

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.**Carlsbad Field Office**
OCD HobbsCase Serial No.
NM132948**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other	2. Name of Operator COG OPERATING LLC	Contact: MAYTE X REYES E-Mail: mreyes1@concho.com	6. If Indian, Allottee or Tribe Name
3a. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701-4287	3b. Phone No. (include area code) Ph: 575-748-6945	8. Well Name and No. SKULL CAP FEDERAL COM 22H	9. API Well No. 30-025-43299-00-X1
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 32 T24S R35E NWSE 2590FSL 1980FEL	10. Field and Pool, or Exploratory WC-025 G09 S243532M	11. County or Parish, and State LEA COUNTY, NM	

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC, respectfully requests approval for the following changes to the original approved APD.

DRILLING

New total depth = 20215' MD

New volumes are:

Casing #Sks Wt. lb/gal Yld ft3/sack H2O gal/sk 500# Comp. Strength(hours)
Prd. Csg 100 11.9 2.52 14 17
Slurry Description
Lead:50:50:2 H Blend (FR, Retarder, FL adds as needed)

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

14. I hereby certify that the foregoing is true and correct. Electronic Submission #343245 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Hobbs Committed to AFMSS for processing by PRISCILLA PEREZ on 06/30/2016 (16PP0837SE)	
Name (Printed/Typed) MAYTE X REYES	Title REGULATORY ANALYST
Signature (Electronic Submission)	Date 06/27/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>(BLM Approver Not Specified) Mustafa Hague</u>	Title PETROLEUM ENGINEER	Date 07/12/2016
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		
Office Hobbs		

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #343245 that would not fit on the form

32. Additional remarks, continued

Casing #Sks Wt. lb/gal Yld ft3/sack H2O gal/sk 500# Comp. Strength(hours)

Prod. Csg 1000 14.4 1.25 5.7 17

Slurry Description

Tail:50:50:2 H Blend (FR, FL adds as needed)

Directional plan attached.

Anti-Collision attached.

BHL

From: 330' FSL & 1980' FEL Section 5. T25S. R35E

To: 50' FSL & 1980' FEI Section 5. T25S. R35E

NAME CHANGE

From: Skull Cap Federal Com #2H

To: Skull Cap Federal Com #22H

C102 Attached

HOBBS OCD

JUL 19 2016

RECEIVED

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	COG Operating, LLC
LEASE NO.:	NMNM-132948
WELL NAME & NO.:	Skull Cap Fed Com 22H
SURFACE HOLE FOOTAGE:	2590' FSL & 1980' FEL
BOTTOM HOLE FOOTAGE	0050' FSL & 1980' FEL
LOCATION:	Section 32, T. 24 S., R 35 E., NMPM
COUNTY:	Lea County, New Mexico

All previous COAs still apply.

MHH 07122016

COG OPERATING, LLC

LEA COUNTY, NM

LUDEMAN

SKULL CAP FEDERAL COM #22H

LATERAL 01

HOBBS OCD

JUL 19 2016

RECEIVED

Plan: DWD Plan 1

Standard Planning Report

24 June, 2016

COG Operating LLC

Planning Report

Database:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Company:	NEW MEXICO BASIN	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Project:	LEA COUNTY, NM	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site:	LUDEMAN	North Reference:	Grid
Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Wellbore:	LATERAL 01		
Design:	DWD Plan 1		

Project	LEA COUNTY, NM		
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	LUDEMAN		
Site Position:		Northing:	409,564.70 usft
From:	Map	Easting:	795,348.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	17-1/2 "
		Latitude:	32° 7' 20.696 N
		Longitude:	103° 22' 45.584 W
		Grid Convergence:	0.51 °

Well	SKULL CAP FEDERAL COM #22H					
Well Position	+N/-S	18,643.1 usft	Northing:	428,207.80 usft	Latitude:	32° 10' 25.391 N
	+E/-W	-2,509.8 usft	Easting:	792,838.90 usft	Longitude:	103° 23' 12.860 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	3,286.0 usft

Wellbore	LATERAL 01				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	1/27/2016	7.03	60.06	48,064

Design	DWD Plan 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	10,000.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.61

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
12,101.5	0.00	0.00	12,101.5	0.0	0.0	0.00	0.00	0.00	0.00	
12,852.2	90.09	179.61	12,579.0	-478.2	3.3	12.00	12.00	0.00	179.61	
20,215.4	90.09	179.61	12,567.4	-7,841.2	53.6	0.00	0.00	0.00	0.00	Skull Cap Federal

COG Operating LLC

Planning Report

Database:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Company:	NEW MEXICO BASIN	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Project:	LEA COUNTY, NM	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site:	LUDEMAN	North Reference:	Grid
Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Wellbore:	LATERAL 01		
Design:	DWD Plan 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)
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
Skull Cap Federal Com #2H - SHL									
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	0.00
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	0.00
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	0.00
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	0.00
10,900.0	0.00	0.00	10,900.0	0.0	0.0	0.0	0.00	0.00	0.00
11,000.0	0.00	0.00	11,000.0	0.0	0.0	0.0	0.00	0.00	0.00
11,100.0	0.00	0.00	11,100.0	0.0	0.0	0.0	0.00	0.00	0.00
11,200.0	0.00	0.00	11,200.0	0.0	0.0	0.0	0.00	0.00	0.00
11,300.0	0.00	0.00	11,300.0	0.0	0.0	0.0	0.00	0.00	0.00
11,400.0	0.00	0.00	11,400.0	0.0	0.0	0.0	0.00	0.00	0.00
11,500.0	0.00	0.00	11,500.0	0.0	0.0	0.0	0.00	0.00	0.00
11,600.0	0.00	0.00	11,600.0	0.0	0.0	0.0	0.00	0.00	0.00
11,700.0	0.00	0.00	11,700.0	0.0	0.0	0.0	0.00	0.00	0.00
11,800.0	0.00	0.00	11,800.0	0.0	0.0	0.0	0.00	0.00	0.00
11,900.0	0.00	0.00	11,900.0	0.0	0.0	0.0	0.00	0.00	0.00
12,000.0	0.00	0.00	12,000.0	0.0	0.0	0.0	0.00	0.00	0.00
12,100.0	0.00	0.00	12,100.0	0.0	0.0	0.0	0.00	0.00	0.00
12,101.5	0.00	0.00	12,101.5	0.0	0.0	0.0	0.00	0.00	0.00
12,200.0	11.82	179.61	12,199.3	-10.1	0.1	10.1	12.00	12.00	0.00
12,300.0	23.82	179.61	12,294.3	-40.7	0.3	40.7	12.00	12.00	0.00
12,400.0	35.82	179.61	12,380.9	-90.3	0.6	90.3	12.00	12.00	0.00
12,500.0	47.82	179.61	12,455.3	-156.9	1.1	156.9	12.00	12.00	0.00
12,600.0	59.82	179.61	12,514.2	-237.4	1.6	237.4	12.00	12.00	0.00
12,700.0	71.82	179.61	12,555.1	-328.5	2.2	328.5	12.00	12.00	0.00
12,800.0	83.82	179.61	12,576.2	-426.1	2.9	426.1	12.00	12.00	0.00
12,852.2	90.09	179.61	12,579.0	-478.2	3.3	478.2	12.00	12.00	0.00
12,900.0	90.09	179.61	12,578.9	-526.0	3.6	526.0	0.00	0.00	0.00
13,000.0	90.09	179.61	12,578.7	-625.9	4.3	626.0	0.00	0.00	0.00
13,100.0	90.09	179.61	12,578.6	-725.9	5.0	726.0	0.00	0.00	0.00
13,200.0	90.09	179.61	12,578.4	-825.9	5.7	826.0	0.00	0.00	0.00
13,300.0	90.09	179.61	12,578.3	-925.9	6.3	926.0	0.00	0.00	0.00
13,400.0	90.09	179.61	12,578.1	-1,025.9	7.0	1,026.0	0.00	0.00	0.00
13,500.0	90.09	179.61	12,577.9	-1,125.9	7.7	1,126.0	0.00	0.00	0.00
13,600.0	90.09	179.61	12,577.8	-1,225.9	8.4	1,226.0	0.00	0.00	0.00
13,700.0	90.09	179.61	12,577.6	-1,325.9	9.1	1,326.0	0.00	0.00	0.00
13,800.0	90.09	179.61	12,577.5	-1,425.9	9.8	1,426.0	0.00	0.00	0.00
13,900.0	90.09	179.61	12,577.3	-1,525.9	10.4	1,526.0	0.00	0.00	0.00
14,000.0	90.09	179.61	12,577.2	-1,625.9	11.1	1,626.0	0.00	0.00	0.00
14,100.0	90.09	179.61	12,577.0	-1,725.9	11.8	1,726.0	0.00	0.00	0.00
14,200.0	90.09	179.61	12,576.8	-1,825.9	12.5	1,826.0	0.00	0.00	0.00
14,300.0	90.09	179.61	12,576.7	-1,925.9	13.2	1,926.0	0.00	0.00	0.00
14,400.0	90.09	179.61	12,576.5	-2,025.9	13.9	2,026.0	0.00	0.00	0.00
14,500.0	90.09	179.61	12,576.4	-2,125.9	14.5	2,126.0	0.00	0.00	0.00
14,600.0	90.09	179.61	12,576.2	-2,225.9	15.2	2,226.0	0.00	0.00	0.00
14,700.0	90.09	179.61	12,576.1	-2,325.9	15.9	2,326.0	0.00	0.00	0.00
14,800.0	90.09	179.61	12,575.9	-2,425.9	16.6	2,426.0	0.00	0.00	0.00

COG Operating LLC

Planning Report

Database:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Company:	NEW MEXICO BASIN	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Project:	LEA COUNTY, NM	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site:	LUDEMAN	North Reference:	Grid
Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Wellbore:	LATERAL 01		
Design:	DWD Plan 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)
14,900.0	90.09	179.61	12,575.7	-2,525.9	17.3	2,526.0	0.00	0.00	0.00
15,000.0	90.09	179.61	12,575.6	-2,625.9	18.0	2,626.0	0.00	0.00	0.00
15,100.0	90.09	179.61	12,575.4	-2,725.9	18.7	2,726.0	0.00	0.00	0.00
15,200.0	90.09	179.61	12,575.3	-2,825.9	19.3	2,826.0	0.00	0.00	0.00
15,300.0	90.09	179.61	12,575.1	-2,925.9	20.0	2,926.0	0.00	0.00	0.00
15,400.0	90.09	179.61	12,575.0	-3,025.9	20.7	3,026.0	0.00	0.00	0.00
15,500.0	90.09	179.61	12,574.8	-3,125.9	21.4	3,126.0	0.00	0.00	0.00
15,600.0	90.09	179.61	12,574.6	-3,225.9	22.1	3,226.0	0.00	0.00	0.00
15,700.0	90.09	179.61	12,574.5	-3,325.9	22.8	3,326.0	0.00	0.00	0.00
15,800.0	90.09	179.61	12,574.3	-3,425.9	23.4	3,426.0	0.00	0.00	0.00
15,900.0	90.09	179.61	12,574.2	-3,525.9	24.1	3,526.0	0.00	0.00	0.00
16,000.0	90.09	179.61	12,574.0	-3,625.9	24.8	3,626.0	0.00	0.00	0.00
16,100.0	90.09	179.61	12,573.9	-3,725.9	25.5	3,726.0	0.00	0.00	0.00
16,200.0	90.09	179.61	12,573.7	-3,825.9	26.2	3,826.0	0.00	0.00	0.00
16,300.0	90.09	179.61	12,573.5	-3,925.9	26.9	3,926.0	0.00	0.00	0.00
16,400.0	90.09	179.61	12,573.4	-4,025.9	27.5	4,026.0	0.00	0.00	0.00
16,500.0	90.09	179.61	12,573.2	-4,125.9	28.2	4,126.0	0.00	0.00	0.00
16,600.0	90.09	179.61	12,573.1	-4,225.9	28.9	4,226.0	0.00	0.00	0.00
16,700.0	90.09	179.61	12,572.9	-4,325.9	29.6	4,326.0	0.00	0.00	0.00
16,800.0	90.09	179.61	12,572.8	-4,425.9	30.3	4,426.0	0.00	0.00	0.00
16,900.0	90.09	179.61	12,572.6	-4,525.9	31.0	4,526.0	0.00	0.00	0.00
17,000.0	90.09	179.61	12,572.4	-4,625.9	31.6	4,626.0	0.00	0.00	0.00
17,100.0	90.09	179.61	12,572.3	-4,725.8	32.3	4,726.0	0.00	0.00	0.00
17,200.0	90.09	179.61	12,572.1	-4,825.8	33.0	4,826.0	0.00	0.00	0.00
17,300.0	90.09	179.61	12,572.0	-4,925.8	33.7	4,926.0	0.00	0.00	0.00
17,400.0	90.09	179.61	12,571.8	-5,025.8	34.4	5,026.0	0.00	0.00	0.00
17,500.0	90.09	179.61	12,571.7	-5,125.8	35.1	5,126.0	0.00	0.00	0.00
17,600.0	90.09	179.61	12,571.5	-5,225.8	35.8	5,226.0	0.00	0.00	0.00
17,700.0	90.09	179.61	12,571.3	-5,325.8	36.4	5,326.0	0.00	0.00	0.00
17,800.0	90.09	179.61	12,571.2	-5,425.8	37.1	5,426.0	0.00	0.00	0.00
17,900.0	90.09	179.61	12,571.0	-5,525.8	37.8	5,526.0	0.00	0.00	0.00
18,000.0	90.09	179.61	12,570.9	-5,625.8	38.5	5,626.0	0.00	0.00	0.00
18,100.0	90.09	179.61	12,570.7	-5,725.8	39.2	5,726.0	0.00	0.00	0.00
18,200.0	90.09	179.61	12,570.6	-5,825.8	39.9	5,826.0	0.00	0.00	0.00
18,300.0	90.09	179.61	12,570.4	-5,925.8	40.5	5,926.0	0.00	0.00	0.00
18,400.0	90.09	179.61	12,570.2	-6,025.8	41.2	6,026.0	0.00	0.00	0.00
18,500.0	90.09	179.61	12,570.1	-6,125.8	41.9	6,126.0	0.00	0.00	0.00
18,600.0	90.09	179.61	12,569.9	-6,225.8	42.6	6,226.0	0.00	0.00	0.00
18,700.0	90.09	179.61	12,569.8	-6,325.8	43.3	6,326.0	0.00	0.00	0.00
18,800.0	90.09	179.61	12,569.6	-6,425.8	44.0	6,426.0	0.00	0.00	0.00
18,900.0	90.09	179.61	12,569.5	-6,525.8	44.6	6,526.0	0.00	0.00	0.00
19,000.0	90.09	179.61	12,569.3	-6,625.8	45.3	6,626.0	0.00	0.00	0.00
19,100.0	90.09	179.61	12,569.2	-6,725.8	46.0	6,726.0	0.00	0.00	0.00
19,200.0	90.09	179.61	12,569.0	-6,825.8	46.7	6,826.0	0.00	0.00	0.00
19,300.0	90.09	179.61	12,568.8	-6,925.8	47.4	6,926.0	0.00	0.00	0.00
19,400.0	90.09	179.61	12,568.7	-7,025.8	48.1	7,026.0	0.00	0.00	0.00
19,500.0	90.09	179.61	12,568.5	-7,125.8	48.8	7,126.0	0.00	0.00	0.00
19,600.0	90.09	179.61	12,568.4	-7,225.8	49.4	7,226.0	0.00	0.00	0.00
19,700.0	90.09	179.61	12,568.2	-7,325.8	50.1	7,326.0	0.00	0.00	0.00
19,800.0	90.09	179.61	12,568.1	-7,425.8	50.8	7,426.0	0.00	0.00	0.00
19,900.0	90.09	179.61	12,567.9	-7,525.8	51.5	7,526.0	0.00	0.00	0.00
20,000.0	90.09	179.61	12,567.7	-7,625.8	52.2	7,626.0	0.00	0.00	0.00

COG Operating LLC

Planning Report

Database:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Company:	NEW MEXICO BASIN	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Project:	LEA COUNTY, NM	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site:	LUDEMAN	North Reference:	Grid
Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Wellbore:	LATERAL 01		
Design:	DWD Plan 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)
20,100.0	90.09	179.61	12,567.6	-7,725.8	52.9	7,726.0	0.00	0.00	0.00
20,200.0	90.09	179.61	12,567.4	-7,825.8	53.5	7,826.0	0.00	0.00	0.00
20,215.4	90.09	179.61	12,567.4	-7,841.2	53.6	7,841.4	0.00	0.00	0.00
Skull Cap Federal Com #2H - BHL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Skull Cap Federal	0.00	0.00	0.0	0.0	0.0	428,207.80	792,838.90	32° 10' 25.391 N	103° 23' 12.860 W
- plan misses target center by 10000.0usft at 10000.0usft MD (10000.0 TVD, 0.0 N, 0.0 E)									
- Point									
Skull Cap Federal	-0.09	179.61	12,567.0	-7,841.2	53.7	420,366.60	792,892.60	32° 9' 7.796 N	103° 23' 13.037 W
- plan misses target center by 0.4usft at 20215.4usft MD (12567.4 TVD, -7841.2 N, 53.6 E)									
- Rectangle (sides W100.0 H7,841.4 D30.0)									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates	Comment
		+N/-S (usft)	+E/-W (usft)
11,914.5	11,914.5	0.0	0.0
12,663.6	12,542.5	-294.4	2.0
KOP: 11914.5' MD			
LANDING POINT: 12663.6' MD, 12392' TVD			

COG OPERATING, LLC

LEA COUNTY, NM

LUDEMAN

SKULL CAP FEDERAL COM #22H

LATERAL 01

DWD Plan 1

HOBBS OCD

JUL 19 2016

RECEIVED

Anticollision Report

27 June, 2016

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Reference Site:	LUDEMAN	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	LATERAL 01	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Reference	DWD Plan 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	Error Surface:	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 6/24/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	10,000.0	DWD Plan 1 (OWB-PILOT HOLE)	VES GyroFlex	
10,000.0	20,215.4	DWD Plan 1 (LATERAL 01)	MWD	OWSG 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						
LUDEMAN						
VIKING HELMET STATE COM #2H - LATERAL 01 - AW	12,269.4	19,480.0	455.5	313.3	3.203 CC, ES, SF	

Offset Design LUDEMAN - VIKING HELMET STATE COM #2H - LATERAL 01 - AWP-LAT 01											
Survey Program: 100- VES GyroFlex, 11811-MWD											
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		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)	Separation Factor
0.0	0.0	42.1	42.1	3.0	3.0	-0.49	7,780.5	-66.5	7,780.8		
100.0	100.0	234.5	234.5	3.0	3.0	-0.48	7,779.1	-65.3	7,780.0	7,774.0	6.01 1,294.087
200.0	200.0	324.7	324.7	3.0	3.0	-0.47	7,778.0	-64.1	7,778.8	7,772.8	6.03 1,289.102
300.0	300.0	423.3	423.3	3.0	3.1	-0.46	7,776.9	-62.6	7,777.7	7,771.6	6.07 1,280.593
400.0	400.0	517.8	517.7	3.0	3.1	-0.45	7,775.9	-61.0	7,776.6	7,770.4	6.13 1,269.323
500.0	500.0	620.8	620.7	3.1	3.1	-0.44	7,774.8	-59.3	7,775.5	7,769.3	6.20 1,254.591
600.0	600.0	727.9	727.8	3.1	3.2	-0.43	7,773.5	-57.8	7,774.3	7,768.0	6.29 1,236.771
700.0	700.0	810.4	810.3	3.2	3.2	-0.42	7,772.6	-56.8	7,773.2	7,766.8	6.38 1,219.239
800.0	800.0	900.0	899.9	3.2	3.3	-0.41	7,771.7	-55.8	7,772.2	7,765.7	6.48 1,199.288
900.0	900.0	981.2	981.1	3.3	3.3	-0.40	7,771.0	-54.7	7,771.3	7,764.7	6.59 1,179.243
1,000.0	1,000.0	1,067.4	1,067.3	3.3	3.4	-0.39	7,770.6	-53.3	7,770.8	7,764.1	6.71 1,157.809
1,100.0	1,100.0	1,149.2	1,149.0	3.4	3.4	-0.38	7,770.3	-52.1	7,770.5	7,763.7	6.84 1,136.395
1,200.0	1,200.0	1,238.4	1,238.3	3.5	3.5	-0.38	7,770.3	-51.0	7,770.4	7,763.5	6.98 1,113.687
1,300.0	1,300.0	1,358.0	1,357.9	3.6	3.6	-0.37	7,770.1	-49.9	7,770.3	7,763.1	7.15 1,086.422
1,400.0	1,400.0	1,447.2	1,447.1	3.7	3.7	-0.36	7,769.8	-49.4	7,770.0	7,762.6	7.31 1,062.613
1,446.9	1,446.9	1,481.1	1,480.9	3.7	3.7	-0.36	7,769.8	-49.2	7,769.9	7,762.5	7.38 1,052.530
1,500.0	1,500.0	1,529.8	1,529.6	3.7	3.7	-0.36	7,769.8	-48.9	7,769.9	7,762.5	7.47 1,040.249
1,600.0	1,600.0	1,627.8	1,627.6	3.8	3.8	-0.36	7,769.8	-48.8	7,770.0	7,762.3	7.63 1,018.577
1,700.0	1,700.0	1,707.5	1,707.3	3.9	3.8	-0.36	7,770.0	-48.7	7,770.2	7,762.4	7.76 1,001.872
1,800.0	1,800.0	1,844.1	1,843.9	4.0	3.9	-0.36	7,770.0	-48.3	7,770.2	7,762.3	7.94 978.300
1,900.0	1,900.0	1,934.5	1,934.3	4.2	4.0	-0.35	7,770.0	-47.9	7,770.1	7,762.0	8.13 955.381
1,901.4	1,901.4	1,935.6	1,935.4	4.2	4.0	-0.35	7,770.0	-47.9	7,770.1	7,762.0	8.14 955.090
2,000.0	2,000.0	2,019.3	2,019.1	4.3	4.1	-0.35	7,770.1	-47.6	7,770.2	7,761.9	8.31 934.593

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Reference Site:	LUDEMAN	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	LATERAL 01	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUDEMAN - VIKING HELMET STATE COM #2H - LATERAL 01 - AWP-LAT 01													Offset Site Error:	0.0 usft
Survey Program: 100- VES GyroFlex, 11811-MWD													Offset Well Error:	3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,100.0	2,100.0	2,131.5	2,131.3	4.4	4.2	-0.35		7,770.2	-47.2	7,770.3	7,761.8	8.52	911.597	
2,200.0	2,200.0	2,226.6	2,226.5	4.5	4.2	-0.35		7,770.2	-46.9	7,770.4	7,761.6	8.73	890.187	
2,300.0	2,300.0	2,321.3	2,321.1	4.6	4.3	-0.34		7,770.4	-46.4	7,770.5	7,761.6	8.94	869.536	
2,400.0	2,400.0	2,423.8	2,423.7	4.7	4.4	-0.34		7,770.5	-45.7	7,770.7	7,761.5	9.16	848.365	
2,500.0	2,500.0	2,523.7	2,523.6	4.8	4.5	-0.33		7,770.6	-45.0	7,770.8	7,761.4	9.39	827.752	
2,600.0	2,600.0	2,606.8	2,606.6	5.0	4.6	-0.33		7,770.8	-44.1	7,771.0	7,761.4	9.60	809.415	
2,700.0	2,700.0	2,700.0	2,699.8	5.1	4.7	-0.32		7,771.2	-42.9	7,771.4	7,761.6	9.82	791.104	
2,800.0	2,800.0	2,792.6	2,792.4	5.2	4.8	-0.31		7,771.7	-41.7	7,772.0	7,761.9	10.05	773.522	
2,900.0	2,900.0	2,883.0	2,882.7	5.3	4.9	-0.30		7,772.3	-40.4	7,772.5	7,762.3	10.27	756.722	
3,000.0	3,000.0	2,982.9	2,982.7	5.5	5.0	-0.29		7,773.0	-39.1	7,773.2	7,762.7	10.51	739.872	
3,100.0	3,100.0	3,068.2	3,067.9	5.6	5.1	-0.28		7,773.6	-38.0	7,774.0	7,763.2	10.73	724.790	
3,200.0	3,200.0	3,200.0	3,199.7	5.7	5.3	-0.27		7,774.5	-36.1	7,774.7	7,763.7	11.00	706.554	
3,300.0	3,300.0	3,286.8	3,286.5	5.9	5.4	-0.26		7,775.0	-34.8	7,775.2	7,763.9	11.24	691.663	
3,400.0	3,400.0	3,368.7	3,368.5	6.0	5.5	-0.25		7,775.6	-33.5	7,775.9	7,764.4	11.47	678.131	
3,500.0	3,500.0	3,469.2	3,468.9	6.1	5.6	-0.24		7,776.4	-32.5	7,776.8	7,765.1	11.70	664.506	
3,600.0	3,600.0	3,638.9	3,638.6	6.3	5.7	-0.23		7,777.0	-31.1	7,777.0	7,765.0	12.03	646.316	
3,623.4	3,623.4	3,657.7	3,657.4	6.3	5.8	-0.23		7,777.0	-31.0	7,777.0	7,764.9	12.09	643.285	
3,700.0	3,700.0	3,726.0	3,725.7	6.4	5.9	-0.22		7,777.0	-30.5	7,777.1	7,764.8	12.28	633.068	
3,800.0	3,800.0	3,833.5	3,833.2	6.6	6.0	-0.22		7,777.1	-30.0	7,777.1	7,764.6	12.57	618.901	
3,900.0	3,900.0	3,938.2	3,937.9	6.7	6.1	-0.22		7,777.1	-29.5	7,777.1	7,764.3	12.85	605.394	
4,000.0	4,000.0	4,042.4	4,042.1	6.8	6.3	-0.21		7,777.0	-29.1	7,777.0	7,763.9	13.13	592.438	
4,100.0	4,100.0	4,142.9	4,142.6	7.0	6.4	-0.21		7,776.9	-28.5	7,776.9	7,763.5	13.40	580.176	
4,179.6	4,179.6	4,213.9	4,213.6	7.1	6.5	-0.21		7,776.8	-28.0	7,776.9	7,763.2	13.61	571.253	
4,200.0	4,200.0	4,230.8	4,230.5	7.1	6.5	-0.20		7,776.8	-27.8	7,776.9	7,763.2	13.67	569.093	
4,300.0	4,300.0	4,300.0	4,299.7	7.3	6.6	-0.20		7,776.9	-27.3	7,777.0	7,763.1	13.90	559.456	
4,400.0	4,400.0	4,375.2	4,374.9	7.4	6.7	-0.20		7,777.3	-26.6	7,777.6	7,763.4	14.13	550.264	
4,500.0	4,500.0	4,437.6	4,437.3	7.5	6.8	-0.19		7,777.9	-25.9	7,778.6	7,764.2	14.35	542.113	
4,600.0	4,600.0	4,500.0	4,499.7	7.7	6.9	-0.18		7,778.8	-24.9	7,780.0	7,765.5	14.56	534.302	
4,700.0	4,700.0	19,253.0	12,438.9	7.8	120.5	0.26		623.9	2.8	7,730.1	7,601.8	128.31	60.246	
4,800.0	4,800.0	19,253.0	12,438.9	8.0	120.5	0.26		623.9	2.8	7,630.4	7,502.0	128.45	59.402	
4,900.0	4,900.0	19,283.2	12,441.3	8.1	121.0	0.46		593.9	4.8	7,530.8	7,401.6	129.10	58.331	
5,000.0	5,000.0	19,292.5	12,442.0	8.3	121.1	0.53		584.6	5.4	7,431.1	7,301.7	129.41	57.425	
5,100.0	5,100.0	19,300.4	12,442.6	8.4	121.3	0.59		576.8	5.9	7,331.4	7,201.7	129.68	56.533	
5,200.0	5,200.0	19,308.2	12,443.3	8.6	121.4	0.65		569.0	6.4	7,231.7	7,101.7	129.96	55.646	
5,300.0	5,300.0	19,316.1	12,443.9	8.7	121.5	0.71		561.2	6.9	7,132.0	7,001.8	130.24	54.761	
5,400.0	5,400.0	19,323.9	12,444.5	8.9	121.7	0.77		553.4	7.4	7,032.3	6,901.8	130.52	53.881	
5,500.0	5,500.0	19,331.8	12,445.1	9.0	121.8	0.83		545.6	7.9	6,932.6	6,801.8	130.79	53.004	
5,600.0	5,600.0	19,339.6	12,445.7	9.1	121.9	0.90		537.8	8.4	6,832.9	6,701.9	131.07	52.131	
5,700.0	5,700.0	19,347.5	12,446.3	9.3	122.1	0.97		530.0	9.0	6,733.2	6,601.9	131.35	51.261	
5,800.0	5,800.0	19,355.3	12,447.0	9.4	122.2	1.04		522.1	9.5	6,633.5	6,501.9	131.63	50.395	
5,900.0	5,900.0	19,363.2	12,447.6	9.6	122.3	1.11		514.3	10.0	6,533.9	6,401.9	131.91	49.533	
6,000.0	6,000.0	19,371.0	12,448.2	9.7	122.4	1.18		506.5	10.5	6,434.2	6,302.0	132.19	48.674	
6,100.0	6,100.0	19,378.8	12,448.8	9.9	122.6	1.26		498.7	11.0	6,334.5	6,202.0	132.47	47.819	
6,200.0	6,200.0	19,386.7	12,449.4	10.0	122.7	1.34		490.9	11.5	6,234.8	6,102.0	132.75	46.967	
6,300.0	6,300.0	19,394.5	12,450.0	10.2	122.8	1.42		483.1	12.0	6,135.1	6,002.1	133.03	46.118	
6,400.0	6,400.0	19,402.4	12,450.6	10.3	123.0	1.50		475.3	12.5	6,035.4	5,902.1	133.31	45.273	
6,500.0	6,500.0	19,410.2	12,451.3	10.5	123.1	1.59		467.5	13.0	5,935.7	5,802.1	133.59	44.432	
6,600.0	6,600.0	19,418.1	12,451.9	10.6	123.2	1.68		459.7	13.5	5,836.0	5,702.2	133.87	43.594	
6,700.0	6,700.0	19,425.9	12,452.5	10.8	123.4	1.77		451.9	14.0	5,736.3	5,602.2	134.15	42.760	
6,800.0	6,800.0	19,433.8	12,453.1	10.9	123.5	1.87		444.1	14.5	5,636.7	5,502.2	134.43	41.929	
6,900.0	6,900.0	19,441.6	12,453.7	11.1	123.6	1.97		436.3	15.0	5,537.0	5,402.2	134.72	41.101	

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Reference Site:	LUDEMAN	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	LATERAL 01	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUDEMAN - VIKING HELMET STATE COM #2H - LATERAL 01 - AWP-LAT 01													Offset Site Error:	0.0 usft
Survey Program: 100- VES GyroFlex, 11811-MWD													Offset Well Error:	3.0 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		
7,000.0	7,000.0	19,449.5	12,454.3	11.2	123.8	2.07	428.5	15.5	5,437.3	5,302.3	135.00	40.277		
7,100.0	7,100.0	19,457.3	12,455.0	11.4	123.9	2.18	420.7	16.0	5,337.6	5,202.3	135.28	39.456		
7,200.0	7,200.0	19,465.2	12,455.6	11.5	124.0	2.29	412.9	16.5	5,237.9	5,102.3	135.56	38.639		
7,300.0	7,300.0	19,473.0	12,456.2	11.7	124.2	2.41	405.1	17.0	5,138.2	5,002.4	135.84	37.825		
7,400.0	7,400.0	19,480.0	12,456.7	11.8	124.3	2.51	398.1	17.5	5,038.5	4,902.4	136.11	37.018		
7,500.0	7,500.0	19,480.0	12,456.7	12.0	124.3	2.51	398.1	17.5	4,938.8	4,802.6	136.26	36.245		
7,600.0	7,600.0	19,480.0	12,456.7	12.1	124.3	2.51	398.1	17.5	4,839.2	4,702.8	136.41	35.474		
7,700.0	7,700.0	19,480.0	12,456.7	12.3	124.3	2.51	398.1	17.5	4,739.5	4,603.0	136.56	34.705		
7,800.0	7,800.0	19,480.0	12,456.7	12.4	124.3	2.51	398.1	17.5	4,639.9	4,503.2	136.72	33.938		
7,900.0	7,900.0	19,480.0	12,456.7	12.6	124.3	2.51	398.1	17.5	4,540.3	4,403.4	136.87	33.173		
8,000.0	8,000.0	19,480.0	12,456.7	12.7	124.3	2.51	398.1	17.5	4,440.7	4,303.6	137.02	32.409		
8,100.0	8,100.0	19,480.0	12,456.7	12.9	124.3	2.51	398.1	17.5	4,341.1	4,203.9	137.17	31.647		
8,200.0	8,200.0	19,480.0	12,456.7	13.1	124.3	2.51	398.1	17.5	4,241.5	4,104.2	137.32	30.887		
8,300.0	8,300.0	19,480.0	12,456.7	13.2	124.3	2.51	398.1	17.5	4,142.0	4,004.5	137.47	30.129		
8,400.0	8,400.0	19,480.0	12,456.7	13.4	124.3	2.51	398.1	17.5	4,042.4	3,904.8	137.63	29.372		
8,500.0	8,500.0	19,480.0	12,456.7	13.5	124.3	2.51	398.1	17.5	3,942.9	3,805.1	137.78	28.618		
8,600.0	8,600.0	19,480.0	12,456.7	13.7	124.3	2.51	398.1	17.5	3,843.5	3,705.5	137.93	27.865		
8,700.0	8,700.0	19,480.0	12,456.7	13.8	124.3	2.51	398.1	17.5	3,744.0	3,605.9	138.08	27.114		
8,800.0	8,800.0	19,480.0	12,456.7	14.0	124.3	2.51	398.1	17.5	3,644.6	3,506.4	138.24	26.365		
8,900.0	8,900.0	19,480.0	12,456.7	14.1	124.3	2.51	398.1	17.5	3,545.2	3,406.8	138.39	25.618		
9,000.0	9,000.0	19,480.0	12,456.7	14.3	124.3	2.51	398.1	17.5	3,445.9	3,307.3	138.54	24.872		
9,100.0	9,100.0	19,480.0	12,456.7	14.4	124.3	2.51	398.1	17.5	3,346.5	3,207.9	138.69	24.129		
9,200.0	9,200.0	19,480.0	12,456.7	14.6	124.3	2.51	398.1	17.5	3,247.3	3,108.4	138.85	23.388		
9,300.0	9,300.0	19,480.0	12,456.7	14.7	124.3	2.51	398.1	17.5	3,148.1	3,009.1	139.00	22.648		
9,400.0	9,400.0	19,480.0	12,456.7	14.9	124.3	2.51	398.1	17.5	3,048.9	2,909.7	139.15	21.910		
9,500.0	9,500.0	19,480.0	12,456.7	15.0	124.3	2.51	398.1	17.5	2,949.8	2,810.5	139.31	21.175		
9,600.0	9,600.0	19,480.0	12,456.7	15.2	124.3	2.51	398.1	17.5	2,850.7	2,711.3	139.46	20.441		
9,700.0	9,700.0	19,480.0	12,456.7	15.3	124.3	2.51	398.1	17.5	2,751.7	2,612.1	139.61	19.710		
9,800.0	9,800.0	19,480.0	12,456.7	15.5	124.3	2.51	398.1	17.5	2,652.8	2,513.1	139.76	18.981		
9,900.0	9,900.0	19,480.0	12,456.7	15.6	124.3	2.51	398.1	17.5	2,554.0	2,414.1	139.92	18.254		
10,000.0	10,000.0	19,480.0	12,456.7	15.8	124.3	2.51	398.1	17.5	2,455.3	2,315.2	140.07	17.529		
10,100.0	10,100.0	19,480.0	12,456.7	15.9	124.3	2.51	398.1	17.5	2,356.7	2,216.5	140.15	16.816		
10,200.0	10,200.0	19,480.0	12,456.7	15.9	124.3	2.51	398.1	17.5	2,258.2	2,118.0	140.16	16.112		
10,300.0	10,300.0	19,480.0	12,456.7	15.9	124.3	2.51	398.1	17.5	2,159.8	2,019.6	140.17	15.408		
10,400.0	10,400.0	19,480.0	12,456.7	15.9	124.3	2.51	398.1	17.5	2,061.6	1,921.4	140.20	14.705		
10,500.0	10,500.0	19,480.0	12,456.7	16.0	124.3	2.51	398.1	17.5	1,963.6	1,823.4	140.23	14.003		
10,600.0	10,600.0	19,480.0	12,456.7	16.0	124.3	2.51	398.1	17.5	1,865.8	1,725.5	140.27	13.301		
10,700.0	10,700.0	19,480.0	12,456.7	16.0	124.3	2.51	398.1	17.5	1,768.2	1,627.9	140.32	12.602		
10,800.0	10,800.0	19,480.0	12,456.7	16.1	124.3	2.51	398.1	17.5	1,670.9	1,530.6	140.37	11.904		
10,900.0	10,900.0	19,480.0	12,456.7	16.2	124.3	2.51	398.1	17.5	1,574.0	1,433.6	140.44	11.208		
11,000.0	11,000.0	19,480.0	12,456.7	16.2	124.3	2.51	398.1	17.5	1,477.5	1,337.0	140.51	10.515		
11,100.0	11,100.0	19,480.0	12,456.7	16.3	124.3	2.51	398.1	17.5	1,381.5	1,240.9	140.59	9.826		
11,200.0	11,200.0	19,480.0	12,456.7	16.4	124.3	2.51	398.1	17.5	1,286.0	1,145.4	140.67	9.142		
11,300.0	11,300.0	19,480.0	12,456.7	16.5	124.3	2.51	398.1	17.5	1,191.4	1,050.6	140.77	8.463		
11,400.0	11,400.0	19,480.0	12,456.7	16.6	124.3	2.51	398.1	17.5	1,097.6	956.8	140.87	7.792		
11,500.0	11,500.0	19,480.0	12,456.7	16.7	124.3	2.51	398.1	17.5	1,005.1	864.1	140.98	7.130		
11,600.0	11,600.0	19,480.0	12,456.7	16.8	124.3	2.51	398.1	17.5	914.2	773.1	141.09	6.479		
11,700.0	11,700.0	19,480.0	12,456.7	16.9	124.3	2.51	398.1	17.5	825.3	684.1	141.21	5.844		
11,800.0	11,800.0	19,480.0	12,456.7	17.1	124.3	2.51	398.1	17.5	739.3	598.0	141.34	5.231		
11,900.0	11,900.0	19,480.0	12,456.7	17.2	124.3	2.51	398.1	17.5	657.3	515.8	141.48	4.646		

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Reference Site:	LUDEMAN	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	LATERAL 01	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUDEMAN - VIKING HELMET STATE COM #2H - LATERAL 01 - AWP-LAT 01													Offset Site Error:	0.0 usft
Survey Program: 100-VES GyroFlex, 11811-MWD													Offset Well Error:	3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
12,000.0	12,000.0	19,480.0	12,456.7	17.3	124.3	2.51	398.1	17.5	580.9	439.3	141.62	4.102		
12,101.5	12,101.5	19,480.0	12,456.7	17.5	124.3	2.51	398.1	17.5	511.8	370.1	141.77	3.610		
12,125.0	12,125.0	19,480.0	12,456.7	17.5	124.3	-177.20	398.1	17.5	497.9	356.1	141.81	3.511		
12,150.0	12,149.9	19,480.0	12,456.7	17.6	124.3	-177.29	398.1	17.5	485.0	343.1	141.85	3.419		
12,175.0	12,174.7	19,480.0	12,456.7	17.6	124.3	-177.35	398.1	17.5	474.2	332.3	141.91	3.341		
12,200.0	12,199.3	19,480.0	12,456.7	17.6	124.3	-177.40	398.1	17.5	465.7	323.7	141.97	3.280		
12,225.0	12,223.6	19,480.0	12,456.7	17.7	124.3	-177.44	398.1	17.5	459.7	317.7	142.05	3.236		
12,250.0	12,247.6	19,480.0	12,456.7	17.7	124.3	-177.45	398.1	17.5	456.3	314.2	142.13	3.211		
12,269.4	12,266.0	19,480.0	12,456.7	17.7	124.3	-177.46	398.1	17.5	455.5	313.3	142.20	3.203 CC, ES, SF		
12,275.0	12,271.2	19,480.0	12,456.7	17.8	124.3	-177.46	398.1	17.5	455.6	313.4	142.22	3.203		
12,300.0	12,294.3	19,480.0	12,456.7	17.8	124.3	-177.45	398.1	17.5	457.5	315.2	142.31	3.215		
12,325.0	12,316.9	19,480.0	12,456.7	17.8	124.3	-177.42	398.1	17.5	462.1	319.6	142.42	3.244		
12,350.0	12,338.9	19,480.0	12,456.7	17.9	124.3	-177.38	398.1	17.5	469.2	326.7	142.53	3.292		
12,375.0	12,360.3	19,480.0	12,456.7	17.9	124.3	-177.32	398.1	17.5	478.7	336.1	142.65	3.356		
12,400.0	12,380.9	19,480.0	12,456.7	17.9	124.3	-177.25	398.1	17.5	490.5	347.7	142.77	3.435		
12,425.0	12,400.8	19,480.0	12,456.7	18.0	124.3	-177.15	398.1	17.5	504.3	361.4	142.90	3.529		
12,450.0	12,419.9	19,480.0	12,456.7	18.0	124.3	-177.03	398.1	17.5	520.0	377.0	143.03	3.636		
12,475.0	12,438.1	19,480.0	12,456.7	18.0	124.3	-176.87	398.1	17.5	537.4	394.2	143.17	3.753		
12,500.0	12,455.3	19,480.0	12,456.7	18.1	124.3	-176.68	398.1	17.5	556.2	412.9	143.30	3.881		
12,525.0	12,471.6	19,480.0	12,456.7	18.1	124.3	-176.44	398.1	17.5	576.2	432.8	143.44	4.017		
12,550.0	12,486.9	19,480.0	12,456.7	18.1	124.3	-176.13	398.1	17.5	597.4	453.8	143.58	4.161		
12,575.0	12,501.1	19,480.0	12,456.7	18.2	124.3	-175.73	398.1	17.5	619.4	475.7	143.72	4.310		
12,600.0	12,514.2	19,480.0	12,456.7	18.2	124.3	-175.20	398.1	17.5	642.3	498.4	143.85	4.465		
12,625.0	12,526.2	19,480.0	12,456.7	18.2	124.3	-174.46	398.1	17.5	665.7	521.8	143.99	4.624		
12,650.0	12,537.1	19,480.0	12,456.7	18.2	124.3	-173.38	398.1	17.5	689.7	545.6	144.12	4.786		
12,675.0	12,546.7	19,480.0	12,456.7	18.3	124.3	-171.69	398.1	17.5	714.1	569.8	144.24	4.951		
12,700.0	12,555.1	19,480.0	12,456.7	18.3	124.3	-168.68	398.1	17.5	738.7	594.3	144.36	5.117		
12,725.0	12,562.3	19,480.0	12,456.7	18.3	124.3	-161.90	398.1	17.5	763.5	619.1	144.47	5.285		
12,750.0	12,568.2	19,480.0	12,456.7	18.3	124.3	-136.45	398.1	17.5	788.5	643.9	144.58	5.454		
12,775.0	12,572.8	19,480.0	12,456.7	18.3	124.3	-44.33	398.1	17.5	813.5	668.8	144.68	5.623		
12,800.0	12,576.2	19,480.0	12,456.7	18.3	124.3	-17.56	398.1	17.5	838.4	693.7	144.77	5.792		
12,825.0	12,578.2	19,480.0	12,456.7	18.3	124.3	-10.58	398.1	17.5	863.3	718.5	144.85	5.960		
12,852.2	12,579.0	19,480.0	12,456.7	18.3	124.3	-7.30	398.1	17.5	890.2	745.3	144.93	6.143		
12,900.0	12,578.9	19,480.0	12,456.7	18.4	124.3	-7.30	398.1	17.5	937.3	792.3	144.99	6.465		
13,000.0	12,578.7	19,480.0	12,456.7	18.4	124.3	-7.30	398.1	17.5	1,036.0	890.8	145.13	7.138		
13,100.0	12,578.6	19,480.0	12,456.7	18.4	124.3	-7.30	398.1	17.5	1,134.9	989.6	145.29	7.811		
13,200.0	12,578.4	19,480.0	12,456.7	18.4	124.3	-7.30	398.1	17.5	1,234.0	1,088.5	145.49	8.481		
13,300.0	12,578.3	19,480.0	12,456.7	19.2	124.3	-7.30	398.1	17.5	1,333.2	1,187.5	145.71	9.149		
13,400.0	12,578.1	19,480.0	12,456.7	20.6	124.3	-7.30	398.1	17.5	1,432.5	1,286.6	145.96	9.814		
13,500.0	12,577.9	19,480.0	12,456.7	22.0	124.3	-7.30	398.1	17.5	1,532.0	1,385.7	146.24	10.476		
13,600.0	12,577.8	19,480.0	12,456.7	23.4	124.3	-7.30	398.1	17.5	1,631.4	1,483.8	147.66	11.049		
13,700.0	12,577.6	19,480.0	12,456.7	24.8	124.3	-7.30	398.1	17.5	1,731.0	1,581.9	149.11	11.609		
13,800.0	12,577.5	19,480.0	12,456.7	26.3	124.3	-7.30	398.1	17.5	1,830.6	1,680.0	150.59	12.166		
13,900.0	12,577.3	19,480.0	12,456.7	27.8	124.3	-7.30	398.1	17.5	1,930.2	1,778.2	152.09	12.692		
14,000.0	12,577.2	19,480.0	12,456.7	29.3	124.3	-7.30	398.1	17.5	2,029.9	1,876.3	153.61	13.215		
14,100.0	12,577.0	19,480.0	12,456.7	30.9	124.3	-7.30	398.1	17.5	2,129.6	1,974.5	155.14	13.727		
14,200.0	12,576.8	19,480.0	12,456.7	32.4	124.3	-7.30	398.1	17.5	2,229.4	2,072.7	156.68	14.228		
14,300.0	12,576.7	19,480.0	12,456.7	34.0	124.3	-7.30	398.1	17.5	2,329.1	2,170.9	158.24	14.719		
14,400.0	12,576.5	19,480.0	12,456.7	35.5	124.3	-7.30	398.1	17.5	2,428.9	2,269.1	159.81	15.199		
14,500.0	12,576.4	19,480.0	12,456.7	37.1	124.3	-7.30	398.1	17.5	2,528.7	2,367.3	161.38	15.669		
14,600.0	12,576.2	19,480.0	12,456.7	38.7	124.3	-7.30	398.1	17.5	2,628.5	2,465.5	162.96	16.130		

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Reference Site:	LUDEMAN	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	LATERAL 01	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUDEMAN - VIKING HELMET STATE COM #2H - LATERAL 01 - AWP-LAT 01														Offset Site Error:	0.0 usft
Survey Program: 100- VES GyroFlex, 11811-MWD														Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)							
14,700.0	12,576.1	19,480.0	12,456.7	40.3	124.3	-7.30	398.1	17.5	2,728.3	2,563.8	164.55	16.580			
14,800.0	12,575.9	19,480.0	12,456.7	41.9	124.3	-7.30	398.1	17.5	2,828.2	2,662.0	166.14	17.022			
14,900.0	12,575.7	19,480.0	12,456.7	43.5	124.3	-7.30	398.1	17.5	2,928.0	2,760.3	167.74	17.455			
15,000.0	12,575.6	19,480.0	12,456.7	45.1	124.3	-7.30	398.1	17.5	3,027.9	2,858.5	169.35	17.879			
15,100.0	12,575.4	19,480.0	12,456.7	46.7	124.3	-7.30	398.1	17.5	3,127.7	2,956.8	170.96	18.295			
15,200.0	12,575.3	19,480.0	12,456.7	48.3	124.3	-7.30	398.1	17.5	3,227.6	3,055.0	172.57	18.703			
15,300.0	12,575.1	19,480.0	12,456.7	49.9	124.3	-7.30	398.1	17.5	3,327.5	3,153.3	174.18	19.103			
15,400.0	12,575.0	19,480.0	12,456.7	51.5	124.3	-7.30	398.1	17.5	3,427.4	3,251.6	175.80	19.496			
15,500.0	12,574.8	19,480.0	12,456.7	53.2	124.3	-7.30	398.1	17.5	3,527.3	3,349.8	177.42	19.880			
15,600.0	12,574.6	19,480.0	12,456.7	54.8	124.3	-7.30	398.1	17.5	3,627.2	3,448.1	179.05	20.258			
15,700.0	12,574.5	19,480.0	12,456.7	56.4	124.3	-7.30	398.1	17.5	3,727.1	3,546.4	180.67	20.629			
15,800.0	12,574.3	19,480.0	12,456.7	58.0	124.3	-7.30	398.1	17.5	3,827.0	3,644.7	182.30	20.993			
15,900.0	12,574.2	19,480.0	12,456.7	59.7	124.3	-7.30	398.1	17.5	3,926.9	3,743.0	183.93	21.350			
16,000.0	12,574.0	19,480.0	12,456.7	61.3	124.3	-7.30	398.1	17.5	4,026.8	3,841.3	185.56	21.700			
16,100.0	12,573.9	19,480.0	12,456.7	62.9	124.3	-7.30	398.1	17.5	4,126.8	3,939.6	187.20	22.045			
16,200.0	12,573.7	19,480.0	12,456.7	64.6	124.3	-7.30	398.1	17.5	4,226.7	4,037.8	188.83	22.383			
16,300.0	12,573.5	19,480.0	12,456.7	66.2	124.3	-7.30	398.1	17.5	4,326.6	4,136.1	190.47	22.715			
16,400.0	12,573.4	19,480.0	12,456.7	67.8	124.3	-7.30	398.1	17.5	4,426.5	4,234.4	192.11	23.042			
16,500.0	12,573.2	19,480.0	12,456.7	69.5	124.3	-7.30	398.1	17.5	4,526.5	4,332.7	193.75	23.363			
16,600.0	12,573.1	19,480.0	12,456.7	71.1	124.3	-7.30	398.1	17.5	4,626.4	4,431.0	195.39	23.678			
16,700.0	12,572.9	19,480.0	12,456.7	72.8	124.3	-7.30	398.1	17.5	4,726.4	4,529.3	197.03	23.988			
16,800.0	12,572.8	19,480.0	12,456.7	74.4	124.3	-7.30	398.1	17.5	4,826.3	4,627.6	198.67	24.293			
16,900.0	12,572.6	19,480.0	12,456.7	76.0	124.3	-7.30	398.1	17.5	4,926.3	4,725.9	200.31	24.593			
17,000.0	12,572.4	19,480.0	12,456.7	77.7	124.3	-7.30	398.1	17.5	5,026.2	4,824.2	201.96	24.887			
17,100.0	12,572.3	19,480.0	12,456.7	79.3	124.3	-7.30	398.1	17.5	5,126.2	4,922.6	203.60	25.177			
17,200.0	12,572.1	19,480.0	12,456.7	81.0	124.3	-7.30	398.1	17.5	5,226.1	5,020.9	205.25	25.462			
17,300.0	12,572.0	19,480.0	12,456.7	82.6	124.3	-7.30	398.1	17.5	5,326.1	5,119.2	206.89	25.743			
17,400.0	12,571.8	19,480.0	12,456.7	84.3	124.3	-7.30	398.1	17.5	5,426.0	5,217.5	208.54	26.019			
17,500.0	12,571.7	19,480.0	12,456.7	85.9	124.3	-7.30	398.1	17.5	5,526.0	5,315.8	210.19	26.290			
17,600.0	12,571.5	19,480.0	12,456.7	87.6	124.3	-7.30	398.1	17.5	5,625.9	5,414.1	211.84	26.558			
17,700.0	12,571.3	19,480.0	12,456.7	89.2	124.3	-7.30	398.1	17.5	5,725.9	5,512.4	213.49	26.821			
17,800.0	12,571.2	19,480.0	12,456.7	90.9	124.3	-7.30	398.1	17.5	5,825.9	5,610.7	215.14	27.080			
17,900.0	12,571.0	19,480.0	12,456.7	92.5	124.3	-7.30	398.1	17.5	5,925.8	5,709.0	216.79	27.335			
18,000.0	12,570.9	19,480.0	12,456.7	94.2	124.3	-7.30	398.1	17.5	6,025.8	5,807.4	218.44	27.586			
18,100.0	12,570.7	19,480.0	12,456.7	95.8	124.3	-7.30	398.1	17.5	6,125.8	5,905.7	220.09	27.833			
18,200.0	12,570.6	19,480.0	12,456.7	97.5	124.3	-7.30	398.1	17.5	6,225.7	6,004.0	221.74	28.077			
18,300.0	12,570.4	19,480.0	12,456.7	99.1	124.3	-7.30	398.1	17.5	6,325.7	6,102.3	223.39	28.317			
18,400.0	12,570.2	19,480.0	12,456.7	100.8	124.3	-7.30	398.1	17.5	6,425.7	6,200.6	225.04	28.553			
18,500.0	12,570.1	19,480.0	12,456.7	102.4	124.3	-7.30	398.1	17.5	6,525.6	6,298.9	226.69	28.786			
18,600.0	12,569.9	19,480.0	12,456.7	104.1	124.3	-7.30	398.1	17.5	6,625.6	6,397.3	228.35	29.015			
18,700.0	12,569.8	19,480.0	12,456.7	105.7	124.3	-7.30	398.1	17.5	6,725.6	6,495.6	230.00	29.242			
18,800.0	12,569.6	19,480.0	12,456.7	107.4	124.3	-7.30	398.1	17.5	6,825.5	6,593.9	231.65	29.464			
18,900.0	12,569.5	19,480.0	12,456.7	109.0	124.3	-7.30	398.1	17.5	6,925.5	6,692.2	233.31	29.684			
19,000.0	12,569.3	19,480.0	12,456.7	110.7	124.3	-7.30	398.1	17.5	7,025.5	6,790.5	234.96	29.901			
19,100.0	12,569.2	19,480.0	12,456.7	112.3	124.3	-7.30	398.1	17.5	7,125.5	6,888.8	236.62	30.114			
19,200.0	12,569.0	19,480.0	12,456.7	114.0	124.3	-7.30	398.1	17.5	7,225.4	6,987.2	238.27	30.325			
19,300.0	12,568.8	19,480.0	12,456.7	115.7	124.3	-7.30	398.1	17.5	7,325.4	7,085.5	239.93	30.532			
19,400.0	12,568.7	19,480.0	12,456.7	117.3	124.3	-7.30	398.1	17.5	7,425.4	7,183.8	241.58	30.737			
19,500.0	12,568.5	19,480.0	12,456.7	119.0	124.3	-7.30	398.1	17.5	7,525.4	7,282.1	243.24	30.939			
19,600.0	12,568.4	19,480.0	12,456.7	120.6	124.3	-7.30	398.1	17.5	7,625.3	7,380.5	244.89	31.138			

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

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	Local Co-ordinate Reference:	Well SKULL CAP FEDERAL COM #22H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Reference Site:	LUDEMAN	MD Reference:	RKB=3286+26 @ 3312.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	SKULL CAP FEDERAL COM #22H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	LATERAL 01	Database:	EDM_Users
Reference Design:	DWD Plan 1	Offset TVD Reference:	Offset Datum

Offset Design LUDEMAN - VIKING HELMET STATE COM #2H - LATERAL 01 - AWP-LAT 01													Offset Site Error:	0.0 usft
Survey Program: 100- VES GyroFlex, 11811-MWD													Offset Well Error:	3.0 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		
19,700.0	12,568.2	19,480.0	12,456.7	122.3	124.3	-7.30	398.1	17.5	7,725.3	7,478.8	246.55	31.334		
19,800.0	12,568.1	19,480.0	12,456.7	123.9	124.3	-7.30	398.1	17.5	7,825.3	7,577.1	248.20	31.528		
19,900.0	12,567.9	19,480.0	12,456.7	125.6	124.3	-7.30	398.1	17.5	7,925.3	7,675.4	249.86	31.719		
20,000.0	12,567.7	19,480.0	12,456.7	127.2	124.3	-7.30	398.1	17.5	8,025.3	7,773.8	251.52	31.908		
20,100.0	12,567.6	19,480.0	12,456.7	128.9	124.3	-7.30	398.1	17.5	8,125.2	7,872.1	253.17	32.094		
20,200.0	12,567.4	19,480.0	12,456.7	130.6	124.3	-7.30	398.1	17.5	8,225.2	7,970.4	254.83	32.278		
20,215.4	12,567.4	19,480.0	12,456.7	130.8	124.3	-7.30	398.1	17.5	8,240.7	7,985.6	255.08	32.306		

COG Operating LLC

Anticollision Report

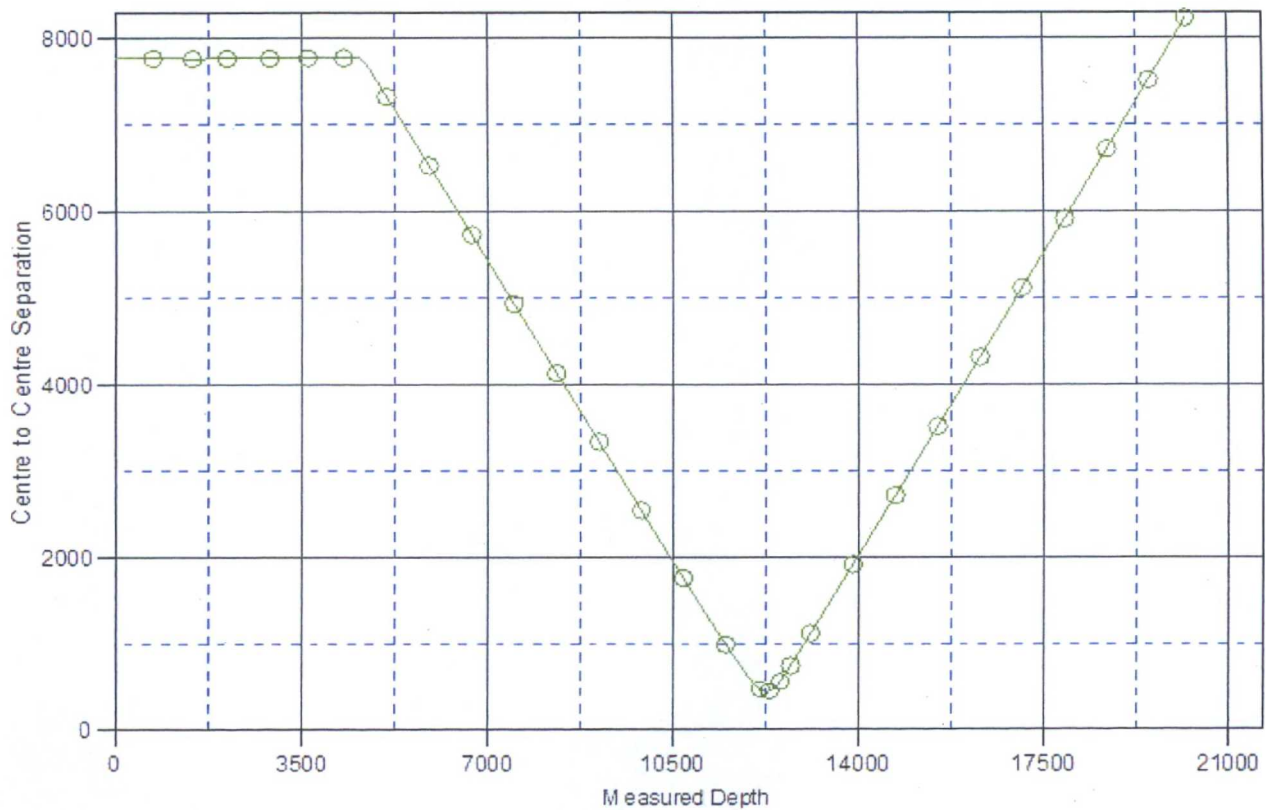
Company: COG OPERATING, LLC
Project: LEA COUNTY, NM
Reference Site: LUDEMAN
Site Error: 0.0 usft
Reference Well: SKULL CAP FEDERAL COM #22H
Well Error: 3.0 usft
Reference Wellbore: LATERAL 01
Reference Design: DWD Plan 1

Local Co-ordinate Reference: Well SKULL CAP FEDERAL COM #22H
TVD Reference: RKB=3286+26 @ 3312.0usft (Original Well Elev)
MD Reference: RKB=3286+26 @ 3312.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB=3286+26 @ 3312.0usft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SKULL CAP FEDERAL COM #22H
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
 Grid Convergence at Surface is: 0.50°

Ladder Plot



LEGEND

E COM #2H.LATERAL 01.AWP-LAT 01 V0

COG Operating LLC

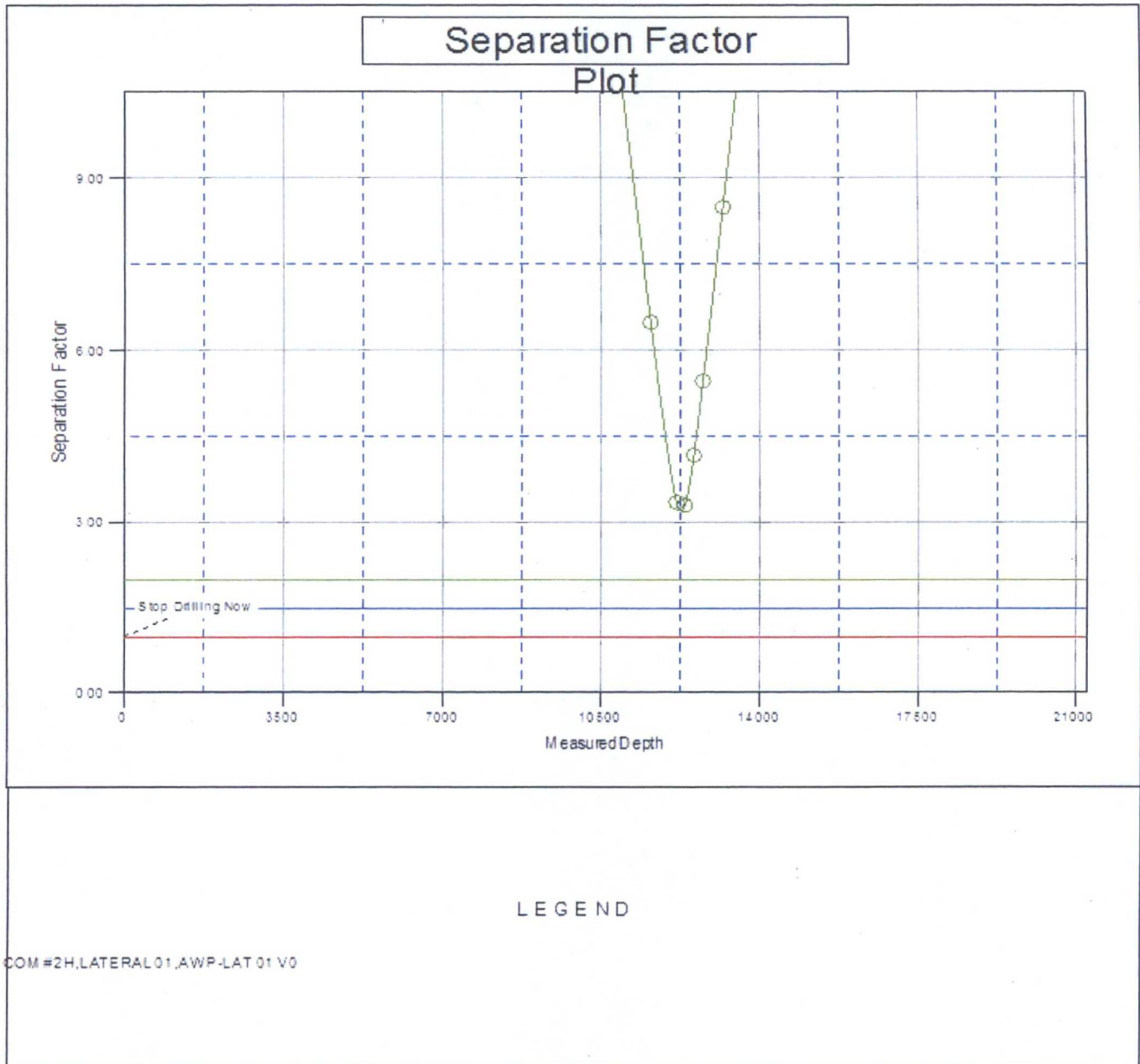
Anticollision Report

Company: COG OPERATING, LLC
Project: LEA COUNTY, NM
Reference Site: LUDEMAN
Site Error: 0.0 usft
Reference Well: SKULL CAP FEDERAL COM #22H
Well Error: 3.0 usft
Reference Wellbore: LATERAL 01
Reference Design: DWD Plan 1

Local Co-ordinate Reference: Well SKULL CAP FEDERAL COM #22H
TVD Reference: RKB=3286+26 @ 3312.0usft (Original Well Elev)
MD Reference: RKB=3286+26 @ 3312.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

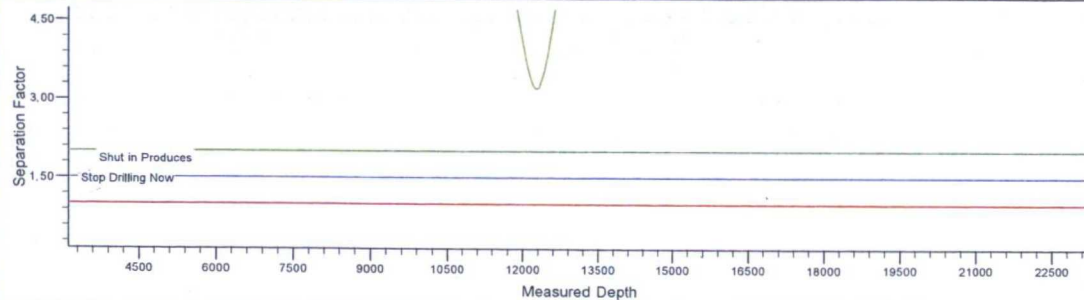
Reference Depths are relative to RKB=3286+26 @ 3312.0usft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SKULL CAP FEDERAL COM #22H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.50°





Project: LEA COUNTY, NM
Site: LUDEMAN
Well: SKULL CAP FEDERAL COM #22H
Wellbore: LATERAL 01
Design: DWD Plan 1



LEGEND

- VIKING HELMET STATE COM #2H, LATERAL 01, AWP-LAT 01 V0
- DWD Plan 1

