

Operator Copy

Form 3160-3
(April 2004)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM-112930
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 <i>(229137)</i>		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 2208 West Main Street Artesia, NM 88210		8. Lease Name and Well No. Superfortress 29 Federal #3H <i>(38564)</i>
3b. Phone No. (include area code)		9. API Well No. 30-015-38642
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 330' FNL & 2080' FWL <i>(42C)</i> At proposed prod. zone 330' FSL & 1980' FWL		10. Field and Pool, or Exploratory HACKBERRY Gatuna Canyon Bone Spring <i>(28345)</i>
11. Sec., T. R. M. or Blk. and Survey or Area Sec. 29 - T19S R31E		12. County or Parish Eddy County
13. State NM		14. Distance in miles and direction from nearest town or post office* Approximately 16 miles from Maljamar, NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'	16. No. of acres in lease 320	17. Spacing Unit dedicated to this well 160 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <i>1336'</i>	19. Proposed Depth TD TVD TMD 10280', 8990', 13420'	20. BLM/BIA Bond No. on file NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3473 GL	22. Approximate date work will start* 03/15/2011	23. Estimated duration 30 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:

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

25. Signature <i>Rand French</i>	Name (Printed Typed) Rand French	Date 02/07/2011
Title Regulatory Coordinator		
Approved by (Signature) <i>Don P...</i>	Name (Printed Typed)	Date 3/18/11
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.

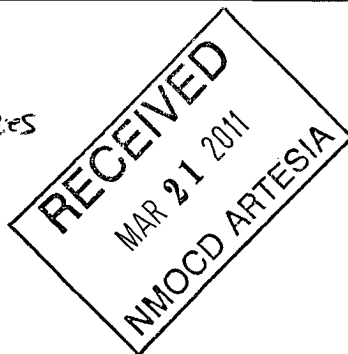
APPROVAL FOR TWO YEARS

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.

*(Instructions on page 2)

Capitan Controlled Water Basin

O = noted deficiencies



Approval Subject to General Requirements & Special Stipulations Attached

Kz 04/10/11

SEE ATTACHED FOR CONDITIONS OF APPROVAL

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM

Super Fortress 29 Federal #3H
SHL: 330' FNL & ^{2080'} 2080' FWL
BHL: 330' FSL & ^{1980'} 1980' FWL
Section 29 T19S R31E
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC (Concho) submits the following ten items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Rustler	< 385'	
Top of Salt	620'	
Base of Salt	1950'	
Reef	2540'	
Delaware	4410'	Oil
Bone Spring	6662'	
1 st BSS	7910'	Oil
2 nd BSS	8570'	Oil
3 rd BSS	9610'	Oil
TD(Pilot)	10280'	
TVD	8990'	
TMD	13420'	

Estimated freshwater / Groundwater

No other formations are expected to give up oil, gas, or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 410' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to 200' into 9-5/8" casing.

less than

3. **Proposed Casing Program:** * See COA

Hole Size	Interval	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - ⁵⁶⁶ 410	13-3/8"	New	48#	STC	H-40	1.125	1.125	1.6
12 1/4"	410 - 4400'	9 5/8"	New	36#	BUTT	J-55	1.125	1.125	1.6
7 7/8"	4400' - 13420	5 1/2"	New	17#	LTC	P-110/N-80	1.125	1.125	1.6

13,467

See COA

5. Proposed Cement Program: * See COA

- a. 13-3/8" Surface Cement to surface with 500 sx Class C wt 14.8 yield 1.34
- b. 9 5/8" Intermediate Cement to surface in 2 stages. 1st stg: lead with 400 sx Class C wt 12.7 yield 1.89 Tail in with 250 sx Class C wt 14.8 yield 1.34. 2nd stg: lead with 600 sx Class C wt 12.7 yield 1.89 Tail in with 100 sx Class C wt 14.8 yield 1.34. DVT/ECP set +/- 100' above reef.
- c. 5 1/2" Production Cement 1st stage with 550 sx "H" acid soluble cement wt 15.0 yield 2.6. Cement 2nd stage with 600 sk Class C wt 12.7 yield 1.91 & Tail in with 100 sx Class C wt 14.8 yield 1.33. DV Tool @ 8400' & TOC @ 4200'. * See COA

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately 200' above the 9 5/8" casing shoe. **All casing is new and API approved.**

6. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8 with 2M system (Hydri) tested to 2000# by independent tester, nipple up on 9 5/8 with 3m system tested to 3000# by independent tester

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. A 2" kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

7. Estimated BHP: 2100 psi

8. Mud Program: The applicable depths and properties of this system are as follows:

* See COA

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 410'	Fresh Water	8.4	29	N.C.
410' - 4300'	Brine	10	29	N.C.
4300' - 13420'	Cut Brine	8.9-9.2	29	N.C.

560
440
13,407

The necessary mud products for weight addition and fluid loss control will be on location at all times.

9. Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

10. Testing, Logging and Coring Program: *See COA*

**
See
COA*

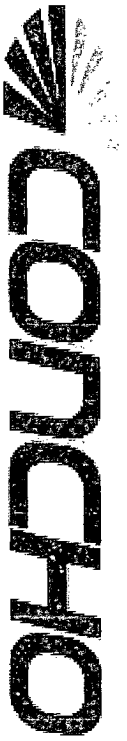
- a. Drill stem tests will be based on geological sample shows.
- b. The open hole electrical logging program will be:
 - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
 - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
 - iii. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

11. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 2100 psi. No H₂S is anticipated to be encountered.

