OCD Artesia

HIGH CAVEKARST

ATS-15-44

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMLC-058181	
6. If Indian, Allotee or Tribe Name N/A	
1a. Type of work: ☑ DRILL ☐ REENTER	7. If Unit or CA Agreement, Name and No. N/A
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	8. Lease Name and Well No. Beech 25 Federal #11H
2. Name of Operator COG Operating LLC	9. API Well No. 30-015- 43176
3a. Address One Concho Center, 600 W. Illinois Ave, Midland, TX 79701	3b. Phone No. (include area code) 432-685-4385
	10. Field and Pool, or Exploratory Red Lake; Glorieta-Yeso, Northeast
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface SHL: 581' FSL & 237' FWL, UL M; At proposed prod. zone BHL: 990' FSL & 330' FEL, UL P	11. Sec., T. R. M. or Blk. and Survey or Area Sec 25, T17S, R27E
14. Distance in miles and direction from nearest town or post office* 2 miles from Loco Hills, NM	12. County or Parish EDDY / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 237'	16. No. of acres in lease 160 / 17. Spacing Unit dedicated to this well 160
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 272.7'	19. Proposed Depth TVD: 3934' MD: 8485' EOC: 3970' TVD / 20. BLM/BIA Bond No. on file NMB000740; NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3587' GL	22. Approximate date work will start* 12/30/2014 / 23. Estimated duration 90 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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name (Printed/Typed) Kelly J. Holly	Date 09/11/2014
Title Permitting Tech		
Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date JUN 8 2015
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 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.

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 9 2015

6/9/2015

RECEIVED

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 5th day of July, 2013.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Sr. Drilling Engineer

Address: One Concho Center, 600 W. Illinois, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@concho.com

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015- 43176	96836	Red Lake; Glorieta Yeso, Northeast

4 Property Code	5 Property Name	6 Well Number
302457	BEECH 25 FEDERAL	11H

7 OGRID NO.	8 Operator Name	9 Elevation
229137	COG OPERATING, LLC	3587'

10 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	25	17-S	27-E		581	SOUTH	237	WEST	EDDY

11 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	25	17-S	27-E		990	SOUTH	330	EAST	EDDY

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
160			

No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16

GEODETIC DATA
NAD 27 GRID – NM EAST

SURFACE LOCATION
N 654538.3
E 528820.3

LAT: 32.79938014° N
LONG: 104.23954022° W

BOTTOM LOCATION
N 654912.6
E 533543.7

CORNER DATA
NAD 27 GRID – NM EAST

A: FND BRASS CAP 1941
N 653959.1 – E 528584.1

B: FND BRASS CAP 1941
N 656592.2 – E 528580.3

C: FND BRASS CAP 1941
N 659226.8 – E 528576.8

D: FND BRASS CAP 1941
N 659215.4 – E 531211.7

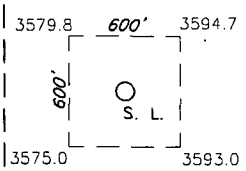
E: FND BRASS CAP 1941
N 659203.3 – E 533847.5

F: FND BRASS CAP 1941
N 656562.0 – E 533864.0

G: FND BRASS CAP 1941
N 653920.5 – E 533879.3

H: FND BRASS CAP 1941
N 653939.2 – E 531231.9

DETAIL "A"



SEE DETAIL "A"

330'
330'
B. H.
330'
4739.43' (HORIZ.)
N 85°28'09" E (GRID)
237'
L.
990'
330'
Producing Area
Project Area

17 OPERATOR CERTIFICATION

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 or has a right to drill this well at this 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.

Signature — Date: 8-26-14

Kelly J. Holly
Printed Name

kholly@concho.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

6/4/14
Date of Survey

Signature and Seal of Professional Surveyor

ROBERT M. HOWETT
NEW MEXICO
19680
PROFESSIONAL SURVEYOR

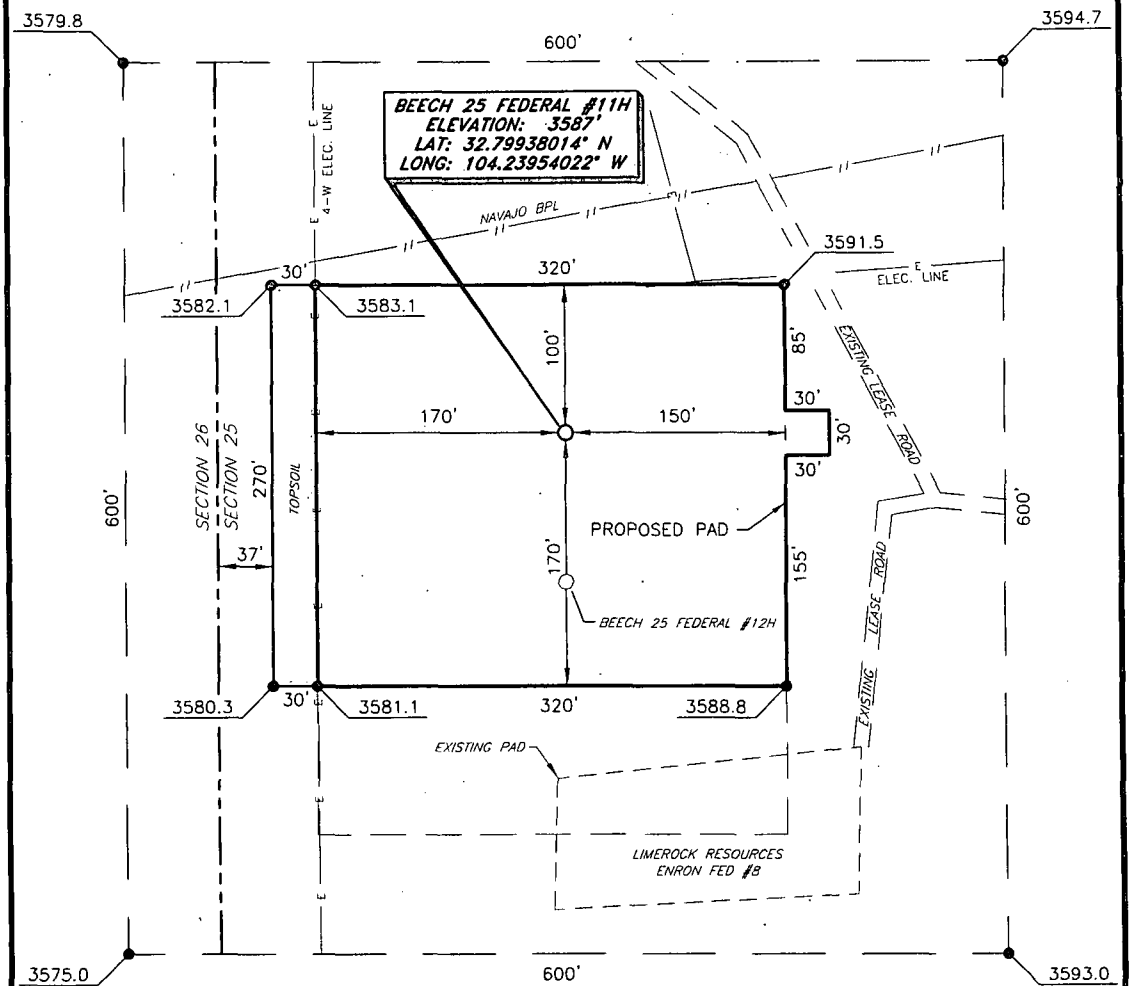
19680
Certificate Number

RRC – Firm No.: TX 10193838 NM 4655451 – Job No.: LS140265

Estimated Completed Interval:

COG OPERATING, LLC

Beech 25 Federal #11H
(581' FSL & 237' FWL)
Section 25, T-17-S, R-27-E,
N. M. P. M., Eddy Co., New Mexico



SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 27 GRID - NM EAST
DISTANCES ARE GROUND.

DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-204 (Hilltop):

Go Southeast on CR-204 approx. 0.8 mile.

Turn right on a lease road and go Southwest approx. 400 feet.

Turn right and go West approx. 0.2 mile.

Turn right and go North approx. 0.1 feet.

Turn left and go West approx. 0.1 mile.

The location is approx. 220 feet Northwest of the lease road intersection.

NO.	REVISION	DATE

JOB NO.: LS140265
DWG. NO.: 140265PAD

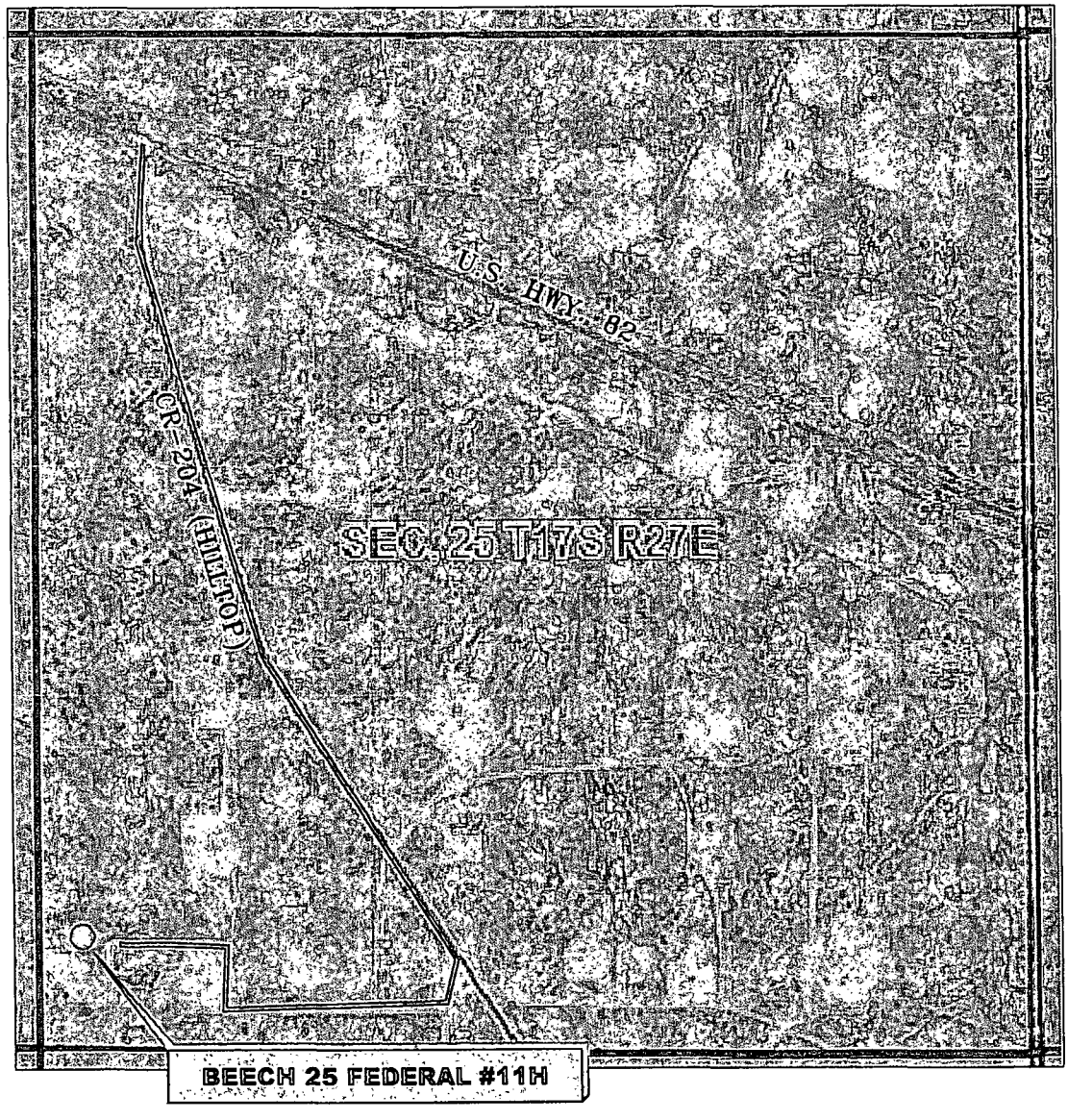
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 6/4/14
SURVEYED BY: GB/IE
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

VICINITY MAP

NOT TO SCALE



SECTION 25, TWP. 17 SOUTH, RGE. 27 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Beech 25 Federal
WELL NO.: 11H

LOCATION: 581' FSL & 237' FWL
ELEVATION: 3587'

NO.	REVISION	DATE

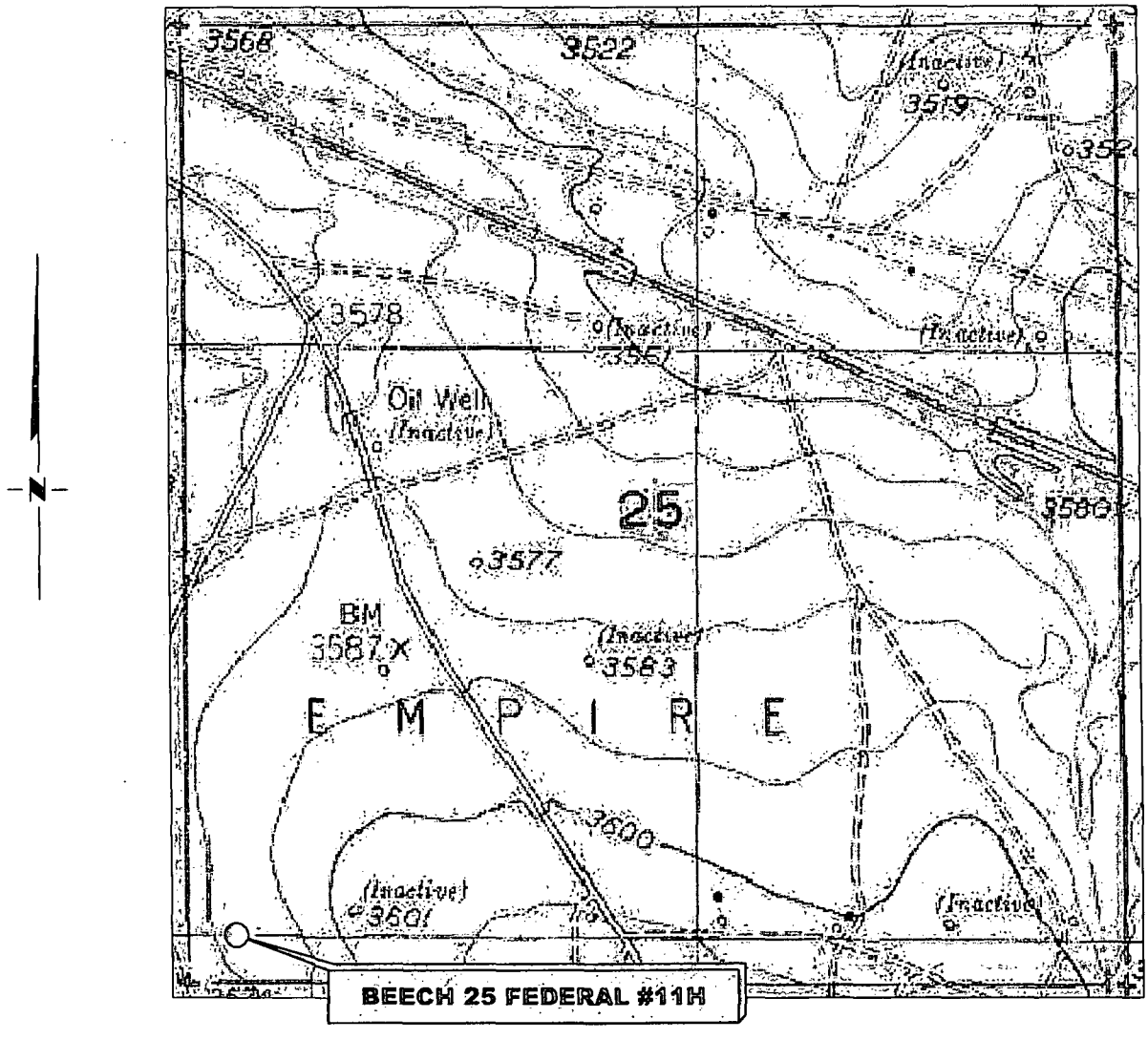
JOB NO.: LS140265
DWG. NO.: 140265VM

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1"=1000'
DATE: 6/4/14
SURVEYED BY: GB/IE
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

LOCATION VERIFICATION MAP



SECTION 25, TWP. 17 SOUTH, RGE. 27 EAST, N. M. P. M., EDDY COUNTY, NEW MEXICO

OPERATOR: COG Operating, LLC
LEASE: Beech 25 Federal
WELL NO.: 11H
ELEVATION: 3587'

LOCATION: 581' FSL & 237' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP: Red Lake, NM (1955)

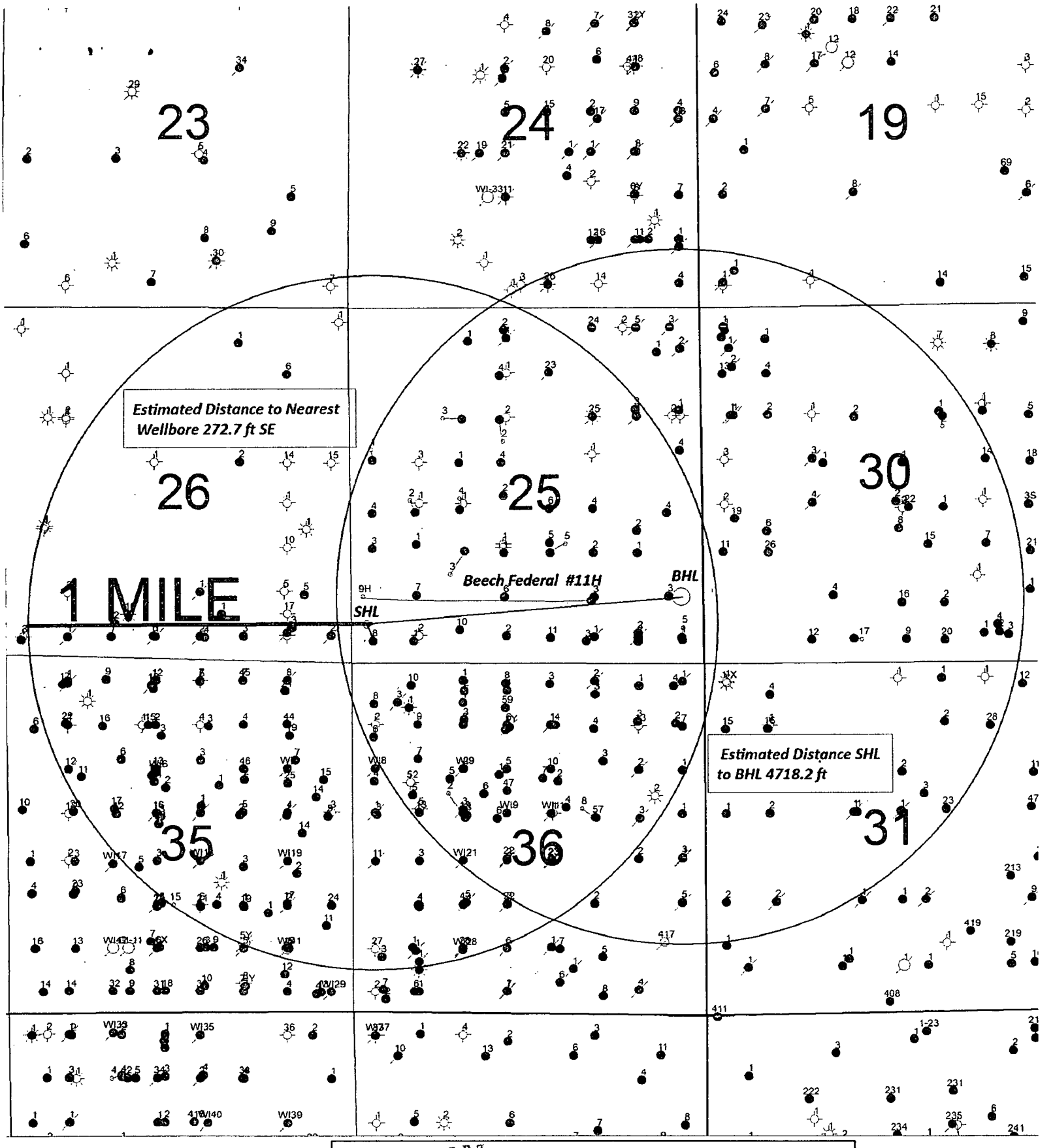
NO.	REVISION	DATE

JOB NO.: LS140265
DWG. NO.: 140265LVM

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1"=1000'
DATE: 6/4/14
SURVEYED BY: GB/IE
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1



