

Form 3160-3
(April 2004)

OCD Artesia

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT


APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No. NMLC-028731A
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA Agreement, Name and No. NMNM-111789X; Dodd Federal Unit
3a Address 550 W. Texas Ave., Suite 100 Midland, TX 79701		8 Lease Name and Well No. DODD FEDERAL UNIT #620
3b Phone No. (include area code) 432-685-4384		9 API Well No. 30-015- 40602
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface SHL: 1600' FSL & 690' FEL, Unit I At proposed prod zone BHL: 1550' FSL & 330' FEL, Unit I		10 Field and Pool, or Exploratory Dodd; Glorieta-Upper Yeso
14 Distance in miles and direction from nearest town or post office* 2 miles from Loco Hills, NM		11 Sec, T R M or Blk and Survey or Area Sec 15 T17S R29E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) 690'	16 No. of acres in lease 600	12 County or Parish EDDY
17 Spacing Unit dedicated to this well 40	13 State NM	
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 317'	19 Proposed Depth TVD: 4550' MD: 4569'	20 BLM/BIA Bond No. on file NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3594' GL	22 Approximate date work will start* 08/31/2012	23 Estimated duration 15 days

24. Attachments

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

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

25 Signature 	Name (Printed/Typed) Kelly J. Holly	Date 06/05/2012
Title Permitting Tech		

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) /s/ Don Peterson	Date AUG - 8 2012
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

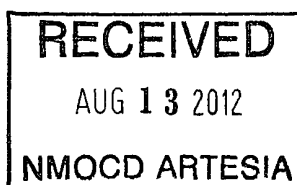
Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

Title 18 USC Section 1001 and Title 43 USC 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

*(Instructions on page 2)

Roswell Controlled Water Basin

SEE ATTACHED FOR
CONDITIONS OF APPROVALApproval Subject to General Requirements
& Special Stipulations Attached

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, New Mexico 87505

Form C-10:
Revised August 1, 201
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015- 40602	Pool Code 97917	Pool Name Dodd; Glorieta Upper Yeso
Property Code 308195	Property Name DODD FEDERAL UNIT	Well Number 620
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3594'

Surface Location

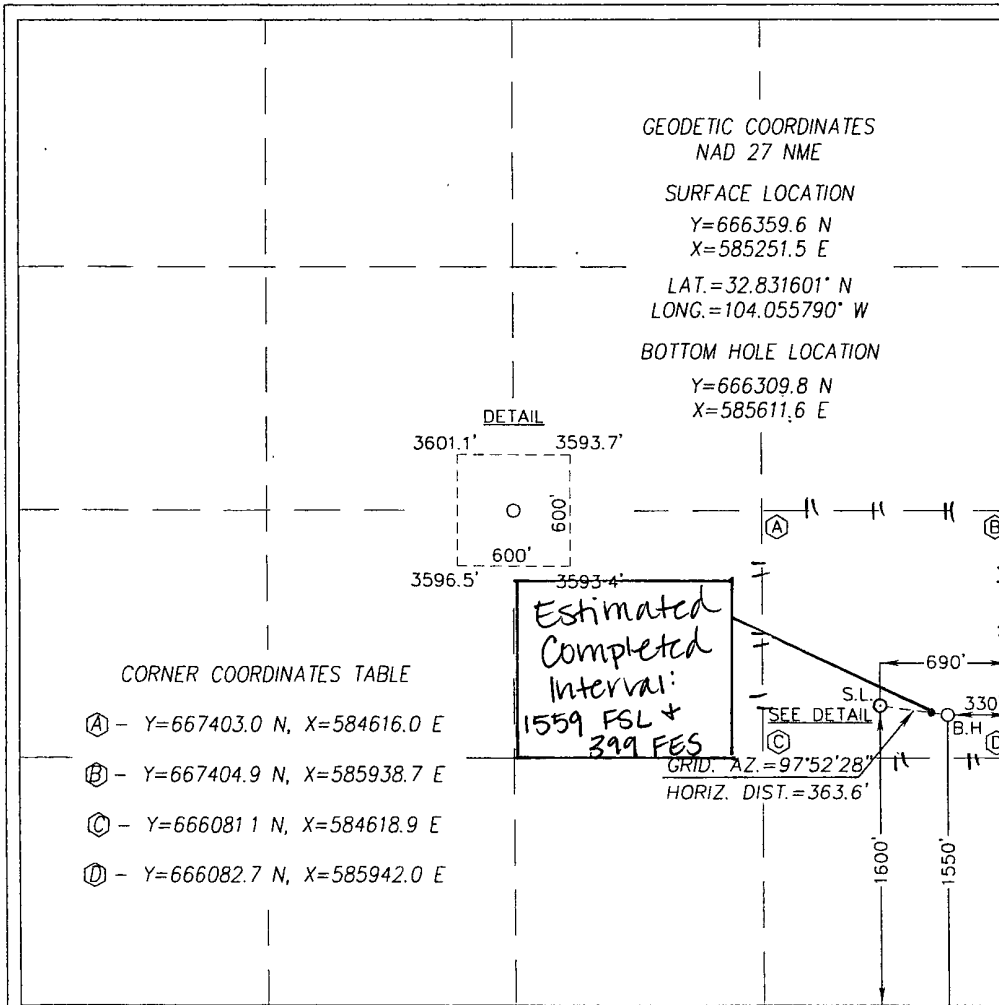
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	15	17-S	29-E		1600	SOUTH	690	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	15	17-S	29-E		1550	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			4569 8/8

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division

5-30-12
Signature Date
Kelly J. Holly
Printed Name
kholly@concho.com
E-mail Address

SURVEYOR CERTIFICATION

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

APRIL 27, 2012

Date of Survey
Signature & Seal of Professional Surveyor:

