584.43	8,576.82	18.28	19.16	110.28	-133.33	-290.93	335.56	298.12	37.44	8.963	
8,700.00	8,694.30	8,684.12	8,676.27	18.50	19.40	110.54	-136.80	-296.95	343.27	305.37	37.90	9.057	
8,800.00	8,794.10	8,783.81	8,775.71	18.72	19.65	110.80	-140.28	-302.97	351.00	312.63	38.37	9.148	
8,846.64	8,840.65	8,830.30	8,822.09	18.82	19.77	110.91	-141.90	-305.78	354.60	316.02	38.59	9.190	
8,850.00	8,844.01	8,833.65	8,825.44	18.82	19.78	112.33	-142.02	-305.99	354.86	316.26	38.60	9.193	
8,900.00	8,893.99	8,879.43	8,871.10	18.93	19.89	-105.66	-143.43	-308.81	358.51	319.69	38.82	9.235	
8,950.00	8,943.82	8,918.61	8,910.14	19.03	19.98	-89.01	-142.54	-311.91	362.77	323.77	39.01	9.300	
9,000.00	8,993.13	8,957.73	8,948.92	19.11	20.06	-86.23	-139.12	-315.81	367.92	328.75	39.17	9.392	
9,050.00	9,041.54	9,000.00	8,990.35	19.19	20.15	-85.22	-132.59	-320.90	373.97	334.63	39.34	9.507	
9,100.00	9,088.68	9,035.86	9,024.98	19.26	20.22	-84.67	-124.76	-325.93	380.83	341.36	39.48	9.647	
9,150.00	9,134.20	9,074.89	9,061.95	19.32	20.30	-84.44	-113.91	-332.11	388.56	348.95	39.61	9.809	
9,200.00	9,177.75	9,113.94	9,098.02	19.38	20.37	-84.35	-100.66	-339.00	397.11	357.37	39.75	9.991	
9,250.00	9,219.00	9,150.00	9,130.37	19.43	20.44	-84.26	-86.34	-345.97	406.48	366.61	39.87	10.195	
9,300.00	9,257.62	9,192.20	9,166.88	19.50	20.51	-84.40	-67.14	-354.82	416.60	376.59	40.01	10.412	
9,350.00	9,293.34	9,231.50	9,199.41	19.57	20.58	-84.48	-46.98	-363.70	427.48	387.33	40.15	10.647	
9,400.00	9,325.87	9,270.98	9,230.50	19.66	20.66	-84.58	-24.59	-373.20	439.07	398.76	40.31	10.892	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,450.00	9,354.98	9,310.70	9,260.04	19.77	20.74	-84.68	-0.03	-383.29	451.33	410.82	40.51	11.142	
9,500.00	9,380.43	9,350.00	9,287.38	19.91	20.82	-84.75	26.17	-393.76	464.20	423.47	40.73	11.396	
9,550.00	9,402.03	9,391.18	9,313.90	20.08	20.92	-84.87	55.52	-405.18	477.64	436.64	41.00	11.649	
9,600.00	9,419.63	9,432.11	9,337.96	20.28	21.04	-84.96	86.46	-416.95	491.57	450.25	41.32	11.896	
9,650.00	9,433.08	9,473.64	9,359.90	20.51	21.19	-85.04	119.50	-429.25	505.94	464.24	41.70	12.131	
9,700.00	9,442.29	9,515.90	9,379.55	20.78	21.38	-85.12	154.63	-442.06	520.66	478.51	42.15	12.352	
9,750.00	9,447.17	9,559.02	9,396.72	21.07	21.60	-85.20	191.87	-455.37	535.66	492.99	42.67	12.553	
9,777.03	9,448.00	9,582.74	9,404.88	21.24	21.74	-85.25	212.87	-462.77	543.85	500.87	42.98	12.653	
9,800.00	9,448.17	9,603.28	9,411.21	21.39	21.87	-85.98	231.33	-469.21	550.88	507.62	43.26	12.734	
9,900.00	9,448.88	9,697.77	9,431.13	22.13	22.56	-88.19	318.65	-498.97	582.09	537.40	44.69	13.025	
10,000.00	9,449.60	9,815.88	9,436.33	22.99	23.59	-88.73	430.91	-534.94	612.70	566.13	46.58	13.155	
10,100.00	9,450.31	9,988.77	9,437.57	23.95	25.23	-88.81	599.50	-572.79	634.64	585.45	49.19	12.903	
10,200.00	9,451.03	10,168.65	9,438.85	25.02	27.06	-88.84	778.40	-590.32	644.40	592.32	52.08	12.374	
10,300.00	9,451.75	10,289.70	9,439.71	26.16	28.34	-88.84	899.44	-591.35	645.04	590.54	54.50	11.835	
10,400.00	9,452.46	10,389.70	9,440.42	27.38	29.46	-88.84	999.43	-591.57	645.26	588.42	56.84	11.352	
10,500.00	9,453.18	10,489.70	9,441.13	28.67	30.64	-88.84	1,099.43	-591.80	645.47	586.17	59.31	10.883	
10,600.00	9,453.89	10,589.70	9,441.83	30.01	31.88	-88.84	1,199.43	-592.02	645.69	583.80	61.89	10.433	
10,700.00	9,454.61	10,689.70	9,442.54	31.40	33.18	-88.84	1,299.42	-592.24	645.91	581.33	64.58	10.002	
10,800.00	9,455.32	10,789.70	9,443.25	32.83	34.52	-88.84	1,399.42	-592.46	646.13	578.78	67.35	9.594	
10,900.00	9,456.04	10,889.70	9,443.96	34.30	35.91	-88.84	1,499.42	-592.69	646.35	576.14	70.20	9.207	
11,000.00	9,456.75	10,989.70	9,444.66	35.80	37.33	-88.84	1,599.42	-592.91	646.56	573.44	73.13	8.842	
11,100.00	9,457.47	11,089.70	9,445.37	37.33	38.78	-88.84	1,699.41	-593.13	646.78	570.67	76.11	8.498	
11,200.00	9,458.18	11,189.70	9,446.08	38.89	40.27	-88.84	1,799.41	-593.35	647.00	567.84	79.15	8.174	
11,300.00	9,458.90	11,289.70	9,446.79	40.46	41.78	-88.84	1,899.41	-593.58	647.22	564.97	82.25	7.869	
11,400.00	9,459.62	11,389.70	9,447.50	42.06	43.32	-88.84	1,999.40	-593.80	647.43	562.05	85.38	7.583	
11,500.00	9,460.33	11,489.70	9,448.20	43.68	44.87	-88.84	2,099.40	-594.02	647.65	559.10	88.55	7.314	
11,600.00	9,461.05	11,589.70	9,448.91	45.31	46.45	-88.84	2,199.40	-594.24	647.87	556.11	91.76	7.060	
11,700.00	9,461.76	11,689.70	9,449.62	46.96	48.05	-88.84	2,299.39	-594.47	648.09	553.08	95.00	6.822	
11,800.00	9,462.48	11,789.70	9,450.33	48.62	49.66	-88.84	2,399.39	-594.69	648.30	550.03	98.27	6.597	
11,900.00	9,463.19	11,889.70	9,451.03	50.29	51.28	-88.84	2,499.39	-594.91	648.52	546.95	101.57	6.385	
12,000.00	9,463.91	11,989.70	9,451.74	51.97	52.92	-88.84	2,599.39	-595.13	648.74	543.85	104.89	6.185	
12,100.00	9,464.62	12,089.70	9,452.45	53.66	54.57	-88.84	2,699.38	-595.35	648.96	540.73	108.23	5.996	
12,200.00	9,465.34	12,189.70	9,453.16	55.36	56.23	-88.84	2,799.38	-595.58	649.18	537.59	111.59	5.818	
12,300.00	9,466.05	12,289.70	9,453.87	57.06	57.90	-88.84	2,899.38	-595.80	649.39	534.43	114.96	5.649	
12,400.00	9,466.77	12,389.70	9,454.57	58.78	59.58	-88.84	2,999.37	-596.02	649.61	531.25	118.36	5.489	
12,500.00	9,467.49	12,489.70	9,455.28	60.50	61.27	-88.84	3,099.37	-596.24	649.83	528.06	121.76	5.337	
12,600.00	9,468.20	12,589.70	9,455.99	62.22	62.96	-88.84	3,199.37	-596.47	650.05	524.86	125.19	5.193	
12,700.00	9,468.92	12,689.70	9,456.70	63.95	64.67	-88.84	3,299.36	-596.69	650.26	521.64	128.62	5.056	
12,800.00	9,469.63	12,789.70	9,457.40	65.69	66.38	-88.84	3,399.36	-596.91	650.48	518.42	132.07	4.925	
12,900.00	9,470.35	12,889.70	9,458.11	67.43	68.09	-88.84	3,499.36	-597.13	650.70	515.18	135.52	4.801	
13,000.00	9,471.06	12,989.70	9,458.82	69.18	69.81	-88.84	3,599.36	-597.36	650.92	511.93	138.99	4.683	
13,100.00	9,471.78	13,089.70	9,459.53	70.92	71.54	-88.83	3,699.35	-597.58	651.14	508.67	142.46	4.571	
13,200.00	9,472.49	13,189.70	9,460.24	72.68	73.27	-88.83	3,799.35	-597.80	651.35	505.41	145.95	4.463	
13,300.00	9,473.21	13,289.70	9,460.94	74.43	75.00	-88.83	3,899.35	-598.02	651.57	502.13	149.44	4.360	
13,400.00	9,473.92	13,389.69	9,461.65	76.19	76.74	-88.83	3,999.34	-598.25	651.79	498.85	152.94	4.262	