CONCHO

SENM Shelf Area

Beech 25 Federal #11H

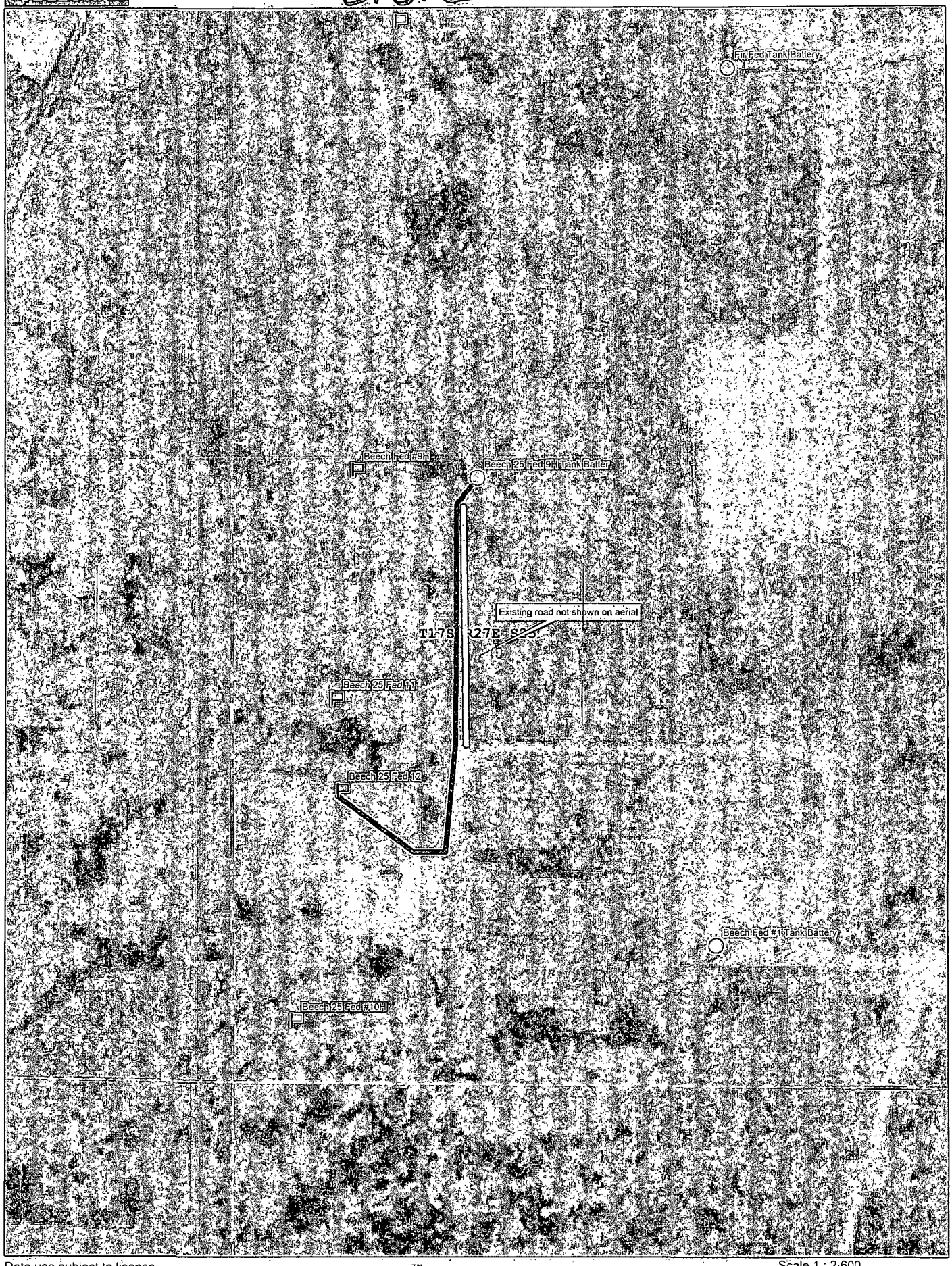
SEC. 25, T17S – R27E SHL 581 FSL 237 FWL, UNIT M
SEC. 25, T17S – R27E BHL 990 FSL 330 FEL, UNIT P

Author: | Date:

DELORME

EXHIBIT 1

XMap® 7



Data use subject to license.

© DeLorme. XMap® 7.

www.delorme.com

TN

MN (7.6°E)

Scale 1 : 2,600

0 60 120 180 240 300 ft

0 20 40 60 80 100 m

1" = 216.7 ft

Data Zoom 16-3

COG Operating LLC
Beech 25 Federal #11H

1. Geologic Formations

TVD of target	3934	Pilot hole depth	NA
MD at TD:	8485	Deepest expected fresh water:	143

Back Reef

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Fresh Water	
Yates	175'	Barren	
Seven Rivers	430'	Barren	
Queen	955'	Barren	
Grayburg	1390'	Oil/Gas	
San Andres	1745'	Oil/Gas	
Glorieta	3080'	Oil/Gas	
Paddock	3165'	Oil/Gas	
Blinebry	3635'	Target	
Tubb	4605'	Oil/Gas	

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing Interval From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	350'	13.375"	48	H40	STC	7.06	3.33	19.17
12.25"	0	1000'	9.625"	40	J55	STC	3.81	1.85	15.67
8.75"	0	3450'	7.0"	29	L80	LTC	3.70	4.30	3.16
8.75"	3450'	4272'	5.5"	17	L80	LTC	3.31	4.08	1.82
7.875"	4272'	8485'	5.5"	17	L80	LTC	3.31	4.08	1.82
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N

If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	Y
If yes, are there two strings cemented to surface?	Y
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	NA
Is well located in critical Cave/Karst?	Y
If yes, are there three strings cemented to surface?	Y

3. Cementing Program

Casing	# Sks	Wt. lb/ Gal	Yld ft3/ sack	H20 gal/s k	500# Comp. Strength (hours)	Slurry Description
Surf.	425	14.8	1.34	6.3	6	Tail: Class C + 2% CaCl2 + 0.25 pps CelloFlake
Inter.	150	11.8	2.45	14.4	24	Lead: 50:50:10 C PozGel w/5% Salt+ 5 pps LCM+ 0.25% CelloFlake
	250	14.8	1.32	6.3	6	Tail: Class C + 2% Ca Cl2
See COA	Multi-stage Contingency DV/ECP Tool +/-400'					
	50	11.8	2.45	14.4	24	1st stage Lead: 50:50:10 C: PozGel w/5% Salt+ 0.25% CelloFlake
	200	14.8	1.32	6.3	6	1st stage Tail: Class C + 2% CaCl2
	70	11.8	2.45	14.4	11	2nd Stage: 50:50:10 C:Poz Gel w/5% salt + 0.25% CF
Prod.	525	12.5	2.01	11.4	22	Lead: 35:65;6 C:Poz Gel w/5% salt+5 pps LCM+0.2% SMS + 1% FL-25+1% BA-58+0.3% FL-52A+ 0.125 pps CF
	790	14.0	1.37	6.4	10	Tail: 50:50:2 C:Poz Gel w/5% salt+ 3ppsLCM+0.6% SMS + 0.3% FL-52A+0.125 pps CF+ 1% FL-25+1% BA-58
See COA	Multi-stage Contingency DV/ECP Tool +/-2500'					
	220	12.5	2.01	11.4	22	1st stage Lead: 35:65:6 C:Poz Gel w/5% salt + 5 pps LCM + 0.2% SMS + 1% FL-25 + 1% Ba-58+0.3% FL-52A + 0.125 pps CF
	790	14.0	1.37	6.4	10	1st stage Tail: 50:50:2 C:Pox Gel w/5% salt+5 pps LCM + 0.2% SMS + 1% FL-25+1% Ba-58 + 0.3% FL-52A + 0.125 pps CF

	250	12.5	2.01	11.4	22	2nd Stage Lead: 35:65;6 C:Poz Gel w/5% salt+5 pps LCM+0.2% SMS + 1% FL-25+1% BA-58+0.3% FL-52A+ 0.125 pps CF
	150	16.8	1.02	5.8	6	2nd Stage Tail: Class "C" w/ 0.3% R-3 + 1.5% CD-32

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	100%
Intermediate Contingency	0'	100%
Production	0'	100%
Production Contingency	0'	100%

4. Pressure Control Equipment

No	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	X	2000 psi
			Blind Ram		
			Pipe Ram		2000 psi
			Double Ram	X	
			Other*		
8-3/4" & 7 7/8"	13-5/8"	2M	Annular	X	2000 psi
			Blind Ram		
			Pipe Ram		2000 psi
			Double Ram	X	
			Other*		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

NA	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
NA	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
NA	Are anchors required by manufacturer?
NA	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. • Provide description here See attached schematic.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6-8.8	28-34	N/C
Surf csg	Int shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int shoe	TD	Cut Brine	8.5-9.2	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	1667 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
Yes	H2S is present
Yes	H2S Plan attached

8. Other facets of operation

Is this a walking operation? No.
Will be pre-setting casing? No

Attachments:
Directional Plan
Multi-stage Cement deatils

Discussion of DV Tool cement options:

9 5/8" DV tool cement option is proposed for approval. This may become necessary if lost circulation occurs while drilling the 12 ¼" intermediate hole. DV tool depth will be based on hole conditions. Cement volumes will be adjusted proportionally. DV Tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe.

7" X 5 ½" DV tool cement option is proposed for approval. This may become necessary if water flows in the San Andres are encountered. These water flows normally occur in areas where produced water disposal is happening. This dense cement is used to combat water flows. This cement recipe also has a right angle set time and is mixed a little under saturated so the water flow will be absorbed by cement. DV tool depth will be based on hole conditions. Cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe.

CONCHO

COG Operating LLC

Eddy County, NM (NAD27 NME)
Beech 25 Federal
#11H

WB1

Plan: Plan #1 08-22-14
Surface: 581' FSL, 237' FWL, Sec 25, T17S, R27E, Unit M
PP: 588' FSL, 330' FWL, Sec 25, T17S, R27E, Unit M
BHL: 990' FSL, 330' FEL, Sec 25, T17S, R27E, Unit P

Standard Planning Report

22 August, 2014

PHOENIX
TECHNOLOGY SERVICES

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #11H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site:	Beech 25 Federal	**North Reference:**	Grid
Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 08-22-14		

Project Eddy County, NM (NAD27 NME)

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Beech 25 Federal

Site Position:		**Northing:**	654,947.50 usft	**Latitude:**	32° 48' 1.81838 N
From:	Map	**Easting:**	528,762.70 usft	**Longitude:**	104° 14' 23.01541 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.05 °

Well #11H

Well Position	**+N/-S**	-409.20 usft	**Northing:**	654,538.30 usft	**Latitude:**	32° 47' 57.76866 N
	+E/-W	57.60 usft	**Easting:**	528,820.30 usft	**Longitude:**	104° 14' 22.34482 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	3,587.00 usft

Wellbore WB1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	08/22/14	7.55	60.52	48,569

Design Plan #1 08-22-14

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	85.47

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,449.61	0.00	0.00	3,449.61	0.00	0.00	0.00	0.00	0.00	0.00	
4,272.34	90.50	85.47	3,970.46	41.51	523.77	11.00	11.00	0.00	85.47	
8,485.29	90.50	85.47	3,933.70	374.30	4,723.40	0.00	0.00	0.00	0.00	PBHL-Beech 25 Fed

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #11H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site:	Beech 25 Federal	**North Reference:**	Grid
Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 08-22-14		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,449.61	0.00	0.00	3,449.61	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Start 11°/100' Build									
3,500.00	5.54	85.47	3,499.92	0.19	2.43	2.44	11.00	11.00	0.00
3,600.00	16.54	85.47	3,597.92	1.70	21.49	21.56	11.00	11.00	0.00
3,700.00	27.54	85.47	3,690.47	4.66	58.85	59.03	11.00	11.00	0.00
3,765.68	34.77	85.47	3,746.64	7.35	92.70	92.99	11.00	11.00	0.00
PP-Beech 25 Fed #11H									
3,800.00	38.54	85.47	3,774.17	8.96	113.12	113.47	11.00	11.00	0.00
3,900.00	49.54	85.47	3,845.94	14.45	182.31	182.89	11.00	11.00	0.00
4,000.00	60.54	85.47	3,903.15	20.91	263.89	264.72	11.00	11.00	0.00
4,100.00	71.54	85.47	3,943.69	28.12	354.85	355.96	11.00	11.00	0.00
4,200.00	82.54	85.47	3,966.08	35.81	451.85	453.27	11.00	11.00	0.00
4,265.14	89.71	85.47	3,970.48	40.94	516.60	518.22	11.00	11.00	0.00
TL, 3975' TVD @ 0 VZ, 90.5° Inc									
4,272.34	90.50	85.47	3,970.46	41.51	523.77	525.42	11.00	11.00	0.00
LP, Hold 90.50° Inc, 85.47° Azm									
4,300.00	90.50	85.47	3,970.22	43.69	551.35	553.07	0.00	0.00	0.00
4,400.00	90.50	85.47	3,969.35	51.59	651.03	653.07	0.00	0.00	0.00
4,500.00	90.50	85.47	3,968.48	59.49	750.71	753.07	0.00	0.00	0.00
4,600.00	90.50	85.47	3,967.61	67.39	850.40	853.06	0.00	0.00	0.00
4,700.00	90.50	85.47	3,966.73	75.29	950.08	953.06	0.00	0.00	0.00
4,800.00	90.50	85.47	3,965.86	83.19	1,049.76	1,053.06	0.00	0.00	0.00
4,900.00	90.50	85.47	3,964.99	91.09	1,149.45	1,153.05	0.00	0.00	0.00
5,000.00	90.50	85.47	3,964.11	98.99	1,249.13	1,253.05	0.00	0.00	0.00
5,100.00	90.50	85.47	3,963.24	106.89	1,348.82	1,353.04	0.00	0.00	0.00
5,200.00	90.50	85.47	3,962.37	114.78	1,448.50	1,453.04	0.00	0.00	0.00
5,300.00	90.50	85.47	3,961.50	122.68	1,548.18	1,553.04	0.00	0.00	0.00
5,400.00	90.50	85.47	3,960.62	130.58	1,647.87	1,653.03	0.00	0.00	0.00
5,500.00	90.50	85.47	3,959.75	138.48	1,747.55	1,753.03	0.00	0.00	0.00
5,600.00	90.50	85.47	3,958.88	146.38	1,847.23	1,853.02	0.00	0.00	0.00
5,700.00	90.50	85.47	3,958.01	154.28	1,946.92	1,953.02	0.00	0.00	0.00
5,800.00	90.50	85.47	3,957.13	162.18	2,046.60	2,053.02	0.00	0.00	0.00
5,900.00	90.50	85.47	3,956.26	170.08	2,146.29	2,153.01	0.00	0.00	0.00
6,000.00	90.50	85.47	3,955.39	177.98	2,245.97	2,253.01	0.00	0.00	0.00
6,100.00	90.50	85.47	3,954.52	185.88	2,345.65	2,353.01	0.00	0.00	0.00
6,200.00	90.50	85.47	3,953.64	193.78	2,445.34	2,453.00	0.00	0.00	0.00
6,300.00	90.50	85.47	3,952.77	201.68	2,545.02	2,553.00	0.00	0.00	0.00
6,400.00	90.50	85.47	3,951.90	209.58	2,644.70	2,652.99	0.00	0.00	0.00
6,500.00	90.50	85.47	3,951.02	217.48	2,744.39	2,752.99	0.00	0.00	0.00
6,600.00	90.50	85.47	3,950.15	225.37	2,844.07	2,852.99	0.00	0.00	0.00
6,700.00	90.50	85.47	3,949.28	233.27	2,943.75	2,952.98	0.00	0.00	0.00
6,800.00	90.50	85.47	3,948.41	241.17	3,043.44	3,052.98	0.00	0.00	0.00
6,900.00	90.50	85.47	3,947.53	249.07	3,143.12	3,152.98	0.00	0.00	0.00
7,000.00	90.50	85.47	3,946.66	256.97	3,242.81	3,252.97	0.00	0.00	0.00
7,100.00	90.50	85.47	3,945.79	264.87	3,342.49	3,352.97	0.00	0.00	0.00
7,200.00	90.50	85.47	3,944.92	272.77	3,442.17	3,452.96	0.00	0.00	0.00
7,300.00	90.50	85.47	3,944.04	280.67	3,541.86	3,552.96	0.00	0.00	0.00
7,400.00	90.50	85.47	3,943.17	288.57	3,641.54	3,652.96	0.00	0.00	0.00
7,500.00	90.50	85.47	3,942.30	296.47	3,741.22	3,752.95	0.00	0.00	0.00
7,600.00	90.50	85.47	3,941.43	304.37	3,840.91	3,852.95	0.00	0.00	0.00
7,700.00	90.50	85.47	3,940.55	312.27	3,940.59	3,952.94	0.00	0.00	0.00
7,800.00	90.50	85.47	3,939.68	320.17	4,040.28	4,052.94	0.00	0.00	0.00
7,900.00	90.50	85.47	3,938.81	328.07	4,139.96	4,152.94	0.00	0.00	0.00

Database:	GCR DB	**Local Co-ordinate Reference:**	Well #11H
Company:	COG Operating LLC	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Project:	Eddy County, NM (NAD27 NME)	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site:	Beech 25 Federal	**North Reference:**	Grid
Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	WB1		
Design:	Plan #1 08-22-14		

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)
8,000.00	90.50	85.47	3,937.94	335.97	4,239.64	4,252.93	0.00	0.00	0.00
8,100.00	90.50	85.47	3,937.06	343.86	4,339.33	4,352.93	0.00	0.00	0.00
8,200.00	90.50	85.47	3,936.19	351.76	4,439.01	4,452.93	0.00	0.00	0.00
8,300.00	90.50	85.47	3,935.32	359.66	4,538.69	4,552.92	0.00	0.00	0.00
8,400.00	90.50	85.47	3,934.44	367.56	4,638.38	4,652.92	0.00	0.00	0.00
8,485.29	90.50	85.47	3,933.70	374.30	4,723.40	4,738.20	0.00	0.00	0.00
TD at 8485.29 - PBHL-Beech 25 Fed #11H									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PP-Beech 25 Fed #11H	0.00	0.00	3,746.60	7.35	92.71	654,545.65	528,913.01	32° 47' 57.84054 N	104° 14' 21.25857 W
- plan misses target center by 0.03usft at 3765.66usft MD (3746.62 TVD, 7.34 N, 92.69 E)									
- Point									
PBHL-Beech 25 Fed #11	0.00	0.00	3,933.70	374.30	4,723.40	654,912.60	533,543.70	32° 48' 1.42768 N	104° 13' 27.00159 W
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,265.14	3,970.48	TL, 3975' TVD @ 0 VZ, 90.5° Inc		-0.50	85.47

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,449.61	3,449.61	0.00	0.00	KOP, Start 11°/100' Build
4,272.34	3,970.46	41.51	523.77	LP, Hold 90.50° Inc, 85.47° Azm
8,485.29	3,933.70	374.30	4,723.40	TD at 8485.29

CONCHO

Project: Eddy County, NM (NAD27 NME)
Site: Beech 25 Federal
Well: #11H
Wellbore: WB1
Design: Plan #1 08-22-14
Rig: Silver Oak 3

PHOENIX TECHNOLOGY SERVICES

T G M

Azimuths to Grid North
True North: -0.05°
Magnetic North: 7.50°

Magnetic Field
Strength: 48568.8nT
Dip Angle: 60.52°
Date: 08/22/2014
Model: IGRF2010_14

WELL DETAILS

Ground Level: 3587.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	654538.30	528820.30	32° 47' 57.76866 N	104° 14' 22.34482 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	3449.61	0.00	0.00	3449.61	0.00	0.00	0.00	0.00	0.00		KOP, Start 11°/100' Build
3	4272.34	90.50	85.47	3970.46	41.51	523.77	11.00	85.47	525.42		LP, Hold 90.50° Inc, 85.47° Azm
4	8485.29	90.50	85.47	3933.70	374.30	4723.40	0.00	0.00	4738.21	PBHL-Beech 25 Fed #11H	TD at 8485.29