3239
Ronald J. Eidson
Certificate Number Gary Eidson 12641
Ronald J. Eidson 3239
AF WSC.W.O 12.11.0416

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	220'
Salt	360'
Base of Salt	780'
Yates	950'
Seven Rivers	1235'
Queen	1845'
Grayburg	2220'
San Andres	2540'
Glorieta	4000'
Paddock	4075'
Blinbry	4620'
Tubb	5520'

3. Estimated Depths of Anticipated Fresh Water, Oil and Gas

Water Sand	150'	Fresh Water
Grayburg	2220'	Oil/Gas
San Andres	2540'	Oil/Gas
Glorieta	4000'	Oil/Gas
Paddock	4075'	Oil/Gas
Blinbry	4620'	Oil/Gas
Tubb	5520'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 300' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to 850' and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing, (but calculated to surface) to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

see
COA

COG Operating LLC
Master Drilling Plan
Dodd; Glorieta- Upper Yeso
Use for Sections 6-30, T17S, R29E
Eddy County, NM

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 1/2"	0-3002'	13 3/8"	48#	H-40/J-55 hybrid	ST&C/New	ST&C	9.22/3.943/15.8
11"	0-850'9"	8 5/8"	24or32#	J-55	ST&C/New	ST&C	3.03/2.029/7.82
7 7/8"	0-TD	5 1/2"	15.5or17#	J-55orL-80	LT&C/New	LT&C	1.88/1.731/2.42

5. Cement Program *See COA*

13 3/8" Surface Casing:

Class C w/ 2% CaCl₂ + 0.25 pps CF, 400 sx, yield 1.32 cuft/sk, 14.8 ppg, back to surface. 154% excess

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx lead, yield-2.45 cuft/sk, 11.8 ppg + Class C w/2% CaCl₂, 200 sx tail, yield-1.32 cuft/sk, 14.8 ppg, back to surface. 363% excess

Multi-Stage: Stage 1: Class C w/2% CaCl₂, 200 sx, yield - 1.32 cuft/sk, 14.8 ppg; 108% excess Stage 2: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx, yield - 2.45 cuft/sk, 11.8 ppg, back to surface, 726% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 350' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

5 1/2" Production Casing:

Single Stage: LEAD 500 sx 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, yield-2.05 cuft/sk, 12.5 ppg; + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37 cuft/sk, 14.0 ppg, to 200' minimum tie back to intermediate casing. 76.8% open hole excess, cement calculated back to surface.

Multi-Stage: Stage 1: (Assumed TD of 4550') 500 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37 cuft/sk, 14.0 ppg, 34% excess; Stage 2: LEAD 450 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37 cuft/sk, 14.0 ppg, + TAIL 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield - 1.02 cuft/sk, 16.8 ppg, 148% open hole excess, cement calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 2500'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

6. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. A 13-5/8" or 11" BOP will be used, depending on the rig selected, during the drilling of the well. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. When 11" BOP is used the special drilling flange will be utilized on the 13-3/8" head to allow testing the BOP with a retrievable test plug. After setting 8-5/8" the BOP will then be nipped up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. 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 (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating.

The majority of the rigs currently in use have a 13-5/8" BOP, so no special provision is needed for most wells in the area for conventionally testing the BOP with a test plug. However, due to the vagaries of rig scheduling, it might be that one of the few rigs with 11" BOP's might be called upon to drill any specific well in the area. Note that intermediate hole size is always 11". Therefore, COG Operating LLC respectfully requests a variance to the requirement of 13-5/8" *see 1071*

BOP on 13-3/8" casing. When that circumstance is encountered the special flange will be utilized to allow testing the entire BOP with a test plug, without subjecting the casing to test pressure. The special flange also allows the return to full-open capability if desired.

7. Types and Characteristics of the Proposed Mud System

The well will be drilled to TD with a combination of brine, cut brine and polymer mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-300' <i>255</i>	Fresh Water	8.5	28	N.C.
300-850' <i>430</i>	Brine	10	30	N.C.
850'-TD'	Cut Brine	8.7-9.2	30	N.C.

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

8. Auxiliary Well Control and Monitoring Equipment

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

9. Logging, Testing and Coring Program *see COA*

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

10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hole pressure is 2300 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide

Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 10 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities. Completion is planned in the Paddock formation.



COG Operating LLC

Eddy County, NM (NAN27 NME)

Dodd Federal Unit #620

OH

Plan: Pan #1 - 7-7/8" Hole

Surface: 1600' FSL, 690' FEL, Sec 15, T17S, R29E, Unit I

BHL: 1550' FSL, 340' FEL, Sec 15, T17S, R29E, Unit I

Top of Paddock = 41' South of Surface & 291' East of Surface @ 4000' TVD

Standard Planning Report

01 June, 2012





Scientific Drilling International, Inc.
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site: Dodd Federal Unit #620
Company:	COG Operating LLC	TVD Reference:	GL @ 3594 00usft
Project:	Eddy County, NM (NAN27,NME)	MD Reference:	GL @ 3594 00usft
Site:	Dodd Federal Unit #620	North Reference:	Grid
Well:	Dodd Federal Unit #620	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Span #1 - 7-7/8" Hole		

Project:	Eddy County, NM (NAN27,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:	Dodd Federal Unit #620		
Site Position:		Northing:	666,359 60 usft
From:	Map	Easting:	585,251 50 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 49' 53 764 N
		Longitude:	104° 3' 20 845 W
		Grid Convergence:	0 15 °

Well:	Dodd Federal Unit #620					
Well Position	+N/-S	0 00 usft	Northing:	666,359 60 usft	Latitude:	32° 49' 53 764 N
	+E/-W	0 00 usft	Easting:	585,251 50 usft	Longitude:	104° 3' 20 845 W
Position Uncertainty		0 00 usft	Wellhead Elevation:		Ground Level:	3,594 00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	06/01/12	7 74	60 64	48.831

