

(July 1992)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
Oil Cons. DIV-District 2  
1301 W. Grand Avenue  
Artesia, NM 88210

OMB NO. 1004-0136  
Expires: February 28, 1995

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK

DRILL ☒ 0641 DEEPEN ☐

b. TYPE OF WELL

OIL WELL ☐ GAS WELL ☒ OTHER ☐ SINGLE ZONE ☒ MULTIPLE ZONE ☐

2. NAME OF OPERATOR

COG OPERATING, LLC 229137 (ERICK NELSON) 432-685-4341

3. ADDRESS AND TELEPHONE NO.

550 WEST TEXAS AVENUE SUITE 1300 MIDLAND, TEXAS 79701

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)\*

At surface

810' FSL & 660' FWL SECTION 4 T19S-R31E EDDY CO. NM.

At proposed prod. zone SAME

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

Approximately 50 miles Southwest of Hobbs, New Mexico

15. DISTANCE FROM PROPOSED\*

LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. 660'

(Also to nearest drlg. unit line, if any)

18. DISTANCE FROM PROPOSED LOCATION\*

TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT. 3000'

16. NO. OF ACRES IN LEASE

320

19. PROPOSED DEPTH

12,700'

17. NO. OF ACRES ASSIGNED TO THIS WELL

320

20. ROTARY OR CABLE TOOLS

ROTARY

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3553' GR.

Capitan Controlled Water Basin

22. APPROX. DATE WORK WILL START\*

WHEN APPROVED

23.

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
25"	Conductor	NA	40'	Cement to surface with Redi-mix
17½"	H-40 13 3/8"	48#	550'	400 Sx. circulate cement
12¼"	J-55 8 5/8"	32#	3500'	1000 Sx. " "
7 7/8"	P-110 5½"	17#	12,700'	600 Sx. Est TOC 9000'±.

1. Drill 25" hole to 40'. Set 40' of 20" conductor pipe and cement to surface with Redi-mix.
2. Drill 17½" hole to 550'. Run and set 550' of 13 3/8" 48# H-40 ST&C casing. Cement with 200 Sx. of 35/65 Class "C" POZ cement + additives, tail in with 200 Sx. of Class "C" cement + 2% CaCl, + ½# Flocele/Sx, circulate cement to surface.
3. Drill 12¼" hole to 3500'. Run and set 3500' of 8 5/8" 32# J-55 ST&C casing. Cement with 800 Sx. of 50/50 Class "C" POZ cement + additives, tail in with 200 Sx. of Class "C" cement + additives, circulate cement to surface.
4. Drill 7 7/8" hole to 12,700'. Run and set 12,700' of 5½" 17# P-110 LT&C casing. Cement with 600 Sx. of Class "H" Premium-Plus cement + additives. Estimate top of cement 9000'±, at least 500' above the upper most pay.

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS AND  
SPECIAL STIPULATIONS  
ATTACHED

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED

*Joe T. Lara*

TITLE Agent

DATE 04/12/05

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

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:

APPROVED BY

/s/ Joe G. Lara

TITLE

FIELD MANAGER

DATE

MAY 17 2005

\*See Instructions On Reverse Side

APPROVAL FOR 1 YEAR

Title 18 U.S.C. Section 1001, makes 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.

DISTRICT I  
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102  
Revised JUNE 10, 2003  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 80840	Pool Name LUSK MORROW WEST GAS
Property Code 34747	Property Name BLUE THUNDER 4 FEDERAL	Well Number 1
OGRID No. 229137	Operator Name COG OPERATING LLC	Elevation 3553'

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	4	19-S	31-E		810	SOUTH	660	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320			

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

LOT 4	LOT 3	LOT 2	LOT 1
39.62 AC	39.63 AC	39.63 AC	39.64 AC
<p>GEODETIC COORDINATES NAD 27 NME  Y=612959.0 N X=639377.6 E  LAT.=32°41'03.50" N LONG.=103°52'49.17" W</p>			
<p>3556.4' 3558.8' 600' 600' 3553.0' 3558.5' 810'</p>			

**OPERATOR CERTIFICATION**

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.

*Joe T. Janica*  
Signature  
Joe T. Janica  
Printed Name  
Agent  
Title  
04/12/05  
Date

**SURVEYOR CERTIFICATION**

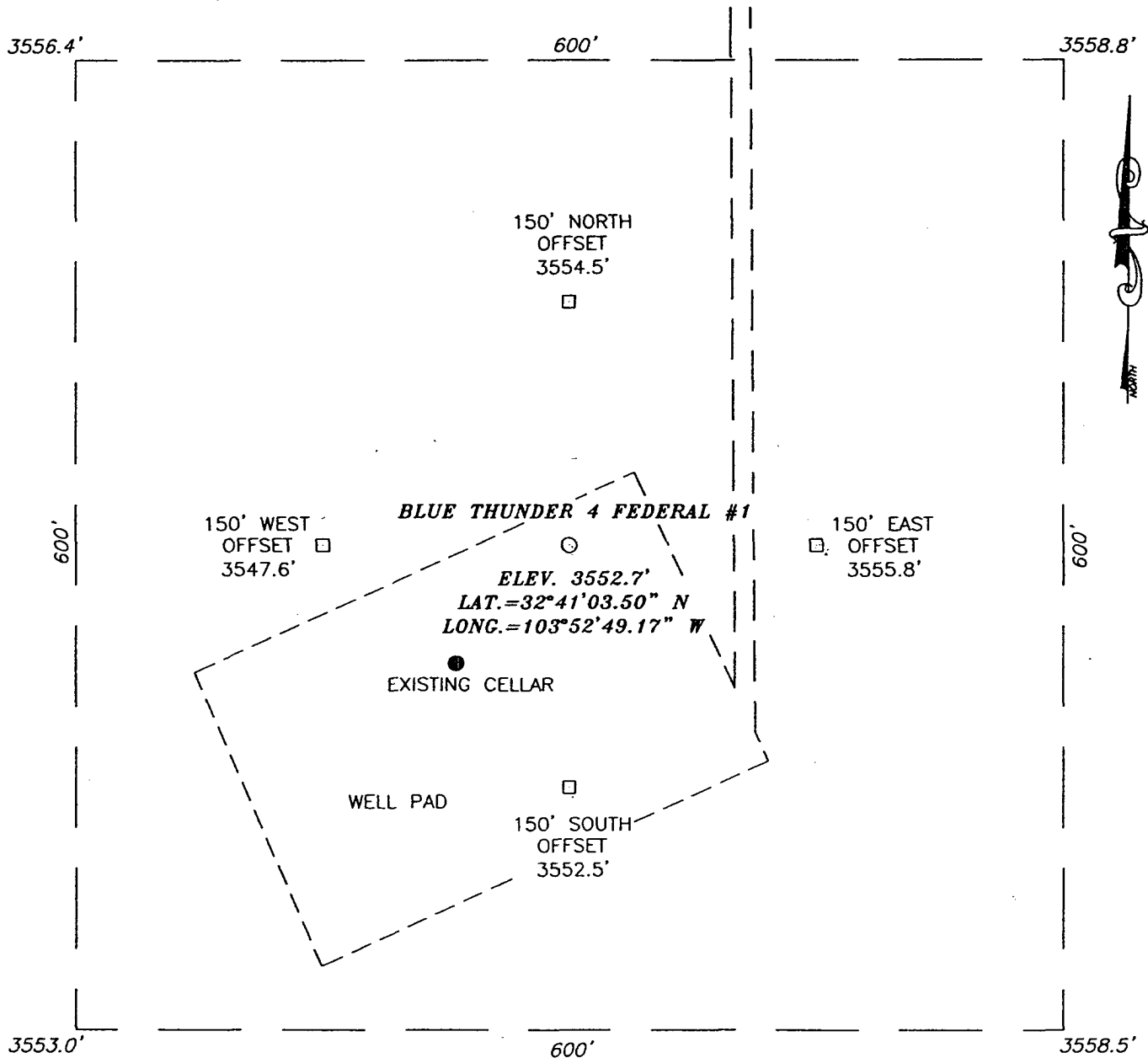
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

MARCH 30, 2005

Date Surveyed DEL  
Signature & Seal of Professional Surveyor  
GARY E. EIDSON  
05.11.05  
Certificate No. GARY EIDSON 12841

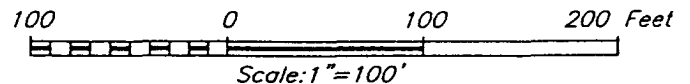
EXHIBIT "A"

**SECTION 4, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.,**  
EDDY COUNTY, NEW MEXICO



**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF CO. RD. #222 AND  
CO. RD. #249. GO APPROX. 100' NORTH OF  
INTERSECTION AND TURN LEFT (WEST) ONTO LEASE  
ROAD. GO W-NW APPROX. 0.4 MILES. AND TURN  
LEFT (SOUTH). GO APPROX. 0.5 MILES TO  
EXISTING WELL PAD AND THIS LOCATION.



**COG OPERATING LLC**

BLUE THUNDER 4 FEDERAL #1 WELL  
LOCATED 810 FEET FROM THE SOUTH LINE  
AND 660 FEET FROM THE WEST LINE OF SECTION 4,  
TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

Survey Date: 03/30/05		Sheet 1 of 1 Sheets	
W.O. Number: 05.11.0515		Dr By: DEL	Rev 1:N/A
Date: 04/01/05	Disk: CD#4	05110515	Scale: 1"=100'



PROVIDING SURVEYING SERVICES  
SINCE 1948  
**JOHN WEST SURVEYING COMPANY**  
412 N. DAL PASO  
HOBBS, N.M. 88240  
(505) 393-3117

# APPLICATION TO DRILL

COG OPERATING, LLC.  
 BLUE THUNDER "4" FEDERAL # 1  
 UNIT "M" SECTION 4  
 T19S-R31E EDDY CO. NM

In response to questions asked under Section II of Bulletin NTL-6 the following information on the above well is provided for your consideration.

1. Location of well: 810' FSL & 660' FWL SECTION 4 T19S-R31E EDDY CO. NM
2. Ground Elevation above Sea Level: 3553' GR.
3. Geological age of surface formation: Quaternary Deposits:
4. Drilling tools and associated equipment: Conventional rotary drilling rig using drilling mud as a circulating medium to remove solids from hole.
5. Proposed drilling depth: 12,700'
6. Estimated tops of geological markers:

Rustler Anhydrite	550'	Bone Spring	6500'
Yates	2700'	Wolfcamp	9900'
Queen	3350'	Strawn	10,850'
Delaware	4920'	Atoka	11,200'
		Morrow	12,300'
7. Possible mineral bearing formations:

Bone Spring	Oil
Atoka	Gas
Morrow	Gas
8. Casing Program:

Hole Size	Interval	OD of Casing	Weight	Thread	Collar	Grade
25"	0-40'	20"	NA	NA	NA	Conductor
17½"	0-550'	13 3/8"	48#	8-R	ST&C	H-40
12¼"	0-3500'	8 5/8"	32#	8-R	ST&C	J=55
7 7/8"	0-12,700'	5½"	17#	8-R	LT&C	P-110

# APPLICATION TO DRILL

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

## 9. Cementing and Setting Depth

13 3/8"	Surface	+/-550'	Set +/- 550' of 13 3/8" 48# H40 STC casing. Cement w/ 200 sx 35:65 Poz: "C" cement + additives followed by 200 sx Class "C" + 2% CaCl2 Circulate cement
8 5/8"	Intermediate	+/-3500'	Set +/- 3500' of 8 5/8" 32# J-55 STC casing. Cement w/ 800 sx 50:50 Poz: "C" light cement + additives followed by 200 sx Class "C" cement. Circulate cement.
5-1/2"	Production	12700'	Set +/- 12700' of 5-1/2" 17# P110 LTC casing. Cement w/ 600 sx Class "H" plus additives. Est TOC @ +/- 9000'

10. Pressure Control Equipment: After setting 13-3/8" casing and installing 3000 psi casing head, NU 13-5/8" 3000 psi annular BOP. Test annular BOP, casing, and manifold with clear fluid to 1350 psi with rig pump

After setting 8-5/8" casing and installing 5000 psi casing spool, NU 5000 psi double ram BOP and 5000 psi annular BOP. Test double ram BOP and manifold to 4000# with clear fluid and test annular to 2500 psi using an independent tester

## 11. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0'- 550'	8.4-9.2	28-35	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH
550'- 3500'	10.0- 10.2	28-29	NC	Brine mud, lime for PH and paper for seepage and sweeps.
3500' - 10800'	8.4 - 9.2	NC	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.
10800' - 11200'	9.2 - 9.6	31-32	20	Increase weight with brine additions and reduce fluid loss w/ starch
11200' - 12300'	9.6-9.8	36-42	<15	Reduce Fluid loss w/ starch and XCD Polymer.
12300'- 12700'	9.8-9.9	36-42	<8	Reduce Fluid loss w/ starch and XCD Polymer. Maintain properties to TD. Spot a high vis pill on bottom for logs

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run DST's, open hole logs, and casing the viscosity and/or water loss may have to be adjusted to meet these needs.

APPLICATION TO DRILL

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

12. LOGGING, CORING, AND TESTING PROGRAM:

- A. Open hole logs: Dual Laterolog, LDT. SNP, Gamma Ray & Caliper from TD back to 8 5/8" casing shoe. Run Gamma Ray and Neutron from 8 5/8" casing shoe back to surface.
- B. Rig up mud logger on hole at 3500'± and keep on hole to TD.
- C. Cores, DST's may be taken and run at the the discretion of Geologist.

13. POTENTIAL HAZARDS:

No abnormal pressures or temperatures are expected. There is no known presence of H<sup>2</sup>S in this area. If H<sup>2</sup>S 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 6500 PSI, and Estimated BHT 195°.

14. ANTICIPATED STARTING DATE AND DURATION OF OPERATION:

Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operation and drilling is expected to take 45 days. If production casing is run then an additional 30 days will be needed to complete well and construct surface facilities and/or lay flowlines in order to place well on production.

15. OTHER FACETS OF OPERATIONS:

After running casing, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The Morrow formation will be perforated and stimulated in order to establish production. The well will be swab tested and potentialized as a gas well.

1. All Company and Contract personnel admitted on location must be trained by a qualified H<sub>2</sub>S safety instructor to the following:
  - A. Characteristics of H<sub>2</sub>S
  - B. Physical effects and hazards
  - C. Proper use of safety equipment and life support systems.
  - D. Principle and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - E. Evacuation procedure, routes and first aid.
  - F. Proper use of 30 minute pressure demand air pack.
2. H<sub>2</sub>S Detection and Alarm Systems
  - A. H<sub>2</sub>S detectors and audio alarm system to be located at bell nipple, end of bloopie line (mud pit) and on derrick floor or doghouse.
3. Windsock and/or wind streamers
  - A. Windsock at mudpit area should be high enough to be visible.
  - B. Windsock at briefing area should be high enough to be visible.
  - C. There should be a windsock at entrance to location.
4. Condition Flags and Signs
  - A. Warning sign on access road to location.
  - B. Flags to be displayed on sign at entrance to location. Green flag, normal safe condition. Yellow flag indicates potential pressure and danger. Red flag, danger, H<sub>2</sub>S present in dangerous concentration. Only emergency personnel admitted to location.
5. Well control equipment
  - A. See exhibit "E" & "E-1"
6. Communication
  - A. While working under masks chalkboards will be used for communication.
  - B. Hand signals will be used where chalk board is inappropriate.
  - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephoned will be available at most drilling foreman's trailer or living quarters.
7. Drillstem Testing
  - A. Exhausts will be watered.
  - B. Flare line will be equipped with an electric ignitor or a propane pilot light in case gas reaches the surface.
  - C. If the location is near to a dwelling a closed DST will be performed.

# SURFACE USE PLAN

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

1. EXISTING AND PROPOSED ROADS: Area maps: Exhibit "B" is a reproduction of a County General Hi-way map showing access roads to the location. Exhibit "C" is a reproduction of a USGS Topographic map showing existing roads in close proximity to the location and the proposed access roads. All existing roads will be maintained in a condition equal to or better than their current conditions. All new roads will be constructed to BLM specifications.

A. Exhibit "A" shows the location of the proposed well site as staked.

B. From Loco Hills New Mexico go East on U.S. Hi-way 82 for 5.5 miles to CR.222, turn Right (South) go 9.2 miles ± turn Right (West) go .4± miles, turn Left (South) go .5 miles to location.

C. Exhibit "C" shows the roads and flowlines proposed for this location.

2. PLANNED ACCESS ROADS: No additional road will be necessary.

A. The access road will be crowned and ditched to a 12' wide traveled surface with a 40' Right-Of-Way.

B. Gradient on all roads will be less than 5% if possible.

C. Turn-outs will be constructed where necessary.

D. If needed roads will be surfaced to the BLM requirements with material obtained from a local source.

E. Center line of new road will be flagged.

F. The new road will be constructed to utilize low water crossings where drainage currently exists, and culverts will be installed where necessary.

3. EXHIBIT "A-1" SHOWS THE BELOW LISTED TYPE WELLS WITHIN A 1 MILE RADIUS:

A. Water wells	-	None known
B. Disposal wells	-	None known
C. Drilling wells	-	None known
D. Producing wells	-	As shown on Exhibit "A-1"
E. Abandoned wells	-	As shown on Exhibit "A-1"



## SURFACE USE PLAN

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

4. If on completion this well is a producer the operator will lay pipelines and construct powerlines along existing road R-O-W's or other existing R-O-W's. Exhibit "C" shows proposed routes of roads, flowlines and powerlines.

5. LOCATION AND TYPE OF WATER SUPPLY:

Water will be purchased locally from a commercial source and trucked over the access roads or piped to location in flexible lines laid on top of the ground.

6. SOURCE OF CONSTRUCTION MATERIAL:

If possible construction material will be obtained from the excavation of drill site, if additional material is needed it will be obtained from a local source and transported over the access roads as shown on Exhibit "C".

7. METHODS OF HANDLING WASTE MATERIAL:

- A. Drill cuttings will be disposed of in the reserve pits.
- B. All trash, junk and other waste material will be contained in trash cages or trash bins to prevent scattering. When the job is completed all contents will be removed and disposed of in a approved sanitary land fill.
- C. Salts remaining after completion of well will be picked up by the supplier, including broken sacks.
- D. Waste water from living quarters will be drained into holes with a minimum of 10'. These holes will be covered during drilling and will be back filled when the well is completed. A Porto-John will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- E. Remaining drilling fluids will be allowed to evaporate in the reserve pits until the pits are dry enough to be broken out for further drying. If the drilling fluids do not evaporate in a reasonable time they will be hauled off by transports to a state approved disposal site. Later pits will be broken out to speed drying. Water produced during completion will be put in reserve pits. Oil and condensate produced will be put in storage tanks and sold.

8. ANCILLARY FACILITIES:

- A. No camps or air strips will be constructed on location.

## SURFACE USE PLAN

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

### 9. WELL SITE LAYOUT

- A. Exhibit "D" shows the proposed well site layout.
- B. This exhibit indicated proposed location of reserve and sump pits and living facilities.
- C. Mud pits in the active circulating system will be steel pits & the reserve pit is proposed to be unlined unless subsurface condition encountered during pit construction indicate that lining is needed for lateral containment of fluids.
- D. If needed, the reserve pit is to be lined with polyethelene. The pit liner will be 6 mils thick. Pit liner will extend a minimum 2'00" over the reserve pits dikes where the liner will be anchored down.
- E. The reserve pit will be fenced on three sides with four strands of barbed wire during drilling and completion phases. The fourth side will be fenced after all drilling operations have ceased. If the well is a producer, the reserve pit fence will be torn down. The reserve pit and those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

### 10. PLANS FOR RESTORATION OF SURFACE

Rehabilitation of the location and reserve pit will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

However, in either event, the reserve pit will be allowed to dry properly, and fluid removed and disposed of in accordance with Article 7.B as previously noted. The pit area will then be leveled and contoured to conform to the original and surrounding area. Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

If the well is a dry hole, the pad and road area will be contoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

Should the well be a producer, the previously noted procedures will apply to those areas which are not required for production facilities.

SURFACE USE PLAN

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

11. OTHER INFORMATION:

- A. Topography consists of relatively low relief features with a slight dip to the West. Soils are of a Caliche nature with native grasses and an occasional mesquite and prickley pear.
- B. Surface is owned by the U.S. Department of Interior and is administered by the Bureau of Land Management. The surface is leased to ranchers for grazing of live stock.
- C. An archaeological survey will be conducted on the location, access roads and possible pipelines and powerlines routes. This report will be filed with the Bureau of Land Management Carlsbad Field Office.
- D. There are no domestic dwellings located within one mile of the location.

12. OPERATORS REPRESENTATIVE:

Before construction:

TIERRA EXPLORATION, INC.  
P.O. BOX 2188  
HOBBS, NEW MEXICO 88241  
JOE T. JANICA  
OFFICE PHONE 505-391-8503

During and after construction:

COG OPERATING, LLC.  
550 WEST TEXAS AVENUE  
SUITE 1300  
MIDLAND, TEXAS  
ERICK NELSON (OFFICE PH. 432-685-4342)

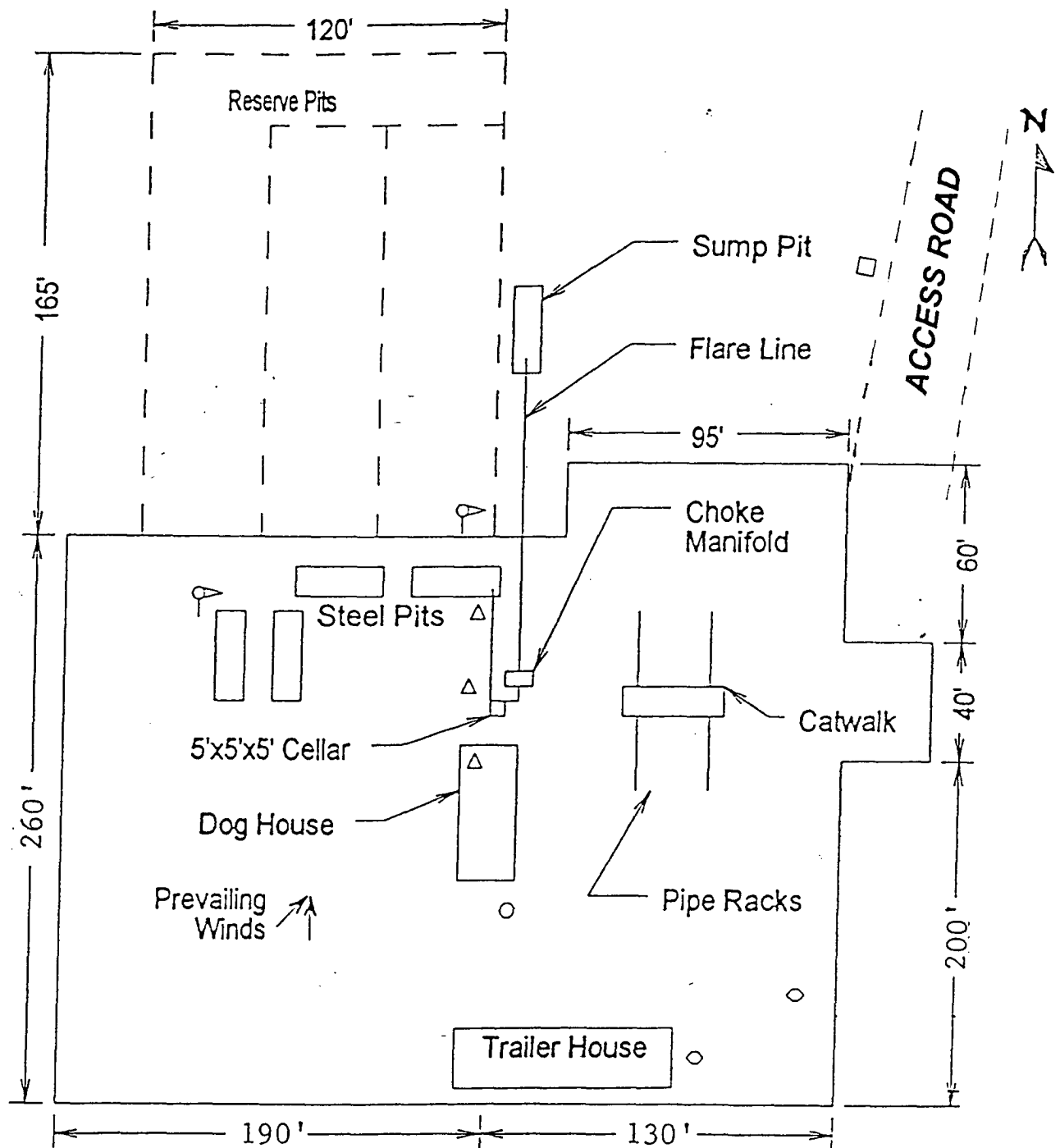
13. CERTIFICATION: I hereby certify that I or persons under my direct supervision have inspected the proposed drill site and access route, that I am familiar with the conditions which currently exist, that the statements made in this plan are to the best of my knowledge, are true and correct, and that the work associated with the operations proposed herein will be performed by COG OPERATING, LLC. it's contractors/subcontractors is in the conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provision of U.S.C. 1001 for the filing of a false statement.

NAME : Joe T. Janica

DATE : 04/12/05

TITLE : Agent

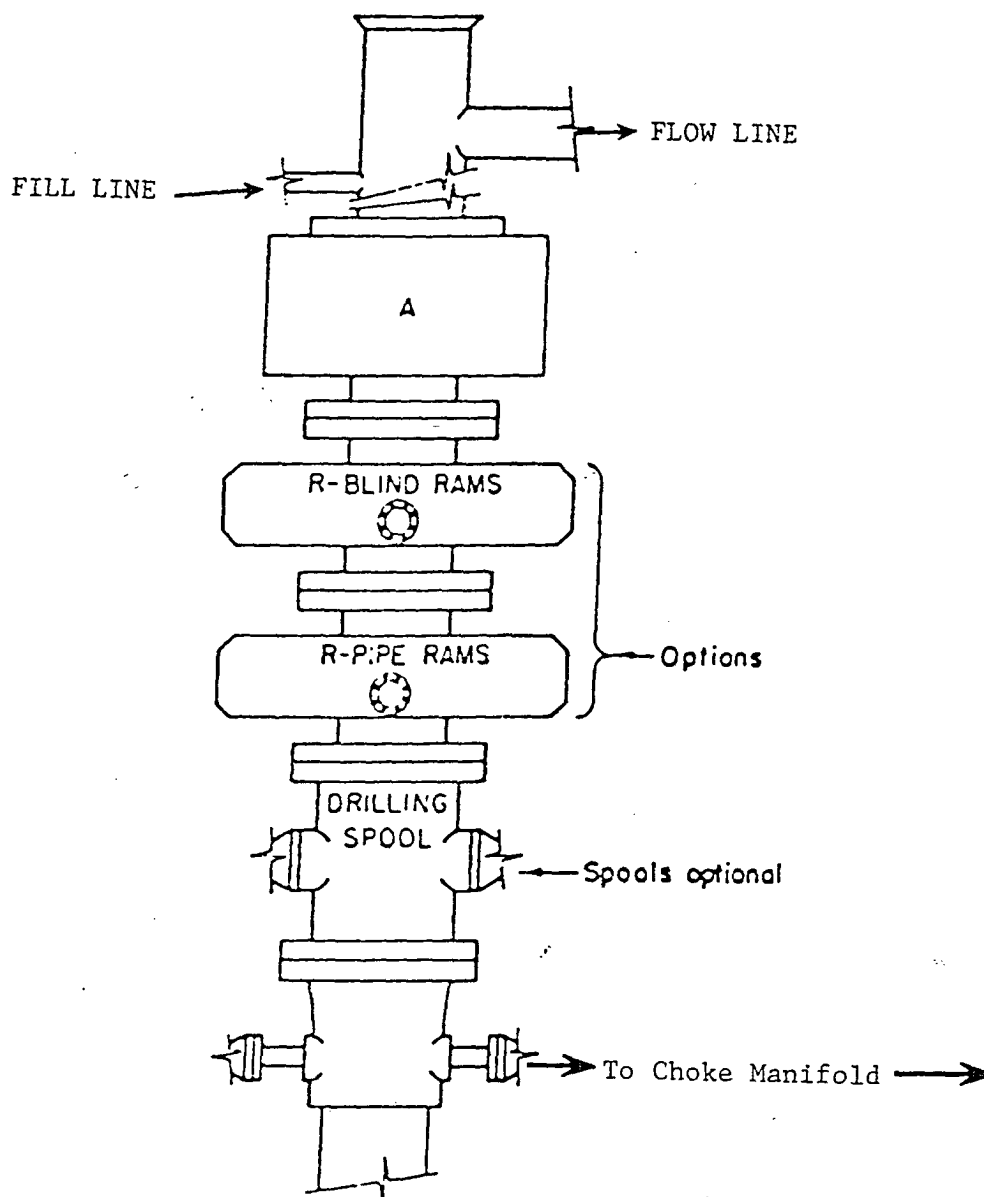




- ⊙ Wind Direction Indicators  
(wind sock or streamers)
- △ H2S Monitors  
(alarms at bell nipple and shale shaker)
- Briefing Areas
- Remote BOP Closing Unit
- Sign and Condition Flags

EXHIBIT "D"  
RIG LAY OUT PLAT

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM

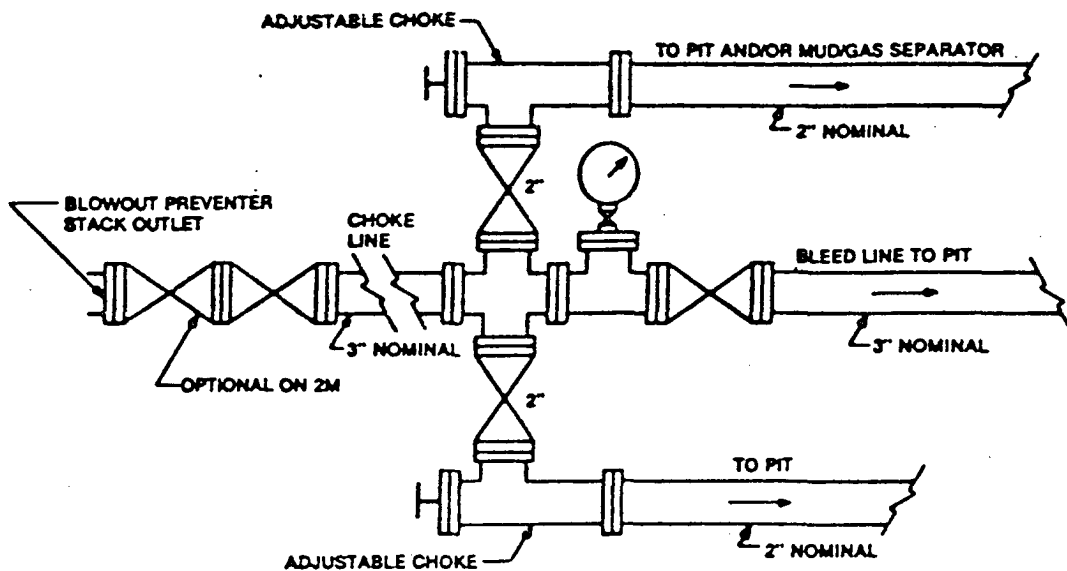


# **ARRANGEMENT SRRA**

900 Series  
3000 PSI WP

EXHIBIT "E"  
SKETCH OF B.O.P. TO BE USED ON  
3000 PSI

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM



Typical choke manifold assembly for 3M WP system

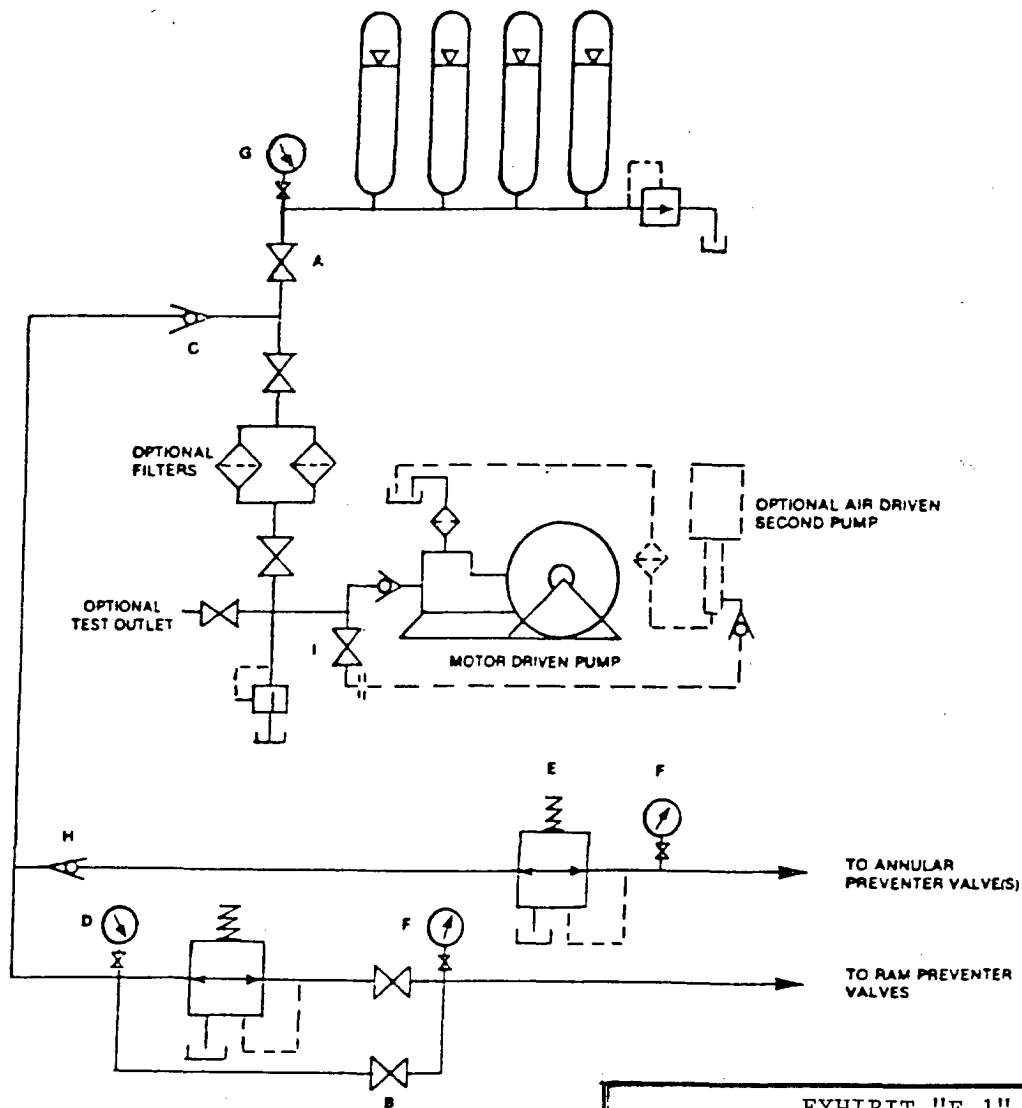
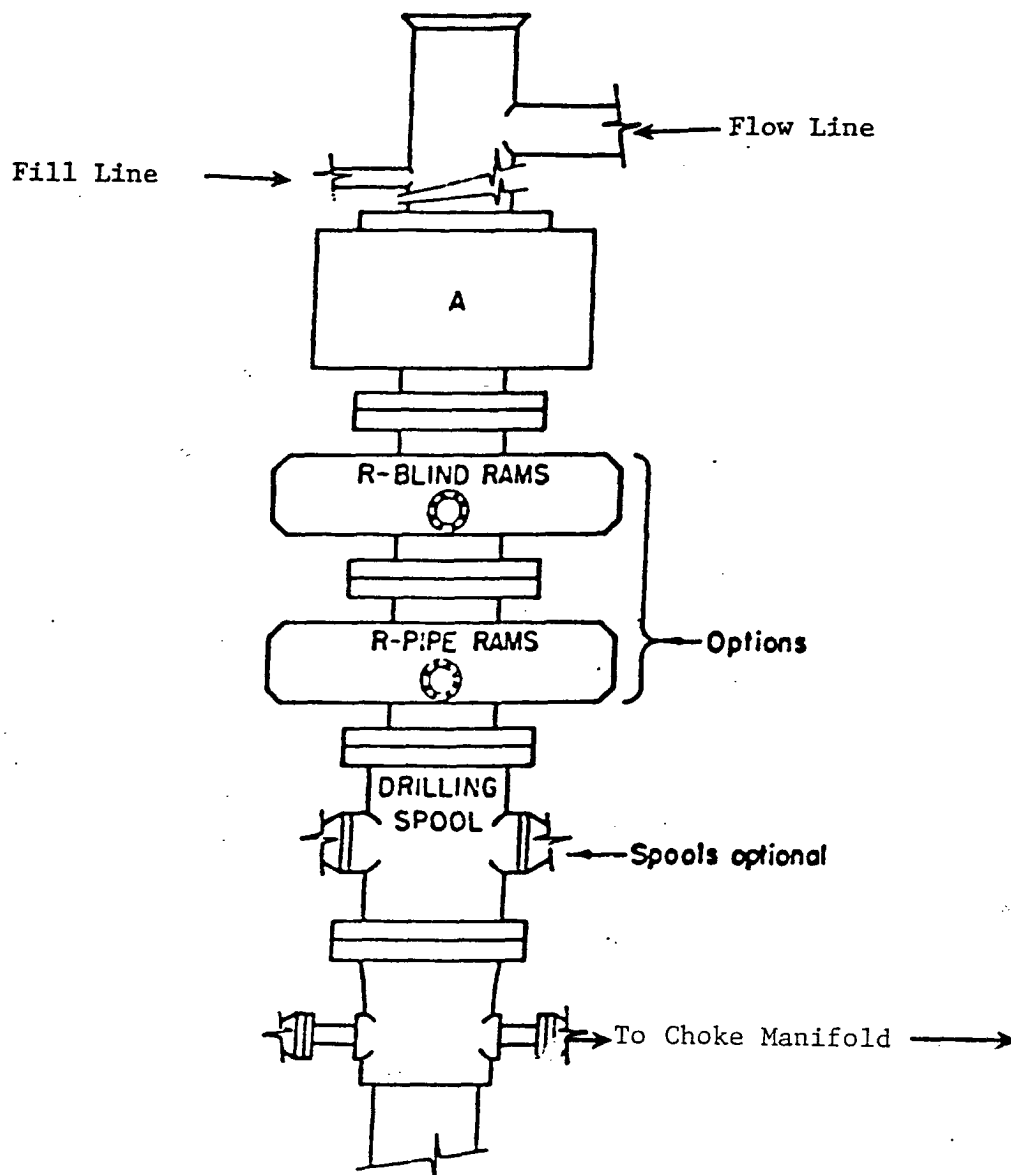


EXHIBIT "E-1"  
CHOKE MANIFOLD & CLOSING UNIT  
3000 PSI

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM



# **ARRANGEMENT SRRA**

1500 Series  
5000# Working Pressure

EXHIBIT "F"  
SKETCH OF B.O.P. TO BE USED ON  
5000 PSI

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM



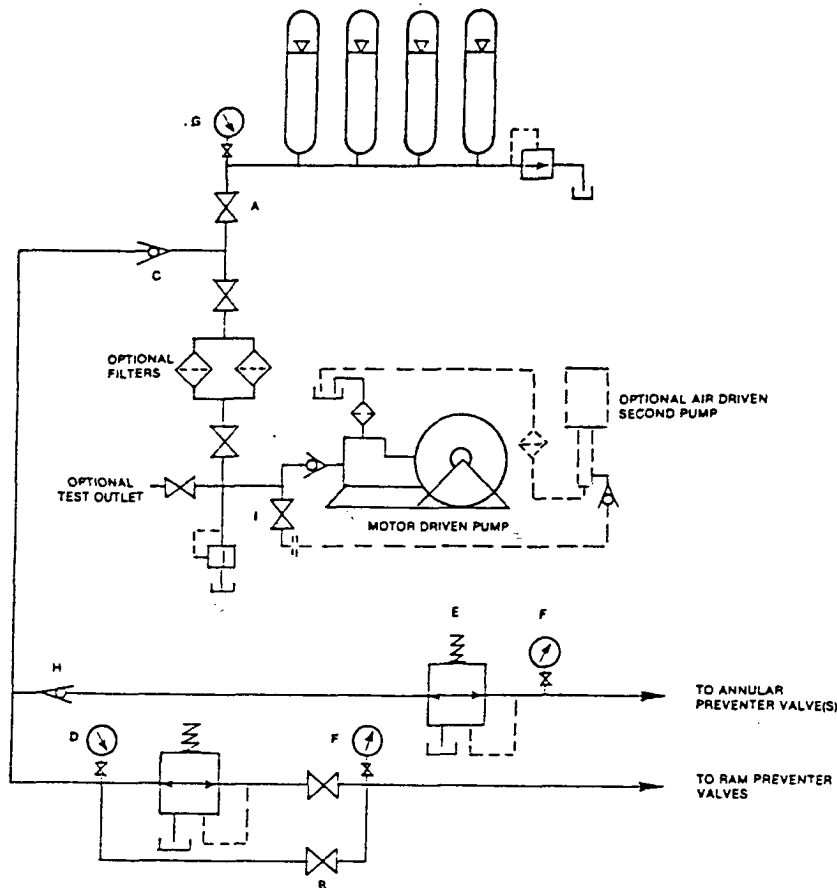


FIGURE K6-1. The schematic sketch of an accumulator system shows required and optional components.

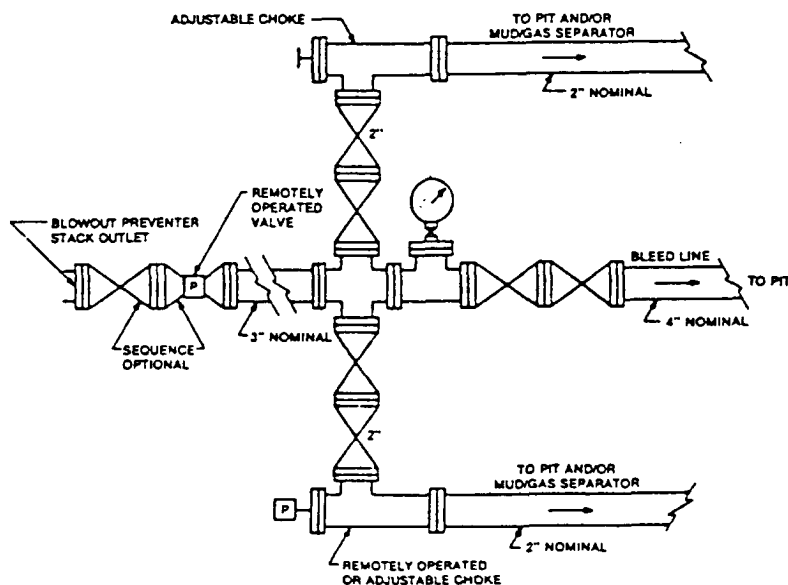


FIGURE K4-2. Typical choke manifold assembly for 5M rated working pressure service — surface installation.

EXHIBIT "F-1"  
CHOKE MANIFOLD & CLOSING UNIT  
5000 PSI

COG OPERATING, LLC.  
BLUE THUNDER "4" FEDERAL # 1  
UNIT "M" SECTION 4  
T19S-R31E EDDY CO. NM