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3970.48	4265.14	TL, 3975' TVD @ 0 VZ, 90.5° Inc	-0.50	85.47

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #11H, Grid North

Latitude: 32° 47' 57.76866 N
Longitude: 104° 14' 22.34482 W

Grid East: 528820.30
Grid North: 654538.30
Scale Factor: 1.000

Geomagnetic Model: IGRF2010_14
Sample Date: 22-Aug-14
Magnetic Declination: 7.55°
Dip Angle from Horizontal: 60.52°
Magnetic Field Strength: 48569

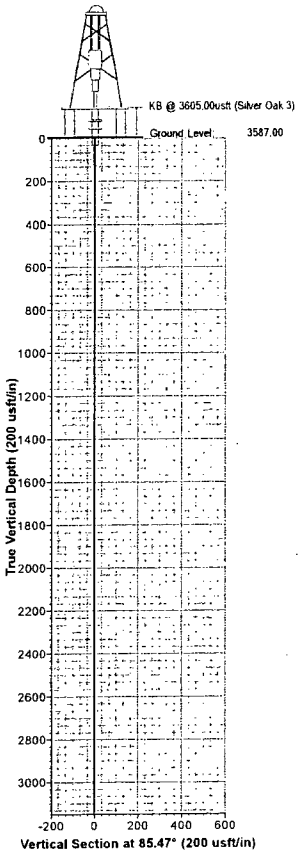
To convert a Magnetic Direction to a Grid Direction, Add 7.50°
To convert a Magnetic Direction to a True Direction, Add 7.55° East
To convert a True Direction to a Grid Direction, Subtract 0.05°

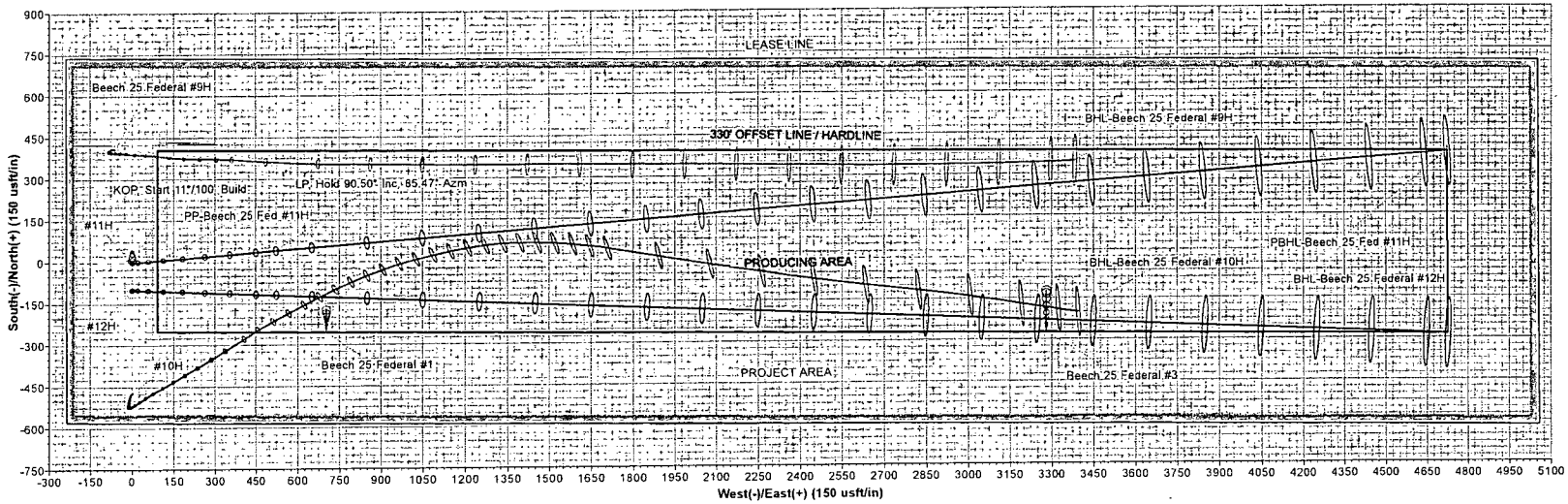
DESIGN TARGET DETAILS

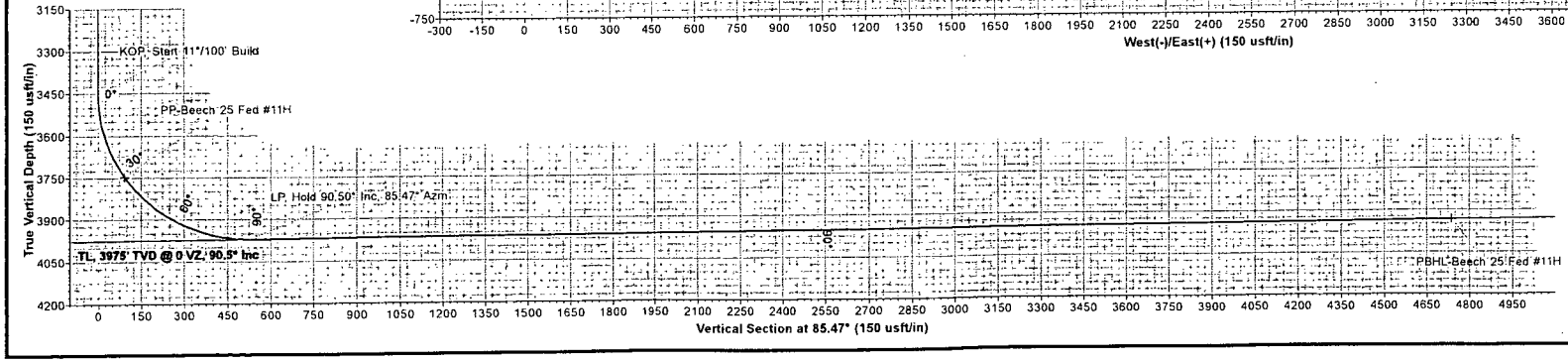
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-Beech 25 Fed #11H	3746.60	7.35	92.71	654545.65	528913.01	32° 47' 57.84054 N	104° 14' 21.25857 W	Point
- plan misses target center by 0.03usft at 3765.66usft MD (3746.62 TVD, 7.34 N, 92.69 E)								
PBHL-Beech 25 Fed #11H	3933.70	374.30	4723.40	654912.60	533543.70	32° 48' 1.42768 N	104° 13' 27.00159 W	Point
- plan hits target center								

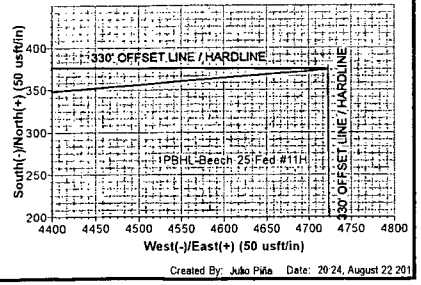
LEGEND

- #9H, WB1/Job #1311101, Surveys (Silver Oak 3) V0
- #12H, WB1, Plan #1 08-22-14 V0
- #1, WB1, Inc Surveys V0
- #3, WB1, Inc Surveys V0
- #10H, WB1/Job #1410706, Surveys (Silver Oak 3) V0
- Plan #1 08-22-14









Created By: Julio Piña Date: 20:24, August 22 201

CONCHO

COG Operating LLC

Eddy County, NM (NAD27 NME)
Beech 25 Federal
#11H

WB1
Plan #1 08-22-14

Anticollision Report

22 August, 2014

PHOENIX
TECHNOLOGY SERVICES

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Reference Plan #1 08-22-14

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 10,000.00 usft	**Error Surface:**	Circular Conic
Warning Levels Evaluated at:	2.00 Sigma	**Casing Method:**	Not applied

Survey Tool Program **Date** 08/22/14

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,485.09	Plan #1 08-22-14 (WB1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Beech 25 Federal						
#1 - WB1 - Inc Surveys	4,431.99	3,979.87	262.76	235.50	9.638	CC, ES
#1 - WB1 - Inc Surveys	4,500.00	3,979.32	271.42	242.51	9.389	SF
#10H - WB1/Job #1410706 - Surveys (Silver Oak 3)	3,426.50	3,520.05	449.15	433.96	29.587	CC
#10H - WB1/Job #1410706 - Surveys (Silver Oak 3)	5,500.00	5,130.74	493.48	400.55	5.310	ES
#10H - WB1/Job #1410706 - Surveys (Silver Oak 3)	7,200.00	6,795.49	680.36	497.87	3.728	SF
#12H - WB1 - Plan #1 08-22-14	3,449.61	3,448.61	99.90	84.66	6.555	CC, ES
#12H - WB1 - Plan #1 08-22-14	8,485.29	8,448.95	659.15	402.73	2.571	SF
#3 - WB1 - Inc Surveys	7,000.74	3,963.41	482.14	386.19	5.025	CC, ES
#3 - WB1 - Inc Surveys	7,100.00	3,962.68	492.25	393.60	4.990	SF
#9H - WB1/Job #1311101 - Surveys (Silver Oak 3)	3,295.43	3,316.91	391.42	378.57	30.476	CC
#9H - WB1/Job #1311101 - Surveys (Silver Oak 3)	7,200.00	6,738.00	496.69	309.94	2.660	ES, SF

Offset Design Beech 25 Federal - #1 - WB1 - Inc Surveys — Offset Site Error: 0.00 usft

Survey Program: 364-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	8.05	8.05	0.00	0.01	110.01	-256.30	703.70	748.92				
100.00	100.00	108.67	108.67	0.09	0.12	110.00	-256.16	703.70	748.87	748.66	0.21	3,548.155	
200.00	200.00	209.28	209.28	0.32	0.23	109.97	-255.77	703.70	748.74	748.20	0.55	1,371.519	
300.00	300.00	309.90	309.90	0.54	0.34	109.93	-255.15	703.70	748.53	747.65	0.88	849.847	
400.00	400.00	410.52	410.52	0.77	0.50	109.87	-254.28	703.70	748.24	746.97	1.27	589.378	
500.00	500.00	511.16	511.15	0.99	0.73	109.79	-253.15	703.70	747.86	746.14	1.72	434.554	
600.00	600.00	611.80	611.77	1.22	0.96	109.69	-251.77	703.70	747.39	745.22	2.17	344.040	
700.00	700.00	712.42	712.39	1.44	1.18	109.57	-250.14	703.70	746.85	744.22	2.62	284.642	
800.00	800.00	812.92	812.86	1.67	1.41	109.43	-248.25	703.70	746.22	743.15	3.07	242.771	
900.00	900.00	911.78	911.71	1.89	1.61	109.31	-246.54	703.70	745.65	742.15	3.50	213.282	
1,000.00	1,000.00	1,011.42	1,011.35	2.12	1.81	109.21	-245.17	703.70	745.19	741.27	3.92	189.963	
1,100.00	1,100.00	1,111.66	1,111.57	2.34	2.01	109.11	-243.76	703.70	744.73	740.38	4.35	171.082	
1,200.00	1,200.00	1,211.89	1,211.79	2.56	2.22	109.00	-242.24	703.70	744.24	739.45	4.78	155.591	
1,300.00	1,300.00	1,312.11	1,312.00	2.79	2.42	108.88	-240.62	703.70	743.71	738.50	5.21	142.651	
1,400.00	1,400.00	1,412.22	1,412.10	3.01	2.63	108.75	-238.91	703.70	743.16	737.52	5.64	131.674	
1,500.00	1,500.00	1,511.79	1,511.65	3.24	2.84	108.63	-237.29	703.70	742.64	736.56	6.08	122.233	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #1 - WB1 - Inc Surveys — Offset Site Error: 0.00 usft

Survey Program: 364-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,600.00	1,600.00	1,611.36	1,611.21	3.46	3.04	108.53	-235.85	703.70	742.18	735.67	6.51	114.054	
1,700.00	1,700.00	1,710.93	1,710.77	3.69	3.25	108.44	-234.59	703.70	741.78	734.84	6.94	106.900	
1,800.00	1,800.00	1,810.51	1,810.34	3.91	3.46	108.36	-233.50	703.70	741.43	734.06	7.37	100.593	
1,900.00	1,900.00	1,910.25	1,910.08	4.14	3.66	108.29	-232.58	703.70	741.14	733.34	7.80	94.983	
2,000.00	2,000.00	2,010.45	2,010.28	4.36	3.87	108.22	-231.64	703.70	740.85	732.61	8.24	89.944	
2,100.00	2,100.00	2,110.65	2,110.47	4.59	4.08	108.14	-230.61	703.70	740.53	731.86	8.67	85.407	
2,200.00	2,200.00	2,210.85	2,210.66	4.81	4.29	108.06	-229.49	703.70	740.18	731.07	9.10	81.299	
2,300.00	2,300.00	2,311.04	2,310.85	5.04	4.50	107.97	-228.28	703.70	739.81	730.27	9.54	77.562	
2,400.00	2,400.00	2,411.23	2,411.03	5.26	4.71	107.88	-226.99	703.70	739.41	729.43	9.98	74.123	
2,500.00	2,500.00	2,511.41	2,511.20	5.49	4.93	107.78	-225.61	703.70	738.99	728.57	10.42	70.918	
2,600.00	2,600.00	2,611.58	2,611.36	5.71	5.15	107.67	-224.15	703.70	738.54	727.68	10.87	67.973	
2,700.00	2,700.00	2,711.76	2,711.52	5.94	5.37	107.55	-222.61	703.70	738.08	726.77	11.31	65.258	
2,800.00	2,800.00	2,811.93	2,811.68	6.16	5.59	107.43	-220.98	703.70	737.59	725.83	11.76	62.746	
2,900.00	2,900.00	2,912.07	2,911.81	6.39	5.81	107.31	-219.27	703.70	737.08	724.88	12.20	60.419	
3,000.00	3,000.00	3,011.67	3,011.40	6.61	6.02	107.18	-217.63	703.70	736.59	723.96	12.63	58.313	
3,100.00	3,100.00	3,111.28	3,110.99	6.84	6.23	107.08	-216.16	703.70	736.16	723.09	13.06	56.350	
3,200.00	3,200.00	3,210.89	3,210.60	7.06	6.44	106.98	-214.87	703.70	735.78	722.28	13.50	54.517	
3,300.00	3,300.00	3,310.50	3,310.20	7.28	6.64	106.90	-213.75	703.70	735.45	721.52	13.93	52.801	
3,400.00	3,400.00	3,410.16	3,409.86	7.51	6.85	106.83	-212.81	703.70	735.18	720.82	14.36	51.192	
3,449.61	3,449.61	3,459.77	3,459.47	7.62	6.95	106.79	-212.38	703.70	735.05	720.48	14.58	50.429	
3,500.00	3,499.92	3,510.08	3,509.77	7.73	7.06	21.46	-211.94	703.70	732.66	717.87	14.79	49.543	
3,550.00	3,549.38	3,559.54	3,559.23	7.84	7.16	21.91	-211.51	703.70	725.82	710.82	15.00	48.396	
3,600.00	3,597.92	3,608.09	3,607.78	7.95	7.26	22.72	-211.08	703.70	714.63	699.42	15.21	46.987	
3,650.00	3,645.09	3,655.27	3,654.96	8.07	7.36	23.92	-210.67	703.70	699.20	683.77	15.43	45.320	
3,700.00	3,690.47	3,700.66	3,700.34	8.21	7.46	25.58	-210.28	703.70	679.73	664.06	15.67	43.381	
3,750.00	3,733.62	3,743.83	3,743.51	8.40	7.55	27.79	-209.90	703.70	656.47	640.53	15.94	41.177	
3,800.00	3,774.17	3,784.39	3,784.07	8.63	7.63	30.68	-209.55	703.70	629.71	613.45	16.26	38.717	
3,850.00	3,811.72	3,821.96	3,821.65	8.94	7.71	34.40	-209.22	703.70	599.82	583.17	16.65	36.021	
3,900.00	3,845.94	3,856.21	3,855.89	9.34	7.78	39.13	-208.92	703.70	567.22	550.10	17.12	33.130	
3,950.00	3,876.51	3,886.80	3,886.48	9.84	7.84	45.02	-208.65	703.70	532.42	514.74	17.69	30.104	
4,000.00	3,903.15	3,913.50	3,913.17	10.45	7.90	52.11	-208.42	703.70	496.01	477.66	18.36	27.022	
4,050.00	3,925.61	3,936.04	3,935.71	11.18	7.95	60.21	-208.22	703.70	458.69	439.56	19.13	23.976	
4,100.00	3,943.69	3,954.19	3,953.86	12.01	7.99	68.78	-208.05	703.70	421.28	401.28	20.00	21.060	
4,150.00	3,957.22	3,967.78	3,967.46	12.94	8.02	76.97	-207.92	703.70	384.79	363.83	20.96	18.356	
4,200.00	3,966.08	3,976.69	3,976.37	13.95	8.04	83.96	-207.84	703.70	350.43	328.44	21.99	15.936	
4,250.00	3,970.18	3,980.84	3,980.52	15.02	8.05	89.15	-207.80	703.70	319.63	296.57	23.06	13.858	
4,272.34	3,970.46	3,981.14	3,980.82	15.51	8.05	90.82	-207.80	703.70	307.46	283.90	23.56	13.053	
4,300.00	3,970.22	3,980.92	3,980.60	16.12	8.05	90.77	-207.80	703.70	294.05	269.88	24.17	12.165	
4,400.00	3,969.35	3,980.12	3,979.80	18.44	8.05	90.59	-207.81	703.70	264.70	238.21	26.49	9.993	
4,431.99	3,969.07	3,979.87	3,979.54	19.22	8.05	90.54	-207.81	703.70	262.76	235.50	27.26	9.638	CC, ES
4,500.00	3,968.48	3,979.32	3,979.00	20.86	8.05	90.42	-207.82	703.70	271.42	242.51	28.91	9.389	SF
4,600.00	3,967.61	3,978.52	3,978.20	23.35	8.04	90.25	-207.82	703.70	311.88	280.48	31.40	9.933	
4,700.00	3,966.73	3,977.72	3,977.40	25.89	8.04	90.07	-207.83	703.70	375.32	341.39	33.94	11.060	
4,800.00	3,965.86	3,976.92	3,976.60	28.47	8.04	89.90	-207.84	703.70	452.18	415.67	36.51	12.385	
4,900.00	3,964.99	3,976.12	3,975.79	31.07	8.04	89.72	-207.85	703.70	536.71	497.60	39.11	13.723	
5,000.00	3,964.11	3,975.32	3,974.99	33.70	8.04	89.55	-207.85	703.70	625.82	584.09	41.73	14.995	
5,100.00	3,963.24	3,974.52	3,974.19	36.34	8.03	89.37	-207.86	703.70	717.81	673.43	44.37	16.177	
5,200.00	3,962.37	3,973.72	3,973.39	38.99	8.03	89.20	-207.87	703.70	811.69	764.66	47.03	17.261	
5,300.00	3,961.50	3,972.92	3,972.59	41.66	8.03	89.02	-207.88	703.70	906.88	857.19	49.69	18.251	
5,400.00	3,960.62	3,972.12	3,971.79	44.33	8.03	88.85	-207.88	703.70	1,003.01	950.65	52.36	19.156	
5,500.00	3,959.75	3,971.32	3,970.99	47.01	8.03	88.67	-207.89	703.70	1,099.82	1,044.78	55.04	19.983	
5,600.00	3,958.88	3,970.51	3,970.19	49.70	8.03	88.50	-207.90	703.70	1,197.16	1,139.44	57.72	20.740	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #1 - WB1 - Inc Surveys — Offset Site Error: 0.00 usft