Design:	Span #1 - 7-7/8" Hole			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0 00	0 00	0 00	98.10

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,150 00	0 00	0 00	1,150 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,461 03	6 22	98 10	1,460 42	-2 38	16 70	2 00	2 00	31 54	98 10	
4,568 91	6.22	98 10	4,550 00	-49 80	350 10	0.00	0 00	0 00	0 00	PBHL-Dodd #620



Scientific Drilling International, Inc.
Planning Report



Database:	EDM 5000 1.Single User Db	Local Co-ordinate Reference:	Site Dodd Federal Unit #620
Company:	COG Operating LLC	TVD Reference:	GL @ 3594.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3594.00usft
Site:	Dodd Federal Unit #620	North Reference:	Grid
Well:	Dodd Federal Unit #620	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Pan #1 - 7-7/8" Hole		

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
1,050 00	0 00	0 00	1,050 00	0 00	0 00	0 00	0 00	0 00	0 00
8-5/8" Casing									
1,150 00	0 00	0 00	1,150 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start DLS 2.00°/100'									
1,200 00	1 00	98 10	1,200 00	-0 06	0 43	0 44	2 00	2 00	0 00
1,300 00	3 00	98 10	1,299 93	-0 55	3 89	3 93	2 00	2 00	0 00
1,400 00	5 00	98 10	1,399 68	-1 54	10 79	10 90	2 00	2 00	0 00
1,461 03	6.22	98 10	1,460 42	-2 38	16 70	16.87	2 00	2 00	0 00
EOC hold 6.22°									
1,500 00	6 22	98 10	1,499 16	-2 97	20 88	21.09	0 00	0 00	0 00
1,600 00	6 22	98 10	1,598 57	-4 50	31 61	31 93	0 00	0 00	0 00
1,700 00	6 22	98 10	1,697 98	-6 02	42 34	42 76	0 00	0 00	0 00
1,800 00	6 22	98 10	1,797 39	-7 55	53 06	53 60	0 00	0 00	0 00
1,900 00	6 22	98 10	1,896 80	-9 07	63 79	64 43	0 00	0 00	0 00
2,000 00	6 22	98 10	1,996 22	-10 60	74 52	75 27	0 00	0 00	0 00
2,100 00	6 22	98 10	2,095 63	-12 13	85 25	86 10	0 00	0 00	0 00
2,200 00	6 22	98 10	2,195 04	-13 65	95 97	96 94	0 00	0 00	0 00
2,300 00	6 22	98 10	2,294 45	-15 18	106 70	107 77	0 00	0 00	0 00
2,400 00	6 22	98 10	2,393 86	-16 70	117 43	118 61	0 00	0 00	0 00
2,500 00	6 22	98 10	2,493 27	-18 23	128 16	129 45	0 00	0 00	0 00
2,600 00	6.22	98 10	2,592 68	-19 76	138 88	140 28	0 00	0 00	0 00
2,700 00	6 22	98 10	2,692 09	-21 28	149 61	151 12	0 00	0 00	0 00
2,800 00	6.22	98 10	2,791 51	-22 81	160 34	161 95	0 00	0 00	0 00
2,900 00	6 22	98 10	2,890 92	-24 33	171 07	172 79	0 00	0 00	0 00
3,000 00	6 22	98 10	2,990 33	-25 86	181 79	183 62	0 00	0 00	0 00
3,100 00	6 22	98 10	3,089 74	-27 39	192 52	194 46	0 00	0 00	0 00
3,200 00	6 22	98 10	3,189 15	-28 91	203 25	205 30	0 00	0 00	0 00
3,300 00	6 22	98 10	3,288 56	-30 44	213 98	216 13	0 00	0 00	0 00
3,400 00	6 22	98 10	3,387 97	-31 96	224 70	226 97	0 00	0 00	0 00
3,500 00	6 22	98 10	3,487 38	-33 49	235 43	237 80	0 00	0 00	0 00
3,600 00	6 22	98 10	3,586 80	-35 01	246 16	248 64	0 00	0 00	0 00
3,700 00	6 22	98 10	3,686 21	-36 54	256 89	259 47	0 00	0 00	0 00
3,800 00	6 22	98 10	3,785 62	-38 07	267 61	270 31	0 00	0 00	0 00
3,900 00	6 22	98 10	3,885 03	-39 59	278 34	281 14	0 00	0 00	0 00
4,000 00	6 22	98 10	3,984 44	-41 12	289 07	291 98	0 00	0 00	0 00
4,015 65	6 22	98 10	4,000 00	-41 36	290 75	293 68	0 00	0 00	0 00
Top of Paddock									
4,100 00	6 22	98 10	4,083 85	-42 64	299 80	302 82	0 00	0 00	0 00
4,200 00	6 22	98 10	4,183 26	-44 17	310 52	313 65	0 00	0 00	0 00
4,300 00	6 22	98 10	4,282 67	-45 70	321 25	324 49	0 00	0 00	0 00
4,400 00	6 22	98 10	4,382 09	-47 22	331 98	335 32	0 00	0 00	0 00
4,500 00	6 22	98 10	4,481 50	-48 75	342 71	346 16	0 00	0 00	0 00
4,568 91	6 22	98 10	4,550 00	-49 80	350 10	353 62	0 00	0 00	0 00
PBHL Dodd #620									



Scientific Drilling International, Inc.

