

OCD-ARTESIA

ATS-07-365

E4-07-1020

FORM APPROVED  
OMB No 1004-0137  
Expires March 31, 2007

SEP 25 2007

OCD-ARTESIA

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

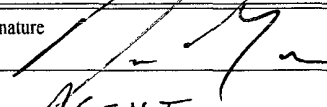
## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		HIGH CAVEKARST		5. Lease Serial No. NM 100844
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone				6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator COG Operating, LLC				7. If Unit or CA Agreement, Name and No N/A
3a. Address 550 W. Texas, Suite 1300 Midland, TX 79701		3b. Phone No. (include area code) 432-685-9158		8. Lease Name and Well No. Comet "22" Federal # 1
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 660' FSL & 330' FWL, Unit M Roswell Controlled Water Basin At proposed prod zone 330' FSL & 330' FEL, Unit P				9. API Well No. 30-C15-35832
14. Distance in miles and direction from nearest town or post office* Approx. 13 miles Northwest from Loco Hills, NM				10. Field and Pool, or Exploratory Crow Flats Wolfcamp
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig, unit line, if any) 330'		16. No. of acres in lease 920	17. Spacing Unit dedicated to this well 160	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft N/A		19. Proposed Depth 6800' TVD; 11150' MD	20. BLM/BIA Bond No. on file NMB 000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3608' GL		22. Approximate date work will start* 07/15/2007		23. Estimated duration 45 days

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature 	Name (Printed/Typed) Dwaine Moore	Date 06/04/2007
Title AGENT		
Approved by (Signature) /s/ James Stovall	Name (Printed/Typed) /s/ James Stovall	Date SEP 12 2007
Title FIELD MANAGER		
Office CARLSBAD FIELD OFFICE		

Application approval 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.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and  
States any false, fictitious or fra

\*(Instructions on page:

If earthen pits are used in  
association with the drilling of this  
well, an OCD pit permit must be  
obtained prior to pit construction.

and willfully to make to any department or agency of the United  
on.SEE ATTACHED FOR  
CONDITIONS OF APPROVALAPPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED

## DISTRICT I

1625 N. French Dr., Hobbs, NM 88240

## DISTRICT II

1301 W. Grand Avenue, Artesia, NM 88210

## DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

## DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

## OIL CONSERVATION DIVISION

1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505Form C-102  
Revised October 12, 2005Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number		Pool Code <b>97102</b>	Pool Name <b>Crow Flats; Wolfcamp</b>
Property Code <b>31129</b>	Property Name <b>COMET "22" FEDERAL</b>		Well Number <b>1</b>
UGRID No. <b>229137</b>	Operator Name <b>C.O.G. OPERATING L.L.C.</b>		Elevation <b>3608'</b>

## Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	22	16 S	28 E		660	SOUTH	330	WEST	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
P	22	16 S	28 E		330	SOUTH	330	EAST	EDDY

Dedicated Acres <b>160</b>	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p><b>SURFACE LOCATION</b> LAT-N32°54'08.5" LONG-W104°10'17.0" (NAD-83)</p> <p><b>PROJECT AREA = 160 ACRES</b></p> <p><b>PRODUCING AREA</b></p> <p><b>BOTTOM HOLE LOCATION</b> LAT-N32°54'08.6" LONG-W104°09'23.1" (NAD-83)</p> <p>3606.9' 3612.2' 330' 3600.6' 3606.0' 4590.4' 330' B.H.</p>	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information contained 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 pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>[Signature]</i> <b>6-11-07</b> Signature Date</p> <p><b>DWAINE MOORE, AGENT</b> Printed Name</p>
	<p><b>SURVEYOR CERTIFICATION</b></p> <p>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.</p> <p><b>MAY 04, 2007</b> Date Surveyed</p> <p><i>[Signature]</i> Signature &amp; Seal Professional Surveyor</p> <p><b>W.S. [Signature] 0031</b> Certificate No. Gary L. Jones 7977</p> <p><b>BASIN SURVEYS</b></p>

**STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS**

C.O.G. Operating, LLC (229137)  
550 W. Texas Avenue, Ste. 1300  
Midland, TX 79701

The undersigned accepts all applicable terms, conditions, stipulations and restrictions covering operations conducted on the leased land or portion thereof, as described below:

Lease No: NM # 100844

Well Name: Comet "22" Federal #1

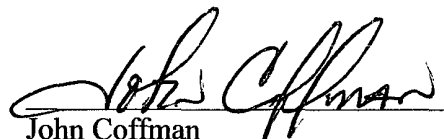
Legal Description of Land: SL: 660' FSL & 330' FWL, Unit M  
BHL: 330' FSL & 330' FEL, Unit P  
Section 22, T16S, R28E  
Eddy County, NM

Formation(s) (if applicable): Crows Flat Wolfcamp (#97102)

Bond Coverage: \$25,000 statewide bond of C.O.G. Operating, LLC

BLM Bond File No: NMB 000215

6-26-07  
Date

  
John Coffman  
C.O.G. Operating, LLC

<u>Hole size</u>	<u>Interval</u>	<u>OD of Casing</u>	<u>Weight</u>	<u>Cond.</u>	<u>Collar</u>	<u>Grade</u>
17-1/2"	0' - +/-500'	13-3/8"	48#	New	STC	H40
Collapse sf - 2.98, Burst sf – 2.33, Tension sf – 13.42						
12 1/4"	0' - 1800'	9-5/8"	40#	New	STC	J-55
Collapse sf - 2.86, Burst sf – 1.42, Tension sf – 7.22						
8-3/4"	0' – 6800'	5-1/2"	17#	New	BTC-LTC	L-80
Collapse sf - 2.08, Burst sf – 2.35, Tension sf – 2.92						
7-7/8"	6000' – 11150'	5-1/2"	17#	New	BTC	L-80
Collapse sf – 1.85, Burst sf – 2.28, Tension sf – 29.19						

**ATTACHMENT TO FORM 3160-3**  
**COG Operating**  
**Comet "22" Federal # 1**  
**Page 2 of 3**  
**Revised 7/18/07**

**7. Cement Program:**

13 3/8" Surf Csg Set at +/- 500', Circ to Surf with +/- 500 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1.35 yd.

9 5/8" Intrmd Csg Set at +/- 1800'. Circ to Surf with +/- 600 sx 35/65 Poz "C", 2.05 yd. & 200 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1.35 yd.

5 1/2" Prod Csg Set at +/- 11150' MD. Cement casing with +/- 200 sx. 50/50/2 "C", 1.37 yd & +/- 600 sx Class "H", 1.18 yd. Est. TOC @ 5000'. ← See CoA

**8. Pressure Control Equipment:**

After setting 13 3/8" casing and installing 3000 psi casing head, NU 13 5/8" 3000 psi annular BOP. Test annular BOP, casing and manifold with clear fluid to 1000 psi w/ rig pump.

After setting 9 5/8" casing and installing 3000 psi casing spool, NU 3000 psi double ram BOP and 3000 psi annular BOP. Test double ram BOP and manifold to 3000# with clear fluid and annular to 1500 psi using an independent tester and used continuously until TD is reached. Blind rams will be operationally checked on each trip out of hole. Pipe rams will be operationally checked each 24 hour period. These checks will be noted on daily tour sheets.

**9. Proposed Mud Circulating System:**

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 500'	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
500' - 1800'	9.1	30	NC	Cut brine mud, lime for PH and paper for seepage and sweeps.
1800' - 6800'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.
6000' - 11150'	9.5	36	10	Drill horizontal section with XCD polymer / cut brine / starch.

See CoA

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

**10. Production Hole Drilling Summary:**

Drill 8-3/4" hole thru Wolfcamp, run open hole logs. Spot 150 sx. "H" Kick off plug from +/- 6300' to +/- 5900'. Time drill and kick off 7-7/8" hole at +/- 6000', building curve over +/- 575' to horizontal at 6560' TVD. Drill horizontal section in an easterly direction for +/- 4500' lateral. Run production casing and cement.

**ATTACHMENT TO FORM 3160-3  
COG Operating  
Comet "22" Federal # 1  
Page 3 of 3  
Revised 7/18/07**

11. Auxiliary Well Control and Monitoring Equipment:

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

12. Logging, Testing and Coring Program:

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be ran from T.D. in vertical hole to 9 5/8" casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined after the 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and estimated maximum bottom hole pressure is 2300 psig. Low levels of Hydrogen sulfide have been monitored in producing wells in the area, so H2S may be present while drilling of the well. An H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date:

Drilling operations will commence approximately on July 15, 2007 with drilling and completion operations lasting approximately 45 days.

# Planned Wellpath Report

Plan #1  
Page 1 of 4



REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1_PWB
Facility	Comet 22 Federal #1		

REPORT SETUP INFORMATION			
Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect™ 1.2
North Reference	Grid	User	GomeOscR
Scale	0.999912	Report Generated	06/07/07 at 09:05:47
Wellbore last revised	06/07/07	Database/Source file	WA_Midland/#1_PWB

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North [feet]	East [feet]	Easting [US feet]	Northing [US feet]	Latitude [°]	Longitude [°]
Slot Location	0.00	0.00	591052.32	692055.85	32 54 08.544N	104 10 16.861W
Facility Reference Pt			591052.32	692055.85	32 54 08.544N	104 10 16.861W
Field Reference Pt			591052.32	692055.85	32 54 08.544N	104 10 16.861W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on #1_SHL (RT) to Facility Vertical Datum	0.00 feet
Horizontal Reference Pt	Facility Center	Rig on #1_SHL (RT) to GRN. ELEV.	3608.00 feet
Vertical Reference Pt	Rig on #1_SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00 feet
MD Reference Pt	Rig on #1_SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	GRN. ELEV.	Section Azimuth	89.87°

# Planned Wellpath Report

Plan #1  
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Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1_PWB
Facility	Comet 22 Federal #1		