Survey Program: 364-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,700.00	3,958.01	3,969.71	3,969.39	52.39	8.02	88.33	-207.91	703.70	1,294.91	1,234.49	60.41	21.434	
5,800.00	3,957.13	3,968.91	3,968.59	55.09	8.02	88.15	-207.91	703.70	1,392.97	1,329.86	63.11	22.073	
5,900.00	3,956.26	3,968.11	3,967.78	57.79	8.02	87.98	-207.92	703.70	1,491.29	1,425.49	65.81	22.662	
6,000.00	3,955.39	3,967.31	3,966.98	60.49	8.02	87.80	-207.93	703.70	1,589.82	1,521.31	68.51	23.207	
6,100.00	3,954.52	3,966.51	3,966.18	63.19	8.02	87.63	-207.94	703.70	1,688.52	1,617.31	71.21	23.712	
6,200.00	3,953.64	3,965.70	3,965.38	65.90	8.02	87.45	-207.94	703.70	1,787.37	1,713.45	73.92	24.181	
6,300.00	3,952.77	3,964.90	3,964.58	68.61	8.01	87.28	-207.95	703.70	1,886.34	1,809.71	76.63	24.617	
6,400.00	3,951.90	3,964.10	3,963.77	71.33	8.01	87.10	-207.96	703.70	1,985.41	1,906.07	79.34	25.025	
6,500.00	3,951.02	3,963.30	3,962.97	74.04	8.01	86.93	-207.97	703.70	2,084.57	2,002.52	82.05	25.406	
6,600.00	3,950.15	3,962.50	3,962.17	76.76	8.01	86.76	-207.97	703.70	2,183.80	2,099.04	84.76	25.764	
6,700.00	3,949.28	3,961.69	3,961.37	79.47	8.01	86.58	-207.98	703.70	2,283.10	2,195.63	87.48	26.099	
6,800.00	3,948.41	3,960.89	3,960.57	82.19	8.00	86.41	-207.99	703.70	2,382.46	2,292.27	90.20	26.415	
6,900.00	3,947.53	3,960.09	3,959.76	84.91	8.00	86.23	-208.00	703.70	2,481.88	2,388.96	92.91	26.712	
7,000.00	3,946.66	3,959.28	3,958.96	87.63	8.00	86.06	-208.00	703.70	2,581.33	2,485.70	95.63	26.992	
7,100.00	3,945.79	3,958.48	3,958.16	90.35	8.00	85.89	-208.01	703.70	2,680.83	2,582.48	98.35	27.258	
7,200.00	3,944.92	3,957.68	3,957.35	93.07	8.00	85.71	-208.02	703.70	2,780.36	2,679.29	101.07	27.509	
7,300.00	3,944.04	3,956.88	3,956.55	95.80	8.00	85.54	-208.03	703.70	2,879.93	2,776.13	103.79	27.747	
7,400.00	3,943.17	3,956.07	3,955.75	98.52	7.99	85.36	-208.03	703.70	2,979.52	2,873.01	106.52	27.973	
7,500.00	3,942.30	3,955.27	3,954.94	101.25	7.99	85.19	-208.04	703.70	3,079.14	2,969.90	109.24	28.187	
7,600.00	3,941.43	3,954.47	3,954.14	103.97	7.99	85.02	-208.05	703.70	3,178.78	3,066.82	111.96	28.392	
7,700.00	3,940.55	3,953.66	3,953.34	106.70	7.99	84.84	-208.06	703.70	3,278.45	3,163.76	114.68	28.587	
7,800.00	3,939.68	3,952.86	3,952.53	109.42	7.99	84.67	-208.06	703.70	3,378.13	3,260.72	117.41	28.772	
7,900.00	3,938.81	3,952.05	3,951.73	112.15	7.99	84.50	-208.07	703.70	3,477.84	3,357.70	120.13	28.950	
8,000.00	3,937.94	3,951.25	3,950.93	114.88	7.98	84.32	-208.08	703.70	3,577.55	3,454.70	122.86	29.119	
8,100.00	3,937.06	3,950.45	3,950.12	117.60	7.98	84.15	-208.09	703.70	3,677.29	3,551.70	125.58	29.281	
8,200.00	3,936.19	3,949.64	3,949.32	120.33	7.98	83.98	-208.09	703.70	3,777.04	3,648.73	128.31	29.437	
8,300.00	3,935.32	3,948.84	3,948.51	123.06	7.98	83.80	-208.10	703.70	3,876.80	3,745.76	131.04	29.585	
8,400.00	3,934.44	3,948.03	3,947.71	125.79	7.98	83.63	-208.11	703.70	3,976.57	3,842.81	133.76	29.728	
8,485.29	3,933.70	3,947.35	3,947.02	128.11	7.98	83.48	-208.11	703.70	4,061.68	3,925.59	136.09	29.846	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design — Beech 25 Federal - #10H - WB1/Job #1410706 - Surveys (Silver Oak 3) — Offset Site Error: 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3, 2815-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	179.56	-471.00	3.60	471.04				
100.00	100.00	93.80	93.80	0.09	0.07	179.57	-471.12	3.55	471.14	470.97	0.16	2,870.887	
200.00	200.00	194.40	194.40	0.32	0.25	179.55	-471.32	3.69	471.34	470.78	0.56	838.365	
300.00	300.00	297.36	297.36	0.54	0.42	179.52	-471.14	3.98	471.17	470.20	0.96	489.524	
400.00	400.00	396.49	396.49	0.77	0.59	179.53	-470.73	3.82	470.75	469.39	1.36	347.095	
484.63	484.63	479.63	479.63	0.96	0.74	179.58	-470.60	3.47	470.61	468.92	1.69	278.162	
500.00	500.00	494.73	494.72	0.99	0.76	179.58	-470.60	3.41	470.62	468.86	1.75	268.454	
600.00	600.00	591.82	591.81	1.22	0.93	179.65	-470.96	2.84	470.98	468.83	2.15	218.980	
700.00	700.00	690.29	690.28	1.44	1.11	179.76	-471.80	1.95	471.83	469.28	2.55	184.802	
800.00	800.00	790.56	790.54	1.67	1.29	179.87	-472.80	1.03	472.82	469.86	2.96	159.708	
900.00	900.00	890.00	889.97	1.89	1.48	179.96	-473.78	0.34	473.81	470.44	3.37	140.711	
1,000.00	1,000.00	988.77	988.73	2.12	1.66	-179.96	-474.95	-0.36	475.00	471.22	3.77	125.872	
1,100.00	1,100.00	1,087.66	1,087.60	2.34	1.84	-179.85	-476.37	-1.23	476.43	472.25	4.18	113.948	
1,200.00	1,200.00	1,186.71	1,186.64	2.56	2.02	-179.73	-478.01	-2.23	478.09	473.50	4.59	104.169	
1,300.00	1,300.00	1,288.28	1,288.19	2.79	2.21	-179.61	-479.65	-3.28	479.71	474.70	5.00	95.882	
1,400.00	1,400.00	1,388.54	1,388.44	3.01	2.40	-179.49	-481.01	-4.29	481.08	475.66	5.41	88.848	
1,500.00	1,500.00	1,485.80	1,485.68	3.24	2.58	-179.40	-482.58	-5.05	482.69	476.87	5.82	82.936	
1,600.00	1,600.00	1,583.98	1,583.84	3.46	2.76	-179.33	-484.67	-5.69	484.83	478.60	6.23	77.859	
1,700.00	1,700.00	1,684.65	1,684.48	3.69	2.95	-179.25	-486.94	-6.36	487.10	480.46	6.64	73.375	
1,800.00	1,800.00	1,783.47	1,783.27	3.91	3.13	-179.21	-489.16	-6.72	489.34	482.30	7.05	69.449	
1,900.00	1,900.00	1,882.64	1,882.41	4.14	3.32	-179.18	-491.62	-7.07	491.83	484.38	7.45	65.977	
2,000.00	2,000.00	1,981.29	1,981.03	4.36	3.50	-179.11	-494.26	-7.69	494.52	486.65	7.86	62.891	
2,100.00	2,100.00	2,083.26	2,082.95	4.59	3.69	-179.03	-496.99	-8.39	497.21	488.93	8.28	60.064	
2,200.00	2,200.00	2,182.28	2,181.94	4.81	3.87	-178.98	-499.41	-8.87	499.66	490.98	8.69	57.517	
2,300.00	2,300.00	2,279.87	2,279.49	5.04	4.06	-178.94	-502.17	-9.29	502.50	493.41	9.09	55.257	
2,400.00	2,400.00	2,379.51	2,379.08	5.26	4.24	-178.89	-505.32	-9.79	505.66	496.16	9.50	53.204	
2,500.00	2,500.00	2,478.87	2,478.39	5.49	4.43	-178.88	-508.48	-9.98	508.85	498.94	9.91	51.327	
2,600.00	2,600.00	2,579.82	2,579.28	5.71	4.62	-178.84	-511.71	-10.34	512.06	501.73	10.33	49.585	
2,700.00	2,700.00	2,681.91	2,681.34	5.94	4.81	-178.78	-514.63	-10.98	514.93	504.19	10.74	47.934	
2,800.00	2,800.00	2,780.71	2,780.09	6.16	4.99	-178.75	-517.30	-11.25	517.64	506.49	11.15	46.418	
2,900.00	2,900.00	2,878.48	2,877.82	6.39	5.03	-178.71	-520.37	-11.71	520.79	509.37	11.42	45.611	
3,000.00	3,000.00	3,019.66	3,018.58	6.61	5.06	-179.64	-521.33	-3.29	521.88	510.21	11.67	44.725	
3,100.00	3,100.00	3,218.89	3,207.65	6.84	5.25	174.45	-490.19	47.63	505.22	493.13	12.09	41.790	
3,200.00	3,200.00	3,342.20	3,309.46	7.06	5.69	166.75	-455.20	107.16	481.45	468.70	12.75	37.757	
3,300.00	3,300.00	3,430.90	3,371.19	7.28	6.45	159.02	-424.21	162.63	460.66	446.92	13.73	33.540	
3,400.00	3,400.00	3,504.67	3,413.79	7.51	7.38	151.42	-394.55	214.97	449.71	434.82	14.89	30.202	
3,426.50	3,426.50	3,520.05	3,421.50	7.57	7.61	149.72	-387.87	226.47	449.15	433.96	15.18	29.587	CC
3,449.61	3,449.61	3,532.06	3,427.20	7.62	7.79	148.37	-382.52	235.59	449.59	434.17	15.41	29.166	
3,500.00	3,499.92	3,555.69	3,437.58	7.73	8.18	59.97	-371.72	253.86	452.58	436.67	15.91	28.448	
3,550.00	3,549.38	3,579.28	3,446.83	7.84	8.59	56.95	-360.59	272.48	457.37	440.95	16.42	27.850	
3,600.00	3,597.92	3,602.14	3,454.72	7.95	9.00	53.97	-349.45	290.82	463.62	446.68	16.95	27.360	
3,650.00	3,645.09	3,622.95	3,461.01	8.07	9.39	51.19	-339.14	307.76	471.09	453.63	17.46	26.983	
3,700.00	3,690.47	3,643.89	3,466.43	8.21	9.80	48.44	-328.60	325.02	479.47	461.45	18.02	26.614	
3,750.00	3,733.62	3,659.00	3,469.70	8.40	10.10	46.28	-320.87	337.59	488.50	470.00	18.50	26.406	
3,800.00	3,774.17	3,690.00	3,474.55	8.63	10.74	42.76	-304.67	363.56	497.89	478.51	19.38	25.697	
3,850.00	3,811.72	3,703.77	3,475.97	8.94	11.03	40.89	-297.39	375.16	507.32	487.34	19.98	25.394	
3,900.00	3,845.94	3,724.58	3,477.52	9.34	11.48	38.55	-286.44	392.79	516.62	495.80	20.82	24.814	
3,950.00	3,876.51	3,747.53	3,478.42	9.84	11.97	36.23	-274.44	412.33	525.46	503.65	21.81	24.087	
4,000.00	3,903.15	3,779.30	3,479.22	10.45	12.67	33.57	-258.15	439.59	533.15	510.02	23.12	23.056	
4,050.00	3,925.61	3,816.51	3,480.15	11.18	13.49	30.95	-239.46	471.75	538.83	514.15	24.67	21.838	
4,100.00	3,943.69	3,852.75	3,480.95	12.01	14.31	28.78	-221.70	503.33	542.21	515.88	26.33	20.595	
4,150.00	3,957.22	3,891.41	3,481.51	12.94	15.20	26.81	-203.06	537.20	542.99	514.84	28.15	19.291	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #10H - WB1/Job #1410706 - Surveys (Silver Oak 3) — Offset Site Error: 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3, 2815-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,200.00	3,966.08	3,934.53	3,481.92	13.95	16.20	24.93	-182.35	575.02	540.70	510.55	30.15	17.935	
4,250.00	3,970.18	3,972.68	3,482.01	15.02	17.09	23.55	-164.21	608.58	535.27	503.17	32.10	16.674	
4,272.34	3,970.46	3,990.00	3,481.88	15.51	17.50	22.99	-156.06	623.86	531.88	498.88	33.00	16.117	
4,300.00	3,970.22	4,013.31	3,481.64	16.12	18.05	22.06	-145.19	644.47	527.45	493.28	34.17	15.435	
4,400.00	3,969.35	4,096.29	3,480.58	18.44	20.03	18.78	-107.88	718.59	513.84	475.37	38.47	13.356	
4,500.00	3,968.48	4,180.71	3,478.83	20.86	22.08	15.58	-72.50	795.20	504.26	461.32	42.95	11.742	
4,600.00	3,967.61	4,270.97	3,476.84	23.35	24.31	12.63	-39.46	879.17	498.21	450.54	47.67	10.452	
4,700.00	3,966.73	4,369.13	3,475.49	25.89	26.76	9.92	-8.28	972.22	493.87	441.21	52.66	9.379	
4,800.00	3,965.86	4,464.97	3,474.90	28.47	29.19	7.83	17.35	1,064.56	490.62	432.97	57.66	8.510	
4,900.00	3,964.99	4,562.10	3,474.87	31.07	31.65	6.32	38.02	1,159.45	488.11	425.38	62.73	7.781	
5,000.00	3,964.11	4,656.41	3,474.57	33.70	34.06	5.39	53.42	1,252.49	486.69	418.93	67.76	7.182	
5,100.00	3,963.24	4,757.19	3,474.39	36.34	36.63	5.17	63.28	1,352.73	485.83	412.86	72.97	6.658	
5,165.64	3,962.67	4,818.25	3,474.65	38.08	38.17	5.58	64.69	1,413.77	485.34	409.09	76.25	6.365	
5,200.00	3,962.37	4,847.72	3,474.43	38.99	38.91	5.85	64.73	1,443.24	485.56	407.65	77.90	6.233	
5,300.00	3,961.50	4,942.31	3,473.08	41.66	41.28	7.05	61.84	1,537.76	487.34	404.40	82.94	5.876	
5,400.00	3,960.62	5,042.26	3,472.35	44.33	43.76	9.04	52.58	1,637.26	489.64	401.56	88.09	5.559	
5,500.00	3,959.75	5,130.74	3,471.72	47.01	45.92	11.28	40.02	1,724.84	493.48	400.55	92.93	5.310	ES
5,600.00	3,958.88	5,221.99	3,469.81	49.70	48.17	13.66	25.71	1,814.94	499.93	402.06	97.86	5.108	
5,700.00	3,958.01	5,315.44	3,467.10	52.39	50.49	16.07	10.62	1,907.11	508.26	405.39	102.88	4.941	
5,800.00	3,957.13	5,408.65	3,463.45	55.09	52.82	18.33	-4.12	1,999.08	518.39	410.48	107.91	4.804	
5,900.00	3,956.26	5,507.41	3,459.46	57.79	55.33	20.59	-19.45	2,096.56	529.40	416.28	113.12	4.680	
6,000.00	3,955.39	5,603.33	3,455.25	60.49	57.78	22.70	-34.38	2,191.22	541.53	423.26	118.27	4.579	
6,100.00	3,954.52	5,711.93	3,451.86	63.19	60.59	25.00	-50.90	2,298.50	553.13	429.34	123.78	4.469	
6,200.00	3,953.64	5,817.86	3,449.99	65.90	63.35	27.13	-66.18	2,403.31	563.91	434.66	129.25	4.363	
6,300.00	3,952.77	5,917.72	3,449.15	68.61	65.97	29.02	-79.45	2,502.27	574.01	439.42	134.59	4.265	
6,400.00	3,951.90	6,028.25	3,448.13	71.33	68.90	30.94	-93.19	2,611.94	584.39	444.16	140.23	4.167	
6,500.00	3,951.02	6,131.62	3,449.47	74.04	71.66	32.70	-104.93	2,714.63	592.79	447.09	145.70	4.069	
6,600.00	3,950.15	6,233.28	3,450.96	76.76	74.38	34.36	-116.10	2,815.67	601.36	450.23	151.13	3.979	
6,700.00	3,949.28	6,318.34	3,452.01	79.47	76.65	35.75	-126.05	2,900.13	611.02	454.89	156.12	3.914	
6,800.00	3,948.41	6,414.66	3,452.57	82.19	79.23	37.35	-138.94	2,995.58	622.65	461.23	161.42	3.857	
6,900.00	3,947.53	6,501.21	3,452.73	84.91	81.54	38.76	-150.96	3,081.29	635.42	468.97	166.45	3.817	
7,000.00	3,946.66	6,593.73	3,452.68	87.63	84.01	40.33	-165.78	3,172.62	650.19	478.55	171.64	3.788	
7,100.00	3,945.79	6,696.38	3,452.72	90.35	86.75	42.00	-182.19	3,273.94	665.41	488.31	177.11	3.757	
7,200.00	3,944.92	6,795.49	3,452.55	93.07	89.42	43.45	-196.74	3,371.98	680.36	497.87	182.49	3.728	SF
7,300.00	3,944.04	6,819.00	3,452.51	95.80	90.05	43.78	-200.17	3,395.24	699.59	513.74	185.85	3.764	
7,400.00	3,943.17	6,819.00	3,452.51	98.52	90.05	43.78	-200.17	3,395.24	731.71	543.14	188.57	3.880	
7,500.00	3,942.30	6,819.00	3,452.51	101.25	90.05	43.78	-200.17	3,395.24	775.49	584.19	191.29	4.054	
7,600.00	3,941.43	6,819.00	3,452.51	103.97	90.05	43.78	-200.17	3,395.24	829.07	635.05	194.02	4.273	
7,700.00	3,940.55	6,819.00	3,452.51	106.70	90.05	43.78	-200.17	3,395.24	890.69	693.95	196.75	4.527	
7,800.00	3,939.68	6,819.00	3,452.51	109.42	90.05	43.78	-200.17	3,395.24	958.81	759.34	199.47	4.807	
7,900.00	3,938.81	6,819.00	3,452.51	112.15	90.05	43.78	-200.17	3,395.24	1,032.13	829.93	202.20	5.105	
8,000.00	3,937.94	6,819.00	3,452.51	114.88	90.05	43.78	-200.17	3,395.24	1,109.63	904.70	204.92	5.415	
8,100.00	3,937.06	6,819.00	3,452.51	117.60	90.05	43.78	-200.17	3,395.24	1,190.48	982.83	207.65	5.733	
8,200.00	3,936.19	6,819.00	3,452.51	120.33	90.05	43.78	-200.17	3,395.24	1,274.06	1,063.68	210.38	6.056	
8,300.00	3,935.32	6,819.00	3,452.51	123.06	90.05	43.78	-200.17	3,395.24	1,359.85	1,146.75	213.11	6.381	
8,400.00	3,934.44	6,819.00	3,452.51	125.79	90.05	43.78	-200.17	3,395.24	1,447.47	1,231.64	215.84	6.706	
8,485.29	3,933.70	6,819.00	3,452.51	128.11	90.05	43.78	-200.17	3,395.24	1,523.41	1,305.25	218.16	6.983	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #12H - WB1 - Plan #1 08-22-14 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	179.94	-99.90	0.10	99.91				
100.00	100.00	99.00	99.00	0.09	0.09	179.94	-99.90	0.10	99.90	99.72	0.18	544.750	
200.00	200.00	199.00	199.00	0.32	0.31	179.94	-99.90	0.10	99.90	99.27	0.63	158.172	
300.00	300.00	299.00	299.00	0.54	0.54	179.94	-99.90	0.10	99.90	98.82	1.08	92.404	
400.00	400.00	399.00	399.00	0.77	0.76	179.94	-99.90	0.10	99.90	98.37	1.53	65.266	
500.00	500.00	499.00	499.00	0.99	0.99	179.94	-99.90	0.10	99.90	97.92	1.98	50.450	
600.00	600.00	599.00	599.00	1.22	1.21	179.94	-99.90	0.10	99.90	97.47	2.43	41.116	
700.00	700.00	699.00	699.00	1.44	1.44	179.94	-99.90	0.10	99.90	97.02	2.88	34.697	
800.00	800.00	799.00	799.00	1.67	1.66	179.94	-99.90	0.10	99.90	96.57	3.33	30.011	
900.00	900.00	899.00	899.00	1.89	1.89	179.94	-99.90	0.10	99.90	96.12	3.78	26.440	
1,000.00	1,000.00	999.00	999.00	2.12	2.11	179.94	-99.90	0.10	99.90	95.67	4.23	23.629	
1,100.00	1,100.00	1,099.00	1,099.00	2.34	2.34	179.94	-99.90	0.10	99.90	95.22	4.68	21.358	
1,200.00	1,200.00	1,199.00	1,199.00	2.56	2.56	179.94	-99.90	0.10	99.90	94.77	5.13	19.485	
1,300.00	1,300.00	1,299.00	1,299.00	2.79	2.79	179.94	-99.90	0.10	99.90	94.32	5.58	17.915	
1,400.00	1,400.00	1,399.00	1,399.00	3.01	3.01	179.94	-99.90	0.10	99.90	93.87	6.03	16.578	
1,500.00	1,500.00	1,499.00	1,499.00	3.24	3.24	179.94	-99.90	0.10	99.90	93.42	6.48	15.427	
1,600.00	1,600.00	1,599.00	1,599.00	3.46	3.46	179.94	-99.90	0.10	99.90	92.98	6.93	14.426	
1,700.00	1,700.00	1,699.00	1,699.00	3.69	3.69	179.94	-99.90	0.10	99.90	92.53	7.37	13.547	
1,800.00	1,800.00	1,799.00	1,799.00	3.91	3.91	179.94	-99.90	0.10	99.90	92.08	7.82	12.768	
1,900.00	1,900.00	1,899.00	1,899.00	4.14	4.14	179.94	-99.90	0.10	99.90	91.63	8.27	12.075	
2,000.00	2,000.00	1,999.00	1,999.00	4.36	4.36	179.94	-99.90	0.10	99.90	91.18	8.72	11.452	
2,100.00	2,100.00	2,099.00	2,099.00	4.59	4.59	179.94	-99.90	0.10	99.90	90.73	9.17	10.891	
2,200.00	2,200.00	2,199.00	2,199.00	4.81	4.81	179.94	-99.90	0.10	99.90	90.28	9.62	10.382	
2,300.00	2,300.00	2,299.00	2,299.00	5.04	5.03	179.94	-99.90	0.10	99.90	89.83	10.07	9.919	
2,400.00	2,400.00	2,399.00	2,399.00	5.26	5.26	179.94	-99.90	0.10	99.90	89.38	10.52	9.495	
2,500.00	2,500.00	2,499.00	2,499.00	5.49	5.48	179.94	-99.90	0.10	99.90	88.93	10.97	9.106	
2,600.00	2,600.00	2,599.00	2,599.00	5.71	5.71	179.94	-99.90	0.10	99.90	88.48	11.42	8.748	
2,700.00	2,700.00	2,699.00	2,699.00	5.94	5.93	179.94	-99.90	0.10	99.90	88.03	11.87	8.416	
2,800.00	2,800.00	2,799.00	2,799.00	6.16	6.16	179.94	-99.90	0.10	99.90	87.58	12.32	8.109	
2,900.00	2,900.00	2,899.00	2,899.00	6.39	6.38	179.94	-99.90	0.10	99.90	87.13	12.77	7.824	
3,000.00	3,000.00	2,999.00	2,999.00	6.61	6.61	179.94	-99.90	0.10	99.90	86.68	13.22	7.558	
3,100.00	3,100.00	3,099.00	3,099.00	6.84	6.83	179.94	-99.90	0.10	99.90	86.23	13.67	7.309	
3,200.00	3,200.00	3,199.00	3,199.00	7.06	7.06	179.94	-99.90	0.10	99.90	85.78	14.12	7.076	
3,300.00	3,300.00	3,299.00	3,299.00	7.28	7.28	179.94	-99.90	0.10	99.90	85.33	14.57	6.858	
3,400.00	3,400.00	3,399.00	3,399.00	7.51	7.51	179.94	-99.90	0.10	99.90	84.88	15.02	6.653	
3,449.61	3,449.61	3,448.61	3,448.61	7.62	7.62	179.94	-99.90	0.10	99.90	84.66	15.24	6.555	CC, ES
3,500.00	3,499.92	3,498.63	3,498.57	7.73	7.72	94.55	-99.99	2.33	100.18	84.73	15.45	6.483	
3,550.00	3,549.38	3,548.27	3,547.69	7.84	7.83	94.57	-100.26	9.26	101.02	85.36	15.66	6.450	
3,600.00	3,597.92	3,597.91	3,595.94	7.95	7.94	94.54	-100.71	20.83	102.42	86.54	15.88	6.449	
3,650.00	3,645.09	3,647.54	3,642.87	8.07	8.05	94.47	-101.35	36.94	104.37	88.25	16.12	6.474	
3,700.00	3,690.47	3,697.17	3,688.05	8.21	8.20	94.34	-102.15	57.43	106.83	90.42	16.41	6.510	
3,750.00	3,733.62	3,746.80	3,731.06	8.40	8.38	94.17	-103.12	82.12	109.80	93.03	16.77	6.546	
3,800.00	3,774.17	3,796.41	3,771.52	8.63	8.61	93.96	-104.25	110.78	113.25	96.00	17.24	6.568	
3,850.00	3,811.72	3,846.02	3,809.06	8.94	8.91	93.70	-105.52	143.15	117.13	99.28	17.85	6.560	
3,900.00	3,845.94	3,895.62	3,843.35	9.34	9.30	93.41	-106.92	178.93	121.43	102.78	18.64	6.513	
3,950.00	3,876.51	3,945.21	3,874.08	9.84	9.79	93.09	-108.45	217.81	126.09	106.45	19.64	6.422	
4,000.00	3,903.15	3,994.81	3,900.96	10.45	10.40	92.75	-110.08	259.43	131.08	110.22	20.85	6.286	
4,050.00	3,925.61	4,044.42	3,923.78	11.18	11.11	92.38	-111.81	303.43	136.34	114.05	22.29	6.116	
4,100.00	3,943.69	4,094.05	3,942.30	12.01	11.93	91.99	-113.62	349.42	141.84	117.89	23.95	5.923	
4,150.00	3,957.22	4,143.71	3,956.37	12.94	12.85	91.59	-115.48	396.99	147.52	121.72	25.80	5.718	
4,200.00	3,966.08	4,193.41	3,965.86	13.95	13.86	91.18	-117.40	445.72	153.33	125.52	27.81	5.514	
4,250.00	3,970.18	4,243.17	3,970.65	15.02	14.92	90.77	-119.34	495.19	159.21	129.27	29.94	5.318	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #12H - WB1 - Plan #1 08-22-14 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,272.34	3,970.46	4,265.42	3,971.26	15.51	15.41	90.58	-120.21	517.41	161.85	130.93	30.92	5.235	
4,300.00	3,970.22	4,292.91	3,971.08	16.12	16.03	90.59	-121.29	544.88	165.12	132.96	32.15	5.135	
4,400.00	3,969.35	4,392.22	3,970.21	18.44	18.35	90.55	-125.19	644.11	176.92	140.13	36.79	4.808	
4,500.00	3,968.48	4,491.52	3,969.34	20.86	20.77	90.51	-129.08	743.33	188.72	147.09	41.64	4.533	
4,600.00	3,967.61	4,590.82	3,968.48	23.35	23.27	90.48	-132.98	842.55	200.53	153.91	46.62	4.301	
4,700.00	3,966.73	4,690.12	3,967.61	25.89	25.81	90.45	-136.87	941.77	212.33	160.63	51.70	4.107	
4,800.00	3,965.86	4,789.42	3,966.74	28.47	28.39	90.43	-140.77	1,040.99	224.14	167.27	56.86	3.942	
4,900.00	3,964.99	4,888.72	3,965.88	31.07	31.00	90.40	-144.66	1,140.21	235.94	173.86	62.08	3.801	
5,000.00	3,964.11	4,988.02	3,965.01	33.70	33.63	90.38	-148.56	1,239.43	247.74	180.41	67.33	3.680	
5,100.00	3,963.24	5,087.32	3,964.14	36.34	36.28	90.36	-152.46	1,338.65	259.55	186.93	72.62	3.574	
5,200.00	3,962.37	5,186.62	3,963.28	38.99	38.94	90.35	-156.35	1,437.87	271.35	193.42	77.93	3.482	
5,300.00	3,961.50	5,285.92	3,962.41	41.66	41.61	90.33	-160.25	1,537.09	283.15	199.89	83.27	3.400	
5,400.00	3,960.62	5,385.22	3,961.54	44.33	44.29	90.32	-164.14	1,636.31	294.96	206.34	88.62	3.328	
5,500.00	3,959.75	5,484.53	3,960.68	47.01	46.98	90.30	-168.04	1,735.53	306.76	212.77	93.99	3.264	
5,600.00	3,958.88	5,583.83	3,959.81	49.70	49.67	90.29	-171.93	1,834.75	318.57	219.20	99.37	3.206	
5,700.00	3,958.01	5,683.13	3,958.94	52.39	52.37	90.28	-175.83	1,933.97	330.37	225.61	104.76	3.154	
5,800.00	3,957.13	5,782.43	3,958.08	55.09	55.08	90.27	-179.73	2,033.19	342.17	232.01	110.16	3.106	
5,900.00	3,956.26	5,881.73	3,957.21	57.79	57.78	90.26	-183.62	2,132.41	353.98	238.41	115.57	3.063	
6,000.00	3,955.39	5,981.03	3,956.35	60.49	60.49	90.25	-187.52	2,231.64	365.78	244.80	120.98	3.023	
6,100.00	3,954.52	6,080.33	3,955.48	63.19	63.21	90.24	-191.41	2,330.86	377.59	251.19	126.40	2.987	
6,200.00	3,953.64	6,179.63	3,954.61	65.90	65.92	90.23	-195.31	2,430.08	389.39	257.57	131.82	2.954	
6,300.00	3,952.77	6,278.93	3,953.75	68.61	68.64	90.22	-199.20	2,529.30	401.19	263.94	137.25	2.923	
6,400.00	3,951.90	6,378.23	3,952.88	71.33	71.36	90.22	-203.10	2,628.52	413.00	270.31	142.68	2.894	
6,500.00	3,951.02	6,477.53	3,952.01	74.04	74.08	90.21	-207.00	2,727.74	424.80	276.68	148.12	2.868	
6,600.00	3,950.15	6,576.83	3,951.15	76.76	76.80	90.20	-210.89	2,826.96	436.61	283.05	153.56	2.843	
6,700.00	3,949.28	6,676.14	3,950.28	79.47	79.53	90.20	-214.79	2,926.18	448.41	289.41	159.00	2.820	
6,800.00	3,948.41	6,775.44	3,949.41	82.19	82.25	90.19	-218.68	3,025.40	460.21	295.77	164.44	2.799	
6,900.00	3,947.53	6,874.74	3,948.55	84.91	84.98	90.19	-222.58	3,124.62	472.02	302.13	169.89	2.778	
7,000.00	3,946.66	6,974.04	3,947.68	87.63	87.71	90.18	-226.47	3,223.84	483.82	308.48	175.34	2.759	
7,100.00	3,945.79	7,073.34	3,946.81	90.35	90.44	90.18	-230.37	3,323.06	495.63	314.84	180.79	2.741	
7,200.00	3,944.92	7,172.64	3,945.95	93.07	93.17	90.17	-234.27	3,422.28	507.43	321.19	186.24	2.725	
7,300.00	3,944.04	7,271.94	3,945.08	95.80	95.90	90.17	-238.16	3,521.50	519.23	327.54	191.69	2.709	
7,400.00	3,943.17	7,371.24	3,944.21	98.52	98.63	90.16	-242.06	3,620.72	531.04	333.89	197.15	2.694	
7,500.00	3,942.30	7,470.54	3,943.35	101.25	101.36	90.16	-245.95	3,719.95	542.84	340.24	202.61	2.679	
7,600.00	3,941.43	7,569.84	3,942.48	103.97	104.09	90.15	-249.85	3,819.17	554.65	346.58	208.06	2.666	
7,700.00	3,940.55	7,669.14	3,941.61	106.70	106.83	90.15	-253.74	3,918.39	566.45	352.93	213.52	2.653	
7,800.00	3,939.68	7,768.45	3,940.75	109.42	109.56	90.15	-257.64	4,017.61	578.25	359.27	218.98	2.641	
7,900.00	3,938.81	7,867.75	3,939.88	112.15	112.29	90.14	-261.53	4,116.83	590.06	365.62	224.44	2.629	
8,000.00	3,937.94	7,967.05	3,939.01	114.88	115.03	90.14	-265.43	4,216.05	601.86	371.96	229.90	2.618	
8,100.00	3,937.06	8,066.35	3,938.15	117.60	117.76	90.14	-269.33	4,315.27	613.67	378.30	235.37	2.607	
8,200.00	3,936.19	8,165.65	3,937.28	120.33	120.50	90.13	-273.22	4,414.49	625.47	384.64	240.83	2.597	
8,300.00	3,935.32	8,264.95	3,936.41	123.06	123.23	90.13	-277.12	4,513.71	637.27	390.98	246.29	2.587	
8,400.00	3,934.44	8,364.25	3,935.55	125.79	125.97	90.13	-281.01	4,612.93	649.08	397.32	251.76	2.578	
8,485.29	3,933.70	8,448.95	3,934.81	128.11	128.30	90.13	-284.34	4,697.56	659.15	402.73	256.42	2.571 SF	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #3 - WB1 - Inc Surveys — Offset Site Error: 0.00 usft