Planning Report



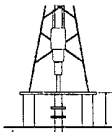
Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site: Dodd Federal Unit #620
Company:	COG Operating LLC	TVD Reference:	GL @ 3594 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3594 00usft
Site:	Dodd Federal Unit #620	North Reference:	Grid
Well:	Dodd Federal Unit #620	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

Design Targets										
Target Name	hit/miss target	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Shape		(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
PBHL-Dodd #620		0 00	0 01	4,550 00	-49 80	350 10	666,309 80	585,601 60	32° 49' 53 262 N	104° 3' 16 743 W
- plan hits target center										
- Circle (radius 10 00)										

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")				
1,050 00	1,050 00	8-5/8" Casing		8-5/8	12-1/4				

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,015 65	4,000 00	Top of Paddock		0 00		

Plan Annotations:					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)		Comment
1,150 00	1,150 00	0 00	0 00		KOP Start DLS 2 00°/100'
1,461 03	1,460 42	-2 38	16 70		EOC hold 6 22°



GL 3594.00

Dodd Federal Unit #620
Eddy County, NM (NAN27 NME)
Northing (Y) 666359.60
Easting (X) 585251.50
Pan #1 - 7-7/8" Hole



To convert Magnetic North to Grid Add 7.5°
To convert True North to Grid Subtract 0.15°

Admutha to Grid Nor
True North -0.1°
Magnetic North 7.5°
Magnetic Field
Strength 48500 Ga
Dip Angle 60.6°
Date 05/01/20
Model IGRF20

WELL DETAILS

Dodd Federal Unit #620
Ground Level 3594.00
+N/-S 0.00 +E/-W 0.00 Northing 666359.60 Easting 585251.50
Latitude 32° 49' 53.784" N Longitude 104° 3' 20.845" W Slot

SITE DETAILS

Dodd Federal Unit #620
Site Centre Northing 666359.60
Easting 585251.50
Positional Uncertainty 0.00
Convergence 0.15
Local North Grid

SECTION DETAILS

Sec	MD	Inc	Az	TVD	+N/-S	+E/-W	Diag	TFace	VSeal	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1150.00	0.00	0.00	1150.00	0.00	0.00	0.00	0.00	0.00	
3	1461.03	6.22	68.10	1460.42	-2.38	16.70	2.00	98.10	16.87	
4	4594.91	6.22	98.10	4550.00	46.80	350.10	0.00	0.00	353.52	PBHL-Dodd #620

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-Dodd #620	4550.00	-49.80	350.10	665359.60	585001.60	32° 49' 53.282" N	104° 3' 16.743" W	Circle (Radius 10.00)
plan hits target center								

FORMATION TOP DETAILS

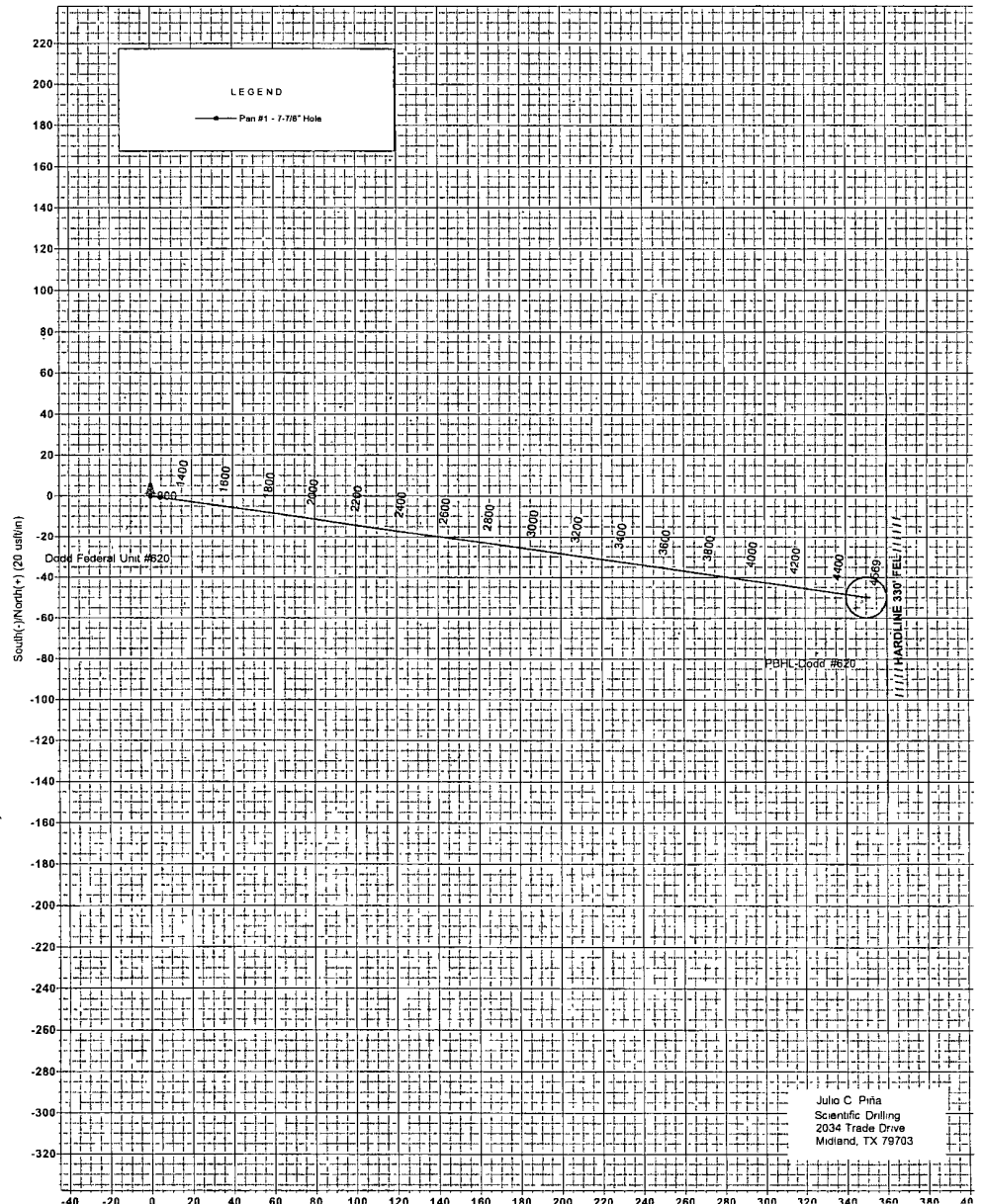
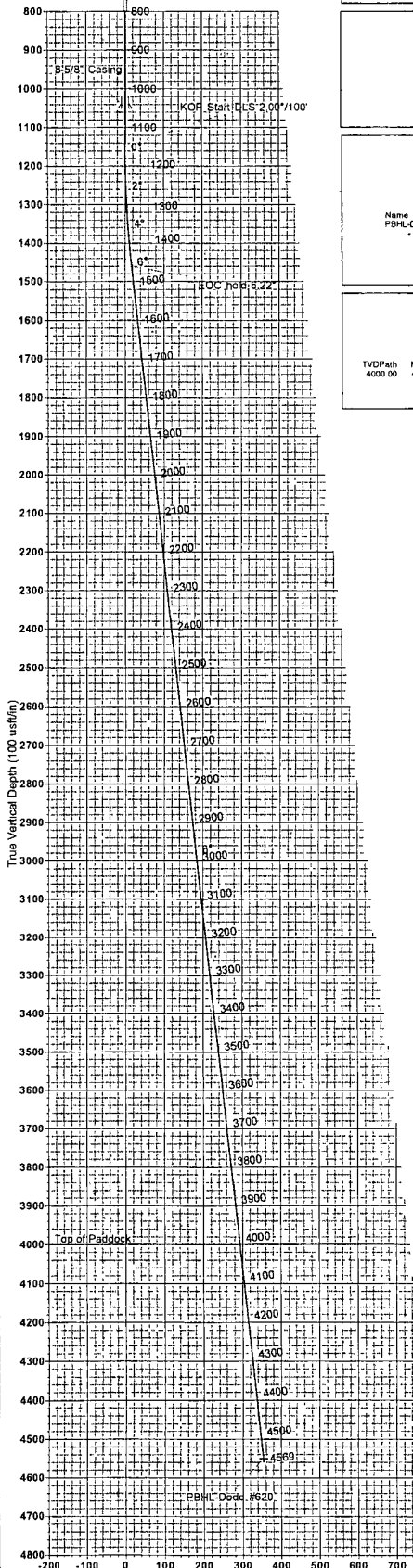
TVDPath	MDPath	Formation	DipAngle	DipDir
4000.00	4015.65	Top of Paddock	0.00	