12. Anticipated starting date and Duration of Operations:

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.



Cog Operating, LLC

Eddy County (NAD83)

Super Fortress "29"

3H

OH

Plan: Plan #1

Pathfinder X & Y Planning Report

13 January, 2011





Pathfinder
Pathfinder X & Y Planning Report



Company: Cog Operating, LLC
Project: Eddy County (NAD83)
Site: Super Fortress "29"
Well: 3H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well 3H
TVD Reference: WELL @ 3491.40usft (Original Well Elev)
MD Reference: WELL @ 3491.40usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project: Eddy County (NAD83)
Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site: Super Fortress "29"
Site Position: Northing: 596,006.610 usft Latitude: 32° 38' 15.718 N
From: Map Easting: 676,815.070 usft Longitude: 103° 53' 35.594 W
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16" Grid Convergence: 0.24°

Well: 3H
Well Position: +N/-S 0.00 usft Northing: 596,006.610 usft Latitude: 32° 38' 15.718 N
+E/W 0.00 usft Easting: 676,815.070 usft Longitude: 103° 53' 35.594 W
Position Uncertainty: 0.00 usft Wellhead Elevation: usft Ground Level: 3,473.40 usft

Wellbore: OH
Magnetics: Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)
IGRF200510 01/13/11 7.80 60.55 48,906

Design: Plan #1
Audit Notes:
Version: Phase: PLAN Tie On Depth: 0.00
Vertical Section: Depth From (TVD) (usft) +N/-S (usft) +E/W (usft) Direction (°)
0.00 0.00 0.00 180.91

Survey Tool Program	Date	From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
		0.00	13,407.01	Plan #1 (OH)	MWD	MWD - Standard



Pathfinder
Pathfinder X & Y Planning Report



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Planned Survey	MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVSS (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
	0.00	0.00	0.00	0.00	3,491.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	100.00	0.00	0.00	100.00	3,391.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	200.00	0.00	0.00	200.00	3,291.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	300.00	0.00	0.00	300.00	3,191.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	400.00	0.00	0.00	400.00	3,091.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	500.00	0.00	0.00	500.00	2,991.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	600.00	0.00	0.00	600.00	2,891.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	700.00	0.00	0.00	700.00	2,791.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	800.00	0.00	0.00	800.00	2,691.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	900.00	0.00	0.00	900.00	2,591.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,000.00	0.00	0.00	1,000.00	2,491.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,100.00	0.00	0.00	1,100.00	2,391.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,200.00	0.00	0.00	1,200.00	2,291.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,300.00	0.00	0.00	1,300.00	2,191.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,400.00	0.00	0.00	1,400.00	2,091.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,500.00	0.00	0.00	1,500.00	1,991.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,600.00	0.00	0.00	1,600.00	1,891.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,700.00	0.00	0.00	1,700.00	1,791.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,800.00	0.00	0.00	1,800.00	1,691.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	1,900.00	0.00	0.00	1,900.00	1,591.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,000.00	0.00	0.00	2,000.00	1,491.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,100.00	0.00	0.00	2,100.00	1,391.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,200.00	0.00	0.00	2,200.00	1,291.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,300.00	0.00	0.00	2,300.00	1,191.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,400.00	0.00	0.00	2,400.00	1,091.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,500.00	0.00	0.00	2,500.00	991.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,600.00	0.00	0.00	2,600.00	891.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07



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Pathfinder X & Y Planning Report



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	2,700.00	0.00	0.00	2,700.00	791.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,800.00	0.00	0.00	2,800.00	691.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	2,900.00	0.00	0.00	2,900.00	591.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,000.00	0.00	0.00	3,000.00	491.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,100.00	0.00	0.00	3,100.00	391.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,200.00	0.00	0.00	3,200.00	291.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,300.00	0.00	0.00	3,300.00	191.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,400.00	0.00	0.00	3,400.00	91.40	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,500.00	0.00	0.00	3,500.00	-8.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,600.00	0.00	0.00	3,600.00	-108.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,700.00	0.00	0.00	3,700.00	-208.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,800.00	0.00	0.00	3,800.00	-308.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	3,900.00	0.00	0.00	3,900.00	-408.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,000.00	0.00	0.00	4,000.00	-508.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,100.00	0.00	0.00	4,100.00	-608.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,200.00	0.00	0.00	4,200.00	-708.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,300.00	0.00	0.00	4,300.00	-808.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,400.00	0.00	0.00	4,400.00	-908.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,500.00	0.00	0.00	4,500.00	-1,008.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,600.00	0.00	0.00	4,600.00	-1,108.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,700.00	0.00	0.00	4,700.00	-1,208.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,800.00	0.00	0.00	4,800.00	-1,308.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	4,900.00	0.00	0.00	4,900.00	-1,408.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,000.00	0.00	0.00	5,000.00	-1,508.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,100.00	0.00	0.00	5,100.00	-1,608.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,200.00	0.00	0.00	5,200.00	-1,708.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,300.00	0.00	0.00	5,300.00	-1,808.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07



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Pathfinder X & Y Planning Report



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Planned Survey	MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	Dleg (°/100usft)	Northing (usft)	Easting (usft)
	5,400.00	0.00	0.00	5,400.00	-1,908.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,500.00	0.00	0.00	5,500.00	-2,008.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,600.00	0.00	0.00	5,600.00	-2,108.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,700.00	0.00	0.00	5,700.00	-2,208.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,800.00	0.00	0.00	5,800.00	-2,308.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	5,900.00	0.00	0.00	5,900.00	-2,408.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,000.00	0.00	0.00	6,000.00	-2,508.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,100.00	0.00	0.00	6,100.00	-2,608.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,200.00	0.00	0.00	6,200.00	-2,708.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,300.00	0.00	0.00	6,300.00	-2,808.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,400.00	0.00	0.00	6,400.00	-2,908.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,500.00	0.00	0.00	6,500.00	-3,008.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,600.00	0.00	0.00	6,600.00	-3,108.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,700.00	0.00	0.00	6,700.00	-3,208.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,800.00	0.00	0.00	6,800.00	-3,308.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	6,900.00	0.00	0.00	6,900.00	-3,408.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,000.00	0.00	0.00	7,000.00	-3,508.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,100.00	0.00	0.00	7,100.00	-3,608.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,200.00	0.00	0.00	7,200.00	-3,708.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,300.00	0.00	0.00	7,300.00	-3,808.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,400.00	0.00	0.00	7,400.00	-3,908.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,500.00	0.00	0.00	7,500.00	-4,008.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,600.00	0.00	0.00	7,600.00	-4,108.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,700.00	0.00	0.00	7,700.00	-4,208.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,800.00	0.00	0.00	7,800.00	-4,308.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	7,900.00	0.00	0.00	7,900.00	-4,408.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07
	8,000.00	0.00	0.00	8,000.00	-4,508.60	0.00	0.00	0.00	0.00	596,006.61	676,815.07



Pathfinder X & Y Planning Report



A Schlumberger Company

Company: Cog Operating, LLC
Project: Eddy County (NAD83)
Site: Super Fortress 29"
Well: 3H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well 3H
TVD Reference: WELL @ 3491.40ustf (Original Well Elev)
MD Reference: WELL @ 3491.40ustf (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Table with columns: MD (ustf), Inc (°), Azi (°), TVD (ustf), TVDSS (ustf), N/S (ustf), E/W (ustf), V. Sec (ustf), DLeg (°/100ustf), Northing (ustf), Easting (ustf). Rows include Planned Survey data points.



Pathfinder X & Y Planning Report



A Schlumberger Company

Company: Cog Operating, LLC
Project: Eddy County (NAD83)
Site: Super Fortress "2g"
Well: 3H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well 3H
TVD Reference: WELL @ 3491.40usft (Original Well Elev)
MD Reference: WELL @ 3491.40usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Table with columns: Planned Survey, MID (usft), Inc (°), Azi (°), TVD (usft), TVDSS (usft), NS (usft), EW (usft), V. Sec (usft), DLeg (°/100usft), Northing (usft), Easting (usft). Rows include data for planned survey points from 9,050.00 to 10,900.00.



Pathfinder
Pathfinder X & Y Planning Report



Company: Cog Operating, LLC
Project: Eddy County (NAD83)
Site: Super Fortress "29"
Wellbore: 3H
Design: OH
Plan #1

Local Co-ordinate Reference:
TVD Reference: Well 3H
MD Reference: WELL @ 3491.40usft (Original Well Elev)
North Reference: WELL @ 3491.40usft (Original Well Elev)
Survey Calculation Method: Grid
Database: Minimum Curvature
EDM 5000.1 Single User Db

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,000.00	90.00	180.91	8,990.00	-5,498.60	-2,214.66	-35.27	2,214.94	0.00	593,791.95	676,779.80
11,100.00	90.00	180.91	8,990.00	-5,498.60	-2,314.65	-36.86	2,314.94	0.00	593,691.96	676,778.21
11,200.00	90.00	180.91	8,990.00	-5,498.60	-2,414.64	-38.46	2,414.94	0.00	593,591.97	676,776.61
11,300.00	90.00	180.91	8,990.00	-5,498.60	-2,514.63	-40.05	2,514.94	0.00	593,491.98	676,775.02
11,400.00	90.00	180.91	8,990.00	-5,498.60	-2,614.61	-41.64	2,614.94	0.00	593,392.00	676,773.43
11,500.00	90.00	180.91	8,990.00	-5,498.60	-2,714.60	-43.23	2,714.94	0.00	593,292.01	676,771.84
11,600.00	90.00	180.91	8,990.00	-5,498.60	-2,814.59	-44.83	2,814.94	0.00	593,192.02	676,770.24
11,700.00	90.00	180.91	8,990.00	-5,498.60	-2,914.58	-46.42	2,914.94	0.00	593,092.03	676,768.65
11,800.00	90.00	180.91	8,990.00	-5,498.60	-3,014.56	-48.01	3,014.94	0.00	592,992.05	676,767.06
11,900.00	90.00	180.91	8,990.00	-5,498.60	-3,114.55	-49.60	3,114.94	0.00	592,892.06	676,765.47
12,000.00	90.00	180.91	8,990.00	-5,498.60	-3,214.54	-51.20	3,214.94	0.00	592,792.07	676,763.87
12,100.00	90.00	180.91	8,990.00	-5,498.60	-3,314.52	-52.79	3,314.94	0.00	592,692.09	676,762.28
12,200.00	90.00	180.91	8,990.00	-5,498.60	-3,414.51	-54.38	3,414.94	0.00	592,592.10	676,760.69
12,300.00	90.00	180.91	8,990.00	-5,498.60	-3,514.50	-55.97	3,514.94	0.00	592,492.11	676,759.10
12,400.00	90.00	180.91	8,990.00	-5,498.60	-3,614.49	-57.56	3,614.94	0.00	592,392.12	676,757.51
12,500.00	90.00	180.91	8,990.00	-5,498.60	-3,714.47	-59.16	3,714.94	0.00	592,292.14	676,755.91
12,600.00	90.00	180.91	8,990.00	-5,498.60	-3,814.46	-60.75	3,814.94	0.00	592,192.15	676,754.32
12,700.00	90.00	180.91	8,990.00	-5,498.60	-3,914.45	-62.34	3,914.94	0.00	592,092.16	676,752.73
12,800.00	90.00	180.91	8,990.00	-5,498.60	-4,014.44	-63.93	4,014.94	0.00	591,992.17	676,751.14
12,900.00	90.00	180.91	8,990.00	-5,498.60	-4,114.42	-65.53	4,114.94	0.00	591,892.19	676,749.54
13,000.00	90.00	180.91	8,990.00	-5,498.60	-4,214.41	-67.12	4,214.94	0.00	591,792.20	676,747.95
13,100.00	90.00	180.91	8,990.00	-5,498.60	-4,314.40	-68.71	4,314.94	0.00	591,692.21	676,746.36
13,200.00	90.00	180.91	8,990.00	-5,498.60	-4,414.38	-70.30	4,414.94	0.00	591,592.23	676,744.77
13,300.00	90.00	180.91	8,990.00	-5,498.60	-4,514.37	-71.90	4,514.94	0.00	591,492.24	676,743.17
13,407.00	90.00	180.91	8,990.00	-5,498.60	-4,621.36	-73.60	4,621.95	0.00	591,385.25	676,741.47

PBHL (SF29)



Pathfinder
Pathfinder X & Y Planning Report

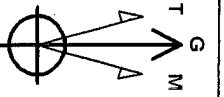


Company: Cog Operating, LLC
Project: Eddy County (NAD83)
Site: Super Fortress "29"
Well: 3H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

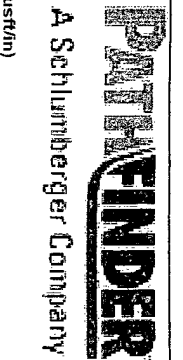
Well 3H
WELL @ 3491.40usft (Original Well Elev)
WELL @ 3491.40usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____



Project: Eddy County (NAD83)
 Site: Super Fortress "29"
 Well: 3H
 Wellbore: OH
 Plan: Plan #1 (3H/OH)

Azimuths to Grid North
 True North: -0.24°
 Magnetic North: 7.57°
 Magnetic Field
 Strength: 48906.35nT
 Dip Angle: 60.55°
 Date: 01/13/2011
 Model: IGRF200510

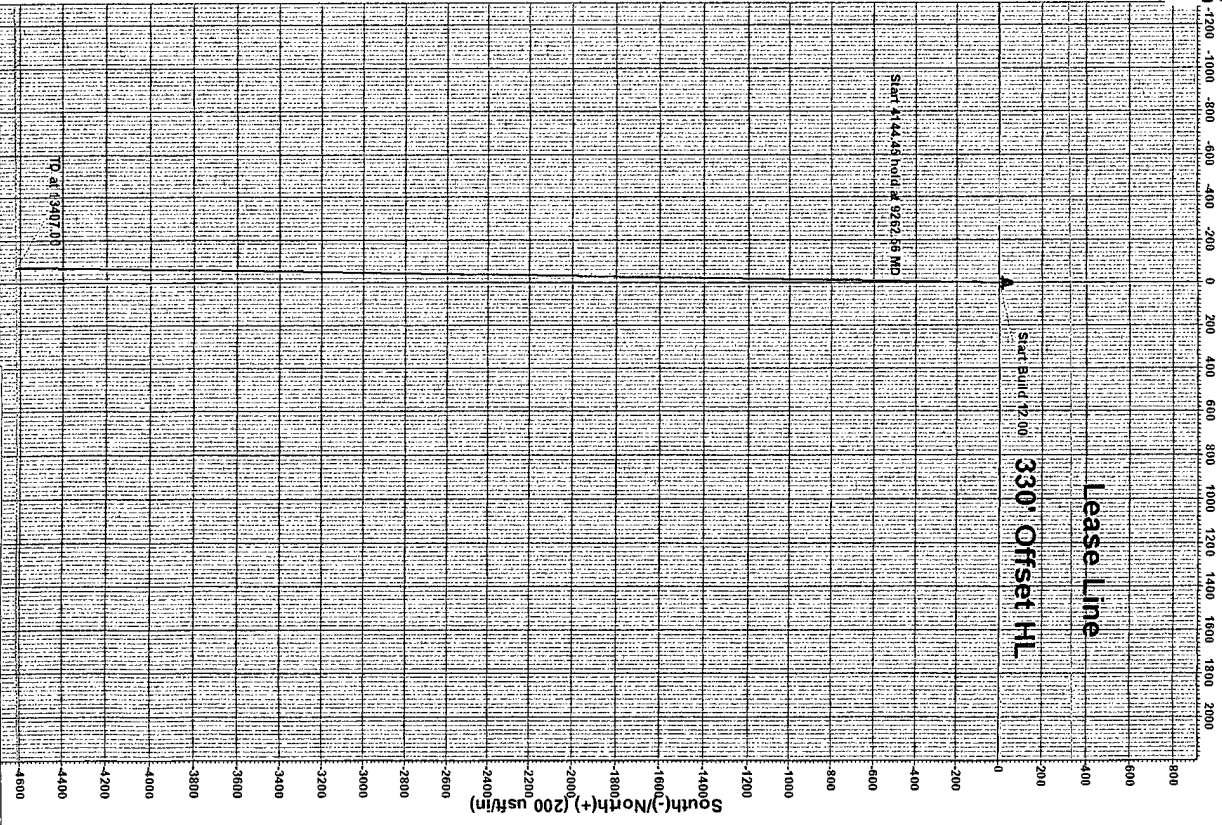
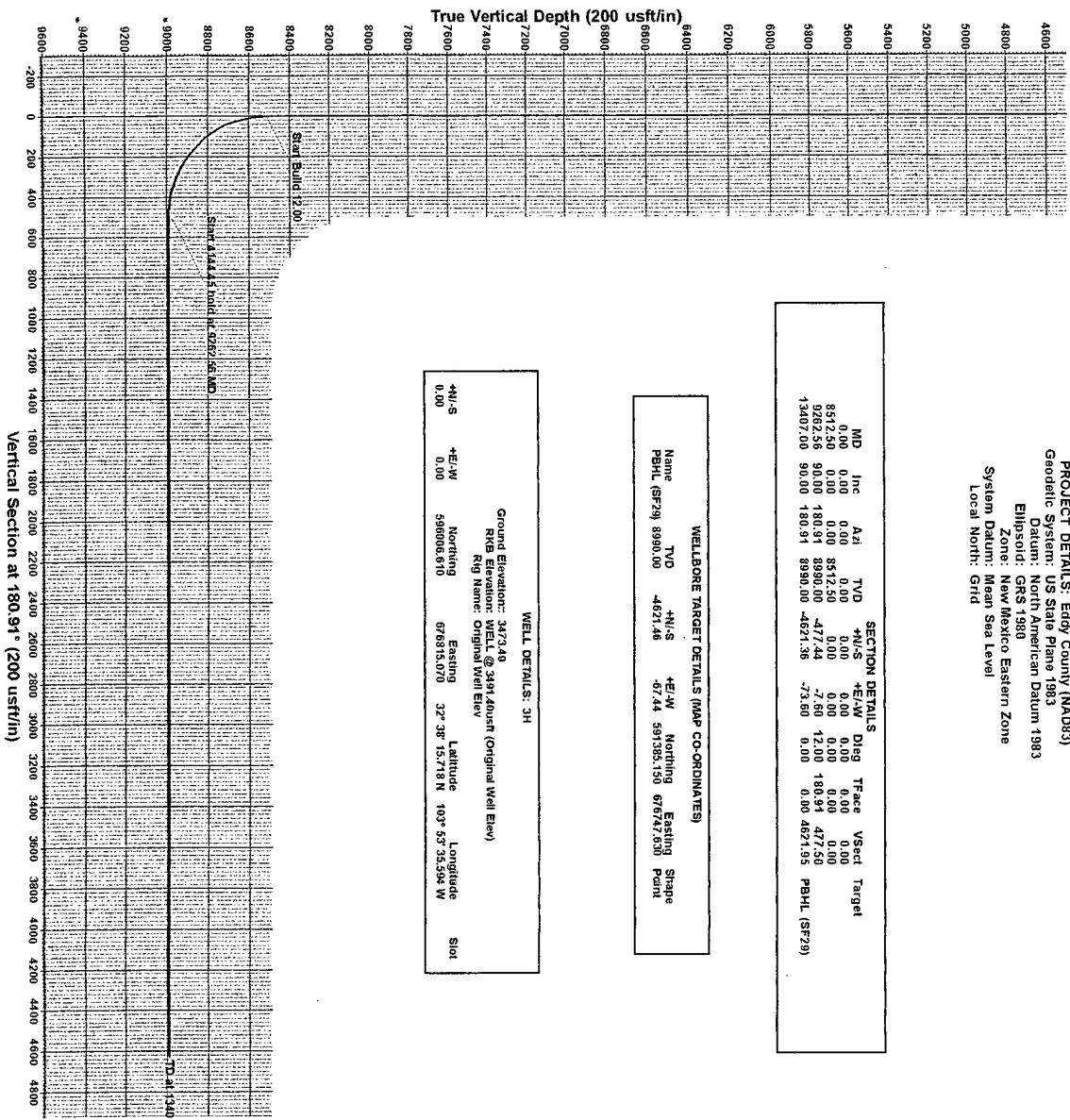


PROJECT DETAILS: Eddy County (NAD83)
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone
 System Datum: Mean Sea Level
 Local North: Grid

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/S	+E/W	Dip	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8312.50	0.00	0.00	8312.50	-477.44	0.00	0.00	0.00	0.00	0.00
9262.56	90.00	180.91	8396.00	-7.60	12.00	180.91	477.50	0.00	PBHL (SF29)
13407.00	90.00	180.91	8396.00	-6271.36	-73.60	0.00	0.00	0.00	46271.95

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N/S	+E/W	Northing	Existing Shape Point
PBHL (SF29)	8396.00	-402.148	-07.64	591363.150	676747.260

WELL DETAILS: 3H					
+N/S	+E/W	Northing	Easting	Latitude	Longitude
0.00	0.00	596006.610	676815.070	32° 38' 15.718 N	103° 53' 53.594 W



Created By: Kate Bingham Date: 8:57, January 13 2011
 Checked: _____ Date: _____

Plan: Plan #1 (3H/OH)

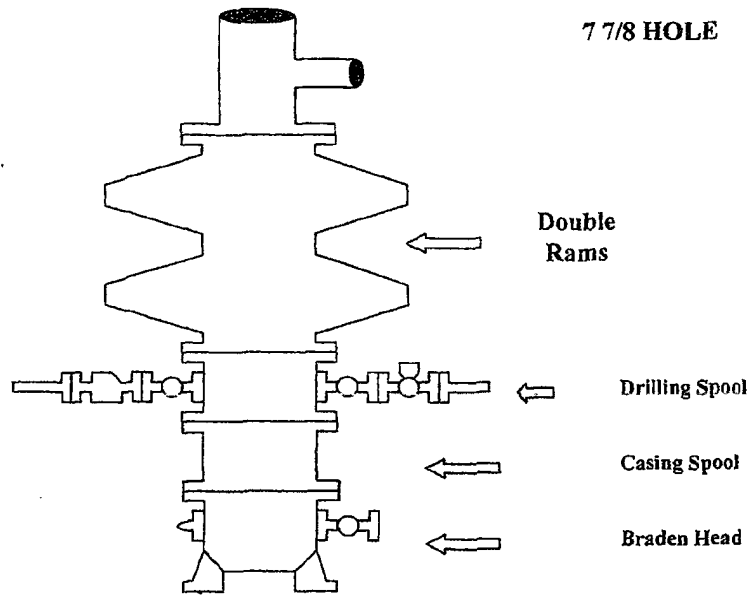
Vertical Section at 180.91° (200 usft/in)

COG Operating LLC

Exhibit #9

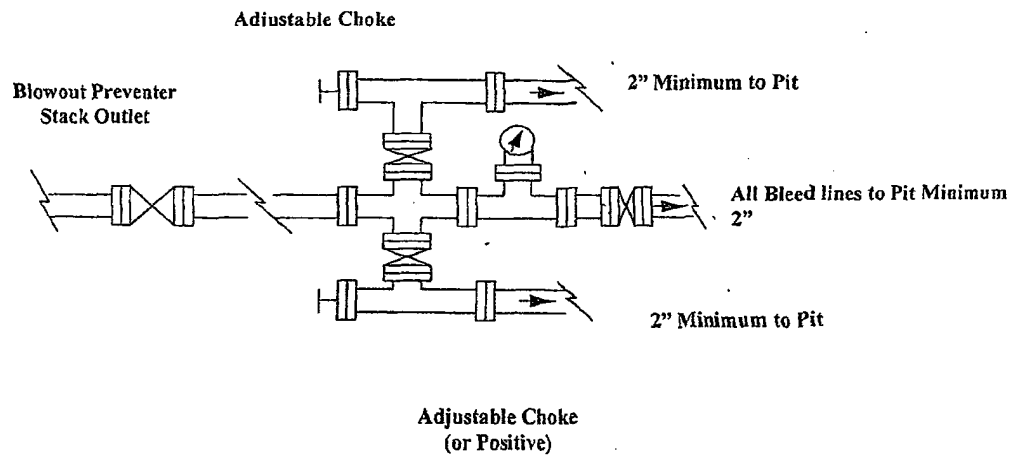
BOPE and Choke Schematic

ZM

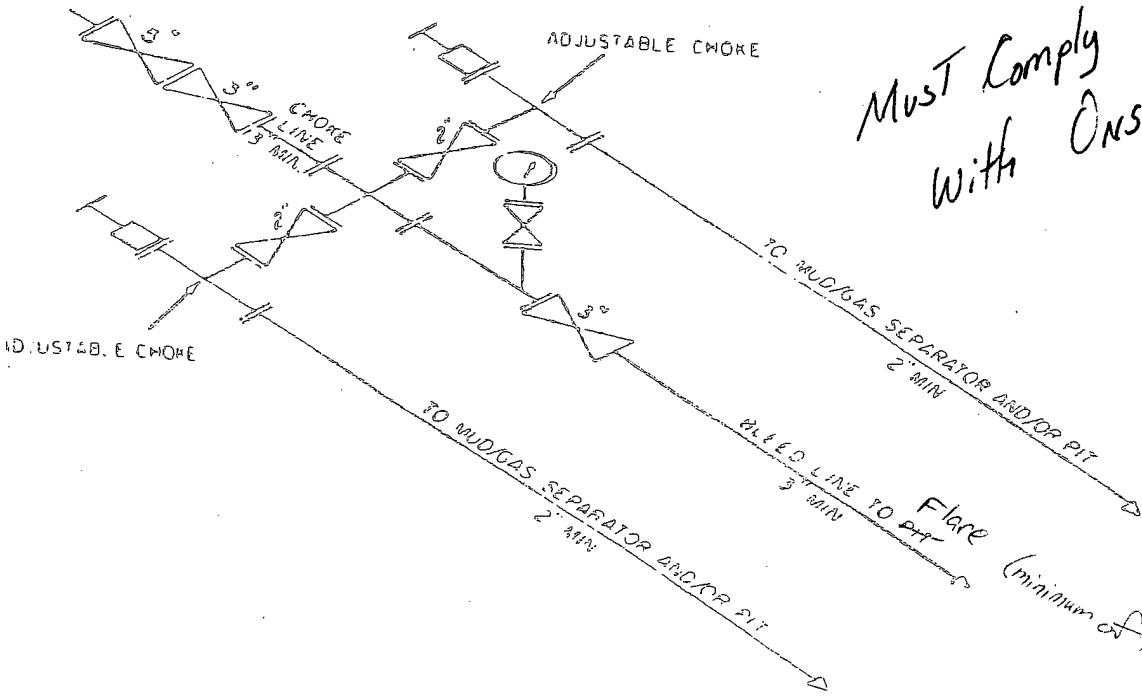
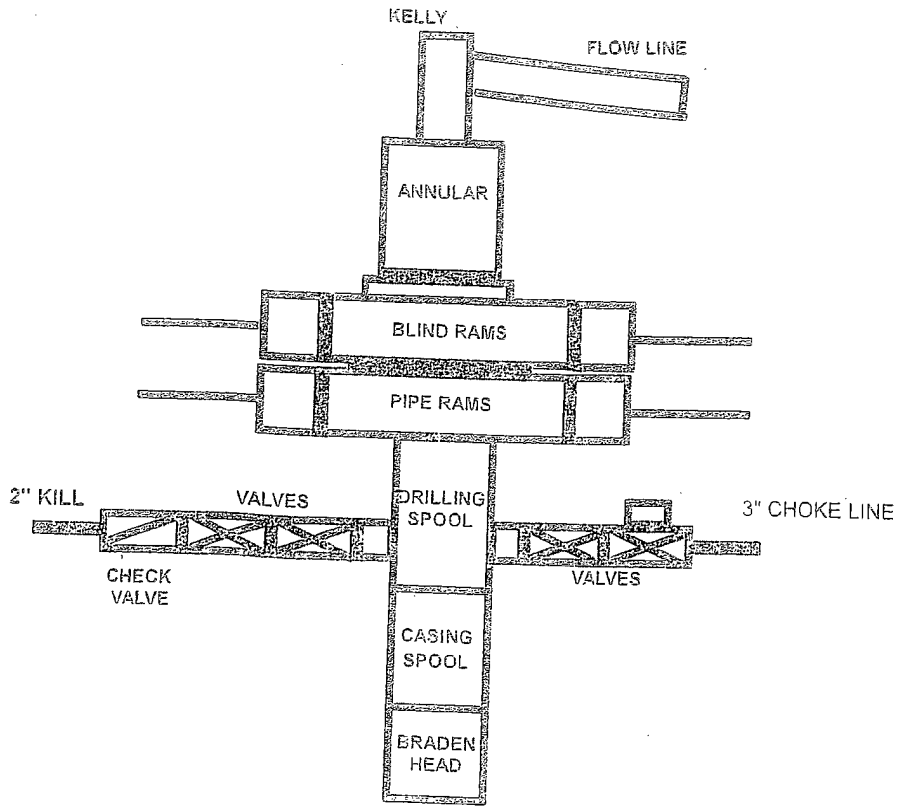


Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



3M SYSTEM



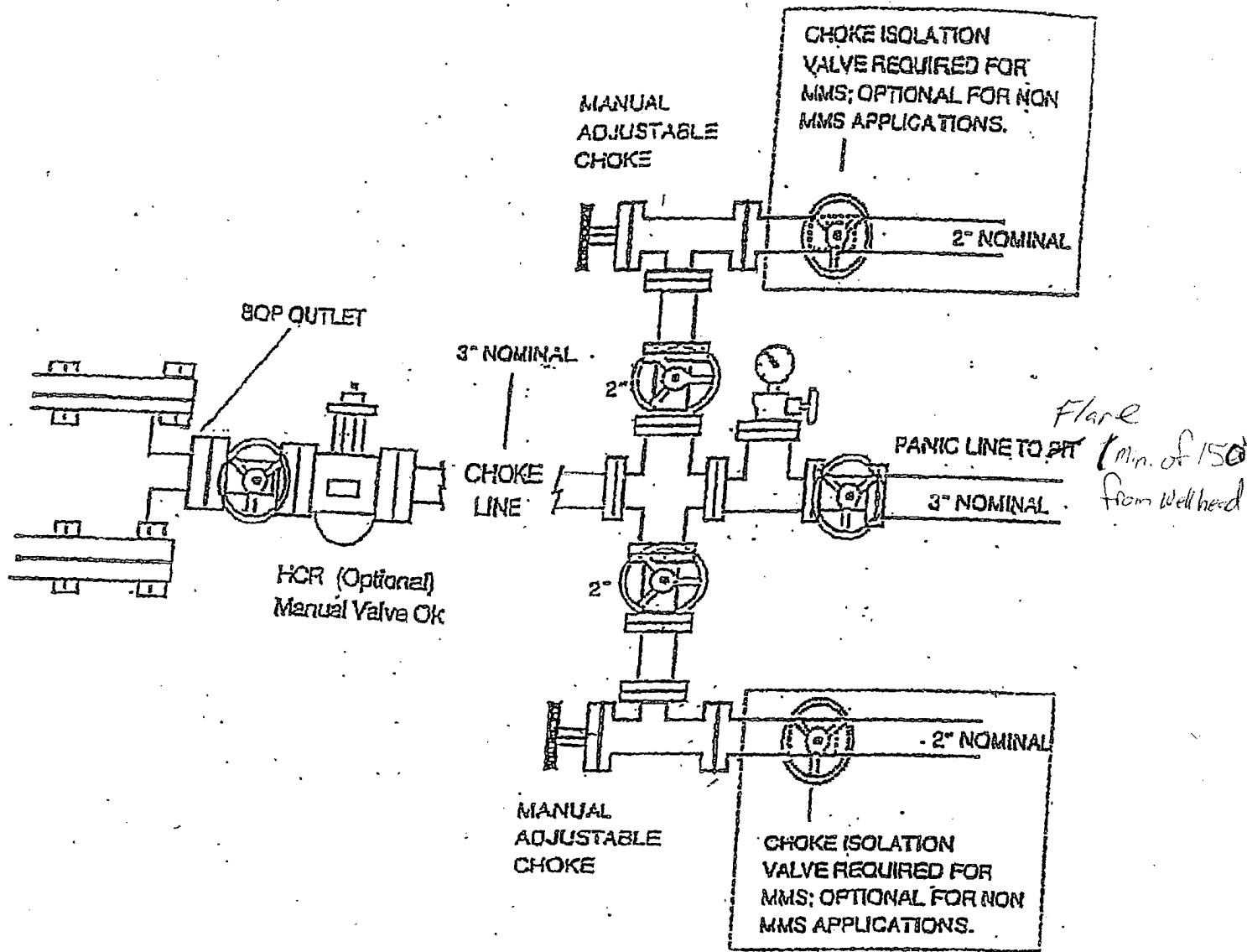
*Must Comply
With Onshore Order No. 2*

(minimum of 150' from wellhead)

3M CHOKE MANIFOLD EQUIPMENT — CONFIGURATION OF CHOKES
MAY VARY

CHOKE MANIFOLD

3M SERVICE



DISTRICT I --- CHECKLIST FOR INTENTS TO DRILL

Operator COG OPERATING LLC OGRID # 229137
Well Name & # 38564 SUPER FORTRESS 29 FED # 3H Surface Type (F)(S) (P)
Location: UL G, Sect 29, Township 19 s, RNG 31 e, Sub-surface Type (F)(S) (P)
N 29 19-31

A. Date C101 rec'd / / C101 reviewed / /

- B. 1. Check mark, Information is OK on Forms:
OGRID BONDING FED PROP CODE WELL # SIGNATURE
2. Inactive Well list as of: 4/1/11 # wells 2824 # Inactive wells: 7
a. District Grant APD but see number of inactive wells:
No letter required ; Sent Letter to Operator , to Santa Fe
3. Additional Bonding as of: 4/1/11
a. District Denial because operator needs addition bonding:
No Letter required ; Sent Letter to Operator , To Santa Fe
b. District Denial because of Inactive well list and Financial Assurance:
No Letter required ; Sent Letter to Operator , To Santa Fe

- C. C102 YES NO , Signature
1. Pool HACKBERRY; BONE SPRING 29345 Code
a. Dedicated acreage 160, What Units CRKN
b. SUR. Location Standard Non-Standard Location
c. Well shares acres: Yes , No # of wells plus this well #
2. 2nd. Operator in same acreage, Yes , No
Agreement Letter , Disagreement letter
3. Intent to Directional Drill Yes No
a. Dedicated acreage 160, What Units CRKN
b. Bottomhole Location Standard Non-Standard Bottomhole
4. Downhole Commingle: Yes , No
a. Pool #2 , Code , Acres
Pool #3 , Code , Acres
Pool #4 , Code , Acres

5. POTASH Area Yes , No FED

D. Blowout Preventer Yes No

E. H2S Yes , No

F. C144 Pit Registration Yes , No need

- G. Does APD require Santa Fe Approval:
1. Non-Standard Location: Yes , No NSL #
2. Non-Standard Proration: Yes , No NSP #
3. Simultaneous Dedication: Yes , No SD #
Number of wells Plus #
4. Injection order Yes , No ; PMX # or WFX #
5. SWD order Yes , NO ; SWD #
6. DHC from SF ; DHC-HOB ; Holding

7. OCD Approval Date / / API #30-0 14-38642

8. Reviewers