Survey Program: 250-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	8.08	8.08	0.00	0.01	94.80	-275.30	3,281.70	3,293.23				
100.00	100.00	109.05	109.05	0.09	0.12	94.79	-275.09	3,281.70	3,293.21	3,293.00	0.21	N/A	
200.00	200.00	210.01	210.01	0.32	0.24	94.78	-274.53	3,281.70	3,293.16	3,292.61	0.55	5,953.260	
300.00	300.00	310.85	310.85	0.54	0.42	94.77	-273.63	3,281.70	3,293.09	3,292.13	0.96	3,430.683	
400.00	400.00	411.56	411.55	0.77	0.64	94.75	-272.44	3,281.70	3,292.99	3,291.58	1.41	2,334.461	
500.00	500.00	511.13	511.11	0.99	0.85	94.72	-271.22	3,281.70	3,292.89	3,291.05	1.84	1,792.693	
600.00	600.00	610.69	610.66	1.22	1.05	94.71	-270.16	3,281.70	3,292.80	3,290.54	2.26	1,455.000	
700.00	700.00	710.38	710.35	1.44	1.25	94.69	-269.25	3,281.70	3,292.73	3,290.04	2.69	1,223.096	
800.00	800.00	810.38	810.34	1.67	1.46	94.68	-268.38	3,281.70	3,292.66	3,289.53	3.12	1,053.870	
900.00	900.00	910.37	910.33	1.89	1.67	94.66	-267.50	3,281.70	3,292.59	3,289.03	3.56	925.776	
1,000.00	1,000.00	1,010.44	1,010.40	2.12	1.88	94.64	-266.63	3,281.70	3,292.51	3,288.52	3.99	824.922	
1,100.00	1,100.00	1,110.81	1,110.76	2.34	2.10	94.63	-265.66	3,281.70	3,292.44	3,288.00	4.44	742.004	
1,200.00	1,200.00	1,211.18	1,211.12	2.56	2.32	94.61	-264.54	3,281.70	3,292.35	3,287.46	4.88	674.229	
1,300.00	1,300.00	1,311.54	1,311.48	2.79	2.54	94.59	-263.28	3,281.70	3,292.25	3,286.92	5.33	617.766	
1,400.00	1,400.00	1,411.86	1,411.79	3.01	2.76	94.56	-261.90	3,281.70	3,292.14	3,286.36	5.78	569.798	
1,500.00	1,500.00	1,512.18	1,512.10	3.24	2.99	94.54	-260.38	3,281.70	3,292.02	3,285.79	6.23	528.739	
1,600.00	1,600.00	1,612.49	1,612.40	3.46	3.21	94.51	-258.74	3,281.70	3,291.89	3,285.21	6.67	493.196	
1,700.00	1,700.00	1,712.60	1,712.49	3.69	3.43	94.48	-257.00	3,281.70	3,291.75	3,284.63	7.12	462.113	
1,800.00	1,800.00	1,811.98	1,811.86	3.91	3.65	94.45	-255.30	3,281.70	3,291.62	3,284.05	7.56	435.137	
1,900.00	1,900.00	1,910.40	1,910.27	4.14	3.85	94.43	-254.17	3,281.70	3,291.53	3,283.54	7.99	411.906	
2,000.00	2,000.00	2,010.82	2,010.69	4.36	4.06	94.41	-253.19	3,281.70	3,291.45	3,283.03	8.42	390.809	
2,100.00	2,100.00	2,111.25	2,111.10	4.59	4.27	94.39	-252.03	3,281.70	3,291.37	3,282.51	8.85	371.766	
2,200.00	2,200.00	2,211.66	2,211.51	4.81	4.48	94.37	-250.71	3,281.70	3,291.26	3,281.97	9.29	354.129	
2,300.00	2,300.00	2,312.05	2,311.89	5.04	4.71	94.34	-249.23	3,281.70	3,291.15	3,281.41	9.74	337.813	
2,400.00	2,400.00	2,412.45	2,412.27	5.26	4.93	94.31	-247.58	3,281.70	3,291.03	3,280.84	10.19	322.933	
2,500.00	2,500.00	2,512.11	2,511.92	5.49	5.14	94.29	-245.91	3,281.70	3,290.90	3,280.28	10.62	309.771	
2,600.00	2,600.00	2,611.68	2,611.48	5.71	5.34	94.26	-244.40	3,281.70	3,290.79	3,279.74	11.05	297.702	
2,700.00	2,700.00	2,711.39	2,711.18	5.94	5.55	94.24	-243.06	3,281.70	3,290.69	3,279.21	11.48	286.527	
2,800.00	2,800.00	2,811.38	2,811.16	6.16	5.76	94.21	-241.75	3,281.70	3,290.59	3,278.68	11.92	276.138	
2,900.00	2,900.00	2,911.38	2,911.15	6.39	5.96	94.19	-240.44	3,281.70	3,290.50	3,278.15	12.35	266.475	
3,000.00	3,000.00	3,011.41	3,011.17	6.61	6.17	94.17	-239.13	3,281.70	3,290.40	3,277.62	12.78	257.404	
3,100.00	3,100.00	3,111.61	3,111.36	6.84	6.40	94.14	-237.76	3,281.70	3,290.30	3,277.07	13.23	248.690	
3,200.00	3,200.00	3,211.80	3,211.55	7.06	6.62	94.12	-236.30	3,281.70	3,290.20	3,276.52	13.68	240.546	
3,300.00	3,300.00	3,312.00	3,311.73	7.28	6.84	94.09	-234.75	3,281.70	3,290.09	3,275.96	14.13	232.918	
3,400.00	3,400.00	3,412.19	3,411.91	7.51	7.06	94.06	-233.11	3,281.70	3,289.97	3,275.40	14.57	225.757	
3,449.61	3,449.61	3,461.90	3,461.61	7.62	7.17	94.05	-232.27	3,281.70	3,289.91	3,275.12	14.80	222.366	
3,500.00	3,499.92	3,512.26	3,511.96	7.73	7.29	8.61	-231.39	3,281.70	3,287.44	3,272.43	15.01	218.944	
3,550.00	3,549.38	3,561.72	3,561.42	7.84	7.40	8.74	-230.53	3,281.70	3,280.25	3,265.02	15.23	215.354	
3,600.00	3,597.92	3,610.27	3,609.96	7.95	7.51	8.96	-229.68	3,281.70	3,268.41	3,252.96	15.45	211.540	
3,650.00	3,645.09	3,657.46	3,657.14	8.07	7.61	9.29	-228.86	3,281.70	3,252.03	3,236.35	15.68	207.441	
3,700.00	3,690.47	3,702.86	3,702.53	8.21	7.71	9.75	-228.07	3,281.70	3,231.25	3,215.32	15.92	202.906	
3,750.00	3,733.62	3,746.04	3,745.71	8.40	7.81	10.37	-227.31	3,281.70	3,206.27	3,190.07	16.21	197.855	
3,800.00	3,774.17	3,786.62	3,786.28	8.63	7.90	11.19	-226.60	3,281.70	3,177.33	3,160.80	16.53	192.178	
3,850.00	3,811.72	3,824.21	3,823.86	8.94	7.98	12.25	-225.95	3,281.70	3,144.69	3,127.76	16.93	185.788	
3,900.00	3,845.94	3,858.47	3,858.12	9.34	8.06	13.67	-225.35	3,281.70	3,108.65	3,091.25	17.40	178.649	
3,950.00	3,876.51	3,889.09	3,888.74	9.84	8.13	15.58	-224.82	3,281.70	3,069.55	3,051.58	17.97	170.810	
4,000.00	3,903.15	3,915.79	3,915.43	10.45	8.19	18.23	-224.35	3,281.70	3,027.76	3,009.12	18.64	162.407	
4,050.00	3,925.61	3,938.31	3,937.95	11.18	8.24	22.04	-223.96	3,281.70	2,983.66	2,964.24	19.42	153.644	
4,100.00	3,943.69	3,956.45	3,956.08	12.01	8.28	27.83	-223.64	3,281.70	2,937.66	2,917.37	20.29	144.760	
4,150.00	3,957.22	3,970.04	3,969.68	12.94	8.31	37.21	-223.40	3,281.70	2,890.19	2,868.94	21.25	135.993	
4,200.00	3,966.08	3,978.97	3,978.60	13.95	8.33	53.31	-223.25	3,281.70	2,841.69	2,819.41	22.28	127.545	
4,250.00	3,970.18	3,983.14	3,982.77	15.02	8.34	79.49	-223.18	3,281.70	2,792.60	2,769.25	23.36	119.571	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #3 - WB1 - Inc Surveys — Offset Site Error: 10.00 usft