CASING DETAILS

TVD	MD	Name	Size
1050.00	1050.00	8 5/8" Casing	8-5/8"

PROJECT DETAILS

Eddy County NM (NAN27 NME)
Geodetic System US State Plane 1927 (Exact solution)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone New Mexico East 3001
System Datum Mean Sea Level



Julio C. Peña
Scientific Drilling
2034 Trade Drive
Midland, TX 79703

COG OPERATING LLC

550 West Texas, Suite 100

Midland, TX 79701

DIRECTIONAL PLAN VARIANCE REQUEST

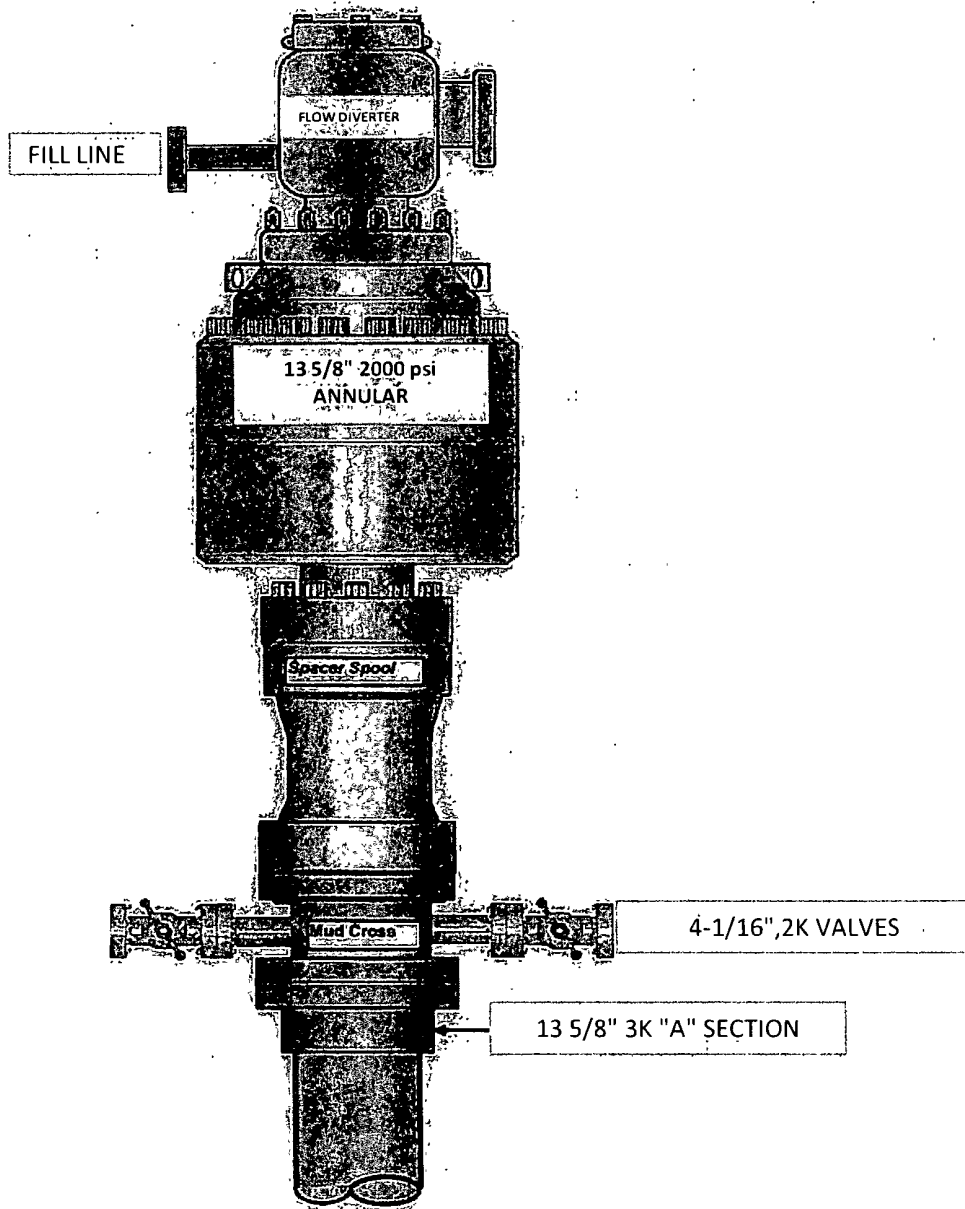
Dodd Federal Unit #620

EDDY, NM

SHL	1600 FSL, 690 FEL	Sec 15, T17S, R29E, Unit I
BHL	1550 FSL, 330 FEL	Sec 15, T17S, R29E, Unit I

COG Operating LLC, as Operator, desires that the APD reflect the footages as stated on the surveyor's plat. However, Operator also desires to avoid inadvertently drilling the well to a non-standard location. Therefore, due to the proximity of the plat bottom hole location to the pro-ration unit hard line(s), the attached directional plan is designed to avoid the hard lines by as much as fifty feet; said fifty feet being in either (or both) the north-south and/or east-west directions as applicable.

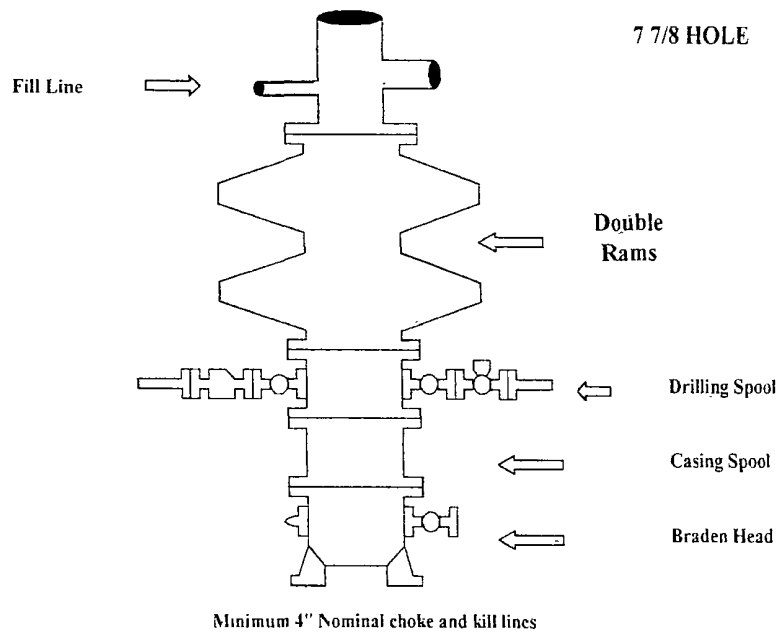
13 5/8" 2K ANNULAR



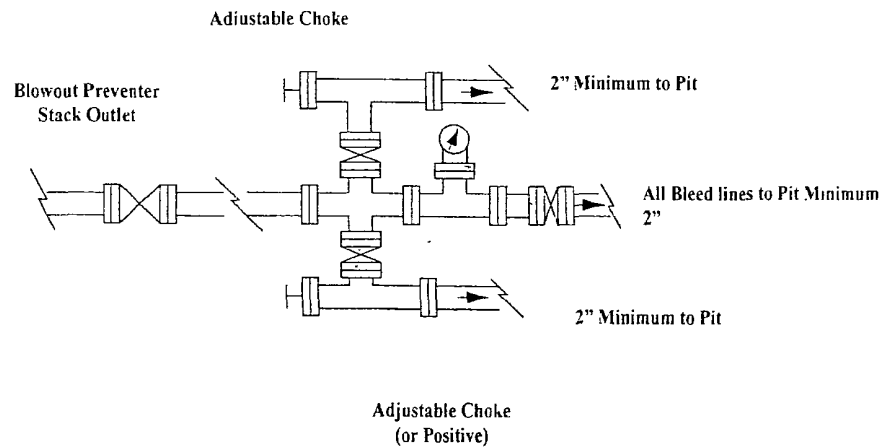
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)
No Annular Required

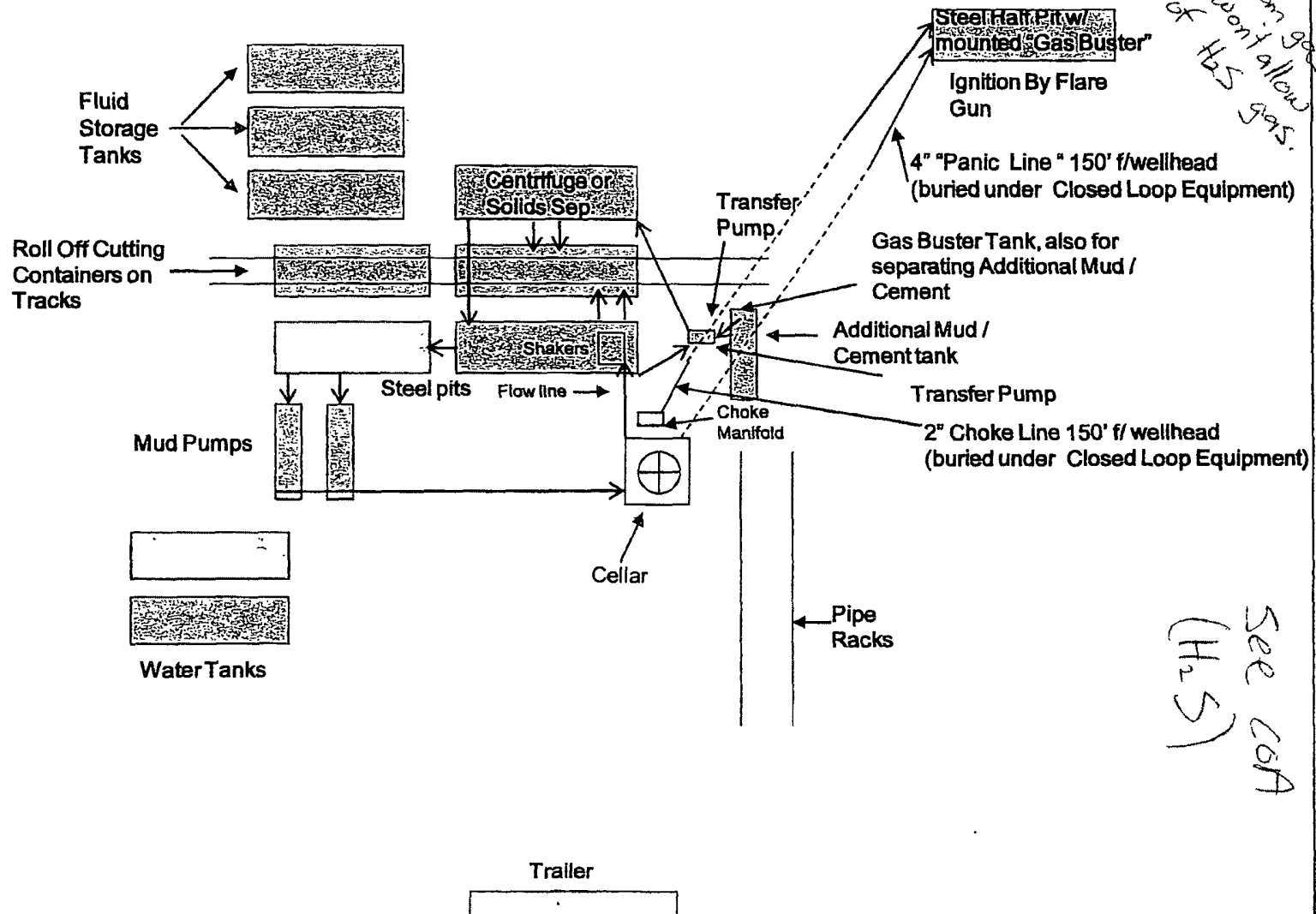


NOTES REGARDING THE BLOWOUT PREVENTERS

**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

COG Operating LLC
Closed Loop Equipment Diagram



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

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 and 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 will 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.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

2. Protective equipment for essential personnel:

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. H2S detection and monitoring equipment:

- A. 1 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 (Exhibit #8).
- 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

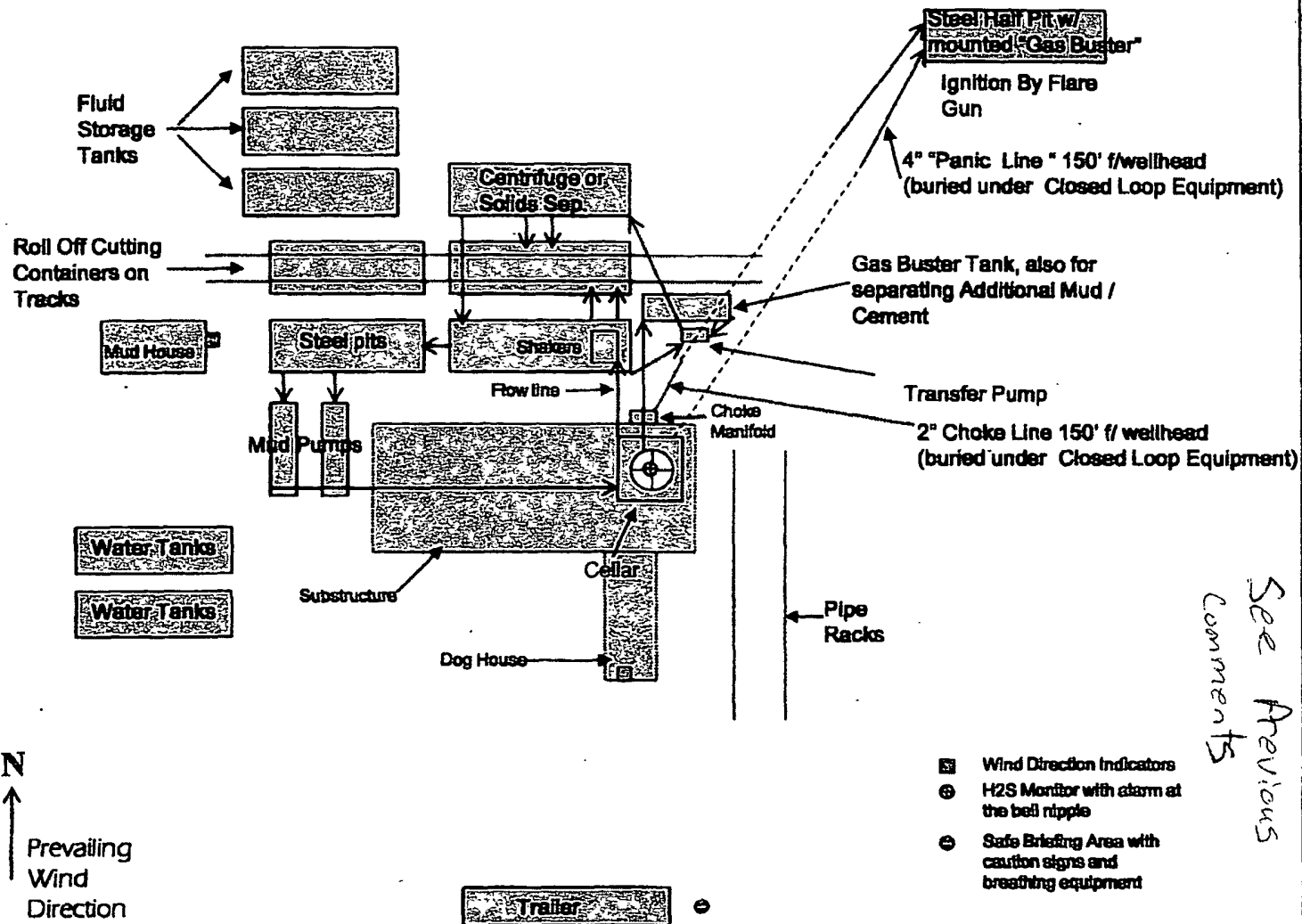
LEA COUNTY EMERGENCY NUMBERS

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

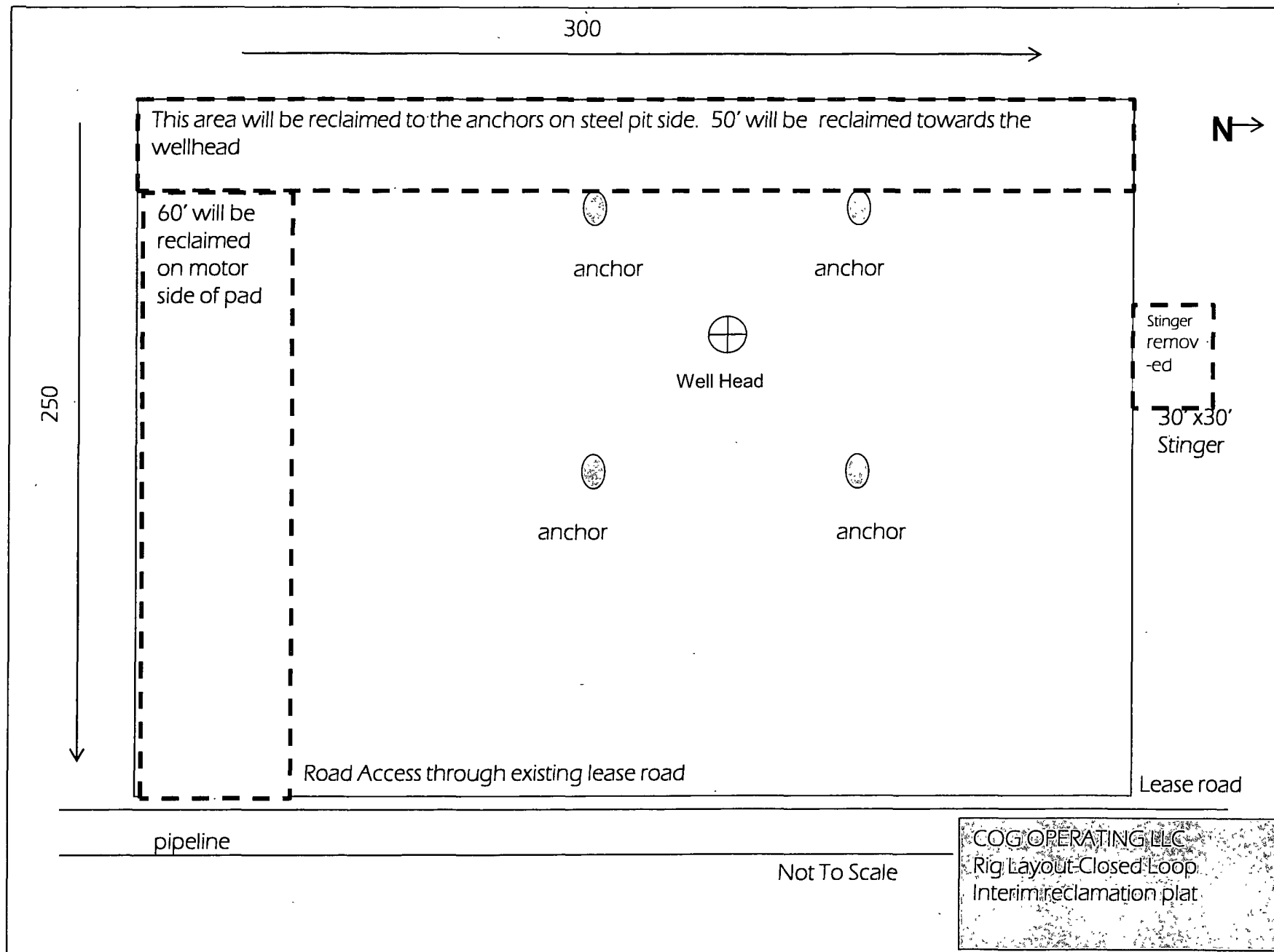
COG Operating LLC

EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram



See Previous Comments



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING, LLC
LEASE NO.:	NMLC028731A
WELL NAME & NO.:	620-DODD FEDERAL UNIT
SURFACE HOLE FOOTAGE:	1600'/S. & 0690'/E.
BOTTOM HOLE FOOTAGE:	1550'/S. & 0330'/E.
LOCATION:	Section 15, T. 17 S., R. 9 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☐ **Special Requirements**
- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - H2S requirement
 - Logging requirement
 - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**