WELLPATH DATA (60 stations) † = interpolated/extrapolated station									
MD [feet]	Inclination [°]	Azimuth [°]	TVD [feet]	Vert Sect [feet]	North [feet]	East [feet]	DLS [°/100ft]	Design Comments	Path Comment
0.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00		
390.00†	0.000	0.000	390.00	0.00	0.00	0.00	0.00		Yates
1020.00†	0.000	0.000	1020.00	0.00	0.00	0.00	0.00		Queens
1950.00†	0.000	0.000	1950.00	0.00	0.00	0.00	0.00		San Andres
3370.00†	0.000	0.000	3370.00	0.00	0.00	0.00	0.00		Glorietta
5400.00†	0.000	0.000	5400.00	0.00	0.00	0.00	0.00		Abo
6200.00	0.000	0.000	6200.00	0.00	0.00	0.00	0.00	Tie On	
6220.00	0.000	89.870	6220.00	0.00	0.00	0.00	0.00	KOP	
6300.00†	7.904	89.870	6299.75	5.51	0.01	5.51	9.88		
6400.00†	17.784	89.870	6397.12	27.71	0.06	27.71	9.88		
6500.00†	27.664	89.870	6489.25	66.29	0.15	66.29	9.88		
6583.30†	35.894	89.870	6560.00	110.13	0.25	110.13	9.88		Wolfcamp
6600.00†	37.544	89.870	6573.38	120.11	0.27	120.11	9.88		
6700.00†	47.424	89.870	6647.04	187.56	0.42	187.56	9.88		
6800.00†	57.304	89.870	6708.03	266.66	0.60	266.66	9.88		
6900.00†	67.184	89.870	6754.54	355.04	0.80	355.04	9.88		
7000.00†	77.064	89.870	6785.20	450.10	1.02	450.09	9.88		
7100.00†	86.944	89.870	6799.09	549.00	1.24	549.00	9.88		
7130.92	89.999	89.870	6799.92	579.90	1.31	579.90	9.88	EOC	
7200.00†	89.999	89.870	6799.92	648.99	1.47	648.98	0.00		
7300.00†	89.999	89.870	6799.92	748.99	1.69	748.98	0.00		
7400.00†	89.999	89.870	6799.92	848.99	1.92	848.98	0.00		
7500.00†	89.999	89.870	6799.92	948.99	2.15	948.98	0.00		
7600.00†	89.999	89.870	6799.93	1048.99	2.37	1048.98	0.00		
7700.00†	89.999	89.870	6799.93	1148.99	2.60	1148.98	0.00		
7800.00†	89.999	89.870	6799.93	1248.99	2.83	1248.98	0.00		
7900.00†	89.999	89.870	6799.93	1348.99	3.05	1348.98	0.00		
8000.00†	89.999	89.870	6799.93	1448.99	3.28	1448.98	0.00		
8100.00†	89.999	89.870	6799.94	1548.99	3.51	1548.98	0.00		
8200.00†	89.999	89.870	6799.94	1648.99	3.73	1648.98	0.00		
8300.00†	89.999	89.870	6799.94	1748.99	3.96	1748.98	0.00		
8400.00†	89.999	89.870	6799.94	1848.99	4.18	1848.98	0.00		
8500.00†	89.999	89.870	6799.95	1948.99	4.41	1948.98	0.00		
8600.00†	89.999	89.870	6799.95	2048.99	4.64	2048.98	0.00		
8700.00†	89.999	89.870	6799.95	2148.99	4.86	2148.98	0.00		
8800.00†	89.999	89.870	6799.95	2248.99	5.09	2248.98	0.00		
8900.00†	89.999	89.870	6799.95	2348.99	5.32	2348.98	0.00		
9000.00†	89.999	89.870	6799.96	2448.99	5.54	2448.98	0.00		
9100.00†	89.999	89.870	6799.96	2548.99	5.77	2548.98	0.00		
9200.00†	89.999	89.870	6799.96	2648.99	5.99	2648.98	0.00		

# Planned Wellpath Report

Plan #1  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1 PWB
Facility	Comet 22 Federal #1		

WELLPATH DATA (60 stations) † = interpolated/extrapolated station									
MD [feet]	Inclination [°]	Azimuth [°]	TVD [feet]	Vert Sect [feet]	North [feet]	East [feet]	DLS [°/100ft]	Design Comments	Path Comment
9300.00†	89.999	89.870	6799.96	2748.99	6.22	2748.98	0.00		
9400.00†	89.999	89.870	6799.96	2848.99	6.45	2848.98	0.00		
9500.00†	89.999	89.870	6799.97	2948.99	6.67	2948.98	0.00		
9600.00†	89.999	89.870	6799.97	3048.99	6.90	3048.98	0.00		
9700.00†	89.999	89.870	6799.97	3148.99	7.13	3148.98	0.00		
9800.00†	89.999	89.870	6799.97	3248.99	7.35	3248.98	0.00		
9900.00†	89.999	89.870	6799.97	3348.99	7.58	3348.98	0.00		
10000.00†	89.999	89.870	6799.98	3448.99	7.81	3448.98	0.00		
10100.00†	89.999	89.870	6799.98	3548.99	8.03	3548.98	0.00		
10200.00†	89.999	89.870	6799.98	3648.99	8.26	3648.98	0.00		
10300.00†	89.999	89.870	6799.98	3748.99	8.48	3748.98	0.00		
10400.00†	89.999	89.870	6799.98	3848.99	8.71	3848.98	0.00		
10500.00†	89.999	89.870	6799.99	3948.99	8.94	3948.98	0.00		
10600.00†	89.999	89.870	6799.99	4048.99	9.16	4048.98	0.00		
10700.00†	89.999	89.870	6799.99	4148.99	9.39	4148.97	0.00		
10800.00†	89.999	89.870	6799.99	4248.99	9.62	4248.97	0.00		
10900.00†	89.999	89.870	6800.00	4348.99	9.84	4348.97	0.00		
11000.00†	89.999	89.870	6800.00	4448.99	10.07	4448.97	0.00		
11100.00†	89.999	89.870	6800.00	4548.99	10.29	4548.97	0.00		
11138.25	89.999	89.870	6800.00†	4587.23	10.38	4587.22	0.00	#1 BHL	

HOLE & CASING SECTIONS Ref Wellbore: #1 PWB Ref Wellpath: Plan #1									
String/Diameter	Start MD [feet]	End MD [feet]	Interval [feet]	Start TVD [feet]	End TVD [feet]	Start N/S [feet]	Start E/W [feet]	End N/S [feet]	End E/W [feet]
17.5in Open Hole	0.00	500.00	500.00	0.00	500.00	0.00	0.00	0.00	0.00
13.375in Casing Surface	0.00	500.00	500.00	0.00	500.00	0.00	0.00	0.00	0.00
12.25in Open Hole	0.00	1800.00	1800.00	0.00	1800.00	0.00	0.00	0.00	0.00
9.625in Casing Intermediate	0.00	1800.00	1800.00	0.00	1800.00	0.00	0.00	0.00	0.00
8.75in Open Hole	0.00	6200.00	6200.00	0.00	6200.00	0.00	0.00	0.00	0.00
7.875in Open Hole	6200.00	11138.25	4938.25	6200.00	NA	0.00	0.00	NA	NA

# Planned Wellpath Report

Plan #1  
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INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1 PWB
Facility	Comet 22 Federal #1		

TARGETS									
Name	MD [feet]	TVD [feet]	North [feet]	East [feet]	Grid East [us survey feet]	Grid North [us survey feet]	Latitude [°]	Longitude [°]	Shape
1) #1 BHL	11138.25	6800.00	1038	4587.22	595639.13	692066.23	32°54'08.574N	104°09'23.060W	point

# Concho O&G

Location Eddy County, NM  
Field Section 22 T16S R28E (Comet)  
Facility Comet 22 Federal #1

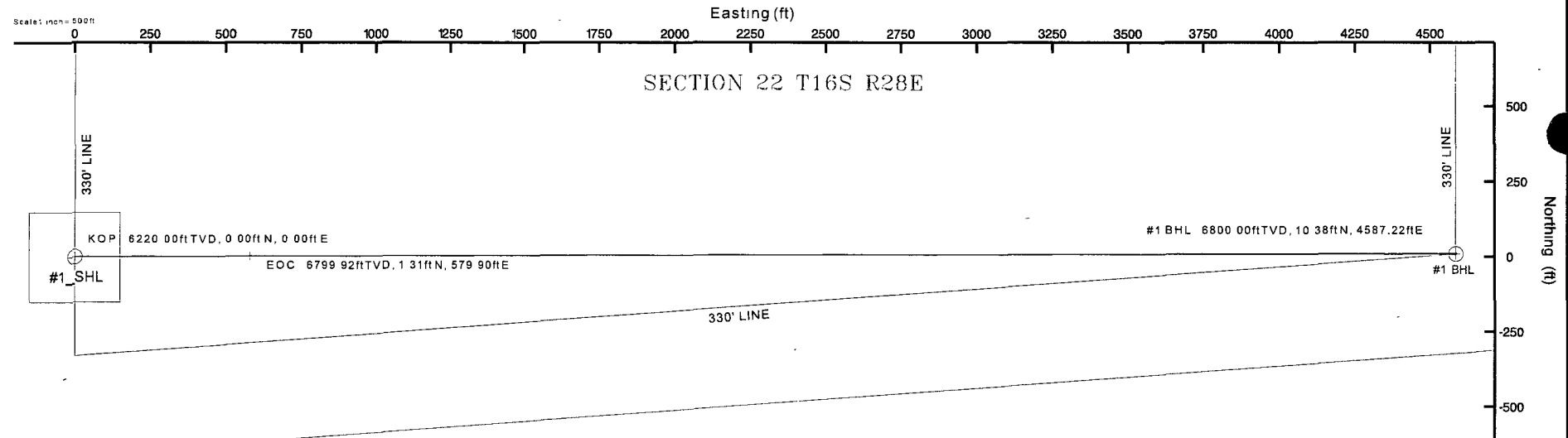
Slot #1\_SHL  
Well #1  
Wellbore #1 PWB



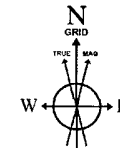
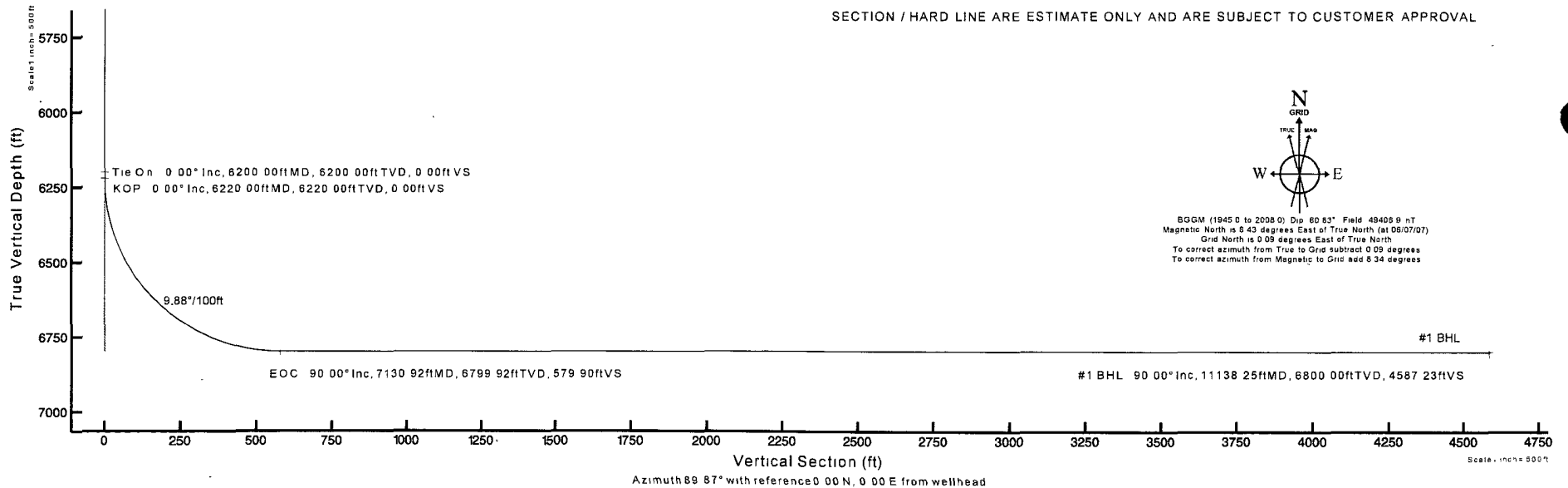
Well Profile Data

Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS ("/100ft)	VS (ft)
Tie On	6200.00	0.000	0.000	6200.00	0.00	0.00	0.00	0.00
KOP	6220.00	0.000	89.870	6220.00	0.00	0.00	0.00	0.00
EOC	7130.92	89.999	89.870	6799.92	131	579.90	9.88	579.90
#1 BHL	11138.25	89.999	89.870	6800.00	1038	4587.22	0.00	4587.23

Note: reference wellpath is Plan #1	
True vertical depths are in feet, except to Rig on #1_SHL (RT)	Grid System: NAD83 / T16N Waco State Planes Eastern Zone (3081) US Feet
Measured depths are in feet, except to Rig on #1_SHL (RT)	No 1st Reference Grid north
Rig on #1_SHL (RT) to G.N. Elev. 3604 feet	Scale True distance
G.N. Elev. to Mud line (Facility - Comet 22 Federal #1) -3695 feet	Depths are in feet
Coordinates are in feet, referenced to Facility Center	Created by: GemoDscRev.07/2007



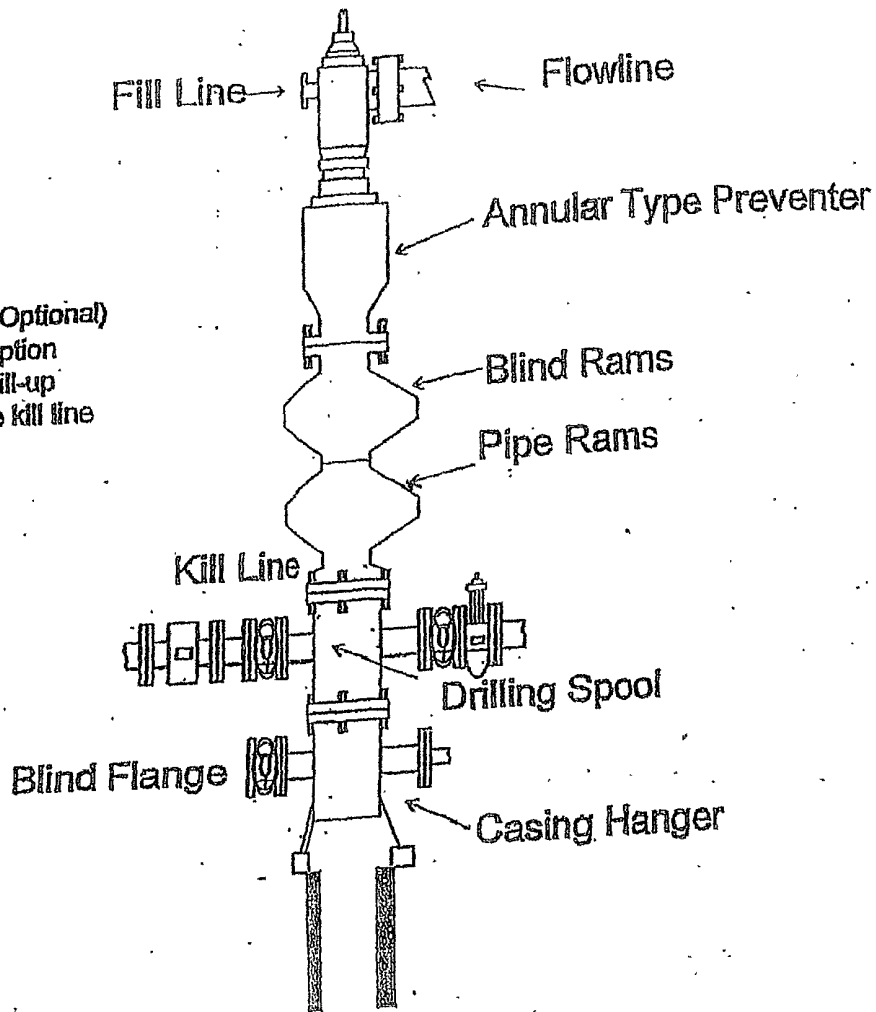
SECTION / HARD LINE ARE ESTIMATE ONLY AND ARE SUBJECT TO CUSTOMER APPROVAL



BGGM (1945 0 to 2008 0) Dip 60.83° Field 49409.9 nT  
Magnetic North is 8.43 degrees East of True North (at 06/07/07)  
Grid North is 0.09 degrees East of True North  
To correct azimuth from True to Grid subtract 0.09 degrees  
To correct azimuth from Magnetic to Grid add 8.34 degrees

BOPE SCHEMATIC  
3M SERVICE

Rotating Head (Optional)  
Drilling Nipple option  
must include a fill-up  
line. Do not use kill line  
for fill up.





# PROPOSED WELLPATH REPORT (CSV version)

Prepared by Baker Hughes INTEQ

Software System: WellArchitect™1.2

## REFERENCE WELLPATH IDENTIFICATION

Operator Concho O&G  
Area Eddy County, NM  
Field Section 22 T16S R28E (Comet)  
Facility Comet 22 Federal #1  
Slot #1\_SHL  
Well #1  
Wellbore #1 PWB  
Wellpath Plan #1  
Sidetrack (none)

## REPORT SETUP INFORMATION

Projection : NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet

North Refe Grid

Scale 0.999912

Wellbore L 6/7/2007

Software S WellArchitect™

User GomeOscR

Report Ger 06/07/07 at 09:15:39

DataBase/ WA\_Midland/ev01.xml

WELLPAT	Local North	Local East	Grid East	Grid North	Latitude	Longitude
	[ft]	[ft]	[ft]	[ft]	[°]	[°]
Slot Locati	0	0	591052.3	692055.9	32 54 08.5	104 10 16.861W
Facility Ref			591052.3	692055.9	32 54 08.5	104 10 16.861W
Field Refer			591052.3	692055.9	32 54 08.5	104 10 16.861W

## WELLPATH DATUM

Calculation Minimum curvature

Horizontal Facility Center

Vertical Re Rig on #1\_SHL (RT)

MD Refere Rig on #1\_SHL (RT)

Field Vertic GRN. ELEV.

Rig on #1\_ 0.00 feet

Rig on #1\_ 3608.00 feet

Facility Ver 0.00 feet

Section Ori 0.00 feet

Section Ori 0.00 feet

Section Azi 89.87°

WELL PATH DATA Wellbore. #1 PWB Wellpath Plan #1 † = interpolated/extrapolated station										
	MD feet	Inclination deg	Azimuth deg	TVD feet	Vert Sect feet	North feet	East feet	DLS deg/100ft	Design Coi Path Comr Tgt#	
	0	0	0	0	0	0	0	0	0	
†	100	0	0	100	0	0	0	0	0	
†	200	0	0	200	0	0	0	0	0	
†	300	0	0	300	0	0	0	0	0	
†	390	0	0	390	0	0	0	0	0	Yates
†	400	0	0	400	0	0	0	0	0	
†	500	0	0	500	0	0	0	0	0	
†	600	0	0	600	0	0	0	0	0	
†	700	0	0	700	0	0	0	0	0	
†	800	0	0	800	0	0	0	0	0	
†	900	0	0	900	0	0	0	0	0	
†	1000	0	0	1000	0	0	0	0	0	
†	1020	0	0	1020	0	0	0	0	0	Queens
†	1100	0	0	1100	0	0	0	0	0	
†	1200	0	0	1200	0	0	0	0	0	
†	1300	0	0	1300	0	0	0	0	0	
†	1400	0	0	1400	0	0	0	0	0	
†	1500	0	0	1500	0	0	0	0	0	
†	1600	0	0	1600	0	0	0	0	0	
†	1700	0	0	1700	0	0	0	0	0	
†	1800	0	0	1800	0	0	0	0	0	
†	1900	0	0	1900	0	0	0	0	0	
†	1950	0	0	1950	0	0	0	0	0	San Andres
†	2000	0	0	2000	0	0	0	0	0	
†	2100	0	0	2100	0	0	0	0	0	
†	2200	0	0	2200	0	0	0	0	0	
†	2300	0	0	2300	0	0	0	0	0	
†	2400	0	0	2400	0	0	0	0	0	
†	2500	0	0	2500	0	0	0	0	0	
†	2600	0	0	2600	0	0	0	0	0	
†	2700	0	0	2700	0	0	0	0	0	
†	2800	0	0	2800	0	0	0	0	0	
†	2900	0	0	2900	0	0	0	0	0	
†	3000	0	0	3000	0	0	0	0	0	
†	3100	0	0	3100	0	0	0	0	0	
†	3200	0	0	3200	0	0	0	0	0	
†	3300	0	0	3300	0	0	0	0	0	
†	3370	0	0	3370	0	0	0	0	0	Glorietta

†	3400	0	0	3400	0	0	0	0	
†	3500	0	0	3500	0	0	0	0	
†	3600	0	0	3600	0	0	0	0	
†	3700	0	0	3700	0	0	0	0	
†	3800	0	0	3800	0	0	0	0	
†	3900	0	0	3900	0	0	0	0	
†	4000	0	0	4000	0	0	0	0	
†	4100	0	0	4100	0	0	0	0	
†	4200	0	0	4200	0	0	0	0	
†	4300	0	0	4300	0	0	0	0	
†	4400	0	0	4400	0	0	0	0	
†	4500	0	0	4500	0	0	0	0	
†	4600	0	0	4600	0	0	0	0	
†	4700	0	0	4700	0	0	0	0	
†	4800	0	0	4800	0	0	0	0	
†	4900	0	0	4900	0	0	0	0	
†	5000	0	0	5000	0	0	0	0	
†	5100	0	0	5100	0	0	0	0	
†	5200	0	0	5200	0	0	0	0	
†	5300	0	0	5300	0	0	0	0	
†	5400	0	0	5400	0	0	0	0	Abo
†	5500	0	0	5500	0	0	0	0	
†	5600	0	0	5600	0	0	0	0	
†	5700	0	0	5700	0	0	0	0	
†	5800	0	0	5800	0	0	0	0	
†	5900	0	0	5900	0	0	0	0	
†	6000	0	0	6000	0	0	0	0	
†	6100	0	0	6100	0	0	0	0	
†	6200	0	0	6200	0	0	0	0	Tie On
†	6220	0	89 87	6220	0	0	0	0	KOP
†	6300	7 904	89 87	6299 75	5 51	0 01	5 51	9.88	
†	6400	17 784	89 87	6397 12	27 71	0 06	27.71	9 88	
†	6500	27 664	89 87	6489 25	66 29	0 15	66 29	9 88	
†	6583 3	35.894	89 87	6560	110 13	0 25	110 13	9 88	Wolfcamp
†	6600	37 544	89 87	6573.38	120.11	0 27	120.11	9 88	
†	6700	47 424	89 87	6647 04	187 56	0.42	187 56	9 88	
†	6800	57 304	89 87	6708 03	266.66	0 6	266 66	9.88	
†	6900	67 184	89 87	6754 54	355 04	0 8	355 04	9 88	
†	7000	77 064	89 87	6785 2	450 1	1 02	450 09	9.88	
†	7100	86.944	89 87	6799 09	549	1 24	549	9 88	
†	7130 92	89 999	89 87	6799 92	579 9	1 31	579 9	9 88	EOC
†	7200	89 999	89 87	6799 92	648.99	1 47	648 98	0	
†	7300	89 999	89 87	6799.92	748 99	1 69	748 98	0	

†	7400	89 999	89 87	6799 92	848 99	1 92	848 98	0
†	7500	89 999	89 87	6799 92	948 99	2 15	948 98	0
†	7600	89 999	89 87	6799 93	1048 99	2 37	1048 98	0
†	7700	89 999	89 87	6799 93	1148 99	2 6	1148 98	0
†	7800	89 999	89 87	6799 93	1248 99	2 83	1248 98	0
†	7900	89 999	89 87	6799 93	1348 99	3 05	1348 98	0
†	8000	89 999	89 87	6799 93	1448 99	3 28	1448 98	0
†	8100	89 999	89 87	6799 94	1548 99	3 51	1548 98	0
†	8200	89 999	89 87	6799 94	1648 99	3 73	1648 98	0
†	8300	89 999	89 87	6799 94	1748 99	3 96	1748 98	0
†	8400	89 999	89 87	6799 94	1848 99	4 18	1848 98	0
†	8500	89 999	89 87	6799 95	1948 99	4 41	1948 98	0
†	8600	89 999	89 87	6799 95	2048 99	4 64	2048 98	0
†	8700	89 999	89 87	6799 95	2148 99	4 86	2148 98	0
†	8800	89 999	89 87	6799 95	2248 99	5 09	2248 98	0
†	8900	89 999	89 87	6799 95	2348 99	5 32	2348 98	0
†	9000	89 999	89 87	6799 96	2448 99	5 54	2448 98	0
†	9100	89 999	89 87	6799 96	2548 99	5 77	2548 98	0
†	9200	89 999	89 87	6799 96	2648 99	5 99	2648 98	0
†	9300	89 999	89 87	6799 96	2748 99	6 22	2748 98	0
†	9400	89 999	89 87	6799 96	2848 99	6 45	2848 98	0
†	9500	89 999	89 87	6799 97	2948 99	6 67	2948 98	0
†	9600	89 999	89 87	6799 97	3048 99	6 9	3048 98	0
†	9700	89 999	89 87	6799 97	3148 99	7 13	3148 98	0
†	9800	89 999	89 87	6799 97	3248 99	7 35	3248 98	0
†	9900	89 999	89 87	6799 97	3348 99	7 58	3348 98	0
†	10000	89 999	89 87	6799 98	3448 99	7 81	3448 98	0
†	10100	89 999	89 87	6799 98	3548 99	8 03	3548 98	0
†	10200	89 999	89 87	6799 98	3648 99	8 26	3648 98	0
†	10300	89 999	89 87	6799 98	3748 99	8 48	3748 98	0
†	10400	89 999	89 87	6799 98	3848 99	8 71	3848 98	0
†	10500	89 999	89 87	6799 99	3948 99	8 94	3948 98	0
†	10600	89 999	89 87	6799 99	4048 99	9 16	4048 98	0
†	10700	89 999	89 87	6799 99	4148 99	9 39	4148 97	0
†	10800	89 999	89 87	6799 99	4248 99	9 62	4248 97	0
†	10900	89 999	89 87	6800	4348 99	9 84	4348 97	0
†	11000	89 999	89 87	6800	4448 99	10 07	4448 97	0
†	11100	89 999	89 87	6800	4548 99	10 29	4548 97	0
	11138 25	89 999	89 87	6800	4587 23	10 38	4587 22	0 #1 BHL

1

## HOLE AND CASING SECTIONS Ref Wellbore #1 PWB Ref Wellpath Plan #1

String/Dian	Start MD	End MD	Interval	Start TVD	End TVD	Start N/S	End N/S	Start E/W	End E/W
	feet	feet	feet	feet	feet				

5in Ope	0	500	500	0	500	0	0	0	0
3 375in C	0	500	500	0	500	0	0	0	0
2 25in Op	0	1800	1800	0	1800	0	0	0	0
9 625in Ca	0	1800	1800	0	1800	0	0	0	0
8 75in Ope	0	6200	6200	0	6200	0	0	0	0
7 875in Op	6200	11138 25	4938 25	6200 NA		0	0 NA	NA	

# TARGETS

Name	MD feet	TVD feet	North feet	East feet	Grid East us survey f	Grid North us survey f	Latitude DegMinSec	Longitude DegMinSec	Shape	Comment	Design Comments
(1) #1 BHL	11138 25	6800	10 38	4587 22	595639 1	692066 2	32 54 08 5	104 09 23	point		

# Planned Wellpath Report

Plan #1  
Page 1 of 4



REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1 PWB
Facility	Comet 22 Federal #1		

REPORT SETUP INFORMATION			
Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect™ 1.2
North Reference	Grid	User	GomeOscR
Scale	0.999912	Report Generated	06/07/07 at 09:05:47
Wellbore last revised	06/07/07	Database/Source file	WA_Midland/#1_PWB

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North [feet]	East [feet]	Easting [US feet]	Northing [US feet]	Latitude [°]	Longitude [°]
Slot Location	0.00	0.00	591052.32	692055.85	32 54 08.544N	104 10 16.861W
Facility Reference Pt			591052.32	692055.85	32 54 08.544N	104 10 16.861W
Field Reference Pt			591052.32	692055.85	32 54 08 544N	104 10 16 861W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on #1_SHL (RT) to Facility Vertical Datum	0.00 feet
Horizontal Reference Pt	Facility Center	Rig on #1_SHL (RT) to GRN. ELEV	3608.00 feet
Vertical Reference Pt	Rig on #1_SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00 feet
MD Reference Pt	Rig on #1_SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	GRN. ELEV.	Section Azimuth	89.87°

# **COG OPERATING, LLC**

**HYDROGEN SULFIDE (H<sub>2</sub>S) CONTINGENCY PLAN  
FOR DRILLING / COMPLETING / WORKOVER / FACILITY  
WITH THE EXPECTATION OF H<sub>2</sub>S IN EXCESS OF 100 PPM**

**COMET "22" FEDERAL #1  
NEW DRILL WELL  
SL: 660' FSL & 330' FWL, UNIT M  
BHL: 330' FSL & 330' FEL, UNIT P  
SECTION 22, T16S, R28E  
EDDY COUNTY, NEW MEXICO**

**This well / facility is not expected to have H<sub>2</sub>S, but the following is submitted as requested.**

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## GENERAL H2S EMERGENCY ACTION

In the event of any evidence of H2S emergency, the following plan will be initiated:

1. All personnel will immediately evacuate to an up-wind and if possible up-hill "safe area".
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (self-contained breathing apparatus).
3. Always use the "buddy system".
4. Isolate the well / problem if possible.
5. Account for all personnel.
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the company representative as soon as possible if not at the location (use the enclosed call list as instructed).

At this point the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of emergency response agencies and residents.

### EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

1. All personnel will don the self-contained breathing apparatus.
2. Remove all personnel to the "safe area: (always use the "buddy system")".
3. Contact company representative if not on location.
4. Set in motion the steps to protect and / or remove the general public to any upwind "safe are". Maintain strict security and safety procedures while dealing with the source.
5. No entry to any unauthorized personnel.
6. Notify the appropriate agencies:  
City Police - City streets  
State Police - State Roads  
County Sheriff - County Roads
7. Call the NMOCD.

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harms way, he will immediately notify public safety personnel.

**EMERGENCY CALL LIST**

	<u>Office</u>	<u>Cell</u>	<u>Home</u>
John Coffman	432-683-7443	432-631-9762	432-699-5552
Erick Nelson	432-683-7443	432-238-7591	
Greg Wilkes	432-683-7443	432-631-6795	432-697-9745

**EMERGENCY RESPONSE NUMBERS**

**Eddy County, New Mexico**

<b>State Police</b>	<b>505-748-9718</b>
<b>Eddy County Sheriff</b>	<b>505-746-2701</b>
<b>Emergency Medical Services (Ambulance)</b>	<b>911 or 505-746-2701</b>
<b>Eddy County Emergency Management (Harry Burgess)</b>	<b>505-887-9511</b>
<b>State Emergency Response Center (SERC)</b>	<b>505-476-9620</b>
<b>Carlsbad Police Department</b>	<b>505-885-2111</b>
<b>Carlsbad Fire Department</b>	<b>505-885-3125</b>
<b>New Mexico Oil Conservation Division</b>	<b>505-748-1283</b>
<b>Callaway Safety Equipment, Inc.</b>	<b>505-392-2973</b>

## PROTECTION OF THE GENERAL (ROE) RADIUS OF EXPOSURE

In the event greater than 100 ppg H<sub>2</sub>S is present, the ROE calculations will be done to determine if the following is warranted:

- \* 100 ppm at any public area (any place not associated with this site)
- \* 500 ppm at any public road (any road which the general public may travel).
- \* 100 ppm radius of 3000' will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H<sub>2</sub>S could be present in concentrations greater than 100 ppm in the gas mixture.

### **Calculation for the 100 ppm ROE:**

(H<sub>2</sub>S concentrations in decimal form)

$$X = [(1.589)(\text{concentration})(Q)] (0.6258)$$

$$10,000 \text{ ppm} = .01$$

$$1,000 \text{ ppm} = .001$$

### **Calculation for the 500 ppm ROE:**

$$100 \text{ ppm} = .0001$$

$$10 \text{ ppm} = .00001$$

$$X = [(0.4546)(\text{concentration})(Q)] (.06258)$$

EXAMPLE: If a well / facility has been determined to have 150 ppm H<sub>2</sub>S in the gas mixture and the well / facility is producing at a gas rate of 200 MCFD then:

$$\begin{aligned} \text{ROE for 100 ppm} \quad X &= [(1.589)(.00010)(200,000)] (0.6258) \\ X &= 8.8' \end{aligned}$$

$$\begin{aligned} \text{ROE for 500 ppm} \quad X &= [(0.4546)(.00050)(200,000)] (0.6258) \\ X &= 10.9' \end{aligned}$$

These calculations will be forwarded to the appropriate NMOCD district office when applicable.

## PUBLIC EVACUATION PLAN

When the supervisor has determined that the general public will be involved, the following plan will be implemented.

1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.
2. A trained person in H<sub>2</sub>S safety shall monitor with detection equipment the H<sub>2</sub>S concentration, wind and area of exposure. This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. All monitoring equipment shall be UL approved for use in Class I Groups A, B, C & D, Division I hazardous locations. All monitors will have a minimum capability of measuring H<sub>2</sub>S, oxygen, and flammable values.
3. Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.
4. The company representative shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the effected area is safe to enter.

## PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

The decision to ignite a well should be a last resort and one, if not both, of the following pertain:

1. Human life and / or property are endangered.
2. There is no hope of bringing the situation under control with the prevailing conditions at the site.

### **Instructions for Igniting the Well:**

1. Two people are required. They must be equipped with positive pressure, self-contained breathing apparatus and "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.
2. One of the people will be a qualified safety person who will test the atmosphere for H<sub>2</sub>S, oxygen and LFL. The other person will be the company representative.
3. Ignite upwind from a distance no closer than necessary. Make sure that where you ignite from has the maximum escape avenue available. A 25mm flare gun with a range of approximately +/- 500 feet shall be used to ignite the gas.
4. Before igniting, check for the presence of combustible gases.
5. After igniting, continue emergency actions and procedures as before.

## REQUIRED EMERGENCY EQUIPMENT

### **1. Breathing Apparatus**

- \* Rescue Packs (SCBA) – 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
- \* Work / Escape Packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
- \* Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.

### **2. Signage and Flagging**

- \* One Color Code Condition Sign will be placed at the entrance to the site reflecting the possible conditions at the site.
- \* A Colored Condition flag will be on display reflecting the condition at the site at that time.

### **3. Briefing Area**

- \* Two perpendicular areas will be designated by signs and readily accessible.

### **4. Windsocks**

- \* Two windsocks will be placed in strategic locations, visible from all angles.

### **5. H2S Detectors and Alarms**

\* The stationary detector with three (3) sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible alarm @ 15 ppm. Calibrate a minimum of every 30 days or as needed. The three sensors will be placed in the following places: (Gas sample tubes will be stored in the safety trailer):

- \* Rig Floor
- \* Bell Nipple
- \* End of flow line or where well bore fluid is being discharged

### **6. Auxiliary Rescue Equipment**

- \* Stretcher
- \* Two OSHA full body harnesses
- \* 100' of 5/8" OSHA approved rope
- \* One 20 lb. Class ABC fire extinguisher
- \* Communication via cell phones on location and vehicles on location

## USING SELF-CONTAINED BREATHING AIR EQUIPMENT (SCBA)

1. SCBA should be worn when any of the following are performed:
  - \* Working near the top or on top of a tank
  - \* Disconnecting any line where H<sub>2</sub>S can reasonably be expected.
  - \* Sampling air in the area to determine if toxic concentrations of H<sub>2</sub>S exist.
  - \* Working in areas where over 10 ppm of H<sub>2</sub>S has been detected.
  - \* At any time there is a doubt of the level of H<sub>2</sub>S in the area.
2. All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.
3. Facial hair and standard eyeglasses are not allowed with SCBA.
4. Contact lenses are never allowed with SCBA.
5. When breaking out any line where H<sub>2</sub>S can reasonably be expected.
6. After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected.
7. All SCBA shall be inspected monthly.

## RESCUE & FIRST AID FOR VICTIMS OF H<sub>2</sub>S POISONING

- \* Do not panic.
- \* Remain calm and think.
- \* Get on the breathing apparatus.
- \* Remove the victim to the safe breathing area as quickly as possible, upwind and uphill from source or crosswind to achieve upwind.
- \* Notify emergency response personnel.
- \* Provide artificial respiration and / or CPR as necessary.
- \* Remove all contaminated clothing to avoid further exposure.
- \* A minimum of two (2) personnel on location shall be trained in CPR and First Aid.

## Toxic Effects of H<sub>2</sub>S Poisoning

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity-1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen sulfide and other gasses are compared below in Table 1. toxicity table for H<sub>2</sub>S and physical effects are shown in Table II.

**Table 1**  
Permissible Exposure Limits of Various Gasses

Common Name	Symbol	Sp. Gravity	TLV	STEL	IDLH
Hydrogen Cyanide	HCN	.94	4.7 ppm	C	
Hydrogen Sulfide	H <sub>2</sub> S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	SO <sub>2</sub>	2.21	2 ppm	5 ppm	
Chlorine	CL	2.45	.5 ppm	1 ppm	
Carbon Monoxide	CO	.97	25 ppm	200 ppm	
Carbon Dioxide	CO <sub>2</sub>	1.52	5000 ppm	30,000 ppm	
Methane	CH <sub>4</sub>	.55	4.7% LEL	14% UEL	

### Definitions

- A. TLV – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Governmental Hygienists and regulated by OSHA.
- B. STEL – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for H<sub>2</sub>S is 19 PPM.
- C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H<sub>2</sub>S is 100 PPM.
- D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed to based on an TWA.

**TABLE II**  
**Toxicity Table of H<sub>2</sub>S**

Percent %	PPM	Physical Effects
.0001	1	Can smell less than 1 ppm.
.001	10	TLV for 8 hours of exposure
.0015	15	STEL for 15 minutes of exposure
.01	100	Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins in a few minutes.
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.

## PHYSICAL PROPERTIES OF H<sub>2</sub>S

The properties of all gasses are usually described in the context of seven major categories:

COLOR  
ODOR  
VAPOR DENSITY  
EXPLOSIVE LIMITS  
FLAMMABILITY  
SOLUBILITY (IN WATER)  
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

### **COLOR – TRANSPARENT**

Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence, a fact that makes the gas extremely dangerous to be around.

### **ODOR – ROTTEN EGGS**

Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs". For this reason it earned its common name "sour gas". However, H<sub>2</sub>S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

### **VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192**

Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H<sub>2</sub>S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

### **EXPLOSIVE LIMITS – 4.3% TO 46%**

Mixed with the right proportion of air or oxygen, H<sub>2</sub>S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

### **FLAMMABILITY**

Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO<sub>2</sub>), another hazardous gas that irritates the eyes and lungs.

### **SOLUBILITY – 4 TO 1 RATIO WITH WATER**

Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H<sub>2</sub>S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H<sub>2</sub>S may release the gas into the air.

**BOILING POINT – (-76 degrees Fahrenheit)**

Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

**SURFACE USE AND OPERATIONS PLAN**  
**FOR DRILLING, COMPLETION, AND PRODUCING**

C.O.G. Operating, LLC  
Comet "22" Federal #1  
SL: 660' FSL & 330' FWL, Unit M  
BHL: 330' FSL & 330' FEL  
Sec 22, T16S, R28E  
Eddy County, New Mexico

**LOCATED**

Approximately 13 miles Northwest from Loco Hills, New Mexico

**OIL & GAS LEASE**

SL: NM #100844  
BHL: NM #095630

**RECORD TITLE LESSEE**

SL: COG Operating, LLC, 550 W. Texas, Suite 1300, Midland, TX 79701  
BHL: Nearburg Exploration Co LLC, 3300 N. A St, #120, Midland, TX 79705

**BOND COVERAGE**

\$25,000 statewide bond of C.O.G. Operating, L.L.C.

**SURFACE OWNER**

Bureau of Land Management

**MINERAL OWNER**

Bureau of Land Management

**GRAZING TENANT**

Bogle LTD CO LLC, PO Box 460, Dexter, NM 88230; 505-734-5442

**POOL**

Crow Flats Wolfcamp (#97102)

**PROPOSED TOTAL DEPTH**

This well will be drilled to a Total Vertical Depth of approximately 6800' and a Measured Depth of approximately 11150'.

## **EXHIBITS**

- A. Well Location & Acreage Dedication Map
- B. Area Road Map
- C. Vicinity Oil & Gas Map
- D. Topographic & Location Verification Map
- E-1. Proposed Lease Road and Pad Layout Map
- E-2. Proposed Lease Road and Pad Layout Map
- F. Drilling Rig Layout
- G. BOPE Schematic
- H. Choke Manifold Schematic
- I. H2S Contingency Plan
- J-1. Proposed Pipeline Route
- J-2. Topographic Proposed Pipeline Route (tie in)

## **EXISTING ROADS**

- A. Exhibit A is a portion of a section map showing the location of the proposed well as staked.
- B. Exhibit B is a map showing existing roads in the vicinity of the proposed well site.
- C. Directions to well location:  
From the junction of U.S. Hwy 82 and County Road 202 (Southern Union), go North on County Road 202 for 3.8 miles to lease road. On lease road go North 1.5 miles to lease road. On lease road, go East 1.5 miles to lease road. On lease road go North 2.7 miles to lease road, thence East 1.0 miles, thence South to ELK "21" #1 and proposed lease road.

## **ACCESS ROADS**

- A. Length and Width: 1567' long and 30' wide. The access road will be built and is shown on Exhibit E-1 & E-2.
- B. Surface Material: Existing
- C. Maximum Grad: Less than five percent
- D. Turnouts: None necessary
- E. Drainage Design: Existing
- F. Culverts: None necessary
- G. Gates and Cattle Guards: None needed

#### **LOCATION OF EXISTING WELLS**

Existing wells in the immediate area are shown in Exhibit C.

#### **LOCATION OF EXISTING AND/OR PROPOSED FACILITIES**

Necessary production facilities for this well will be located on the well pad.

#### **LOCATION AND TYPE OF WATER SUPPLY**

It is not contemplated that a water well will be drilled. Water necessary for drilling will be purchased and hauled to the site over existing roads shown on Exhibit B.

#### **METHODS OF HANDLING WASTE DISPOSAL**

- A. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
- B. Water produced during tests will be disposed of in the drilling pits.
- C. Oil produced during tests will be stored in test tanks.
- D. Trash will be contained in a trash trailer and removed from well site.
- E. All trash and debris will be removed from the well site within 30 days after finishing drilling and/or completion operations.

#### **ANCILLARY FACILITIES**

None required.

#### **WELL SITE LAYOUT**

Exhibits E-1 and F show the relative location and dimensions of the well pad, mud pits, reserve pit, and trash pit, and the location of major rig components.

**PLANS FOR RESTORATION OF THE SURFACE**

- A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. The well site will be cleaned of all trash and junk to leave the site in an as aesthetically pleasing condition as possible.
- B. After abandonment, all equipment, trash, and junk will be removed and the site will be clean.

**OTHER INFORMATION**

- A. **Topography:**  
The topography consists of sandy soil with native grasses. No wildlife was observed, but the usual inhabitants of this region are Jackrabbits, Reptiles, Coyotes, etc.
- B. **Soil:** Topsoil at the well site is sandy soil.
- C. **Flora and Fauna:** The location is in an area sparsely covered with mesquite and range grasses.
- D. **Ponds and Streams:** There are no rivers, lakes, ponds, or streams in the area.
- E. **Residences and Other Structures:** There are no residences within a mile of the proposed well site.
- F. **Archaeological, Historical, and Cultural sites:** An Archaeological Survey has been ordered and a copy to be sent to the BLM Office.
- G. **Land Use:** Grazing

**ONLEASE RIGHT OF WAY REQUEST**

**Requesting Right of Way for all onlease appurtenances, including proposed lease roads.**

- A. **Roads:** Building of a proposed lease road 1567' in length.  
(See Exhibit E-1 & E-2).
- B. **Pipeline:** Constructing of proposed Pipeline to follow proposed lease road  
( approximately 880 ft. please see attached plat.)

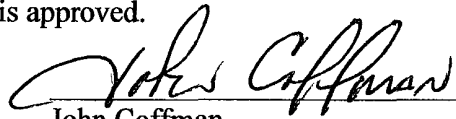
**OPERATOR'S REPRESENTATIVE**

John Coffman  
C.O.G. Operating, LLC  
550 W. Texas Ave, Suite 1300  
Midland, TX 79701  
(432) 683-7443

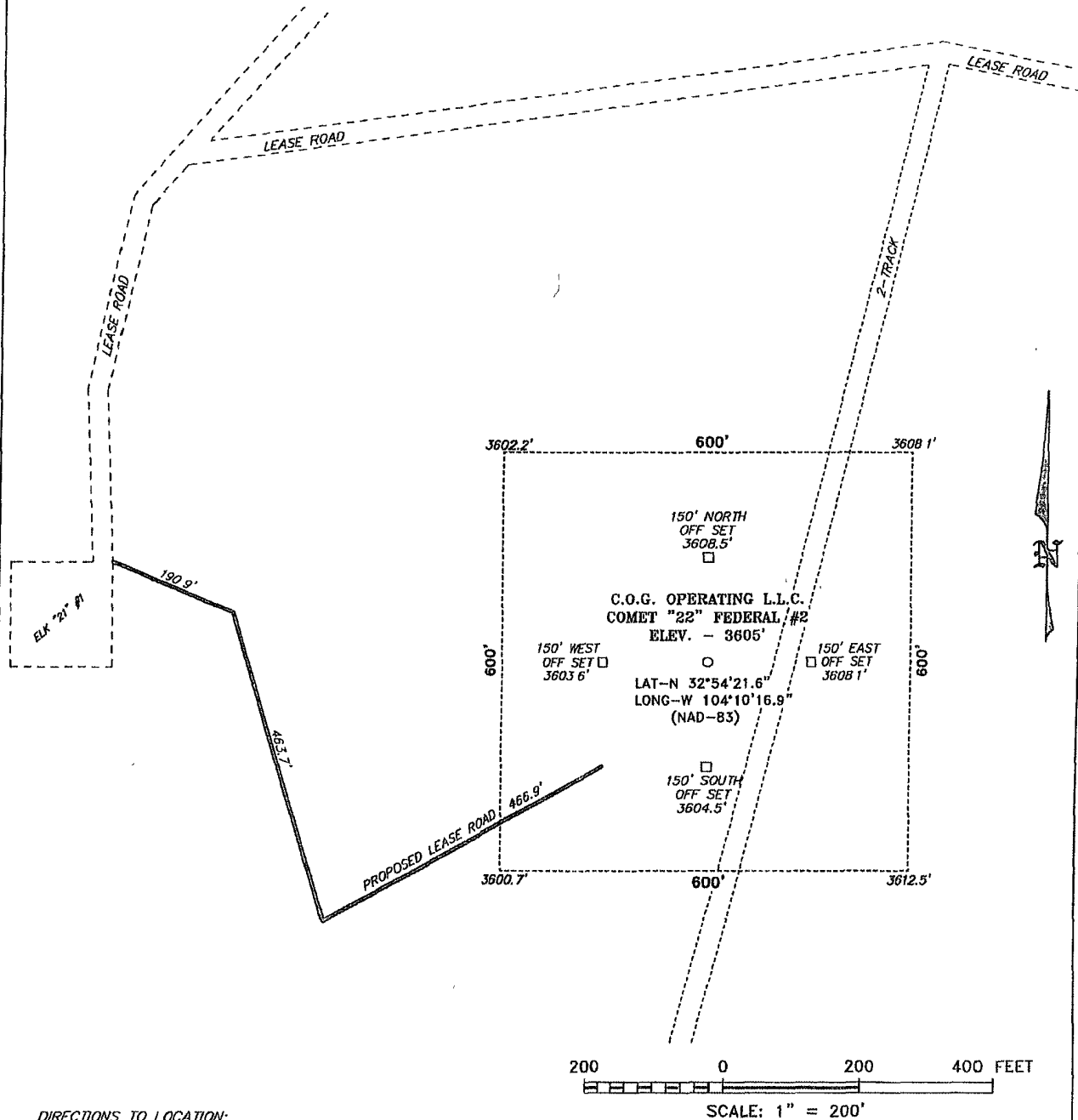
**CERTIFICATION**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be performed by the C.O.G. Operating, LLC Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

6-26-07  
Date

  
\_\_\_\_\_  
John Coffman  
C.O.G. Operating, LLC

SECTION 22, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



## DIRECTIONS TO LOCATION-

FROM THE JUNCTION OF U.S. HWY 82 AND CO RD. 202 (SOUTHERN UNION), GO NORTH ON CO. RD. 202 FOR 3.8 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTH 1.5 MILES TO LEASE ROAD, ON LEASE ROAD GO EAST 1.5 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTH 2.7 MILES TO LEASE ROAD, THENCE EAST 1.0 MILES, THENCE SOUTH TO ELK "21" #1 LOCATION AND PROPOSED LEASE ROAD.

**BASIN SURVEYS** P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number. 18032

Drawn By: J. M. SMALL

Date: 05-10-2007

Disk: JMS 18032W

**C.O.G. OPERATING L.L.C.**

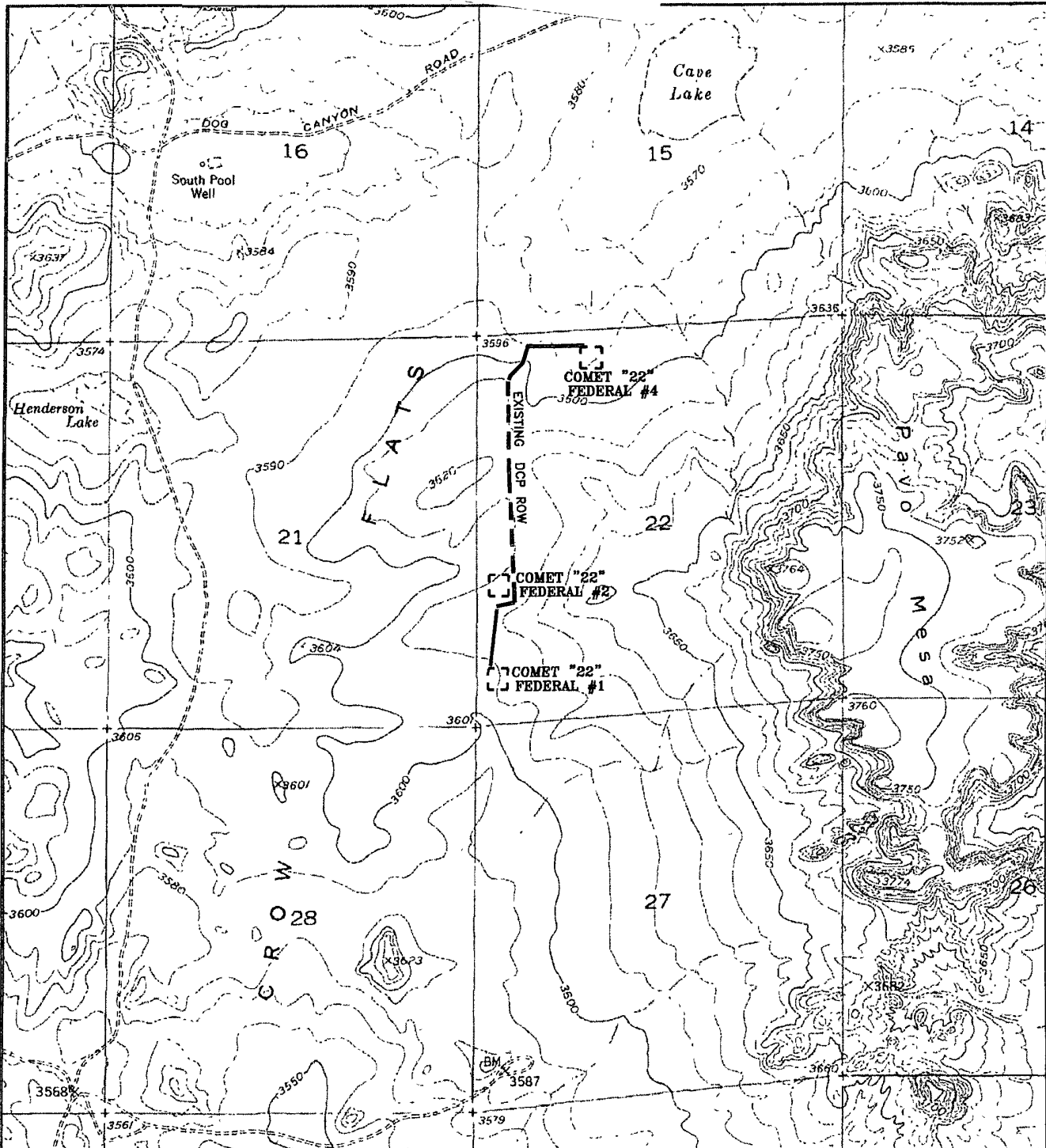
REF: COMET "22" FEDERAL #2 / Well Pad Topo

THE COMET "22" FEDERAL #2 LOCATED 1980' FROM  
THE SOUTH LINE AND 330' FROM THE WEST LINE OF  
SECTION 22, TOWNSHIP 16 SOUTH, RANGE 28 EAST,

N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date. 05-04-2007

Sheet 1 of 1 Sheets



PROPOSED PIPELINE TO THE COMET "22" #1,2&4 WELLS  
 Section 22, Township 16 South, Range 28 East,  
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786  
 1120 N. West County Rd.  
 Hobbs, New Mexico 88241  
 (505) 393-7316 - Office  
 (505) 392-3074 - Fax  
 basinsurveys.com

WO Number JMS 18094T

Survey Date 05-28-2007

Scale 1" = 2000'

Date 05-30-2007

C.O.G.  
 OPERATING  
 L.L.C.

## **Conditions of Approval Cave and Karst**

EA#: NM-520-07-1020

Lease #: NM-100844

**COG Operating LLC**

**Comet "22" Federal # 1**

### **Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

#### **Berming:**

Any tank batteries will be constructed and bermed large enough to contain any spills that may occur.

Bermed areas will be lined with rip-stop padding to prevent tears or punctures in liners and lined with a permanent 20 mil plastic liner.

### **Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

#### **Rotary Drilling with Fresh Water:**

Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. Use depth to the deepest expected fresh water as listed in the geologist report.

#### **Casing:**

All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run to American Petroleum Institute and BLM standards.

#### **Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported.

Regardless of the type of drilling machinery used, if a void (bit drops) of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in any cave-bearing zone, drilling operations will immediately stop and the BLM will be notified by the operator. The BLM will assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment the well bore will be cemented completely from 100 feet below the bottom of the cave bearing zone to the surface.

**Record Keeping:**

The Operator will track customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence or absence of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

## CONDITIONS OF APPROVAL - DRILLING

Operator's Name: COG Operating LLC  
Well Name & No. 1-Comet "22" Federal  
Location SHL: 0660' FSL, 0330' FWL, Sec. 22, T-16-S, R-28-E, Eddy County, NM  
Location BHL: 0330' FSL, 0330' FEL, Sec. 22, T-16-S, R-28-E, Eddy County, NM  
Lease: NM-100844

.....

### I. DRILLING OPERATIONS REQUIREMENTS:

- A. The Bureau of Land Management (BLM) is to be notified a minimum of 2 hours in advance for a representative to witness:
1. Spudding well
  2. Setting and/or Cementing of all casing strings
  3. BOPE tests
- Eddy County call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (505) 361-2822
- B. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If H<sub>2</sub>S is detected, please report the measurements to the BLM.**
- C. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
- D. When floor controls are required, (3M or Greater), controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

### II. CASING:

- A. The 13-3/8 inch surface casing shall be set in the Tansill Formation at approximately 500 feet and cemented to the surface.
1. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.
  2. Wait on cement (WOC) time for a primary cement job will be a minimum of 18 hours or 24 hours in the potash area or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  3. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  4. **If cement falls back, remedial action will be done prior to drilling out that string.**

**Fresh water mud to be used down to setting depth for the 9-5/8" casing.  
Possible lost circulation in the Grayburg and San Andres formations.  
Possible water flows in the Salado and Artesia Groups. High cave/karst area.  
High pressure gas bursts possible within the Wolfcamp formation.**

- B.** The minimum required fill of cement behind the 9-5/8 inch intermediate casing is cement shall come to surface. If cement does not come to surface see A.1 thru 4.

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

- C.** The minimum required fill of cement behind the 5-1/2 inch production casing is cement to extend a minimum of 200 feet inside the intermediate casing. Proposed cement volume is inadequate to get to required height. Prior to moving the rig, please provide verification of cement top.
- D.** If hardband drill pipe is rotated inside casing; returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### **III. PRESSURE CONTROL:**

- A.** All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
- B.** The appropriate BLM office shall be notified a minimum of 2 hours in advance for a representative to witness the tests.
- 1.** The tests shall be done by an independent service company.
  - 2.** The results of the test shall be reported to the appropriate BLM office.
  - 3.** All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
  - 4.** The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.
  - 5.** BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.
  - 6.** A variance to test the surface casing and BOP/BOPE to the reduced pressure of 1000 psi with rig pumps is approved.

#### **IV. DRILLING MUD:**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation and shall be used until production casing is run and cemented.

1. Recording pit level indicator to indicate volume gains and losses.
2. Mud measuring device for accurately determining the mud volumes necessary to fill the hole during trips.
3. Flow-sensor on the flow line to warn of abnormal mud returns from the well

**Engineer on call phone (after hours): Carlsbad - 505-706-2779**

**WWI 072407**

# Planned Wellpath Report

Plan #1  
Page 2 of 4



REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1 PWB
Facility	Comet 22 Federal #1		

WELLPATH DATA (60 stations) † = interpolated/extrapolated station									
MD [feet]	Inclination [°]	Azimuth [°]	TVD [feet]	Vert Sect [feet]	North [feet]	East [feet]	DLS [°/100ft]	Design Comments	Path Comment
0.00	0.000	0.000	0.00	0.00	0.00	0.00	0.00		
390.00†	0.000	0.000	390.00	0.00	0.00	0.00	0.00		Yates
1020.00†	0.000	0.000	1020.00	0.00	0.00	0.00	0.00		Queens
1950.00†	0.000	0.000	1950.00	0.00	0.00	0.00	0.00		San Andres
3370.00†	0.000	0.000	3370.00	0.00	0.00	0.00	0.00		Glorietta
5400.00†	0.000	0.000	5400.00	0.00	0.00	0.00	0.00		Abo
6200.00	0.000	0.000	6200.00	0.00	0.00	0.00	0.00	Tie On	
6220.00	0.000	89.870	6220.00	0.00	0.00	0.00	0.00	KOP	
6300.00†	7.904	89.870	6299.75	5.51	0.01	5.51	9.88		
6400.00†	17.784	89.870	6397.12	27.71	0.06	27.71	9.88		
6500.00†	27.664	89.870	6489.25	66.29	0.15	66.29	9.88		
6583.30†	35.894	89.870	6560.00	110.13	0.25	110.13	9.88		Wolfcamp
6600.00†	37.544	89.870	6573.38	120.11	0.27	120.11	9.88		
6700.00†	47.424	89.870	6647.04	187.56	0.42	187.56	9.88		
6800.00†	57.304	89.870	6708.03	266.66	0.60	266.66	9.88		
6900.00†	67.184	89.870	6754.54	355.04	0.80	355.04	9.88		
7000.00†	77.064	89.870	6785.20	450.10	1.02	450.09	9.88		
7100.00†	86.944	89.870	6799.09	549.00	1.24	549.00	9.88		
7130.92	89.999	89.870	6799.92	579.90	1.31	579.90	9.88	EOC	
7200.00†	89.999	89.870	6799.92	648.99	1.47	648.98	0.00		
7300.00†	89.999	89.870	6799.92	748.99	1.69	748.98	0.00		
7400.00†	89.999	89.870	6799.92	848.99	1.92	848.98	0.00		
7500.00†	89.999	89.870	6799.92	948.99	2.15	948.98	0.00		
7600.00†	89.999	89.870	6799.93	1048.99	2.37	1048.98	0.00		
7700.00†	89.999	89.870	6799.93	1148.99	2.60	1148.98	0.00		
7800.00†	89.999	89.870	6799.93	1248.99	2.83	1248.98	0.00		
7900.00†	89.999	89.870	6799.93	1348.99	3.05	1348.98	0.00		
8000.00†	89.999	89.870	6799.93	1448.99	3.28	1448.98	0.00		
8100.00†	89.999	89.870	6799.94	1548.99	3.51	1548.98	0.00		
8200.00†	89.999	89.870	6799.94	1648.99	3.73	1648.98	0.00		
8300.00†	89.999	89.870	6799.94	1748.99	3.96	1748.98	0.00		
8400.00†	89.999	89.870	6799.94	1848.99	4.18	1848.98	0.00		
8500.00†	89.999	89.870	6799.95	1948.99	4.41	1948.98	0.00		
8600.00†	89.999	89.870	6799.95	2048.99	4.64	2048.98	0.00		
8700.00†	89.999	89.870	6799.95	2148.99	4.86	2148.98	0.00		
8800.00†	89.999	89.870	6799.95	2248.99	5.09	2248.98	0.00		
8900.00†	89.999	89.870	6799.95	2348.99	5.32	2348.98	0.00		
9000.00†	89.999	89.870	6799.96	2448.99	5.54	2448.98	0.00		
9100.00†	89.999	89.870	6799.96	2548.99	5.77	2548.98	0.00		
9200.00†	89.999	89.870	6799.96	2648.99	5.99	2648.98	0.00		

# Planned Wellpath Report

Plan #1  
Page 3 of 4



REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1_PWB
Facility	Comet 22 Federal #1		

WELLPATH DATA (60 stations) † = interpolated/extrapolated station									
MD [feet]	Inclination [°]	Azimuth [°]	TVD [feet]	Vert Sect [feet]	North [feet]	East [feet]	DLS [°/100ft]	Design Comments	Path Comment
9300.00†	89.999	89.870	6799.96	2748.99	6.22	2748.98	0.00		
9400.00†	89.999	89.870	6799.96	2848.99	6.45	2848.98	0.00		
9500.00†	89.999	89.870	6799.97	2948.99	6.67	2948.98	0.00		
9600.00†	89.999	89.870	6799.97	3048.99	6.90	3048.98	0.00		
9700.00†	89.999	89.870	6799.97	3148.99	7.13	3148.98	0.00		
9800.00†	89.999	89.870	6799.97	3248.99	7.35	3248.98	0.00		
9900.00†	89.999	89.870	6799.97	3348.99	7.58	3348.98	0.00		
10000.00†	89.999	89.870	6799.98	3448.99	7.81	3448.98	0.00		
10100.00†	89.999	89.870	6799.98	3548.99	8.03	3548.98	0.00		
10200.00†	89.999	89.870	6799.98	3648.99	8.26	3648.98	0.00		
10300.00†	89.999	89.870	6799.98	3748.99	8.48	3748.98	0.00		
10400.00†	89.999	89.870	6799.98	3848.99	8.71	3848.98	0.00		
10500.00†	89.999	89.870	6799.99	3948.99	8.94	3948.98	0.00		
10600.00†	89.999	89.870	6799.99	4048.99	9.16	4048.98	0.00		
10700.00†	89.999	89.870	6799.99	4148.99	9.39	4148.97	0.00		
10800.00†	89.999	89.870	6799.99	4248.99	9.62	4248.97	0.00		
10900.00†	89.999	89.870	6800.00	4348.99	9.84	4348.97	0.00		
11000.00†	89.999	89.870	6800.00	4448.99	10.07	4448.97	0.00		
11100.00†	89.999	89.870	6800.00	4548.99	10.29	4548.97	0.00		
11138.25	89.999	89.870	6800.00	4587.23	10.38	4587.22	0.00	#1_BHL	

HOLE & CASING SECTIONS Ref Wellbore: #1_PWB Ref Wellpath: Plan #1									
String/Diameter	Start MD [feet]	End MD [feet]	Interval [feet]	Start TVD [feet]	End TVD [feet]	Start N/S [feet]	Start E/W [feet]	End N/S [feet]	End E/W [feet]
17.5in Open Hole	0.00	500.00	500.00	0.00	500.00	0.00	0.00	0.00	0.00
13.375in Casing Surface	0.00	500.00	500.00	0.00	500.00	0.00	0.00	0.00	0.00
12.25in Open Hole	0.00	1800.00	1800.00	0.00	1800.00	0.00	0.00	0.00	0.00
9.625in Casing Intermediate	0.00	1800.00	1800.00	0.00	1800.00	0.00	0.00	0.00	0.00
8.75in Open Hole	0.00	6200.00	6200.00	0.00	6200.00	0.00	0.00	0.00	0.00
7.875in Open Hole	6200.00	11138.25	4938.25	6200.00	NA	0.00	0.00	NA	NA

# Planned Wellpath Report

Plan #1  
Page 4 of 4



REFERENCE WELLPATH IDENTIFICATION			
Operator	Concho O&G	Slot	#1_SHL
Area	Eddy County, NM	Well	#1
Field	Section 22 T16S R28E (Comet)	Wellbore	#1_PWB
Facility	Comet 22 Federal #1		

TARGETS									
Name	MD [feet]	TVD [feet]	North [feet]	East [feet]	Grid East [us survey feet]	Grid North [us survey feet]	Latitude [°]	Longitude [°]	Shape
1) #1 BHL	11138.25	6800.00	10.38	4587.22	595639.13	692066.23	32°54'08.574N	104°09'23.060W	point

# Concho O&G

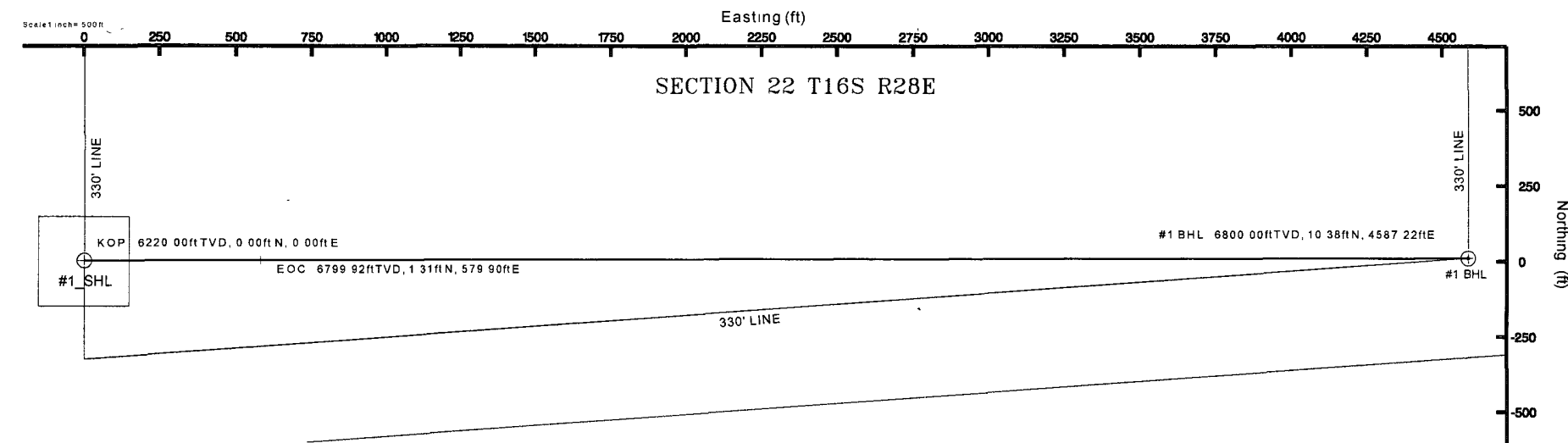
Location Eddy County, NM  
Field Section 22 T16S R28E (Comet)  
Facility Comet 22 Federal #1

Slot #1\_SHL  
Well #1  
Wellbore #1.PWB

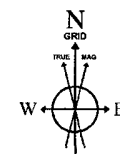
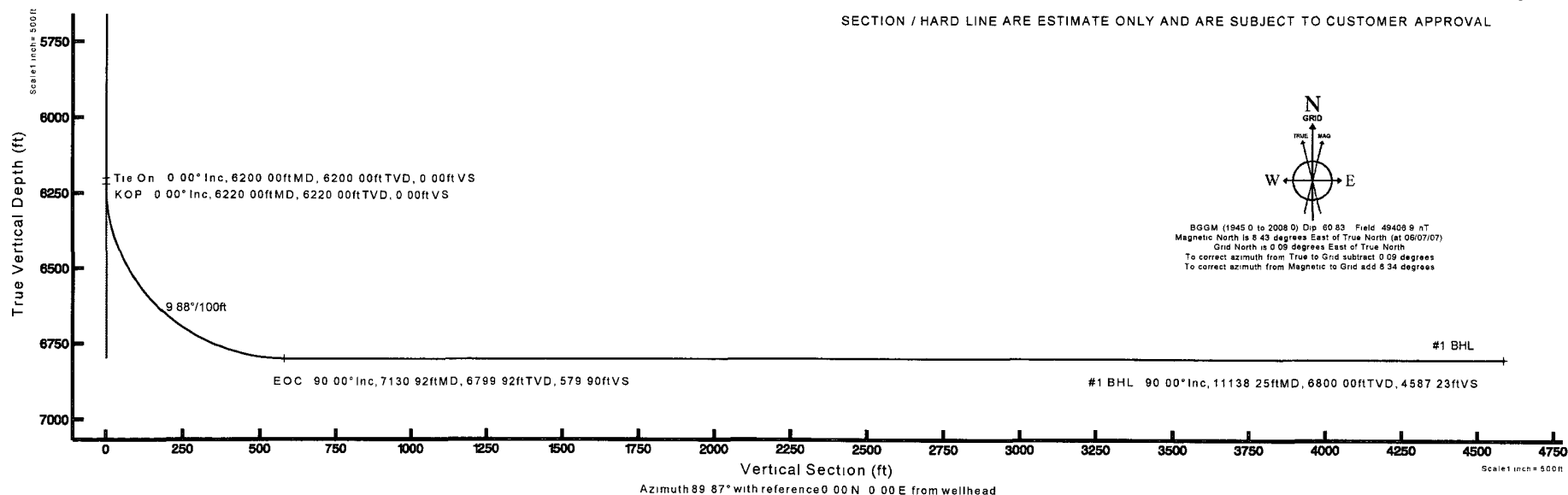


Well Profile Data							
Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	6200.00	0.000	0.000	6200.00	0.00	0.00	0.00
KOP	6220.00	0.000	89.870	6220.00	0.00	0.00	0.00
EOC	7130.92	89.999	89.870	6799.92	131	579.90	579.90
#1 BHL	11138.25	89.999	89.870	6800.00	1038	4587.22	4587.23

Plot reference wellpath is Plan #1	
True vertical depths are referenced to Rig on #1_SHL (RT)	Grid System: NAD83 / TM New Mexico State Planes Eastern Zone (2001) U.S. Feet
Measured depths are referenced to Rig on #1_SHL (RT)	North Reference Grid north
Rig on #1_SHL (RT) to GRN ELEV: 3508 feet	Scale: True distance
GRN ELEV to Mud line (Facility Comet 22 Federal #1): 3508 feet	Depths are in feet
Coordinates are in feet referenced to Facility Center	Created by: GomaSection 9/7/2007



SECTION / HARD LINE ARE ESTIMATE ONLY AND ARE SUBJECT TO CUSTOMER APPROVAL



GGGM (1945.0 to 2009.0) Dip 60.83 Field 49408.9 nT  
Magnetic North is 8.43 degrees East of True North (at 06/07/07)  
Grid North is 0.09 degrees East of True North  
To correct azimuth from True to Grid subtract 0.09 degrees  
To correct azimuth from Magnetic to Grid add 8.34 degrees

ATTACHMENT TO FORM 3160-3  
 COG Operating  
 Comet "22" Federal # 1  
 SL: 660' FSL & 330' FWL, Unit M  
 BHL: 330' FSL & 330' FEL, Unit P  
 Sec 22, T16S, R28E  
 Eddy County, NM  
 Revised 7/18/07

1 Proration Unit Spacing 160 Acres

2 Ground Elevation 3608'

3 Proposed Depths TVD = 6800', MD = 11150'

4 Estimated tops of geological markers

Quaternary	Surface
Yates	390'
Queens	1020'
San Andres	1950'
Glorietta	3370'
Abo	5400'
Wolfcamp	6560'

5 Possible mineral bearing formations

Water Sand	Fresh Water	150'
San Andres	Oil / Gas	1950'
Glorietta	Oil / Gas	3370'
Abo	Oil / Gas	5400'
Wolfcamp	Oil / Gas	6560'

6 Casing Program

<u>Hole size</u>	<u>Interval</u>	<u>OD of Casing</u>	<u>Weight</u>	<u>Cond</u>	<u>Collar</u>	<u>Grade</u>
17-1/2"	0' - +/-500'	13-3/8"	48#	New	STC	H40
Collapse sf - 2 98, Burst sf - 2 33, Tension sf - 13 42						
12 1/4"	0' - 1800'	9-5/8"	40#	New	STC	J-55
Collapse sf - 2 86, Burst sf - 1 42, Tension sf - 7 22						
8-3/4"	0' - 6800'	5-1/2"	17#	New	BTC-LTC	L-80
Collapse sf - 2 08, Burst sf - 2 35, Tension sf - 2 92						
7-7/8"	6000' - 11150'	5-1/2"	17#	New	BTC	L-80
Collapse sf - 1.85, Burst sf - 2 28, Tension sf - 29 19						

**ATTACHMENT TO FORM 3160-3**  
**COG Operating**  
**Comet "22" Federal # 1**  
**Page 2 of 3**  
**Revised 7/18/07**

**7 Cement Program**

13 3/8" Surf Csg Set at +/- 500', Circ to Surf with +/- 500 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1 35 yd

9 5/8" Intrmd Csg Set at +/- 1800' Circ to Surf with +/- 600 sx 35/65 Poz "C", 2 05 yd & 200 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1 35 yd

5 1/2" Prod Csg Set at +/- 11150' MD. Cement casing with +/- 200 sx 50/50/2 "C", 1 37 yd & +/- 600 sx Class "H", 1 18 yd Est TOC @ 5000'

**8 Pressure Control Equipment**

After setting 13 3/8" casing and installing 3000 psi casing head, NU 13 5/8" 3000 psi annular BOP Test annular BOP, casing and manifold with clear fluid to 1000 psi w/ rig pump

After setting 9 5/8" casing and installing 3000 psi casing spool, NU 3000 psi double ram BOP and 3000 psi annular BOP Test double ram BOP and manifold to 3000# with clear fluid and annular to 1500 psi using an independent tester and used continuously until TD is reached Blind rams will be operationally checked on each trip out of hole Pipe rams will be operationally checked each 24 hour period These checks will be noted on daily tour sheets

**9 Proposed Mud Circulating System**

<u>Interval</u>	<u>Mud Wt</u>	<u>Visc</u>	<u>FL</u>	<u>Type Mud System</u>
0' - 500'	8 5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH
500' - 1800'	9 1	30	NC	Cut brine mud, lime for PH and paper for seepage and sweeps
1800' - 6800'	9 1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal
6000' - 11150'	9 5	36	10	Drill horizontal section with XCD polymer / cut brine / starch

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times

**10 Production Hole Drilling Summary:**

Drill 8-3/4" hole thru Wolfcamp, run open hole logs Spot 150 sx "H" Kick off plug from +/- 6300' to +/- 5900' Time drill and kick off 7-7/8" hole at +/- 6000', building curve over +/- 575' to horizontal at 6560' TVD Drill horizontal section in an easterly direction for +/-4500' lateral Run production casing and cement

**ATTACHMENT TO FORM 3160-3**  
**COG Operating**  
**Comet "22" Federal # 1**  
**Page 3 of 3**  
**Revised 7/18/07**

11 Auxiliary Well Control and Monitoring Equipment:

- A Kelly cock will be kept in the drill string at all times
- B A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times

12 Logging, Testing and Coring Program

- A The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be ran from T D in vertical hole to 9 5/8" casing shoe
- B Drill Stem test is not anticipated
- C No conventional coring is anticipated
- D Further testing procedures will be determined after the 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation

13 Abnormal Conditions, Pressures, Temperatures and Potential Hazards.

No abnormal pressures or temperatures are anticipated The estimated bottom hole at TD is 110 degrees and estimated maximum bottom hole pressure is 2300 psig Low levels of Hydrogen sulfide have been monitored in producing wells in the area, so H2S may be present while drilling of the well An H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells

14 Anticipated Starting Date

Drilling operations will commence approximately on July 15, 2007 with drilling and completion operations lasting approximately 45 days