Survey Program: 250-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,272.34	3,970.46	3,983.45	3,983.08	15.51	8.34	93.38	-223.17	3,281.70	2,770.60	2,746.75	23.85	116.186	
4,300.00	3,970.22	3,983.25	3,982.88	16.12	8.34	93.35	-223.17	3,281.70	2,743.37	2,718.91	24.46	112.142	
4,400.00	3,969.35	3,982.51	3,982.15	18.44	8.34	93.27	-223.19	3,281.70	2,644.99	2,618.21	26.78	98.764	
4,500.00	3,968.48	3,981.78	3,981.41	20.86	8.34	93.18	-223.20	3,281.70	2,546.73	2,517.53	29.20	87.218	
4,600.00	3,967.61	3,981.05	3,980.68	23.35	8.33	93.09	-223.21	3,281.70	2,448.61	2,416.93	31.69	77.272	
4,700.00	3,966.73	3,980.31	3,979.94	25.89	8.33	93.00	-223.22	3,281.70	2,350.66	2,316.43	34.23	68.680	
4,800.00	3,965.86	3,979.58	3,979.21	28.47	8.33	92.92	-223.24	3,281.70	2,252.88	2,216.08	36.80	61.218	
4,900.00	3,964.99	3,978.84	3,978.47	31.07	8.33	92.83	-223.25	3,281.70	2,155.30	2,115.90	39.40	54.699	
5,000.00	3,964.11	3,978.11	3,977.74	33.70	8.33	92.74	-223.26	3,281.70	2,057.96	2,015.94	42.03	48.969	
5,100.00	3,963.24	3,977.37	3,977.00	36.34	8.33	92.66	-223.28	3,281.70	1,960.89	1,916.22	44.66	43.902	
5,200.00	3,962.37	3,976.64	3,976.27	38.99	8.32	92.57	-223.29	3,281.70	1,864.12	1,816.81	47.32	39.396	
5,300.00	3,961.50	3,975.90	3,975.54	41.66	8.32	92.48	-223.30	3,281.70	1,767.72	1,717.74	49.98	35.368	
5,400.00	3,960.62	3,975.17	3,974.80	44.33	8.32	92.39	-223.31	3,281.70	1,671.73	1,619.08	52.65	31.751	
5,500.00	3,959.75	3,974.43	3,974.07	47.01	8.32	92.31	-223.33	3,281.70	1,576.25	1,520.92	55.33	28.488	
5,600.00	3,958.88	3,973.70	3,973.33	49.70	8.32	92.22	-223.34	3,281.70	1,481.36	1,423.34	58.02	25.534	
5,700.00	3,958.01	3,972.96	3,972.60	52.39	8.32	92.13	-223.35	3,281.70	1,387.19	1,326.48	60.71	22.851	
5,800.00	3,957.13	3,972.23	3,971.86	55.09	8.31	92.05	-223.37	3,281.70	1,293.89	1,230.49	63.40	20.408	
5,900.00	3,956.26	3,971.49	3,971.13	57.79	8.31	91.96	-223.38	3,281.70	1,201.68	1,135.58	66.10	18.180	
6,000.00	3,955.39	3,970.76	3,970.39	60.49	8.31	91.87	-223.39	3,281.70	1,110.80	1,042.00	68.80	16.146	
6,100.00	3,954.52	3,970.03	3,969.66	63.19	8.31	91.78	-223.40	3,281.70	1,021.64	950.14	71.50	14.288	
6,200.00	3,953.64	3,969.29	3,968.92	65.90	8.31	91.70	-223.42	3,281.70	934.67	860.46	74.21	12.595	
6,300.00	3,952.77	3,968.56	3,968.19	68.61	8.31	91.61	-223.43	3,281.70	850.57	773.65	76.92	11.058	
6,400.00	3,951.90	3,967.82	3,967.46	71.33	8.30	91.52	-223.44	3,281.70	770.28	690.65	79.63	9.673	
6,500.00	3,951.02	3,967.09	3,966.72	74.04	8.30	91.43	-223.46	3,281.70	695.11	612.77	82.34	8.442	
6,600.00	3,950.15	3,966.35	3,965.99	76.76	8.30	91.35	-223.47	3,281.70	626.93	541.87	85.06	7.371	
6,700.00	3,949.28	3,965.62	3,965.25	79.47	8.30	91.26	-223.48	3,281.70	568.24	480.47	87.77	6.474	
6,800.00	3,948.41	3,964.88	3,964.52	82.19	8.30	91.17	-223.49	3,281.70	522.25	431.77	90.49	5.771	
6,900.00	3,947.53	3,964.15	3,963.78	84.91	8.30	91.08	-223.51	3,281.70	492.55	399.34	93.21	5.284	
7,000.00	3,946.66	3,963.41	3,963.05	87.63	8.29	91.00	-223.52	3,281.70	482.14	386.21	95.93	5.026	
7,000.74	3,946.66	3,963.41	3,963.04	87.65	8.29	91.00	-223.52	3,281.70	482.14	386.19	95.95	5.025	CC, ES
7,100.00	3,945.79	3,962.68	3,962.31	90.35	8.29	90.91	-223.53	3,281.70	492.25	393.60	98.65	4.990	SF
7,200.00	3,944.92	3,961.94	3,961.58	93.07	8.29	90.82	-223.55	3,281.70	521.69	420.32	101.37	5.147	
7,300.00	3,944.04	3,961.21	3,960.84	95.80	8.29	90.74	-223.56	3,281.70	567.45	463.37	104.09	5.452	
7,400.00	3,943.17	3,960.48	3,960.11	98.52	8.29	90.65	-223.57	3,281.70	625.98	519.17	106.81	5.861	
7,500.00	3,942.30	3,959.74	3,959.38	101.25	8.29	90.56	-223.58	3,281.70	694.05	584.51	109.53	6.336	
7,600.00	3,941.43	3,959.01	3,958.64	103.97	8.28	90.47	-223.60	3,281.70	769.12	656.86	112.26	6.852	
7,700.00	3,940.55	3,958.27	3,957.91	106.70	8.28	90.39	-223.61	3,281.70	849.35	734.37	114.98	7.387	
7,800.00	3,939.68	3,957.54	3,957.17	109.42	8.28	90.30	-223.62	3,281.70	933.40	815.69	117.70	7.930	
7,900.00	3,938.81	3,956.80	3,956.44	112.15	8.28	90.21	-223.63	3,281.70	1,020.33	899.90	120.43	8.472	
8,000.00	3,937.94	3,956.07	3,955.70	114.88	8.28	90.12	-223.65	3,281.70	1,109.47	986.31	123.15	9.009	
8,100.00	3,937.06	3,955.33	3,954.97	117.60	8.28	90.04	-223.66	3,281.70	1,200.32	1,074.44	125.88	9.535	
8,200.00	3,936.19	3,954.60	3,954.23	120.33	8.28	89.95	-223.67	3,281.70	1,292.52	1,163.91	128.61	10.050	
8,300.00	3,935.32	3,953.86	3,953.50	123.06	8.27	89.86	-223.69	3,281.70	1,385.80	1,254.46	131.33	10.552	
8,400.00	3,934.44	3,953.13	3,952.76	125.79	8.27	89.78	-223.70	3,281.70	1,479.96	1,345.90	134.06	11.040	
8,485.29	3,933.70	3,952.50	3,952.14	128.11	8.27	89.70	-223.71	3,281.70	1,560.84	1,424.46	136.39	11.444	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #9H - WB1/Job #1311101 - Surveys (Silver Oak 3) — Offset Site Error: 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3-2874-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-8.01	409.20	-57.60	413.24				
100.00	100.00	95.99	95.99	0.09	0.08	-8.12	409.44	-58.39	413.59	413.42	0.18	2,338.391	
200.00	200.00	196.34	196.32	0.32	0.26	-8.32	409.93	-59.96	414.30	413.72	0.58	714.247	
300.00	300.00	296.81	296.78	0.54	0.45	-8.52	410.30	-61.47	414.89	413.90	0.99	418.468	
400.00	400.00	395.39	395.35	0.77	0.63	-8.73	410.76	-63.07	415.59	414.19	1.40	296.670	
500.00	500.00	497.72	497.67	0.99	0.83	-8.91	411.19	-64.45	416.21	414.39	1.82	229.044	
600.00	600.00	597.54	597.48	1.22	1.01	-9.06	411.35	-65.57	416.55	414.32	2.23	186.871	
700.00	700.00	698.81	698.74	1.44	1.20	-9.24	411.36	-66.93	416.76	414.12	2.64	157.667	
800.00	800.00	798.74	798.66	1.67	1.39	-9.43	411.20	-68.28	416.83	413.78	3.05	136.456	
900.00	900.00	899.23	899.14	1.89	1.58	-9.57	411.05	-69.33	416.86	413.39	3.47	120.236	
923.03	923.03	922.12	922.03	1.94	1.62	-9.60	411.02	-69.52	416.86	413.29	3.56	117.042	
1,000.00	1,000.00	998.58	998.49	2.12	1.76	-9.70	410.95	-70.22	416.90	413.03	3.88	107.515	
1,100.00	1,100.00	1,101.03	1,100.93	2.34	1.95	-9.86	410.57	-71.40	416.73	412.44	4.29	97.076	
1,200.00	1,200.00	1,200.00	1,199.89	2.56	2.14	-10.04	410.08	-72.62	416.46	411.76	4.70	88.582	
1,300.00	1,300.00	1,301.85	1,301.73	2.79	2.33	-10.21	409.48	-73.77	416.08	410.97	5.11	81.356	
1,400.00	1,400.00	1,400.00	1,399.88	3.01	2.51	-10.38	408.85	-74.87	415.66	410.13	5.52	75.292	
1,500.00	1,500.00	1,502.17	1,502.04	3.24	2.70	-10.55	408.15	-75.99	415.18	409.24	5.93	69.965	
1,600.00	1,600.00	1,600.00	1,599.86	3.46	2.88	-10.66	407.60	-76.71	414.76	408.42	6.34	65.422	
1,700.00	1,700.00	1,701.85	1,701.72	3.69	3.06	-10.75	407.09	-77.26	414.37	407.62	6.75	61.372	
1,800.00	1,800.00	1,801.71	1,801.57	3.91	3.25	-10.87	406.29	-78.05	413.73	406.57	7.16	57.789	
1,900.00	1,900.00	1,901.18	1,901.03	4.14	3.43	-10.98	405.60	-78.72	413.17	405.61	7.57	54.610	
2,000.00	2,000.00	2,000.00	1,999.85	4.36	3.61	-11.06	405.18	-79.23	412.85	404.88	7.97	51.782	
2,100.00	2,100.00	2,101.34	2,101.18	4.59	3.80	-11.17	404.69	-79.93	412.51	404.13	8.39	49.187	
2,200.00	2,200.00	2,200.61	2,200.45	4.81	3.98	-11.28	404.11	-80.60	412.07	403.28	8.80	46.850	
2,300.00	2,300.00	2,301.79	2,301.63	5.04	4.17	-11.37	403.49	-81.13	411.57	402.37	9.21	44.706	
2,400.00	2,400.00	2,400.00	2,399.83	5.26	4.35	-11.42	403.02	-81.43	411.17	401.56	9.61	42.780	
2,500.00	2,500.00	2,501.29	2,501.12	5.49	4.53	-11.46	402.62	-81.65	410.82	400.80	10.02	40.998	
2,600.00	2,600.00	2,601.04	2,600.88	5.71	4.71	-11.49	402.12	-81.72	410.34	399.92	10.42	39.381	
2,700.00	2,700.00	2,702.41	2,702.24	5.94	4.88	-11.48	401.50	-81.54	409.71	398.89	10.82	37.882	
2,800.00	2,800.00	2,802.01	2,801.84	6.16	5.04	-11.48	400.79	-81.42	408.99	397.79	11.20	36.513	
2,900.00	2,900.00	2,904.25	2,904.07	6.39	5.11	-11.46	399.96	-81.09	408.13	396.63	11.49	35.515	
3,000.00	3,000.00	3,016.08	3,015.59	6.61	5.13	-10.49	398.26	-73.73	405.37	393.63	11.74	34.538	
3,100.00	3,100.00	3,124.42	3,121.57	6.84	5.19	-7.45	396.68	-51.85	400.69	388.67	12.02	33.329	
3,200.00	3,200.00	3,231.99	3,221.46	7.06	5.32	-1.82	393.52	-12.48	394.36	381.98	12.38	31.851	
3,295.43	3,295.43	3,316.91	3,294.43	7.27	5.57	4.50	390.21	30.71	391.42	378.57	12.84	30.476 CC	
3,300.00	3,300.00	3,320.66	3,297.52	7.28	5.59	4.81	390.04	32.84	391.43	378.55	12.87	30.409	
3,400.00	3,400.00	3,395.83	3,355.96	7.51	6.09	11.68	386.25	79.84	396.76	383.16	13.60	29.177	
3,449.61	3,449.61	3,428.16	3,378.75	7.62	6.40	14.97	384.13	102.68	403.71	389.69	14.02	28.790	
3,500.00	3,499.92	3,457.04	3,397.54	7.73	6.74	-66.54	381.87	124.49	413.35	398.88	14.47	28.572	
3,550.00	3,549.38	3,481.39	3,412.17	7.84	7.06	-63.04	379.82	143.84	424.56	409.67	14.90	28.502	
3,600.00	3,597.92	3,502.00	3,423.60	7.95	7.36	-59.91	378.27	160.91	437.36	422.06	15.30	28.581	
3,650.00	3,645.09	3,523.25	3,434.41	8.07	7.70	-56.81	376.92	179.15	451.35	435.58	15.77	28.622	
3,700.00	3,690.47	3,543.85	3,443.90	8.21	8.06	-53.88	375.84	197.40	466.13	449.86	16.27	28.646	
3,750.00	3,733.62	3,565.00	3,452.62	8.40	8.44	-51.09	375.00	216.65	481.33	464.49	16.84	28.583	
3,800.00	3,774.17	3,585.80	3,460.23	8.63	8.85	-48.53	374.43	235.99	496.58	479.09	17.49	28.395	
3,850.00	3,811.72	3,608.99	3,467.65	8.94	9.33	-46.09	374.05	257.96	511.50	493.22	18.27	27.992	
3,900.00	3,845.94	3,635.12	3,474.73	9.34	9.89	-43.79	373.68	283.11	525.61	506.38	19.23	27.331	
3,950.00	3,876.51	3,664.89	3,481.39	9.84	10.56	-41.62	373.02	312.11	538.37	517.97	20.40	26.390	
4,000.00	3,903.15	3,690.00	3,485.76	10.45	11.14	-39.89	372.08	336.82	549.57	527.97	21.60	25.447	
4,050.00	3,925.61	3,716.00	3,488.90	11.18	11.76	-38.33	370.67	362.59	559.15	536.21	22.94	24.370	
4,100.00	3,943.69	3,749.57	3,491.16	12.01	12.59	-36.77	368.51	396.01	566.95	542.35	24.60	23.044	
4,150.00	3,957.22	3,779.00	3,491.76	12.94	13.31	-35.60	366.61	425.37	572.93	546.67	26.26	21.822	

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

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Offset Design Beech 25 Federal - #9H - WB1/Job #1311101 - Surveys (Silver Oak 3) — Offset Site Error: 0.00 usft