13,500.00	9,474.64	13,489.69	9,462.36	77.96	78.49	-88.83	4,099.34	-598.47	652.01	495.56	156.44	4.168	
13,600.00	9,475.36	13,589.69	9,463.07	79.72	80.23	-88.83	4,199.34	-598.69	652.22	492.27	159.96	4.077	
13,700.00	9,476.07	13,689.69	9,463.77	81.49	81.99	-88.83	4,299.34	-598.91	652.44	488.97	163.48	3.991	
13,800.00	9,476.79	13,789.69	9,464.48	83.26	83.74	-88.83	4,399.33	-599.14	652.66	485.66	167.00	3.908	
13,900.00	9,477.50	13,889.69	9,465.19	85.03	85.50	-88.83	4,499.33	-599.36	652.88	482.35	170.53	3.829	
14,000.00	9,478.22	13,989.69	9,465.90	86.81	87.26	-88.83	4,599.33	-599.58	653.10	479.03	174.06	3.752	
14,100.00	9,478.93	14,089.69	9,466.61	88.59	89.02	-88.83	4,699.32	-599.80	653.31	475.71	177.60	3.679	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
14,200.00	9,479.65	14,189.69	9,467.31	90.36	90.78	-88.83	4,799.32	-600.03	653.53	472.38	181.15	3.608	
14,300.00	9,480.36	14,289.69	9,468.02	92.14	92.55	-88.83	4,899.32	-600.25	653.75	469.05	184.69	3.540	
14,400.00	9,481.08	14,389.69	9,468.73	93.93	94.32	-88.83	4,999.31	-600.47	653.97	465.72	188.25	3.474	
14,500.00	9,481.79	14,489.69	9,469.44	95.71	96.09	-88.83	5,099.31	-600.69	654.18	462.38	191.80	3.411	
14,600.00	9,482.51	14,589.69	9,470.14	97.50	97.86	-88.83	5,199.31	-600.92	654.40	459.04	195.36	3.350	
14,700.00	9,483.23	14,689.69	9,470.85	99.28	99.64	-88.83	5,299.31	-601.14	654.62	455.70	198.92	3.291	
14,800.00	9,483.94	14,789.69	9,471.56	101.07	101.41	-88.83	5,399.30	-601.36	654.84	452.35	202.49	3.234	
14,900.00	9,484.66	14,889.69	9,472.27	102.86	103.19	-88.83	5,499.30	-601.58	655.05	449.00	206.05	3.179	
15,000.00	9,485.37	14,989.69	9,472.98	104.65	104.97	-88.83	5,599.30	-601.81	655.27	445.65	209.62	3.126	
15,100.00	9,486.09	15,089.69	9,473.68	106.44	106.76	-88.83	5,699.29	-602.03	655.49	442.29	213.20	3.075	
15,200.00	9,486.80	15,189.69	9,474.39	108.24	108.54	-88.83	5,799.29	-602.25	655.71	438.93	216.77	3.025	
15,300.00	9,487.52	15,289.69	9,475.10	110.03	110.32	-88.83	5,899.29	-602.47	655.93	435.57	220.35	2.977	
15,400.00	9,488.23	15,389.69	9,475.81	111.83	112.11	-88.83	5,999.28	-602.70	656.14	432.21	223.93	2.930	
15,500.00	9,488.95	15,489.69	9,476.51	113.62	113.90	-88.83	6,099.28	-602.92	656.36	428.84	227.52	2.885	
15,600.00	9,489.66	15,589.69	9,477.22	115.42	115.68	-88.83	6,199.28	-603.14	656.58	425.48	231.10	2.841	
15,700.00	9,490.38	15,689.69	9,477.93	117.22	117.47	-88.83	6,299.28	-603.36	656.80	422.11	234.69	2.799	
15,800.00	9,491.10	15,789.69	9,478.64	119.01	119.26	-88.83	6,399.27	-603.59	657.01	418.74	238.28	2.757	
15,900.00	9,491.81	15,889.69	9,479.35	120.81	121.06	-88.83	6,499.27	-603.81	657.23	415.36	241.87	2.717	
16,000.00	9,492.53	15,989.69	9,480.05	122.61	122.85	-88.83	6,599.27	-604.03	657.45	411.99	245.46	2.678	
16,100.00	9,493.24	16,089.69	9,480.76	124.41	124.64	-88.83	6,699.26	-604.25	657.67	408.61	249.06	2.641	
16,200.00	9,493.96	16,189.69	9,481.47	126.22	126.44	-88.83	6,799.26	-604.48	657.89	405.23	252.65	2.604	
16,300.00	9,494.67	16,289.69	9,482.18	128.02	128.23	-88.83	6,899.26	-604.70	658.10	401.85	256.25	2.568	
16,400.00	9,495.39	16,389.69	9,482.88	129.82	130.03	-88.83	6,999.25	-604.92	658.32	398.47	259.85	2.533	
16,500.00	9,496.10	16,489.69	9,483.59	131.62	131.82	-88.83	7,099.25	-605.14	658.54	395.09	263.45	2.500	
16,600.00	9,496.82	16,589.69	9,484.30	133.43	133.62	-88.82	7,199.25	-605.37	658.76	391.71	267.05	2.467	
16,700.00	9,497.53	16,689.69	9,485.01	135.23	135.42	-88.82	7,299.25	-605.59	658.97	388.32	270.65	2.435	
16,800.00	9,498.25	16,789.69	9,485.72	137.04	137.22	-88.82	7,399.24	-605.81	659.19	384.94	274.26	2.404	
16,900.00	9,498.97	16,889.69	9,486.42	138.84	139.02	-88.82	7,499.24	-606.03	659.41	381.55	277.86	2.373	
17,000.00	9,499.68	16,989.69	9,487.13	140.65	140.82	-88.82	7,599.24	-606.26	659.63	378.16	281.47	2.344	
17,100.00	9,500.40	17,089.69	9,487.84	142.45	142.62	-88.82	7,699.23	-606.48	659.84	374.77	285.07	2.315	
17,200.00	9,501.11	17,189.69	9,488.55	144.26	144.42	-88.82	7,799.23	-606.70	660.06	371.38	288.68	2.286	
17,300.00	9,501.83	17,289.69	9,489.25	146.07	146.22	-88.82	7,899.23	-606.92	660.28	367.99	292.29	2.259	
17,400.00	9,502.54	17,389.69	9,489.96	147.88	148.03	-88.82	7,999.22	-607.14	660.50	364.59	295.90	2.232	
17,500.00	9,503.26	17,489.69	9,490.67	149.68	149.83	-88.82	8,099.22	-607.37	660.72	361.20	299.52	2.206	
17,600.00	9,503.97	17,589.69	9,491.38	151.49	151.63	-88.82	8,199.22	-607.59	660.93	357.81	303.13	2.180	
17,700.00	9,504.69	17,689.69	9,492.09	153.30	153.44	-88.82	8,299.22	-607.81	661.15	354.41	306.74	2.155	
17,800.00	9,505.40	17,789.69	9,492.79	155.11	155.24	-88.82	8,399.21	-608.03	661.37	351.01	310.36	2.131	
17,900.00	9,506.12	17,889.69	9,493.50	156.92	157.05	-88.82	8,499.21	-608.26	661.59	347.62	313.97	2.107	
18,000.00	9,506.84	17,989.69	9,494.21	158.73	158.86	-88.82	8,599.21	-608.48	661.80	344.22	317.59	2.084	
18,100.00	9,507.55	18,089.69	9,494.92	160.54	160.66	-88.82	8,699.20	-608.70	662.02	340.82	321.20	2.061	
18,200.00	9,508.27	18,189.69	9,495.62	162.35	162.47	-88.82	8,799.20	-608.92	662.24	337.42	324.82	2.039	
18,300.00	9,508.98	18,289.69	9,496.33	164.16	164.28	-88.82	8,899.20	-609.15	662.46	334.02	328.44	2.017	
18,400.00	9,509.70	18,389.69	9,497.04	165.97	166.08	-88.82	8,999.19	-609.37	662.68	330.62	332.06	1.996	
18,500.00	9,510.41	18,489.69	9,497.75	167.78	167.89	-88.82	9,099.19	-609.59	662.89	327.22	335.68	1.975	
18,600.00	9,511.13	18,589.69	9,498.46	169.60	169.70	-88.82	9,199.19	-609.81	663.11	323.82	339.30	1.954	
18,700.00	9,511.84	18,689.69	9,499.16	171.41	171.51	-88.82	9,299.19	-610.04	663.33	320.41	342.92	1.934	
18,800.00	9,512.56	18,789.69	9,499.87	173.22	173.32	-88.82	9,399.18	-610.26	663.55	317.01	346.54	1.915	
18,900.00	9,513.27	18,889.69	9,500.58	175.03	175.13	-88.82	9,499.18	-610.48	663.76	313.60	350.16	1.896	
19,000.00	9,513.99	18,989.69	9,501.29	176.85	176.94	-88.82	9,599.18	-610.70	663.98	310.20	353.78	1.877	
19,100.00	9,514.71	19,089.69	9,501.99	178.66	178.75	-88.82	9,699.17	-610.93	664.20	306.79	357.41	1.858	
19,200.00	9,515.42	19,189.69	9,502.70	180.47	180.56	-88.82	9,799.17	-611.15	664.42	303.39	361.03	1.840	
19,300.00	9,516.14	19,289.69	9,503.41	182.29	182.37	-88.82	9,899.17	-611.37	664.64	299.98	364.65	1.823	

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



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design		Sec. 31, T 26 S, R 28- E - Way South State Com 706H - Wellbore #1 - Plan #1											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 Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,400.00	9,516.85	19,389.68	9,504.12	184.10	184.18	-88.82	9,999.16	-611.59	664.85	296.58	368.28	1.805		
19,500.00	9,517.57	19,489.68	9,504.83	185.91	185.99	-88.82	10,099.16	-611.82	665.07	293.17	371.90	1.788		
19,600.00	9,518.28	19,589.68	9,505.53	187.73	187.80	-88.82	10,199.16	-612.04	665.29	289.76	375.53	1.772		
19,700.00	9,519.00	19,689.68	9,506.24	189.54	189.61	-88.82	10,299.16	-612.26	665.51	286.35	379.15	1.755		
19,800.00	9,519.71	19,789.68	9,506.95	191.36	191.42	-88.82	10,399.15	-612.48	665.72	282.94	382.78	1.739		
19,900.00	9,520.43	19,889.68	9,507.66	193.17	193.24	-88.82	10,499.15	-612.71	665.94	279.53	386.41	1.723		
20,000.00	9,521.14	19,989.68	9,508.36	194.99	195.05	-88.82	10,599.15	-612.93	666.16	276.13	390.03	1.708		
20,100.00	9,521.86	20,089.68	9,509.07	196.80	196.86	-88.82	10,699.14	-613.15	666.38	272.72	393.66	1.693		
20,200.00	9,522.58	20,189.68	9,509.78	198.62	198.67	-88.82	10,799.14	-613.37	666.59	269.30	397.29	1.678		
20,300.00	9,523.29	20,289.68	9,510.49	200.43	200.49	-88.81	10,899.14	-613.60	666.81	265.89	400.92	1.663		
20,400.00	9,524.01	20,389.68	9,511.20	202.25	202.30	-88.81	10,999.13	-613.82	667.03	262.48	404.55	1.649		
20,500.00	9,524.72	20,489.68	9,511.90	204.06	204.11	-88.81	11,099.13	-614.04	667.25	259.07	408.18	1.635		
20,600.00	9,525.44	20,589.68	9,512.61	205.88	205.93	-88.81	11,199.13	-614.26	667.47	255.66	411.81	1.621		
20,700.00	9,526.15	20,689.68	9,513.32	207.70	207.74	-88.81	11,299.13	-614.49	667.68	252.25	415.44	1.607		
20,800.00	9,526.87	20,789.68	9,514.03	209.51	209.55	-88.81	11,399.12	-614.71	667.90	248.83	419.07	1.594		
20,900.00	9,527.58	20,889.68	9,514.73	211.33	211.37	-88.81	11,499.12	-614.93	668.12	245.42	422.70	1.581		
21,000.00	9,528.30	20,989.68	9,515.44	213.14	213.18	-88.81	11,599.12	-615.15	668.34	242.01	426.33	1.568		
21,100.00	9,529.01	21,089.68	9,516.15	214.96	215.00	-88.81	11,699.11	-615.38	668.55	238.59	429.96	1.555		
21,200.00	9,529.73	21,189.68	9,516.86	216.78	216.81	-88.81	11,799.11	-615.60	668.77	235.18	433.59	1.542		
21,300.00	9,530.45	21,289.68	9,517.57	218.60	218.63	-88.81	11,899.11	-615.82	668.99	231.77	437.22	1.530		
21,400.00	9,531.16	21,389.68	9,518.27	220.41	220.44	-88.81	11,999.11	-616.04	669.21	228.35	440.86	1.518		
21,500.00	9,531.88	21,489.68	9,518.98	222.23	222.26	-88.81	12,099.10	-616.27	669.43	224.94	444.49	1.506		
21,600.00	9,532.59	21,589.68	9,519.69	224.05	224.07	-88.81	12,199.10	-616.49	669.64	221.52	448.12	1.494 Level 3		
21,700.00	9,533.31	21,689.68	9,520.40	225.86	225.89	-88.81	12,299.10	-616.71	669.86	218.11	451.75	1.483 Level 3		
21,746.01	9,533.64	21,735.68	9,520.72	226.55	226.61	-88.81	12,345.10	-616.81	669.96	216.81	453.15	1.478 Level 3		
21,796.92	9,534.00	21,774.88	9,521.00	227.30	227.19	-88.81	12,384.30	-616.90	670.17	215.68	454.49	1.475 Level 3, SF		



Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=30' @ 3129.00usft (Nabor 894)

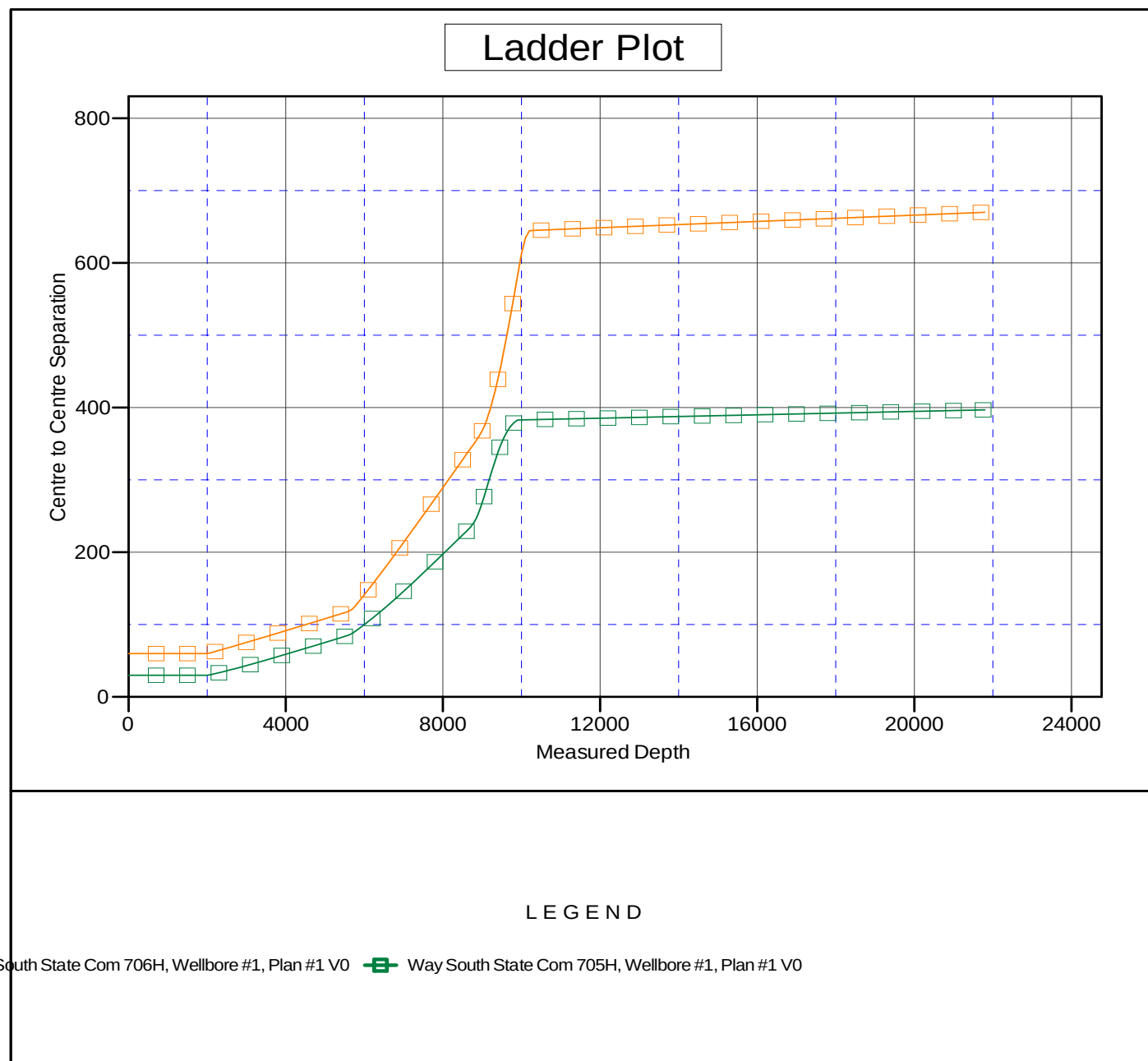
Coordinates are relative to: Way South State Com 704H

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Central Meridian is -104.33334

Grid Convergence at Surface is: 0.11°





Anticollision Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Reference Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Way South State Com 704H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.1
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=30' @ 3129.00usft (Nabor 894)

Offset Depths are relative to Offset Datum

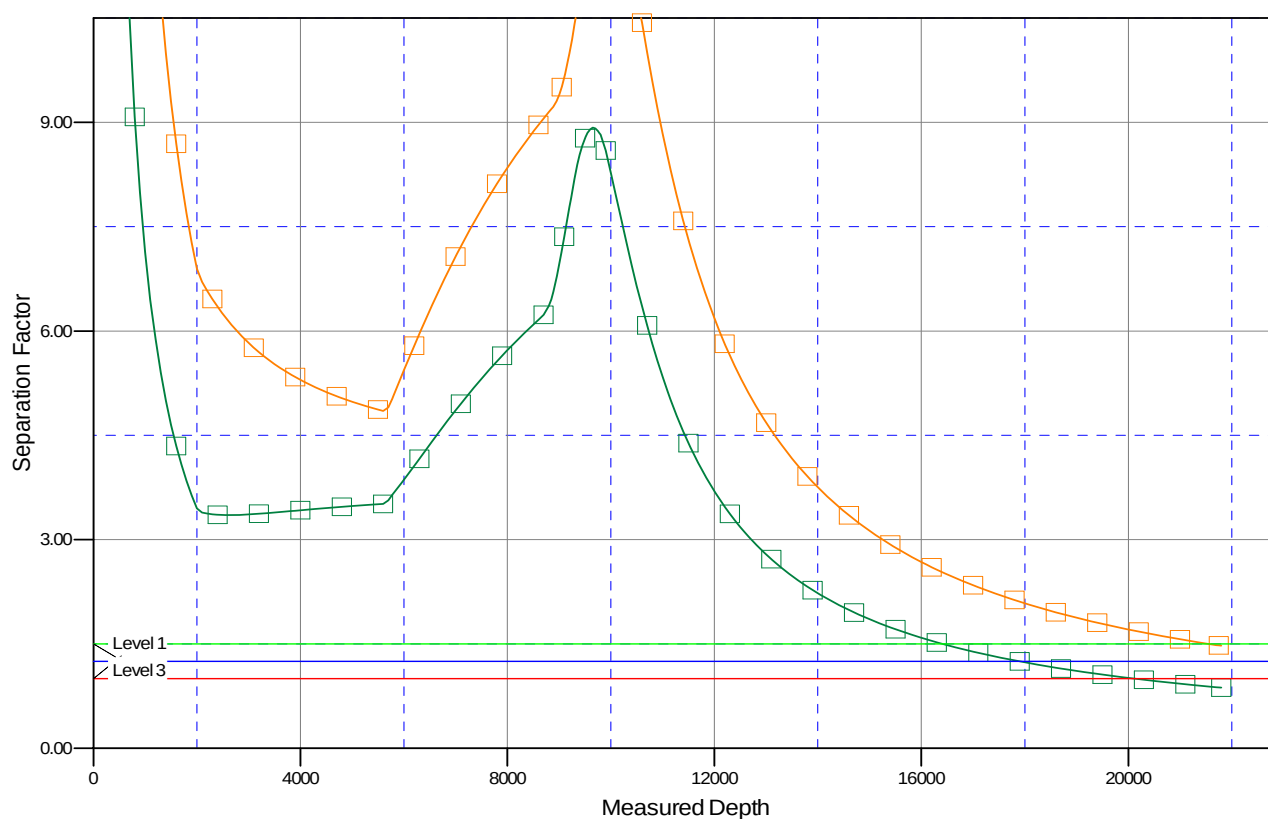
Central Meridian is -104.33334

Coordinates are relative to: Way South State Com 704H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.11°

Separation Factor Plot



LEGEND

South State Com 706H, Wellbore #1, Plan #1 V0 Way South State Com 705H, Wellbore #1, Plan #1 V0

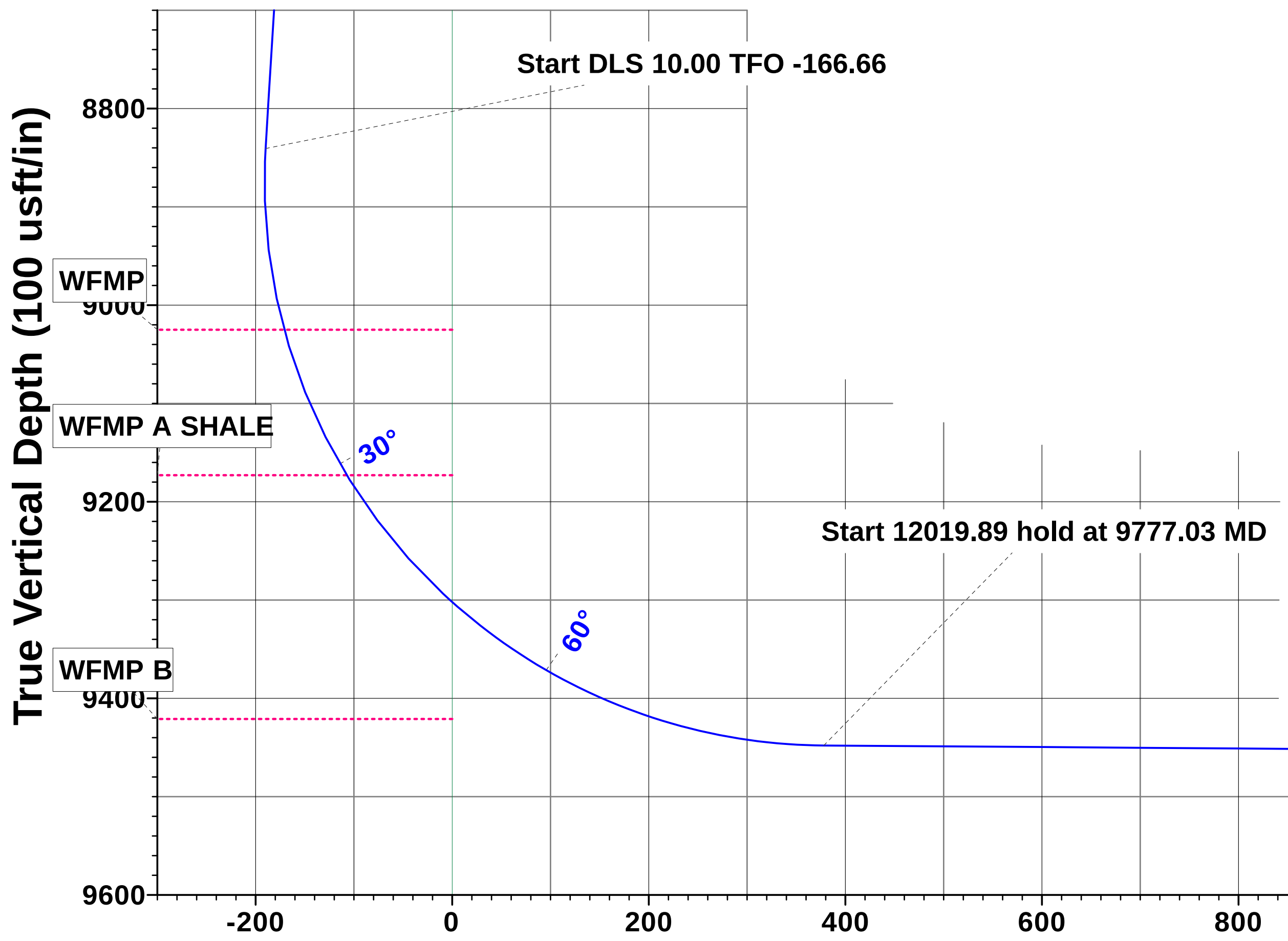
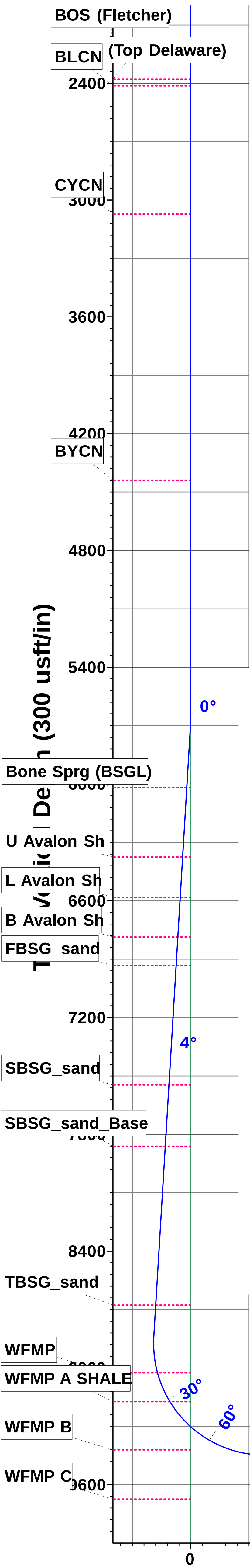


COG Operating L L C
Project: Eddy County, NM (NAD 27 NME)
Site: Sec. 31, T 26 S, R 28- E
Well: Way South State Com 704H
Wellbore: Wellbore #1
Plan: Plan #1 (Way South State Com 704H/Wellbore #1)
Nabor 894

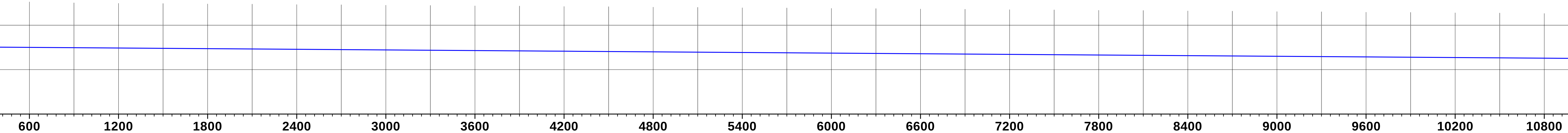
WELL DETAILS: Way South State Com 704H
Ground Elevation:: 3099.00
RKB Elevation: KB=30' @ 3129.00usft (Nabor 894)
Rig Name: Nabor 894

Northing	Easting	Latitude	Longitude
363975.10	565489.70	32.00051	-104.12207

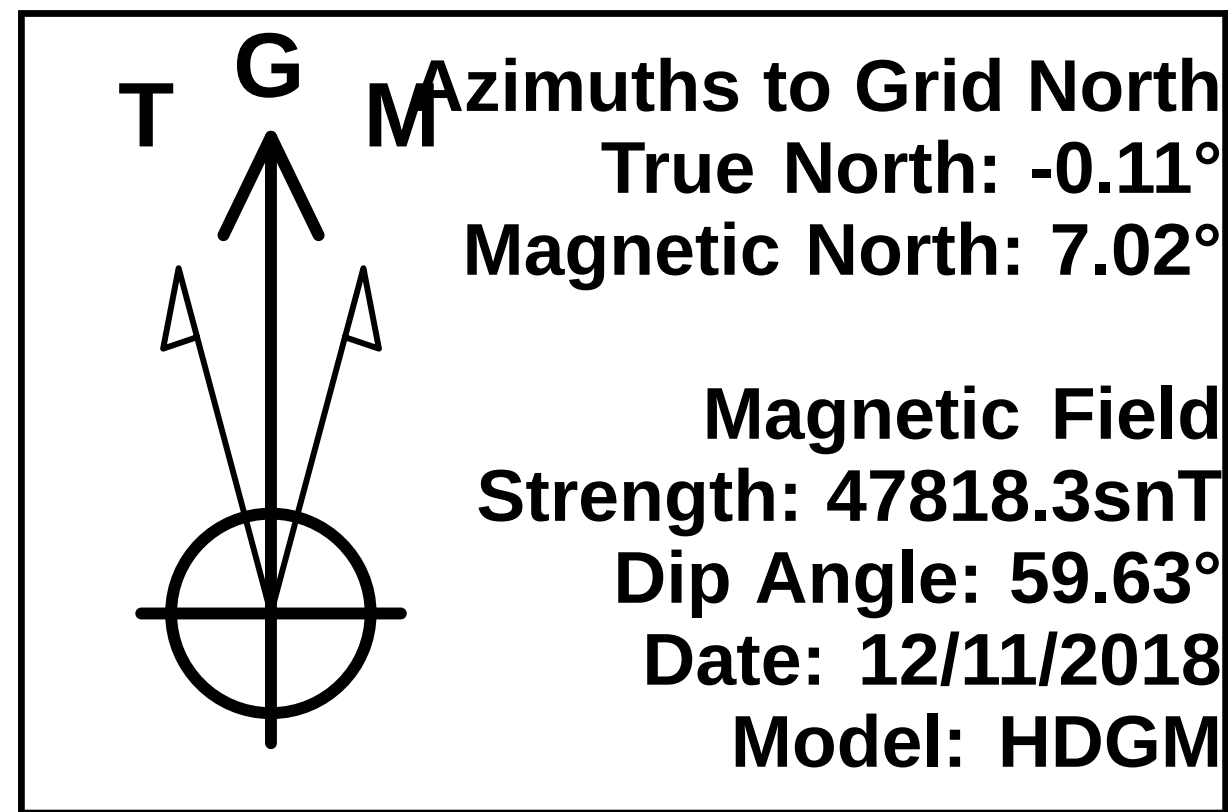
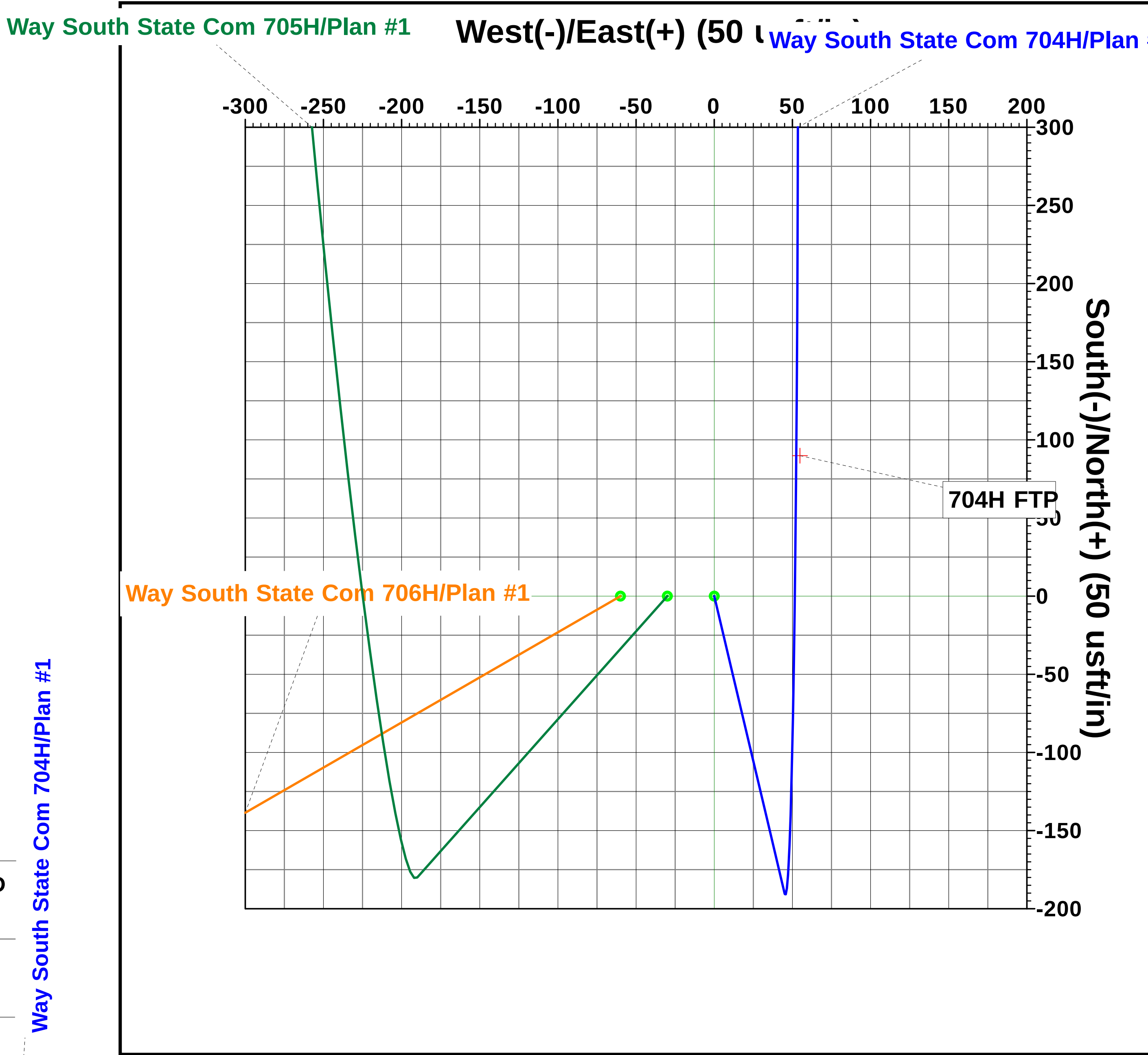
Planned Section Details										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5600.00	0.00	0.00	5600.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
3	5777.24	3.54	166.68	5777.12	-5.33	1.26	2.00	166.68	-5.33	Start 3069.40 hold at 5777.24 MD
4	8846.64	3.54	166.68	8840.65	-190.00	45.00	0.00	0.00	-189.81	Start DLS 10.00 TFO -166.66
5	9777.03	89.59	360.00	9448.00	377.82	53.58	10.00	-166.66	378.05	Start 12019.89 hold at 9777.03 MD
6	21796.92	89.59	360.00	9534.00	12397.40	53.00	0.00	0.00	12397.51	TD at 21796.92



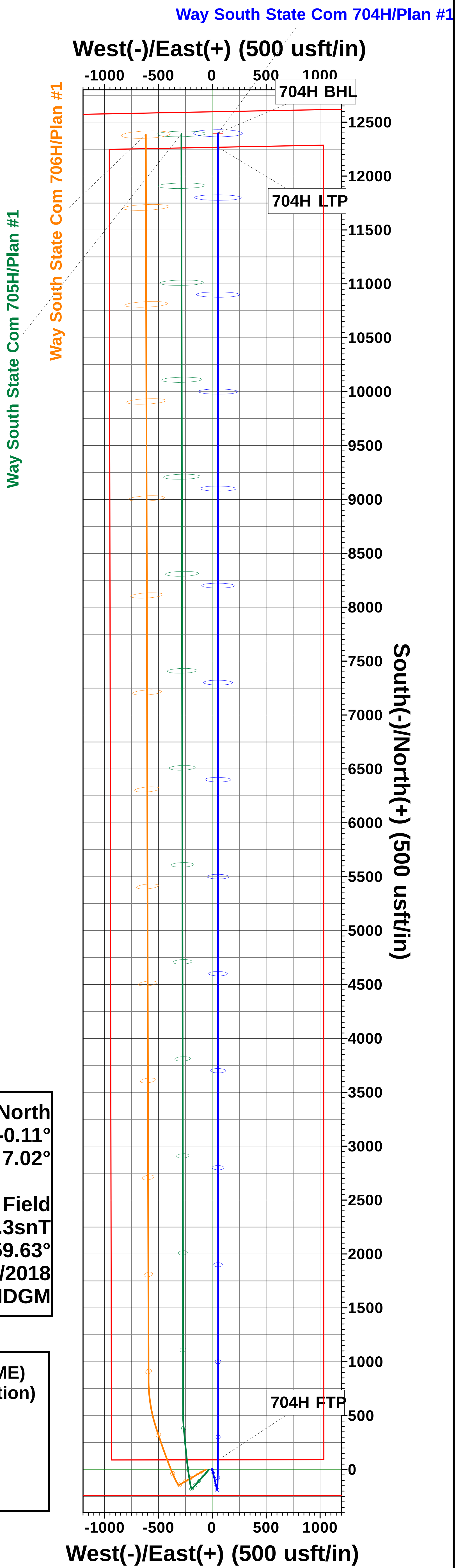
Vertical Section at 0.24° (100 usft/in)



Vertical Section at 0.24° (300 usft/in)



PROJECT DETAILS: Eddy County, NM (NAD 27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Way South State Com 704H/Plan #1

Intent ☐ As Drilled ☐

API # 30-015-		
Operator Name: COG OPERATING LLC	Property Name: WAY SOUTH STATE COM	Well Number 704H

Kick Off Point (KOP)

UL G	Section 31	Township 26S	Range 28E	Lot 4	Feet 240'	From N/S S	Feet 1365'	From E/W E	County EDDY
Latitude 32.000629					Longitude -104.122560			NAD 83	

First Take Point (FTP)

UL H	Section 31	Township 26S	Range 28E	Lot 5	Feet 330'	From N/S S	Feet 1310'	From E/W E	County Eddy
Latitude 32.000876					Longitude -104.122382			NAD 83	

Last Take Point (LTP)

UL A	Section 19	Township 26S	Range 28E	Lot 5	Feet 330'	From N/S N	Feet 1310'	From E/W E	County EDDY
Latitude 32.034352					Longitude -104.122312			NAD 83	

Is this well the defining well for the Horizontal Spacing Unit?

☐ Y

Is this well an infill well?

☐ N

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API # 30-015-		
Operator Name: COG OPERATING LLC	Property Name: WAY SOUTH STATE COM	Well Number 704H



COG Operating L L C

Eddy County, NM (NAD 27 NME)

Sec. 31, T 26 S, R 28- E

Way South State Com 704H

Wellbore #1

Plan: Plan #1

Standard Survey Report

11 December, 2018





Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

Project	Eddy County, NM (NAD 27 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		Sec. 31, T 26 S, R 28- E			
Site Position:		Northing:	363,736.60 usft	Latitude:	31.99984
From:	Map	Easting:	566,855.10 usft	Longitude:	-104.11767
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.11 °

Well	Way South State Com 704H					
Well Position	+N/-S	0.00 usft	Northing:	363,975.10 usft	Latitude:	32.00051
	+E/-W	0.00 usft	Easting:	565,489.70 usft	Longitude:	-104.12207
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,099.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/11/2018	7.13	59.63	47,818

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.24	

Survey Tool Program	Date	12/11/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	21,796.28	Plan #1 (Wellbore #1)	MWD	MWD - Standard	

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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	



Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00



Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
5,700.00	2.00	166.68	5,699.98	-1.70	0.40	-1.70	2.00	2.00	0.00
5,777.24	3.54	166.68	5,777.12	-5.33	1.26	-5.33	2.00	2.00	0.00
Start 3069.40 hold at 5777.24 MD									
5,800.00	3.54	166.68	5,799.84	-6.70	1.59	-6.70	0.00	0.00	0.00
5,900.00	3.54	166.68	5,899.65	-12.72	3.01	-12.71	0.00	0.00	0.00
6,000.00	3.54	166.68	5,999.46	-18.74	4.44	-18.72	0.00	0.00	0.00
6,100.00	3.54	166.68	6,099.27	-24.75	5.86	-24.73	0.00	0.00	0.00
6,200.00	3.54	166.68	6,199.08	-30.77	7.29	-30.74	0.00	0.00	0.00
6,300.00	3.54	166.68	6,298.89	-36.78	8.71	-36.75	0.00	0.00	0.00
6,400.00	3.54	166.68	6,398.70	-42.80	10.14	-42.76	0.00	0.00	0.00
6,500.00	3.54	166.68	6,498.50	-48.82	11.56	-48.77	0.00	0.00	0.00
6,600.00	3.54	166.68	6,598.31	-54.83	12.99	-54.78	0.00	0.00	0.00
6,700.00	3.54	166.68	6,698.12	-60.85	14.41	-60.79	0.00	0.00	0.00
6,800.00	3.54	166.68	6,797.93	-66.87	15.84	-66.80	0.00	0.00	0.00
6,900.00	3.54	166.68	6,897.74	-72.88	17.26	-72.81	0.00	0.00	0.00
7,000.00	3.54	166.68	6,997.55	-78.90	18.69	-78.82	0.00	0.00	0.00
7,100.00	3.54	166.68	7,097.36	-84.92	20.11	-84.83	0.00	0.00	0.00
7,200.00	3.54	166.68	7,197.17	-90.93	21.54	-90.84	0.00	0.00	0.00
7,300.00	3.54	166.68	7,296.97	-96.95	22.96	-96.85	0.00	0.00	0.00
7,400.00	3.54	166.68	7,396.78	-102.96	24.39	-102.86	0.00	0.00	0.00
7,500.00	3.54	166.68	7,496.59	-108.98	25.81	-108.87	0.00	0.00	0.00
7,600.00	3.54	166.68	7,596.40	-115.00	27.24	-114.88	0.00	0.00	0.00
7,700.00	3.54	166.68	7,696.21	-121.01	28.66	-120.89	0.00	0.00	0.00
7,800.00	3.54	166.68	7,796.02	-127.03	30.09	-126.90	0.00	0.00	0.00
7,900.00	3.54	166.68	7,895.83	-133.05	31.51	-132.91	0.00	0.00	0.00
8,000.00	3.54	166.68	7,995.63	-139.06	32.94	-138.92	0.00	0.00	0.00
8,100.00	3.54	166.68	8,095.44	-145.08	34.36	-144.93	0.00	0.00	0.00
8,200.00	3.54	166.68	8,195.25	-151.10	35.79	-150.94	0.00	0.00	0.00
8,300.00	3.54	166.68	8,295.06	-157.11	37.21	-156.95	0.00	0.00	0.00
8,400.00	3.54	166.68	8,394.87	-163.13	38.64	-162.96	0.00	0.00	0.00
8,500.00	3.54	166.68	8,494.68	-169.15	40.06	-168.97	0.00	0.00	0.00
8,600.00	3.54	166.68	8,594.49	-175.16	41.49	-174.98	0.00	0.00	0.00
8,700.00	3.54	166.68	8,694.30	-181.18	42.91	-180.99	0.00	0.00	0.00
8,800.00	3.54	166.68	8,794.10	-187.19	44.34	-187.00	0.00	0.00	0.00
8,846.64	3.54	166.68	8,840.65	-190.00	45.00	-189.81	0.00	0.00	0.00
Start DLS 10.00 TFO -166.66									
8,900.00	2.06	23.40	8,893.99	-190.73	45.76	-190.53	10.00	-2.79	-268.48
9,000.00	11.91	3.87	8,993.13	-178.75	47.17	-178.55	10.00	9.86	-19.53
9,100.00	21.90	2.03	9,088.68	-149.74	48.53	-149.53	10.00	9.99	-1.84
9,200.00	31.90	1.31	9,177.75	-104.57	49.80	-104.36	10.00	9.99	-0.72



Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
9,300.00	41.89	0.90	9,257.62	-44.62	50.93	-44.41	10.00	10.00	-0.40
9,400.00	51.89	0.63	9,325.87	28.28	51.89	28.51	10.00	10.00	-0.27
9,500.00	61.89	0.43	9,380.43	111.94	52.66	112.16	10.00	10.00	-0.20
9,600.00	71.89	0.26	9,419.63	203.79	53.20	204.02	10.00	10.00	-0.17
9,700.00	81.89	0.11	9,442.29	301.06	53.51	301.29	10.00	10.00	-0.15
9,777.03	89.59	360.00	9,448.00	377.82	53.58	378.05	10.00	10.00	-0.14
Start 12019.89 hold at 9777.03 MD									
9,800.00	89.59	360.00	9,448.17	400.79	53.58	401.02	0.00	0.00	0.00
9,900.00	89.59	360.00	9,448.88	500.79	53.57	501.01	0.00	0.00	0.00
10,000.00	89.59	360.00	9,449.60	600.79	53.57	601.01	0.00	0.00	0.00
10,100.00	89.59	360.00	9,450.31	700.78	53.56	701.01	0.00	0.00	0.00
10,200.00	89.59	360.00	9,451.03	800.78	53.56	801.00	0.00	0.00	0.00
10,300.00	89.59	360.00	9,451.75	900.78	53.55	901.00	0.00	0.00	0.00
10,400.00	89.59	360.00	9,452.46	1,000.78	53.55	1,001.00	0.00	0.00	0.00
10,500.00	89.59	360.00	9,453.18	1,100.77	53.55	1,100.99	0.00	0.00	0.00
10,600.00	89.59	360.00	9,453.89	1,200.77	53.54	1,200.99	0.00	0.00	0.00
10,700.00	89.59	360.00	9,454.61	1,300.77	53.54	1,300.99	0.00	0.00	0.00
10,800.00	89.59	360.00	9,455.32	1,400.77	53.53	1,400.98	0.00	0.00	0.00
10,900.00	89.59	360.00	9,456.04	1,500.76	53.53	1,500.98	0.00	0.00	0.00
11,000.00	89.59	360.00	9,456.75	1,600.76	53.52	1,600.98	0.00	0.00	0.00
11,100.00	89.59	360.00	9,457.47	1,700.76	53.52	1,700.97	0.00	0.00	0.00
11,200.00	89.59	360.00	9,458.18	1,800.76	53.51	1,800.97	0.00	0.00	0.00
11,300.00	89.59	360.00	9,458.90	1,900.75	53.51	1,900.96	0.00	0.00	0.00
11,400.00	89.59	360.00	9,459.62	2,000.75	53.50	2,000.96	0.00	0.00	0.00
11,500.00	89.59	360.00	9,460.33	2,100.75	53.50	2,100.96	0.00	0.00	0.00
11,600.00	89.59	360.00	9,461.05	2,200.75	53.49	2,200.95	0.00	0.00	0.00
11,700.00	89.59	360.00	9,461.76	2,300.74	53.49	2,300.95	0.00	0.00	0.00
11,800.00	89.59	360.00	9,462.48	2,400.74	53.48	2,400.95	0.00	0.00	0.00
11,900.00	89.59	360.00	9,463.19	2,500.74	53.48	2,500.94	0.00	0.00	0.00
12,000.00	89.59	360.00	9,463.91	2,600.74	53.47	2,600.94	0.00	0.00	0.00
12,100.00	89.59	360.00	9,464.62	2,700.73	53.47	2,700.94	0.00	0.00	0.00
12,200.00	89.59	360.00	9,465.34	2,800.73	53.46	2,800.93	0.00	0.00	0.00
12,300.00	89.59	360.00	9,466.05	2,900.73	53.46	2,900.93	0.00	0.00	0.00
12,400.00	89.59	360.00	9,466.77	3,000.73	53.45	3,000.93	0.00	0.00	0.00
12,500.00	89.59	360.00	9,467.49	3,100.72	53.45	3,100.92	0.00	0.00	0.00
12,600.00	89.59	360.00	9,468.20	3,200.72	53.44	3,200.92	0.00	0.00	0.00
12,700.00	89.59	360.00	9,468.92	3,300.72	53.44	3,300.92	0.00	0.00	0.00
12,800.00	89.59	360.00	9,469.63	3,400.72	53.43	3,400.91	0.00	0.00	0.00
12,900.00	89.59	360.00	9,470.35	3,500.71	53.43	3,500.91	0.00	0.00	0.00
13,000.00	89.59	360.00	9,471.06	3,600.71	53.42	3,600.91	0.00	0.00	0.00
13,100.00	89.59	360.00	9,471.78	3,700.71	53.42	3,700.90	0.00	0.00	0.00
13,200.00	89.59	360.00	9,472.49	3,800.70	53.41	3,800.90	0.00	0.00	0.00
13,300.00	89.59	360.00	9,473.21	3,900.70	53.41	3,900.89	0.00	0.00	0.00



Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
13,400.00	89.59	360.00	9,473.92	4,000.70	53.41	4,000.89	0.00	0.00	0.00
13,500.00	89.59	360.00	9,474.64	4,100.70	53.40	4,100.89	0.00	0.00	0.00
13,600.00	89.59	360.00	9,475.36	4,200.69	53.40	4,200.88	0.00	0.00	0.00
13,700.00	89.59	360.00	9,476.07	4,300.69	53.39	4,300.88	0.00	0.00	0.00
13,800.00	89.59	360.00	9,476.79	4,400.69	53.39	4,400.88	0.00	0.00	0.00
13,900.00	89.59	360.00	9,477.50	4,500.69	53.38	4,500.87	0.00	0.00	0.00
14,000.00	89.59	360.00	9,478.22	4,600.68	53.38	4,600.87	0.00	0.00	0.00
14,100.00	89.59	360.00	9,478.93	4,700.68	53.37	4,700.87	0.00	0.00	0.00
14,200.00	89.59	360.00	9,479.65	4,800.68	53.37	4,800.86	0.00	0.00	0.00
14,300.00	89.59	360.00	9,480.36	4,900.68	53.36	4,900.86	0.00	0.00	0.00
14,400.00	89.59	360.00	9,481.08	5,000.67	53.36	5,000.86	0.00	0.00	0.00
14,500.00	89.59	360.00	9,481.79	5,100.67	53.35	5,100.85	0.00	0.00	0.00
14,600.00	89.59	360.00	9,482.51	5,200.67	53.35	5,200.85	0.00	0.00	0.00
14,700.00	89.59	360.00	9,483.23	5,300.67	53.34	5,300.85	0.00	0.00	0.00
14,800.00	89.59	360.00	9,483.94	5,400.66	53.34	5,400.84	0.00	0.00	0.00
14,900.00	89.59	360.00	9,484.66	5,500.66	53.33	5,500.84	0.00	0.00	0.00
15,000.00	89.59	360.00	9,485.37	5,600.66	53.33	5,600.84	0.00	0.00	0.00
15,100.00	89.59	360.00	9,486.09	5,700.66	53.32	5,700.83	0.00	0.00	0.00
15,200.00	89.59	360.00	9,486.80	5,800.65	53.32	5,800.83	0.00	0.00	0.00
15,300.00	89.59	360.00	9,487.52	5,900.65	53.31	5,900.83	0.00	0.00	0.00
15,400.00	89.59	360.00	9,488.23	6,000.65	53.31	6,000.82	0.00	0.00	0.00
15,500.00	89.59	360.00	9,488.95	6,100.65	53.30	6,100.82	0.00	0.00	0.00
15,600.00	89.59	360.00	9,489.66	6,200.64	53.30	6,200.81	0.00	0.00	0.00
15,700.00	89.59	360.00	9,490.38	6,300.64	53.29	6,300.81	0.00	0.00	0.00
15,800.00	89.59	360.00	9,491.10	6,400.64	53.29	6,400.81	0.00	0.00	0.00
15,900.00	89.59	360.00	9,491.81	6,500.64	53.28	6,500.80	0.00	0.00	0.00
16,000.00	89.59	360.00	9,492.53	6,600.63	53.28	6,600.80	0.00	0.00	0.00
16,100.00	89.59	360.00	9,493.24	6,700.63	53.27	6,700.80	0.00	0.00	0.00
16,200.00	89.59	360.00	9,493.96	6,800.63	53.27	6,800.79	0.00	0.00	0.00
16,300.00	89.59	360.00	9,494.67	6,900.63	53.27	6,900.79	0.00	0.00	0.00
16,400.00	89.59	360.00	9,495.39	7,000.62	53.26	7,000.79	0.00	0.00	0.00
16,500.00	89.59	360.00	9,496.10	7,100.62	53.26	7,100.78	0.00	0.00	0.00
16,600.00	89.59	360.00	9,496.82	7,200.62	53.25	7,200.78	0.00	0.00	0.00
16,700.00	89.59	360.00	9,497.53	7,300.62	53.25	7,300.78	0.00	0.00	0.00
16,800.00	89.59	360.00	9,498.25	7,400.61	53.24	7,400.77	0.00	0.00	0.00
16,900.00	89.59	360.00	9,498.97	7,500.61	53.24	7,500.77	0.00	0.00	0.00
17,000.00	89.59	360.00	9,499.68	7,600.61	53.23	7,600.77	0.00	0.00	0.00
17,100.00	89.59	360.00	9,500.40	7,700.61	53.23	7,700.76	0.00	0.00	0.00
17,200.00	89.59	360.00	9,501.11	7,800.60	53.22	7,800.76	0.00	0.00	0.00
17,300.00	89.59	360.00	9,501.83	7,900.60	53.22	7,900.76	0.00	0.00	0.00
17,400.00	89.59	360.00	9,502.54	8,000.60	53.21	8,000.75	0.00	0.00	0.00
17,500.00	89.59	360.00	9,503.26	8,100.59	53.21	8,100.75	0.00	0.00	0.00
17,600.00	89.59	360.00	9,503.97	8,200.59	53.20	8,200.74	0.00	0.00	0.00



Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

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)
17,700.00	89.59	360.00	9,504.69	8,300.59	53.20	8,300.74	0.00	0.00	0.00
17,800.00	89.59	360.00	9,505.40	8,400.59	53.19	8,400.74	0.00	0.00	0.00
17,900.00	89.59	360.00	9,506.12	8,500.58	53.19	8,500.73	0.00	0.00	0.00
18,000.00	89.59	360.00	9,506.84	8,600.58	53.18	8,600.73	0.00	0.00	0.00
18,100.00	89.59	360.00	9,507.55	8,700.58	53.18	8,700.73	0.00	0.00	0.00
18,200.00	89.59	360.00	9,508.27	8,800.58	53.17	8,800.72	0.00	0.00	0.00
18,300.00	89.59	360.00	9,508.98	8,900.57	53.17	8,900.72	0.00	0.00	0.00
18,400.00	89.59	360.00	9,509.70	9,000.57	53.16	9,000.72	0.00	0.00	0.00
18,500.00	89.59	360.00	9,510.41	9,100.57	53.16	9,100.71	0.00	0.00	0.00
18,600.00	89.59	360.00	9,511.13	9,200.57	53.15	9,200.71	0.00	0.00	0.00
18,700.00	89.59	360.00	9,511.84	9,300.56	53.15	9,300.71	0.00	0.00	0.00
18,800.00	89.59	360.00	9,512.56	9,400.56	53.14	9,400.70	0.00	0.00	0.00
18,900.00	89.59	360.00	9,513.27	9,500.56	53.14	9,500.70	0.00	0.00	0.00
19,000.00	89.59	360.00	9,513.99	9,600.56	53.13	9,600.70	0.00	0.00	0.00
19,100.00	89.59	360.00	9,514.71	9,700.55	53.13	9,700.69	0.00	0.00	0.00
19,200.00	89.59	360.00	9,515.42	9,800.55	53.13	9,800.69	0.00	0.00	0.00
19,300.00	89.59	360.00	9,516.14	9,900.55	53.12	9,900.69	0.00	0.00	0.00
19,400.00	89.59	360.00	9,516.85	10,000.55	53.12	10,000.68	0.00	0.00	0.00
19,500.00	89.59	360.00	9,517.57	10,100.54	53.11	10,100.68	0.00	0.00	0.00
19,600.00	89.59	360.00	9,518.28	10,200.54	53.11	10,200.67	0.00	0.00	0.00
19,700.00	89.59	360.00	9,519.00	10,300.54	53.10	10,300.67	0.00	0.00	0.00
19,800.00	89.59	360.00	9,519.71	10,400.54	53.10	10,400.67	0.00	0.00	0.00
19,900.00	89.59	360.00	9,520.43	10,500.53	53.09	10,500.66	0.00	0.00	0.00
20,000.00	89.59	360.00	9,521.14	10,600.53	53.09	10,600.66	0.00	0.00	0.00
20,100.00	89.59	360.00	9,521.86	10,700.53	53.08	10,700.66	0.00	0.00	0.00
20,200.00	89.59	360.00	9,522.58	10,800.53	53.08	10,800.65	0.00	0.00	0.00
20,300.00	89.59	360.00	9,523.29	10,900.52	53.07	10,900.65	0.00	0.00	0.00
20,400.00	89.59	360.00	9,524.01	11,000.52	53.07	11,000.65	0.00	0.00	0.00
20,500.00	89.59	360.00	9,524.72	11,100.52	53.06	11,100.64	0.00	0.00	0.00
20,600.00	89.59	360.00	9,525.44	11,200.52	53.06	11,200.64	0.00	0.00	0.00
20,700.00	89.59	360.00	9,526.15	11,300.51	53.05	11,300.64	0.00	0.00	0.00
20,800.00	89.59	360.00	9,526.87	11,400.51	53.05	11,400.63	0.00	0.00	0.00
20,900.00	89.59	360.00	9,527.58	11,500.51	53.04	11,500.63	0.00	0.00	0.00
21,000.00	89.59	360.00	9,528.30	11,600.51	53.04	11,600.63	0.00	0.00	0.00
21,100.00	89.59	360.00	9,529.01	11,700.50	53.03	11,700.62	0.00	0.00	0.00
21,200.00	89.59	360.00	9,529.73	11,800.50	53.03	11,800.62	0.00	0.00	0.00
21,300.00	89.59	360.00	9,530.45	11,900.50	53.02	11,900.62	0.00	0.00	0.00
21,400.00	89.59	360.00	9,531.16	12,000.50	53.02	12,000.61	0.00	0.00	0.00
21,500.00	89.59	360.00	9,531.88	12,100.49	53.01	12,100.61	0.00	0.00	0.00
21,600.00	89.59	360.00	9,532.59	12,200.49	53.01	12,200.61	0.00	0.00	0.00
21,700.00	89.59	360.00	9,533.31	12,300.49	53.00	12,300.60	0.00	0.00	0.00
21,796.92	89.59	360.00	9,534.00	12,397.40	53.00	12,397.51	0.00	0.00	0.00
TD at 21796.92									



Survey Report



Company:	COG Operating L L C	Local Co-ordinate Reference:	Well Way South State Com 704H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Site:	Sec. 31, T 26 S, R 28- E	MD Reference:	KB=30' @ 3129.00usft (Nabor 894)
Well:	Way South State Com 704H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 5000.1

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
704H FTP - plan misses target center by 105.29usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	89.90	54.80	364,065.00	565,544.50	32.00075	-104.12190
704H LTP - plan misses target center by 9532.83usft at 21598.71usft MD (9532.58 TVD, 12199.20 N, 53.01 E) - Point	0.00	0.00	0.00	12,267.40	53.10	376,242.50	565,542.80	32.03423	-104.12183
704H BHL - plan hits target center - Point	0.00	0.00	9,534.00	12,397.40	53.00	376,372.50	565,542.70	32.03459	-104.12183

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
17.00	17.00	Rustler		0.00	
606.00	606.00	TOS		0.00	
2,198.00	2,198.00	BOS (Fletcher)		0.00	
2,379.00	2,379.00	LMAR (Top Delaware)		0.00	
2,413.00	2,413.00	BLCN		0.00	
3,072.00	3,072.00	CYCN		0.00	
4,439.00	4,439.00	BYCN			
6,018.57	6,018.00	Bone Sprg (BSGL)			
6,376.26	6,375.00	U Avalon Sh			
6,583.66	6,582.00	L Avalon Sh			
6,788.05	6,786.00	B Avalon Sh			
6,934.33	6,932.00	FBSG_sand			
7,549.50	7,546.00	SBSG_sand			
7,865.11	7,861.00	SBSG_sand_Base			
8,682.67	8,677.00	TBSG_sand			
9,032.79	9,025.00	WFMP			
9,194.42	9,173.00	WFMP A SHALE			
9,604.46	9,421.00	WFMP B			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5600	5600	0	0	Start Build 2.00
5777	5777	-5	1	Start 3069.40 hold at 5777.24 MD
8847	8841	-190	45	Start DLS 10.00 TFO -166.66
9777	9448	378	54	Start 12019.89 hold at 9777.03 MD
21,797	9534	12,397	53	TD at 21796.92

Checked By: _____ Approved By: _____ Date: _____