Survey Program: 100-VES-ISCWSA-GYRO-3, 2874-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,200.00	3,966.08	3,825.90	3,491.74	13.95	14.50	-34.38	363.67	472.17	576.16	547.71	28.45	20.254	
4,250.00	3,970.18	3,872.64	3,491.78	15.02	15.69	-33.67	360.96	518.84	575.67	544.96	30.71	18.746	
4,272.34	3,970.46	3,893.07	3,491.75	15.51	16.22	-33.52	359.87	539.24	574.29	542.56	31.73	18.102	
4,300.00	3,970.22	3,918.39	3,491.67	16.12	16.87	-33.25	358.61	564.53	572.19	539.20	33.00	17.341	
4,400.00	3,969.35	4,008.95	3,491.00	18.44	19.24	-32.35	355.05	655.02	565.65	527.97	37.68	15.012	
4,500.00	3,968.48	4,108.43	3,490.22	20.86	21.87	-31.48	352.82	754.46	560.21	517.48	42.73	13.110	
4,600.00	3,967.61	4,201.02	3,489.64	23.35	24.34	-30.74	351.57	847.04	555.22	507.53	47.69	11.642	
4,700.00	3,966.73	4,303.52	3,488.44	25.89	27.09	-29.91	350.60	949.53	551.01	498.02	52.98	10.400	
4,800.00	3,965.86	4,404.00	3,488.16	28.47	29.80	-29.13	349.58	1,050.00	546.08	487.81	58.27	9.371	
4,900.00	3,964.99	4,497.00	3,487.19	31.07	32.32	-28.33	348.36	1,142.99	541.82	478.42	63.40	8.547	
5,000.00	3,964.11	4,602.14	3,486.17	33.70	35.18	-27.48	347.67	1,248.12	537.88	469.01	68.87	7.810	
5,100.00	3,963.24	4,694.06	3,484.95	36.34	37.67	-26.73	347.26	1,340.03	534.48	460.47	74.01	7.221	
5,200.00	3,962.37	4,795.22	3,483.52	38.99	40.43	-26.02	348.15	1,441.18	531.84	452.42	79.42	6.697	
5,300.00	3,961.50	4,903.11	3,483.05	41.66	43.37	-25.23	348.33	1,549.06	528.08	443.05	85.03	6.211	
5,400.00	3,960.62	4,999.72	3,482.60	44.33	46.01	-24.34	346.85	1,645.66	523.76	433.42	90.34	5.798	
5,500.00	3,959.75	5,089.69	3,480.65	47.01	48.47	-23.48	345.82	1,735.59	521.26	425.77	95.48	5.459	
5,600.00	3,958.88	5,188.47	3,477.83	49.70	51.17	-22.61	345.87	1,834.34	520.01	419.14	100.87	5.155	
5,700.00	3,958.01	5,291.83	3,475.25	52.39	54.00	-21.60	344.89	1,937.66	518.18	411.79	106.39	4.871	
5,800.00	3,957.13	5,392.89	3,473.09	55.09	56.77	-20.65	344.18	2,038.70	516.25	404.40	111.86	4.615	
5,900.00	3,956.26	5,490.24	3,470.94	57.79	59.44	-19.65	342.69	2,136.01	514.27	397.04	117.22	4.387	
6,000.00	3,955.39	5,594.77	3,468.44	60.49	62.31	-18.61	341.66	2,240.50	512.80	390.01	122.79	4.176	
6,100.00	3,954.52	5,693.81	3,466.98	63.19	65.02	-17.56	339.84	2,339.52	510.35	382.13	128.22	3.980	
6,200.00	3,953.64	5,797.48	3,465.44	65.90	67.87	-16.50	338.38	2,443.16	508.21	374.44	133.77	3.799	
6,300.00	3,952.77	5,892.99	3,464.44	68.61	70.49	-15.57	337.37	2,538.66	505.91	366.80	139.11	3.637	
6,400.00	3,951.90	5,996.00	3,463.39	71.33	73.32	-14.59	336.58	2,641.66	503.78	359.14	144.65	3.483	
6,500.00	3,951.02	6,091.96	3,462.38	74.04	75.96	-13.61	335.41	2,737.61	501.75	351.75	150.00	3.345	
6,600.00	3,950.15	6,199.04	3,461.79	76.76	78.90	-12.63	334.99	2,844.68	499.54	343.88	155.66	3.209	
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6,900.00	3,947.53	6,491.85	3,461.61	84.91	86.93	-10.47	338.55	3,137.46	493.14	321.30	171.84	2.870	
6,985.29	3,946.79	6,571.59	3,460.64	87.23	89.12	-9.99	340.69	3,217.17	492.64	316.30	176.35	2.794	
7,000.00	3,946.66	6,585.22	3,460.38	87.63	89.49	-9.91	341.09	3,230.79	492.66	315.54	177.12	2.782	
7,100.00	3,945.79	6,679.92	3,457.91	90.35	92.08	-9.37	344.10	3,325.40	493.58	311.15	182.43	2.706	
7,200.00	3,944.92	6,738.00	3,456.19	93.07	93.67	-9.04	346.03	3,383.43	496.69	309.94	186.74	2.660 ES, SF	
7,300.00	3,944.04	6,738.00	3,456.19	95.80	93.67	-9.04	346.03	3,383.43	516.14	326.67	189.47	2.724	
7,400.00	3,943.17	6,738.00	3,456.19	98.52	93.67	-9.04	346.03	3,383.43	553.27	361.08	192.19	2.879	
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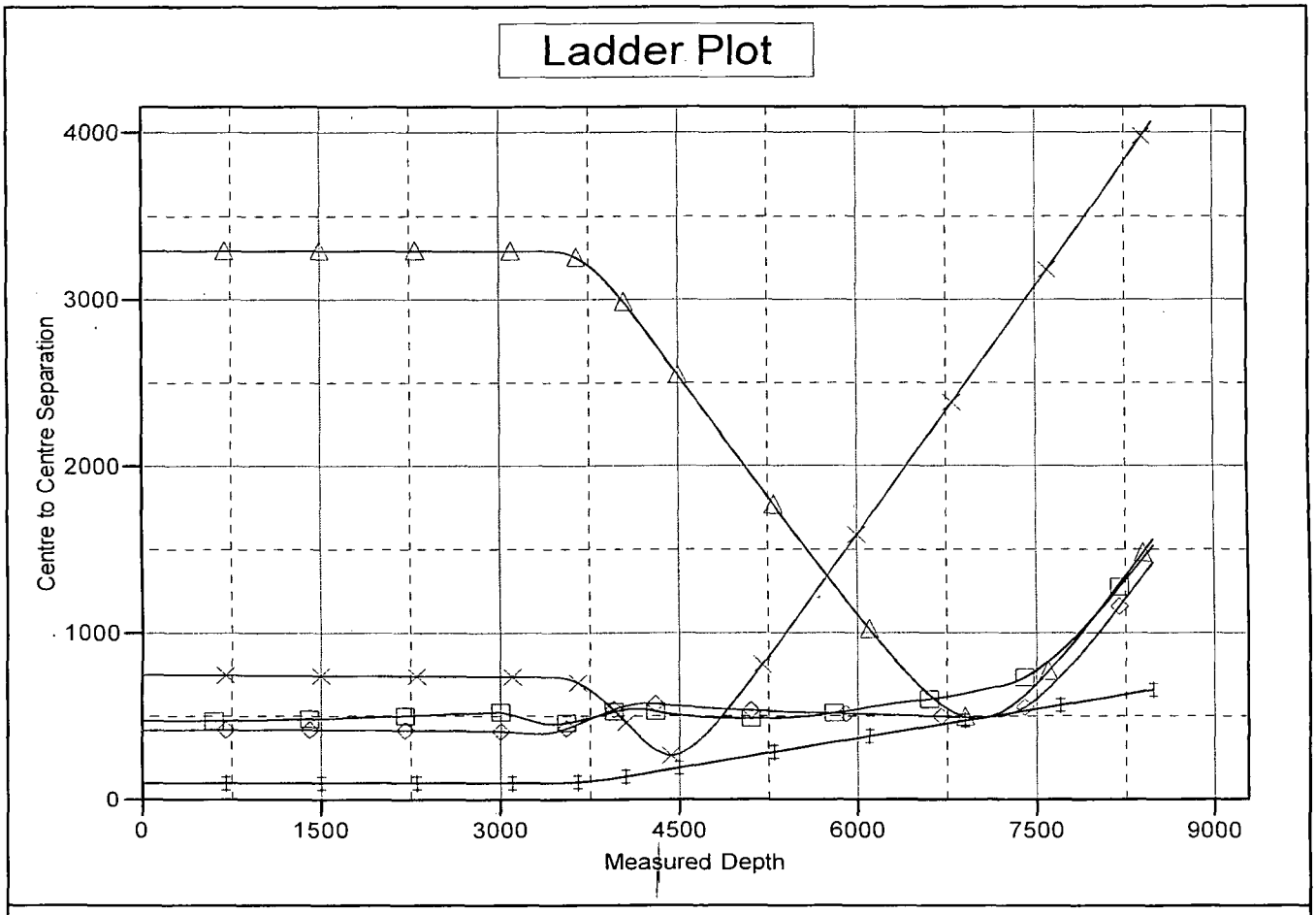
7,600.00	3,941.43	6,738.00	3,456.19	103.97	93.67	-9.04	346.03	3,383.43	667.46	469.82	197.64	3.377	
7,700.00	3,940.55	6,738.00	3,456.19	106.70	93.67	-9.04	346.03	3,383.43	738.38	538.02	200.37	3.685	
7,800.00	3,939.68	6,738.00	3,456.19	109.42	93.67	-9.04	346.03	3,383.43	815.42	612.33	203.09	4.015	
7,900.00	3,938.81	6,738.00	3,456.19	112.15	93.67	-9.04	346.03	3,383.43	897.01	691.19	205.82	4.358	
8,000.00	3,937.94	6,738.00	3,456.19	114.88	93.67	-9.04	346.03	3,383.43	982.00	773.45	208.55	4.709	
8,100.00	3,937.06	6,738.00	3,456.19	117.60	93.67	-9.04	346.03	3,383.43	1,069.59	858.32	211.27	5.063	
8,200.00	3,936.19	6,738.00	3,456.19	120.33	93.67	-9.04	346.03	3,383.43	1,159.19	945.19	214.00	5.417	
8,300.00	3,935.32	6,738.00	3,456.19	123.06	93.67	-9.04	346.03	3,383.43	1,250.37	1,033.64	216.73	5.769	
8,400.00	3,934.44	6,738.00	3,456.19	125.79	93.67	-9.04	346.03	3,383.43	1,342.81	1,123.35	219.46	6.119	
8,485.29	3,933.70	6,738.00	3,456.19	128.11	93.67	-9.04	346.03	3,383.43	1,422.46	1,200.67	221.78	6.414	

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3605.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #11H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 3001
Grid Convergence at Surface is: 0.05°



LEGEND

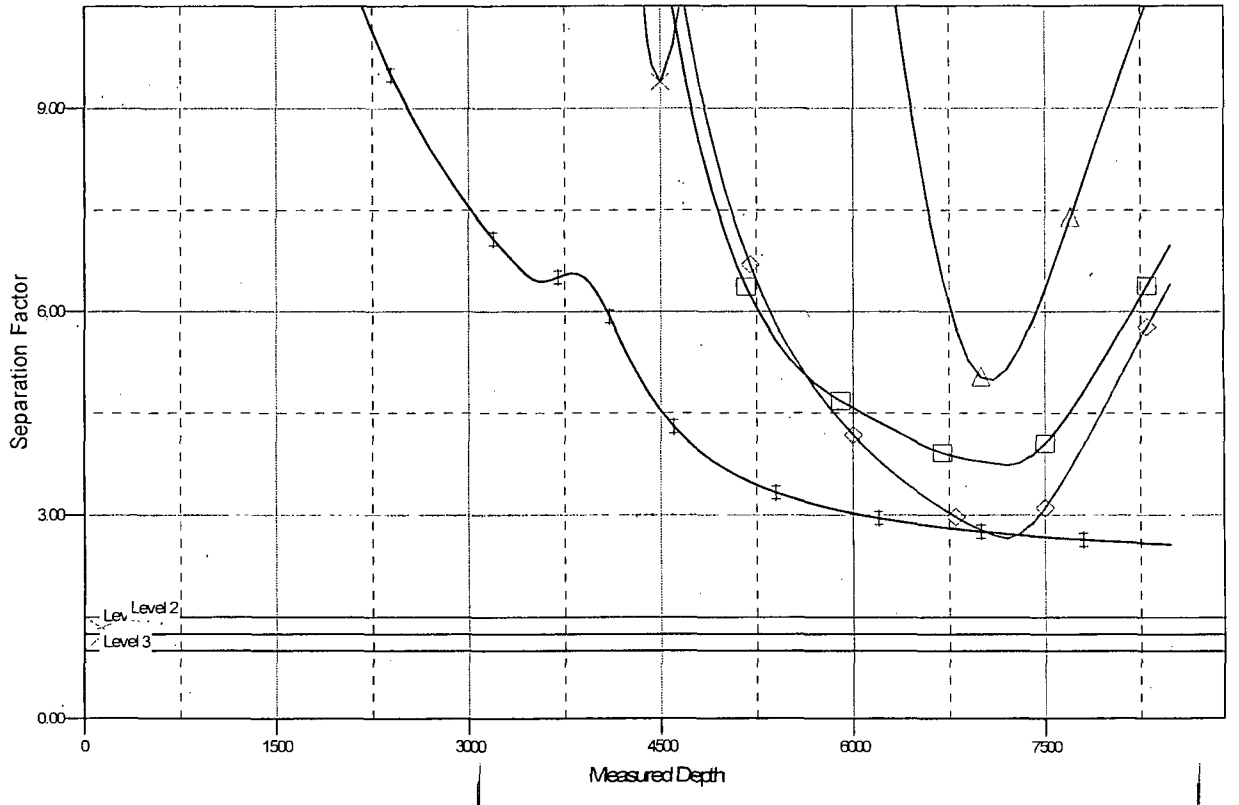
#9H, WB1/Job #1311101, Surveys (Silver Oak 3) V0
#12H, WB1, Plan #1 08-22-14 V0
#1, WB1, Inc Surveys V0
#3, WB1, Inc Surveys V0
#10H, WB1/Job#1410706, Surveys (Silver Oak

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #11H
Project:	Eddy County, NM (NAD27 NME)	**TVD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Reference Site:	Beech 25 Federal	**MD Reference:**	KB @ 3605.00usft (Silver Oak 3)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#11H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	WB1	**Database:**	GCR DB
Reference Design:	Plan #1 08-22-14	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB @ 3605.00usft (Silver Oak 3)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #11H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 3001
Grid Convergence at Surface is: 0.05°

Separation Factor Plot

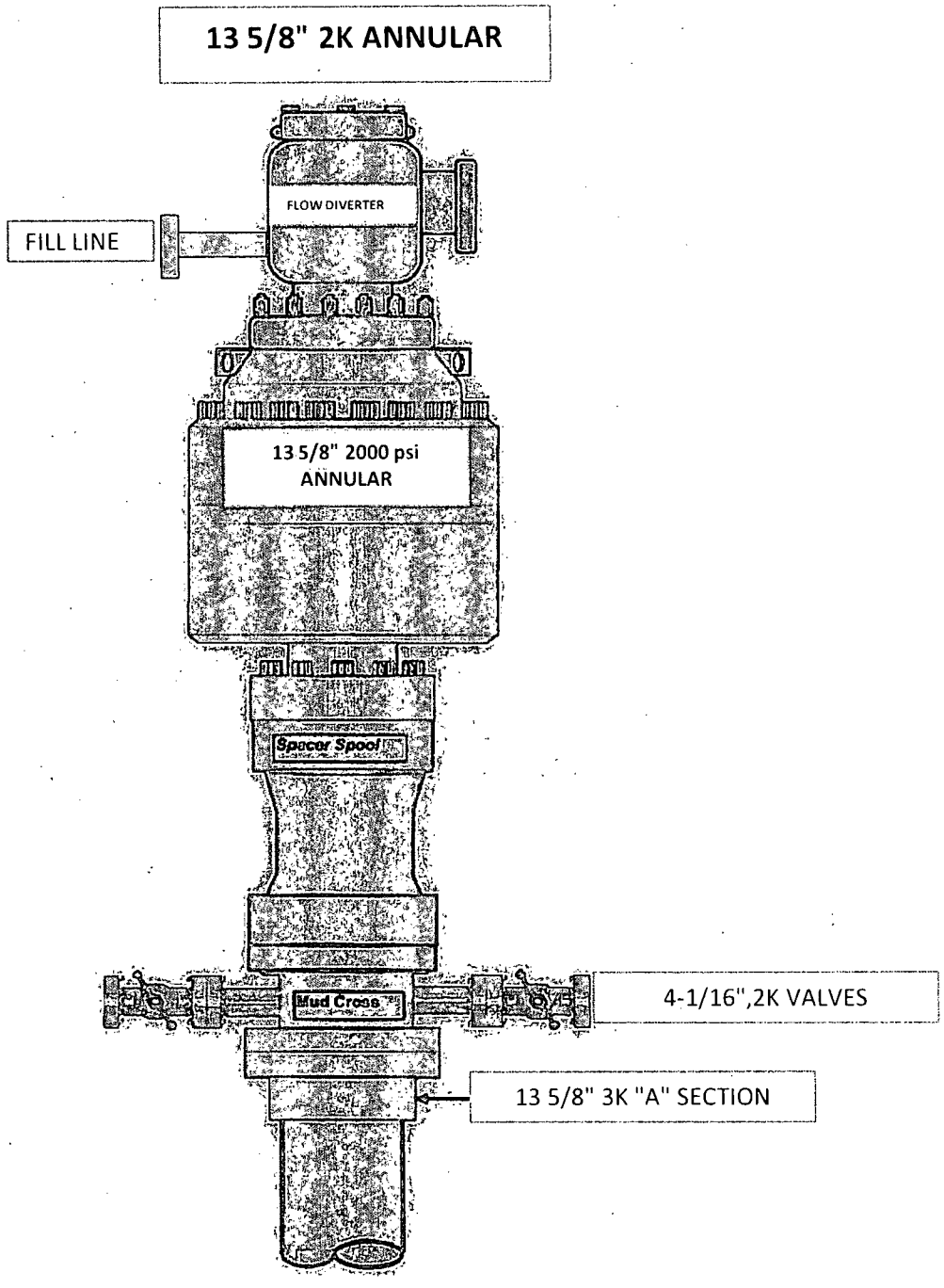


LEGEND

#9H, WB1/Job #1311101, Surveys (Silver Oak 3) V0
#12H, WB1, Plan #1 08-22-14 V0
#1, WB1, Inc Surveys V0
#3, WB1, Inc Surveys V0
#10H, WB1/Job #1410706, Surveys (Silver Oak

Exhibit #10

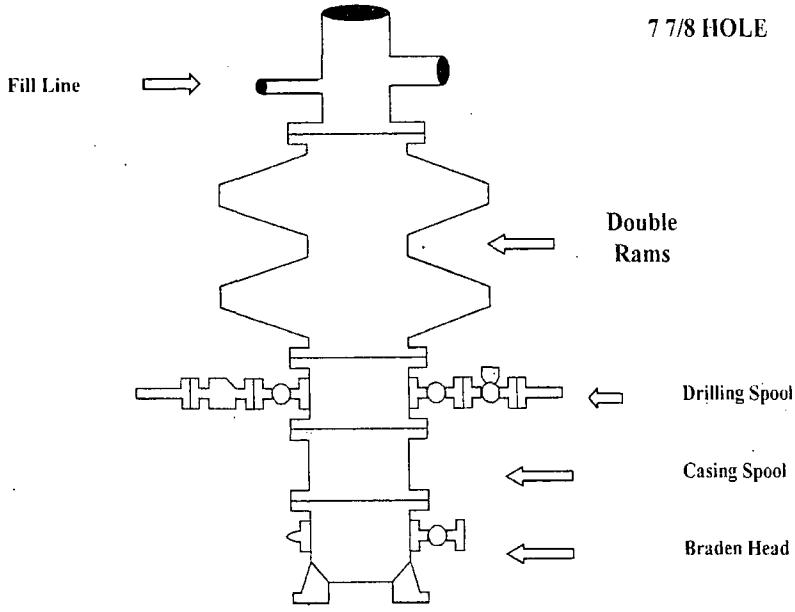
(Choke Manifold Schematic same as Exhibit #9)



COG Operating LLC

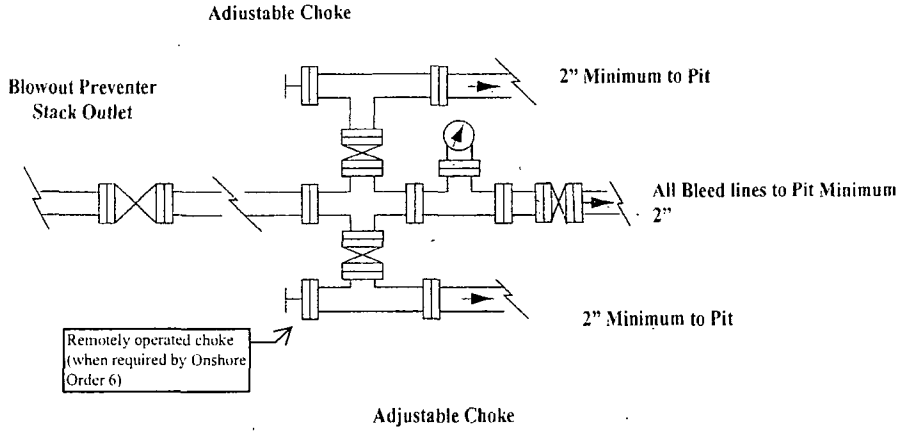
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



Adjustable Choke

NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

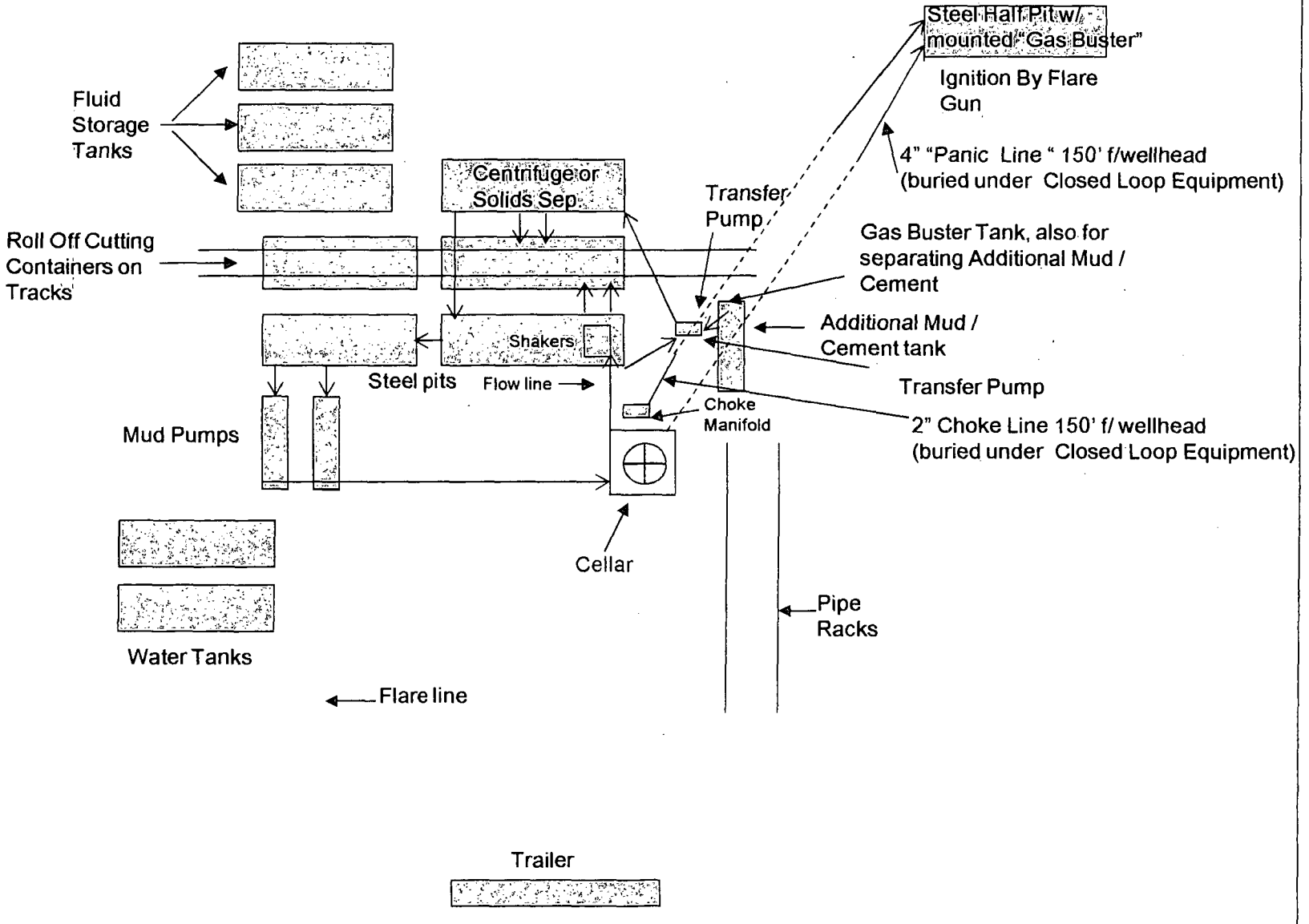
Cuttings will be hauled to either:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC

Closed Loop Equipment Diagram



COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards an characteristics of hydrogen sulfide (H2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H2S detectors alarms warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel well be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

1. **Well Control Equipment:**

   A. Flare line.

   B. Choke manifold with minimum of one remotely operated choke.

   C. Closed Loop Blow Down Tank

   D. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

   E. Auxiliary equipment may include if applicable: mud-gas separator, annular preventer & rotating head.

2. **Protective equipment for essential personnel:**

   A. SCBA (Self contained breathing apparatus) 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. **H2S detection and monitoring equipment:**

   A. Portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

4. **Visual warning systems:**

   A. Wind direction indicators as shown on well site diagram.

   B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

5. **Mud program:**

   A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

6. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

   B. All elastomers used for packing and seals shall be H2S trim.

7. **Communication:**

   A. Radio communications in company vehicles including cellular telephone and 2-way radio.

   B. Land line (telephone) communication at Office.

8. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

EXHIBIT #7

WARNING

YOU ARE ENTERING AN H2S

AUTHORIZED PERSONNEL ONLY

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING IN DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH COG OPERATING FOREMAN AT

COG OPERATING LLC
1-432-683-7443
1-575-746-2010

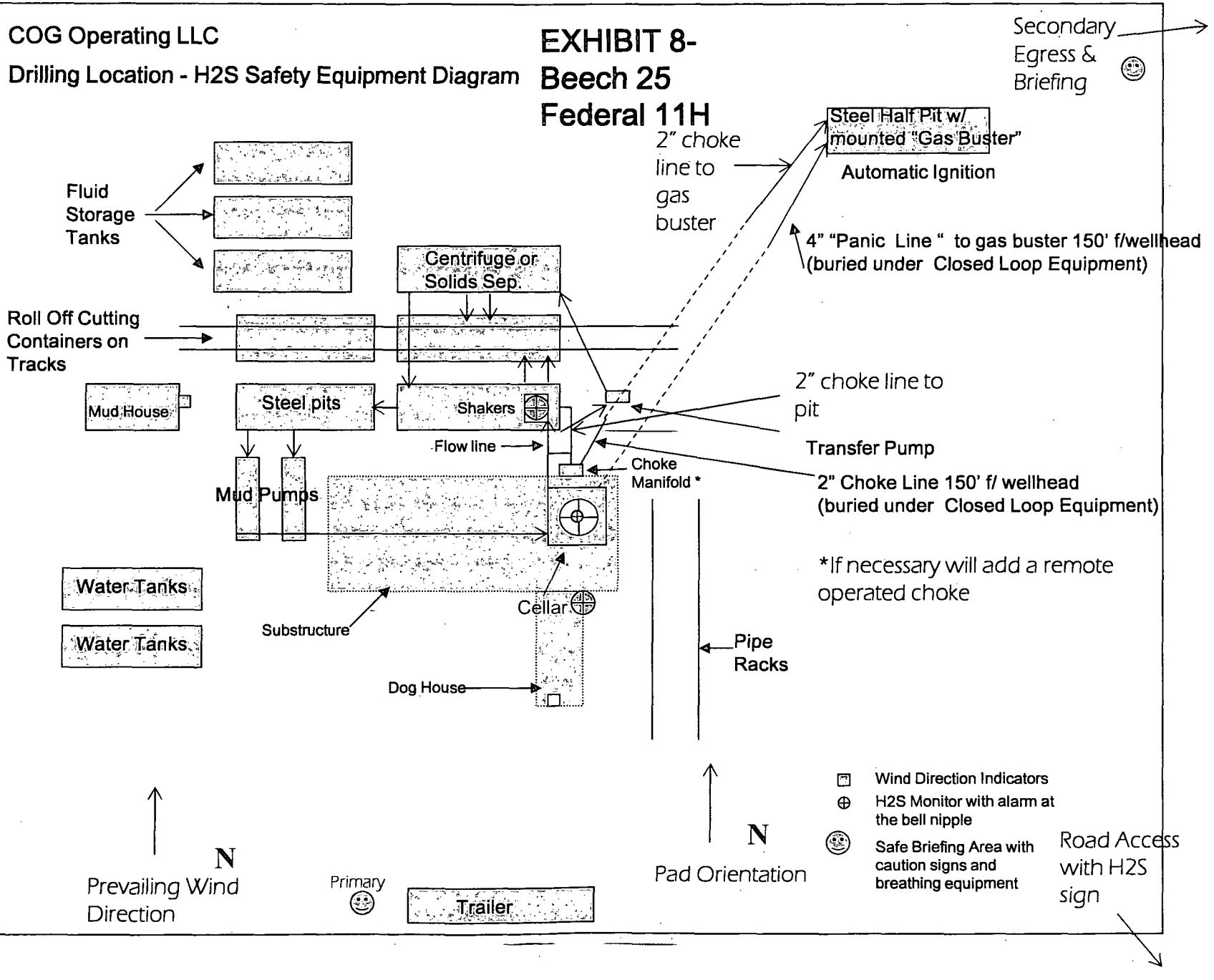
EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

LEA COUNTY EMERGENCY NUMBERS
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

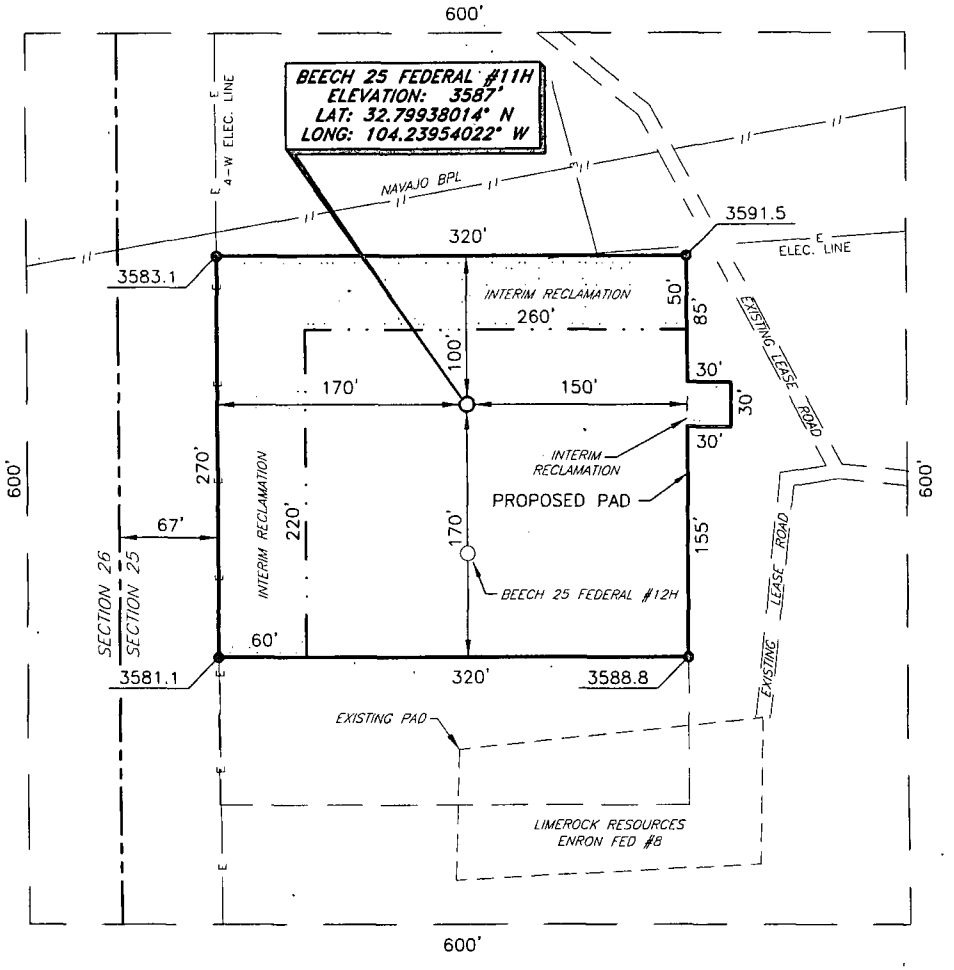
COG Operating LLC

Drilling Location - H2S Safety Equipment Diagram

EXHIBIT 8-
Beech 25
Federal 11H



COG OPERATING, LLC
Interim Reclamation
Beech 25 Federal #11H
(581' FSL & 237' FWL)
Section 25, T-17-S, R-27-E,
N. M. P. M., Eddy Co., New Mexico



N

SCALE: 1" = 100'
0 50 100

BEARINGS ARE NAD 27 GRID - NM EAST
DISTANCES ARE GROUND.

DIRECTIONS TO LOCATION

From the intersection of U.S. Hwy. #82 and CR-204 (Hilltop):

Go Southeast on CR-204 approx. 0.8 mile.

Turn right on a lease road and go Southwest approx. 400 feet.

Turn right and go West approx. 0.2 mile.

Turn right and go North approx. 0.1 feet.

Turn left and go West approx. 0.1 mile.

The location is approx. 220 feet Northwest of the lease road intersection.

NO.	REVISION	DATE

JOB NO.: LS140265
DWG. NO.: 140265REC

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 6/4/14
SURVEYED BY: GB/IE
DRAWN BY: JC
APPROVED BY: RMH
SHEET : 1 OF 1

Surface Use & Operating Plan

Beech 25 Federal 11H

- Surface Tenant: Bogle Farms, Lewis Derrick, P O Box 441, Artesia, NM 88211.
- New Road: approx. 0'
- Flow Line: approx. 1,000 feet
- Facilities: Beech 25 Federal 9H Federal Tank Battery

Well Site Information

V Door: East

Topsoil: West

Interim Reclamation: North/West

Notes

-moved to avoid pipelines, existing wells, electric lines

Onsite: 6/3/2014

Jessie Rice (BLM), Caden Jameson (COG), Gary Box (P.C.)

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Prosperity Consultants, LLC, Midland, TX.

B. All roads to the location are shown in the Vicinity Map. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in Vicinity Map. The road highlighted in the Vicinity Map will be used to access the well.

C. Directions to location: See Vicinity Map.

D. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease. Roads will be maintained according to specifications in section 2A of this Surface Use and Operating Plan.

2. Proposed Access Road:

The Elevation Plat shows that 0' of new access road will be required for this location. If any road is required it will be constructed as follows:

A. The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

B. The average grade will be less than 1%.

C. No turnouts are planned.

D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.

E. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit.

3. Location of Existing Well:

The 1-mile Map shows all existing wells within a one-mile radius of this well.

As shown on this plat there are numerous wells producing from the San Andres and Yeso formations.

4. Location of Existing and/or Proposed Facilities:

A. COG Operating LLC does operate a production facility on this lease.

B. If the well is productive, contemplated facilities will be as follows:

1) Production will be sent to the Beech 25 Federal 9H Tank Battery located in Section 25 at approx. 990' FSL & 200' FWL in T17S R27E. The facility location is shown in Exhibit #1.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, the caliche will be hauled from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.

4) Proposed flow lines, will follow an archaeologically approved route to the Beech 25 Federal 9H Tank Battery located in Section 25 at approx. 990' FSL & 200' FWL in T17S R27E. The flowline will be SDR 7 3" poly line laid on the surface and will be approximately 1,000 feet in length. See Exhibit 1.

5) It will be necessary to run electric power if this well is productive. Power will be provided by CVE and they will submit a separate plan and ROW for service to the well location.

6) If the well is productive, rehabilitation plans will include the following:

- The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Vicinity Map. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

B. An approximate 120' X 120' area is used within the proposed well site to remove caliche.

C. Subsoil is removed and piled alongside the 120' by 120' area within the pad site.

D. When caliche is found, material will be stock piled within the pad site to build the location and road.

E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.

- In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit.

7. Methods of Handling Water Disposal:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.

B. Drilling fluids will be contained in steel mud pits.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.

E. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

F. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Prosperity Consultants, LLC, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door direction is East. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Interim Reclamation will take place after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders.

11.Surface Ownership:

A. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

B. The surface tenant is Bogle Farms, Lewis Derrick, P.O. Box 441, Artesia, NM 88211.

C. The proposed road routes and surface location will be restored as directed by the BLM

12.Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of New Mexico, LLC. Carlsbad, NM, 88220. 506 E Chapman Rd. , phone # 575.887.7667 and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

13. Bond Coverage:

Bond Coverage is Nationwide Bond # 000215

14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Jim Evans
Drilling Superintendent
COG Operating LLC
One Concho Center
600 W. Illinois
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 221-0346 (business)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W. Illinois
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 818-2254 (business)

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating, LLC**
LEASE NO.:	**NMLC-058181**
WELL NAME & NO.:	**Beech 25 Federal 11H**
SURFACE HOLE FOOTAGE:	**0581' FSL & 0237' FWL**
BOTTOM HOLE FOOTAGE	**0990' FSL & 0330' FEL**
LOCATION:	**Section 25, T. 17 S., R 27 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

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

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

Tank Battery Liners and Berms:
Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

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

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Communitization Agreement
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced. **Operator to submit sundry to add "COM" to the name.**

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

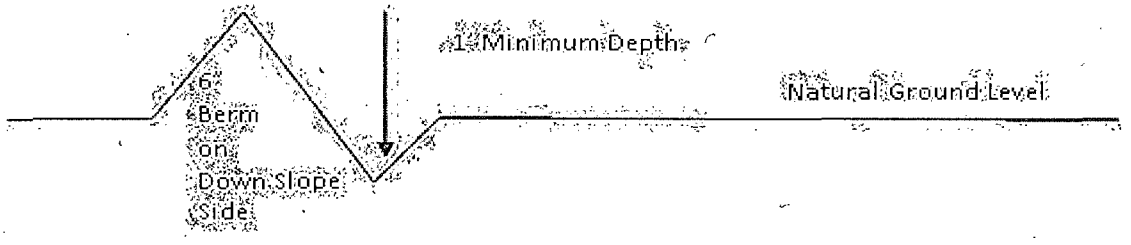
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattleguards

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road.
3. Redistribute topsoil
4. Revegetate slopes

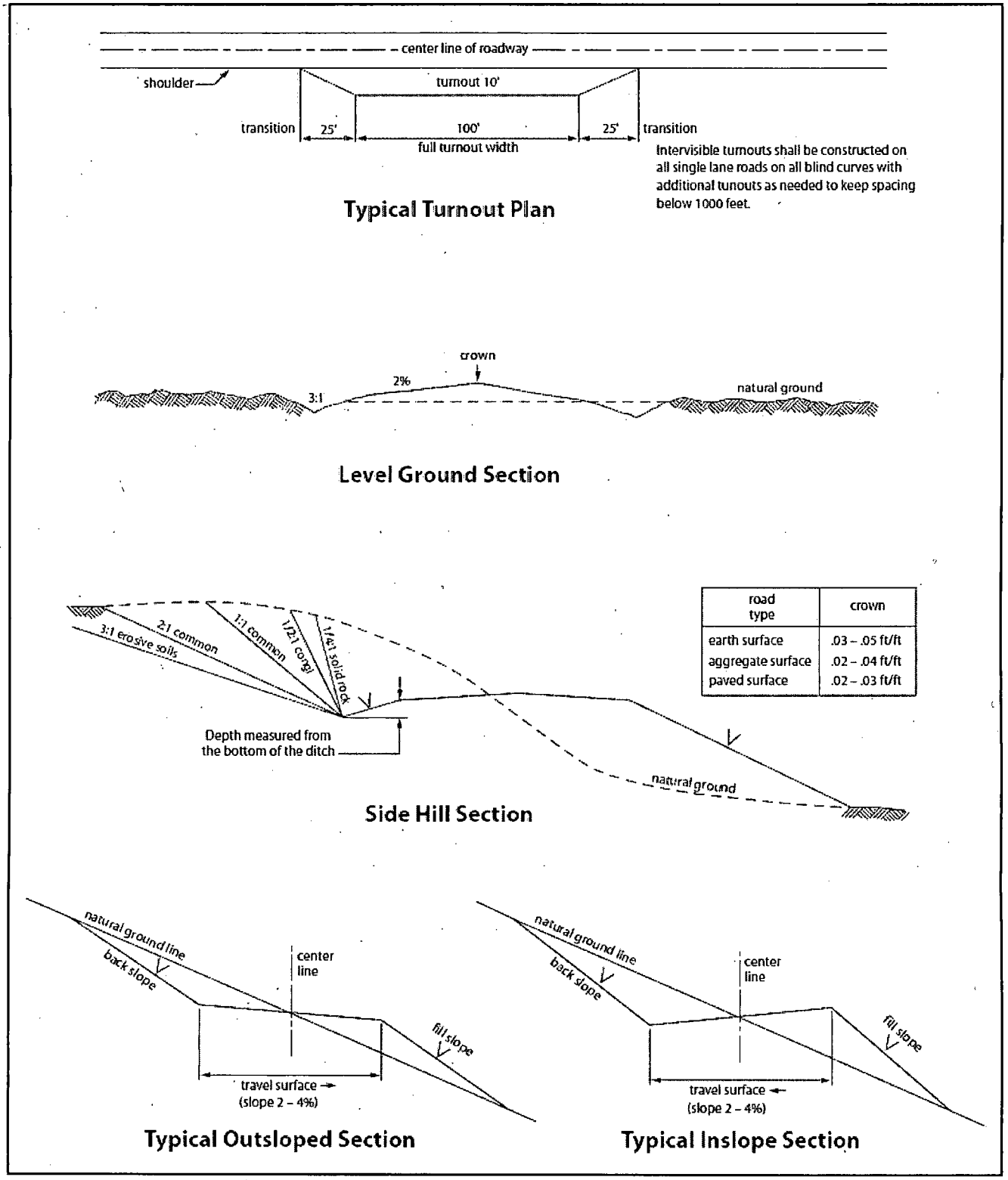


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Queen** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

High Cave/Karst
Possible water flows in the Artesia Group.
Possible lost circulation in the Artesia Group and San Andres.

A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH. IF THE PRIMARY CEMENT JOB ON THE SURFACE CASING DOES NOT CIRCULATE, THEN THE NEXT TWO CASING STRINGS MUST BE CEMENTED TO SURFACE.

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet and cemented to the surface.

    a. 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 surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. 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.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Option #1(Single Stage):

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Option #2:

Operator has proposed DV tool at depth of 400', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst. Excess calculates to 16% - Additional cement may be required.**

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

Option #1(Single Stage):

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to 9% - Additional cement may be required.**

Option #2:

Operator has proposed DV tool at depth of 2500', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage. **Excess calculates to 15% - Additional cement may be required.**

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. 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.

C. PRESSURE CONTROL

1. 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.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

   a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

   b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

   c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

   d. The results of the test shall be reported to the appropriate BLM office.

   e. 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.**

   f. 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. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent

provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:
    (1) Land clearing.
    (2) Earth-disturbing and earth-moving work.
    (3) Blasting.
    (4) Vandalism and sabotage.
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize

suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed