

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0136
Expires November 30, 2000

RECEIVED

SEP 21 2004

APPLICATION FOR PERMIT TO DRILL OR REENTER

| | | |
|---|---|---|
| 1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER | | 5. Lease Serial No. SF-078994 |
| 1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other: CBM <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone | | 6. If Indian, Allottee or Tribe Name |
| 2. Name of Operator CONOCOPHILLIPS COMPANY | | 7. If Unit or CA Agreement, Name and No. |
| Contact: VICKI WESTBY E-Mail: Vicki.R.Westby@conocophillips.com | | 8. Lease Name and Well No. SAN JUAN 30-5 UNIT 239A |
| 3a. Address 4001 PENBROOK, SUITE 346 ODESSA, TX 79762 | 3b. Phone No. (include area code) Ph: 915.368.1352 | 9. API Well No. 30-039-29232 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SWNW 2235FNL 1090FWL At proposed prod. zone | | 10. Field and Pool, or Exploratory BASIN FRUITLAND COAL |
| 14. Distance in miles and direction from nearest town or post office* | | 11. Sec., T., R., M., or Blk. and Survey or Area E Sec 15 T30N R5W Mer NMP |
| 15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) | 16. No. of Acres in Lease | 12. County or Parish RIO ARRIBA |
| 18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth 3250 MD | 13. State NM |
| 21. Elevations (Show whether DF, KB, RT, GL, etc.) 6443 GL | 22. Approximate date work will start | 17. Spacing Unit dedicated to this well 320 1/2 |
| 23. Estimated duration | | 20. BLM/BIA Bond No. on file |

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.
2. A Drilling Plan.
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).
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 authorized officer.

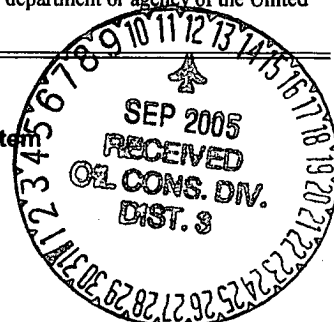
| | | |
|--|--|--------------------|
| 25. Signature (Electronic Submission) | Name (Printed/Typed) VICKI WESTBY | Date 09/20/2004 |
| Title AGENT | | |
| Approved by (Signature) <i>Wayne Townsend</i> | Name (Printed/Typed) Wayne Townsend | Date 9/8/05 |
| Title Acting AFM | Office FFO | |

Application approval does not warrant or certify 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.

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.

Additional Operator Remarks (see next page)

Electronic Submission #36336 verified by the BLM Well Information System
For CONOCOPHILLIPS COMPANY, sent to the Farmington



** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
PO Drawer DD, Artesia, NM 88211-0719

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

District IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

Form C-102
Revised February 21, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

RECEIVED

SEP 21 2004

AMENDED REPORT

WELL LOCATION AND ACREAGE DEED
Bureau of Land Management
Saginaw Field Office

| | | | |
|-------------------------|--|---------------------|------------------------------------|
| *API Number | | *Pool Code 71629 | *Pool Name BASIN FRUITLAND COAL |
| *Property Code 31327 | *Property Name SAN JUAN 30-5 UNIT | | *Well Number 239A |
| *OGRID No. 217817 | *Operator Name CONOCOPHILLIPS COMPANY | | *Elevation 6443' |

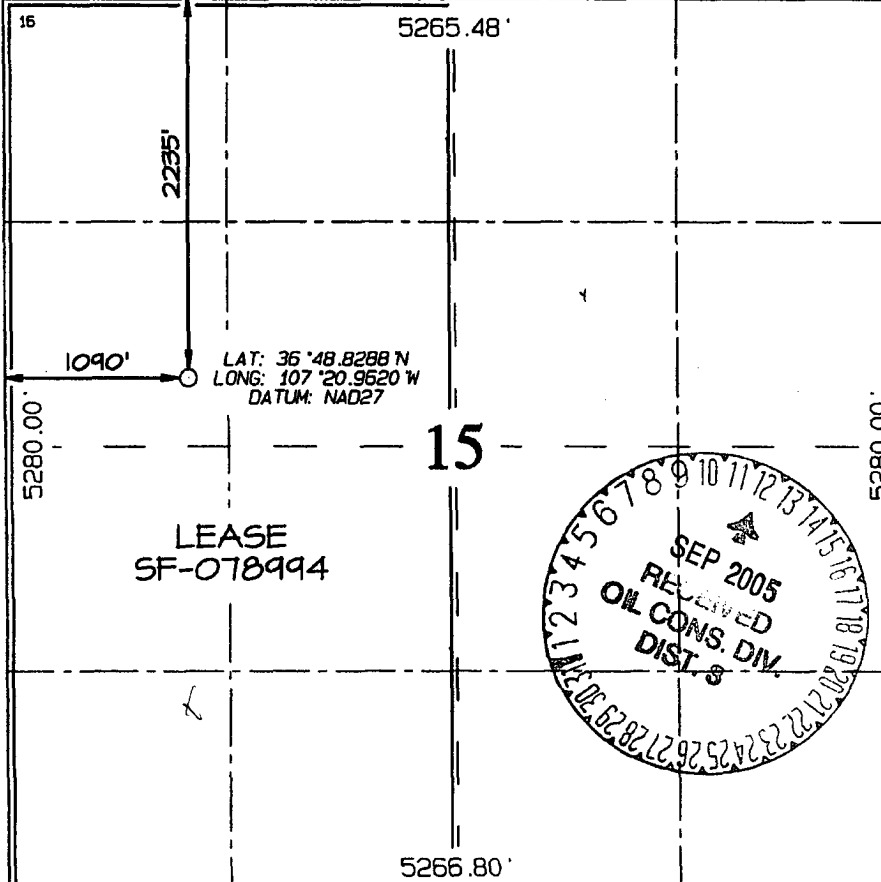

¹⁰ Surface Location

| | | | | | | | | | |
|--------------------|---------------|-----------------|-------------|---------|-----------------------|---------------------------|-----------------------|------------------------|----------------------|
| UL or lot no. E | Section 15 | Township 30N | Range 5W | Lot Idn | Feet from the 2235 | North/South line NORTH | Feet from the 1090 | East/West line WEST | County RIO ARriba |
|--------------------|---------------|-----------------|-------------|---------|-----------------------|---------------------------|-----------------------|------------------------|----------------------|

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 |
| ¹² Dedicated Acres 320.0 Acres - W/2 | | | | | ¹³ Joint or Infill | ¹⁴ Consolidation Code | ¹⁵ Order No. | | |

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

| | |
|---|---|
|  <p>16</p> <p>5265.48'</p> <p>2235'</p> <p>1090'</p> <p>5280.00'</p> <p>15</p> <p>5266.80'</p> <p>LEASE SF-078994</p> <p>LAT: 36°48.8288'N LONG: 107°20.9520'W DATUM: NAD27</p> <p>SEP 2005 RECEIVED OIL CONS. DIV. DIST. 8</p> | <p>¹⁷ OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Vicki Westby (pf)</i></p> <p>Signature Vicki R. Westby</p> <p>Printed Name Staff Agent</p> <p>Title 9/20/04</p> <p>Date</p> |
| | <p>¹⁸ SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>Survey Date: AUGUST 24, 2004</p> <p>Signature and Seal of Professional Surveyor</p> <p></p> <p><i>JASON C. EDWARDS</i></p> <p>Certificate Number 15269</p> |

Submit 3 Copies To Appropriate District Office

District I

1625 N. French Dr., Hobbs, NM 88240

District II

1301 W. Grand Ave., 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

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103

May 27, 2004

WELL API NO.

5. Indicate Type of Lease

STATE ☐ FEE ☐

6. State Oil & Gas Lease No.

7. Lease Name or Unit Agreement Name

SAN JUAN 30-5 UNIT

8. Well Number 239A

9. OGRID Number
217817

10. Pool name or Wildcat
BASIN FRUITLAND COAL

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

2. Name of Operator
ConocoPhillips Company

3. Address of Operator
4001 Penbrook, Odessa, TX 79762

4. Well Location
Unit Letter E 2235 feet from the NORTH line and 1090 feet from the WEST line
Section 15 Township 30N Range 5W NMPM County RIO ARriba

11. Elevation (Show whether DR, RKB, RT, GR, etc)
6443 GL

Pit r Btl n% aj nlv I ink Applikition I r Closure

Pit type DRILL Depth to Groundwater >100' Distance from nearest fresh water well >1000' Distance from nearest surface water 200-1000'

Pit Liner Thickness: null Below-Grade Tank: Volume bbls; Construction Material

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐

OTHER: ☐

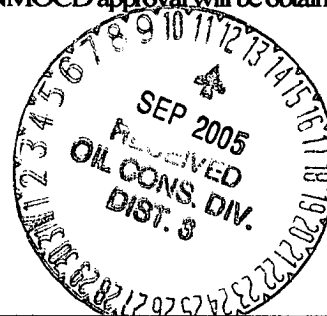
SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ PANDA ☐
CASING/CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 11.03. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

ConocoPhillips Generic Pit Plan is on files at the NMOCD in Aztec, NM. See the attached diagram that details the location of the pit in reference to the proposed wellhead. The drill pit will be lined. The drill pit will be closed after the well has been completed. The solids left after the water has been disposed of will be sampled and NMOCD approval will be obtained prior to closure of this pit.



I hereby certify that the information above is true and complete to the best of my knowledge and belief. Further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒ a general permit ☐ or an (attached) alternative OCD-approved plan ☐

SIGNATURE Vicki Westby TITLE Sr. Analyst DATE 9/17/04

Type or print name E-mail address: Telephone No.

For State Use Only

APPROVED BY: [Signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. 3 DATE SEP 12 2005

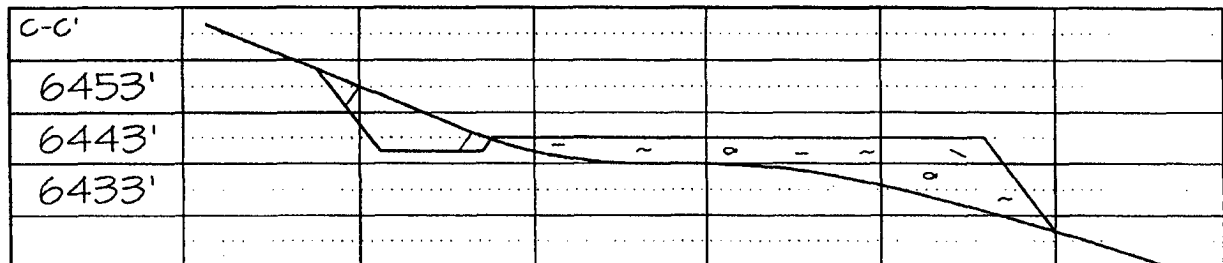
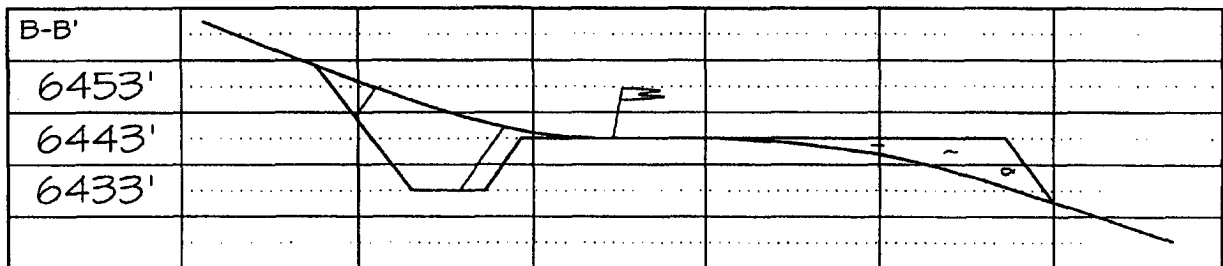
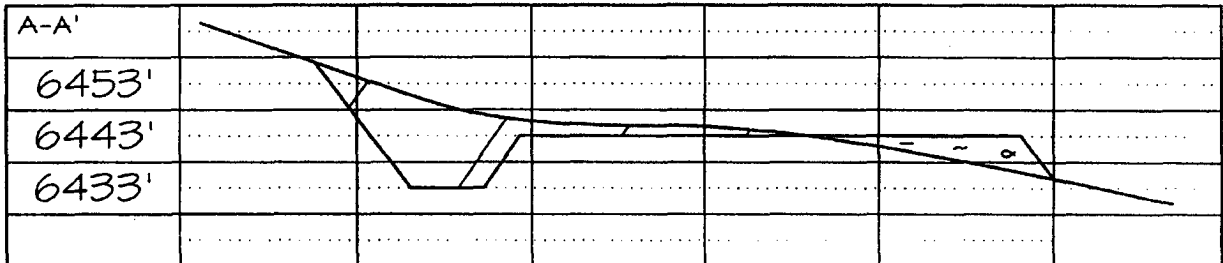
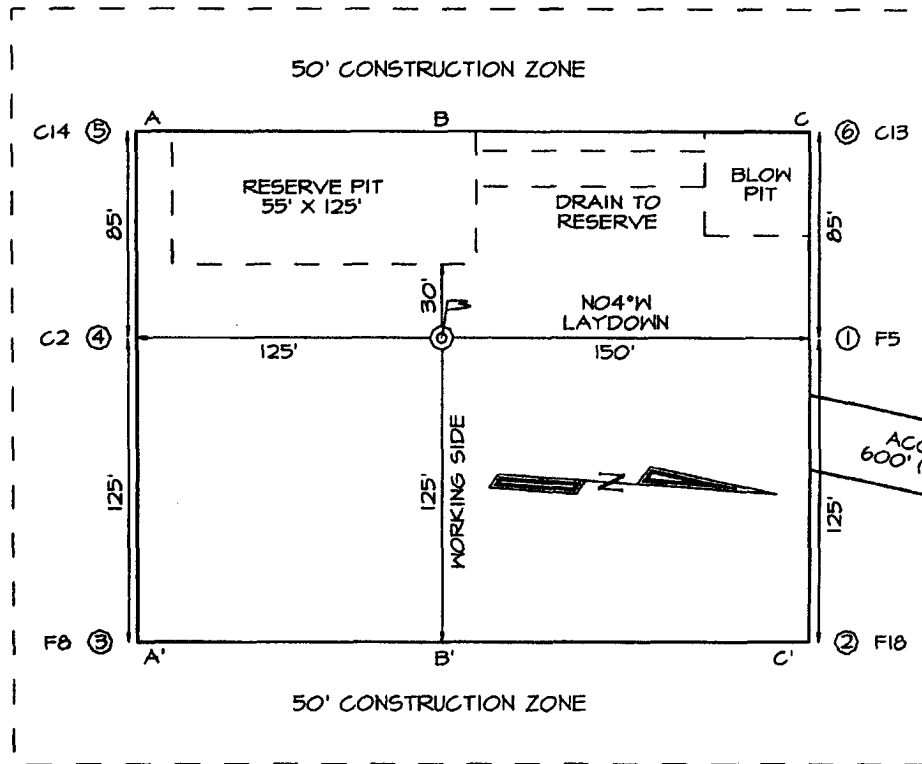
Conditions of Approval (if any):

CONOCOPHILLIPS COMPANY SAN JUAN 30-5 UNIT #239A
2235' FNL & 1090' FWL, SECTION 15, T30N, R5W, NMPM
RIO ARriba COUNTY, NEW MEXICO ELEVATION: 6443'

LATITUDE: 36.81381° N
LONGITUDE: 107.34937° W
 DATUM: NAD1927

PLAT NOTE:

FEE SURFACE OWNER
 Lopez Family Trust



PROJECT PROPOSAL - New Drill / Sidetrack

SAN JUAN 30-5 239A

| | | | | | |
|---|---|-------------------------|---------------------------------|--------------------|--|
| Lease: | | AFE #: | | AFE \$: | |
| Field Name: hPHILLIPS 30-5 | | Rig: | State: NM | County: RIO ARRIBA | API #: |
| Geoscientist: Cloud, Tom A | | Phone: +1 832 486-2377 | Prod. Engineer: Bergman, Pat W. | | Phone: (832) 486-2358 |
| Res. Engineer: Kolesar, James E. | | Phone: (832) 486 - 2336 | Proj. Field Lead: | | Phone: |
| Primary Objective / Zones: | | | | | |
| Zone | Zone Name | | | | |
| JCV | BASIN FRUITLAND COAL (GAS) | | | | |
| Location Summary: | | | | | |
| Latitude: 36.82 | Longitude: -107.35 | X: | Y: | Section: 15 | Range: 5W |
| Footage X: 900 FWL | Footage Y: 1600 FNL | Elevation: 6420 | (FT) | Township: 30N | |
| Tolerance: | | | | | |
| Location Type: | | Start Date (Est.): | Completion Date: | Date In Operation: | |
| Formation Data: Assume KB = 6433 Units = FT | | | | | |
| Formation Call & Casing Points | Depth (TVD in Ft) | SS (Ft) | Depletion (Yes/No) | BHP (PSIG) | BHT |
| Remarks | | | | | |
| SAN JOSE | 13 | 6420 | <input type="checkbox"/> | | |
| Surface Casing | 213 | 6220 | <input type="checkbox"/> | | 12-1/4 hole. 9 5/8" 32.3 ppf, H-40, STC casing. Circulate cement to surface. |
| NCMT | 1283 | 5150 | <input type="checkbox"/> | | |
| OJAM | 2543 | 3890 | <input type="checkbox"/> | | Possible water flows. |
| KRLD | 2683 | 3750 | <input type="checkbox"/> | | |
| FRLD | 2933 | 3500 | <input type="checkbox"/> | | Possible gas. |
| Intermediate Casing | 3023 | 3410 | <input type="checkbox"/> | | 8 3/4" Hole. 7", 20 ppf, J-55, STC Casing. Circulate cement to surface. |
| BASE MAIN COAL | 3163 | 3270 | <input type="checkbox"/> | 300 | |
| PC TONGUE | 3183 | 3250 | <input type="checkbox"/> | | |
| Total Depth | 3250 | 3183 | <input type="checkbox"/> | | 6-1/4" hole possibly underreamed to 9.5". Optional Liner: 5.5", 15.5#, J-55 LTC - left uncemented. |
| BASE LOWEST COAL | 3373 | 3060 | <input type="checkbox"/> | | |
| PCCF | 3378 | 3055 | <input type="checkbox"/> | | |
| Reference Wells: | | | | | |
| Reference Type | Well Name | | Comments | | |
| Logging Program: | | | | | |
| Intermediate Logs: | <input type="checkbox"/> Log only if show <input type="checkbox"/> GR/ILD <input type="checkbox"/> Triple Combo | | | | |
| TD Logs: | <input type="checkbox"/> Triple Combo <input type="checkbox"/> Dipmeter <input type="checkbox"/> RFT <input type="checkbox"/> Sonic <input type="checkbox"/> VSP <input type="checkbox"/> TDT | | | | |
| Additional Information: | | | | | |

Comments: General/Work Description - Next to road and pipeline. Location moved at Fee owner's request to avoid grazing land.

Mud log from intermediate casing shoe to TD will be obtained.

Mud Log from intermediate casing shoe to TD will be obtained.

Drilling Mud Program:

Surface: spud mud

Intermediate: fresh water mud with bentonite and polymer as needed

Below Intermediate: air/mist drilling media with foamer, polymer, & corrosion inhibitor as needed

San Juan 30-5 # 239A

SURFACE CASING :

| | | |
|-------------------------|--------|----------------------------|
| Drill Bit Diameter | 12.25" | |
| Casing Outside Diameter | 9.625" | Casing Inside Diam. 8.063" |
| Casing Weight | 32.3 | ppf |
| Casing Grade | H-40 | |
| Shoe Depth | 230' | |
| Cement Yield | 125 | cuft/sk |
| Excess Cement | 125 | % |
| Cement Required | 125 | sx |

SHOE 230 ', 9.625 ", 32.3 ppf, H-40 STC

INTERMEDIATE CASING :

| | | |
|-------------------------|--------|----------------------------|
| Drill Bit Diameter | 12.25" | |
| Casing Outside Diameter | 9.625" | Casing Inside Diam. 8.063" |
| Casing Weight | 20 | ppf |
| Casing Grade | J-55 | |
| Shoe Depth | 3023' | |
| Lead Cement Yield | 160 | cuft/sk |
| Lead Cement Excess | 160 | % |
| Tail Cement Length | 100' | |
| Tail Cement Yield | 160 | cuft/sk |
| Tail Cement Excess | 160 | % |
| Lead Cement Required | 160 | sx |
| Tail Cement Required | 100 | sx |

LINER TOP 3003 '

SHOE 3023 ', 7 ", 20 ppf, J-55

LINER BOTTOM 3250' (Uncemented)

| San Juan 30-5 #289A | | |
|---------------------|------------|-----------|
| | Surf. Csg. | Int. Csg. |
| OP | 9.625 | 7 |
| ID | 9.001 | 6.456 |
| Depth | 230 | 3023 |
| Hole Dia. | 12.25 | 8.75 |
| % Excess Gap | | 160 |
| % Excess Tail | 125 | 160 |
| Lead Yield | | |
| Tail Yield | | |
| Foot Tail Slury | 230 | 315 |
| Foot Tail Slury | 0 | 2708 |
| Foot Lead Slury | N/A | 0 |
| Mud Wt (ppg) | 8.9 | 9.0 |
| Mud Type | WBM | WBM |

| Surface Casing | | | | | | |
|-------------------|-----|----------|-----------|------|-------|-------|
| | Ft | Cap | XS Factor | bbls | cuft | sq |
| Open Hole Annulus | 230 | 0.055804 | 2.25 | 28.9 | 162.1 | 134.0 |
| Shoe Track Volume | 40 | 0.078735 | 1 | 3.1 | 17.7 | 13.3 |
| Total | | | | 32.0 | 179.8 | 147.3 |

| Intermediate Casing | | | | | | |
|-------------------------|------|----------|-----------|-------|--------|-------|
| | Ft | Cap | XS Factor | bbls | cuft | sq |
| Lead Open Hole Annulus | 2478 | 0.026786 | 2.6 | 172.6 | 968.9 | 333.0 |
| Lead Cased Hole Annulus | 220 | 0.031116 | 1 | 6.8 | 38.4 | 13.2 |
| Lead Total | | | | 179.4 | 1007.3 | 346.2 |
| Tail Open Hole Annulus | 315 | 0.026786 | 2.6 | 21.9 | 123.2 | 92.6 |
| Tail Shoe Track Volume | 42 | 0.040505 | 1 | 1.7 | 9.6 | 7.2 |
| Tail Total | | | | 23.6 | 132.7 | 99.8 |

| | | |
|----------------------|-------------------------|-----------|
| San Juan 30.5 # 239A | | |
| 9 5/8 Surface Casing | | |
| Cement Recipe | Class C Standard Cement | |
| | + 3% Calcium Chloride | |
| | + 0.25 lb/sx Flocele | |
| Cement Volume | | 1.21 sx |
| Cement Yield | 1.21 | cuft/sx |
| Slurry Volume | | 1.21 cuft |
| | | 0.23 bbls |
| Cement Density | 15.6 | ppg |
| Water Required | 5.29 | gal/sx |

San Juan 30-5 # 239A

| 7" Intermediate Casing | | |
|------------------------|--|---------|
| Lead Slurry | | |
| Cement Recipe | Standard Cement | |
| | + 3% Econolite (Lost Circulation Additive) | |
| | + 10 lb/sx Gilsonite (Lost Circ. Additive) | |
| | + 0.25 lb/sx Flocele (Lost Circ. Additive) | |
| Cement Required | 2.16 | sx |
| Cement Yield | 2.91 | cuft/sx |
| Slurry Volume | 1007.4 | cuft |
| | 29.4 | bbls |
| Cement Density | 11.5 | ppg |
| Water Required | 16.88 | gal/sx |

| 7" Intermediate Casing | | |
|------------------------|---|---------|
| Tail Slurry | | |
| Cement Slurry | 50 / 50 POZ: Standard Cement | |
| | + 2% Bentonite (Light Weight Additive) | |
| | + 5 lbm/sk Gilsonite (Lost Circ. Additive) | |
| | + 0.25 lbm/sk Flocele (lost Circ. Additive) | |
| | + 2% Calcium Chloride (Accelerator) | |
| Cement Required | 1.10 | sx |
| Cement Yield | 1.33 | cuft/sx |
| Slurry Volume | | cuft |
| | | bbls |
| Cement Density | 13.5 | ppg |
| Water Required | 5.36 | gal/sx |

San Juan 30-5 #239A

SURFACE CASING :

| | | |
|--------------------------------|---------------|----------------|
| Drill Bit Diameter | 12.25" | |
| Casing Outside Diameter | 9.625" | 9.001 |
| Casing Weight | 32.3 | ppf |
| Casing Grade | H-40 | |
| Shoe Depth | 230' | 40' |
| Cement Yield | 147 | cuft/sk |
| Excess Cement | 100 | % |
| Casing Capacity | 0.0787 bbl/ft | 0.4419 cuft/ft |
| Hole / Casing Annulus Capacity | 0.0558 bbl/ft | 0.3132 cuft/ft |

Cement Required 147 sx

SHOE 230', 9.625", 32.3 ppf, H-40

INTERMEDIATE CASING :

| | | |
|----------------------------------|---------------|----------------|
| Drill Bit Diameter | 12.25" | |
| Casing Outside Diameter | 9.625" | 6.456 |
| Casing Weight | 20 | ppf |
| Casing Grade | J-55 | |
| Shoe Depth | 3023' | |
| Lead Cement Yield | 389 | cuft/sk |
| Lead Cement Excess | 100 | % |
| Tail Cement Length | 100' | 42' |
| Tail Cement Yield | 100 | cuft/sk |
| Tail Cement Excess | 100 | % |
| Casing Capacity | 0.0405 bbl/ft | 0.2273 cuft/ft |
| Casing / Casing Annulus Capacity | 0.0311 bbl/ft | 0.1746 cuft/ft |
| Hole / Casing Annulus Capacity | 0.0268 bbl/ft | 0.1503 cuft/ft |

Lead Cement Required 389 sx
Tail Cement Required 100 sx

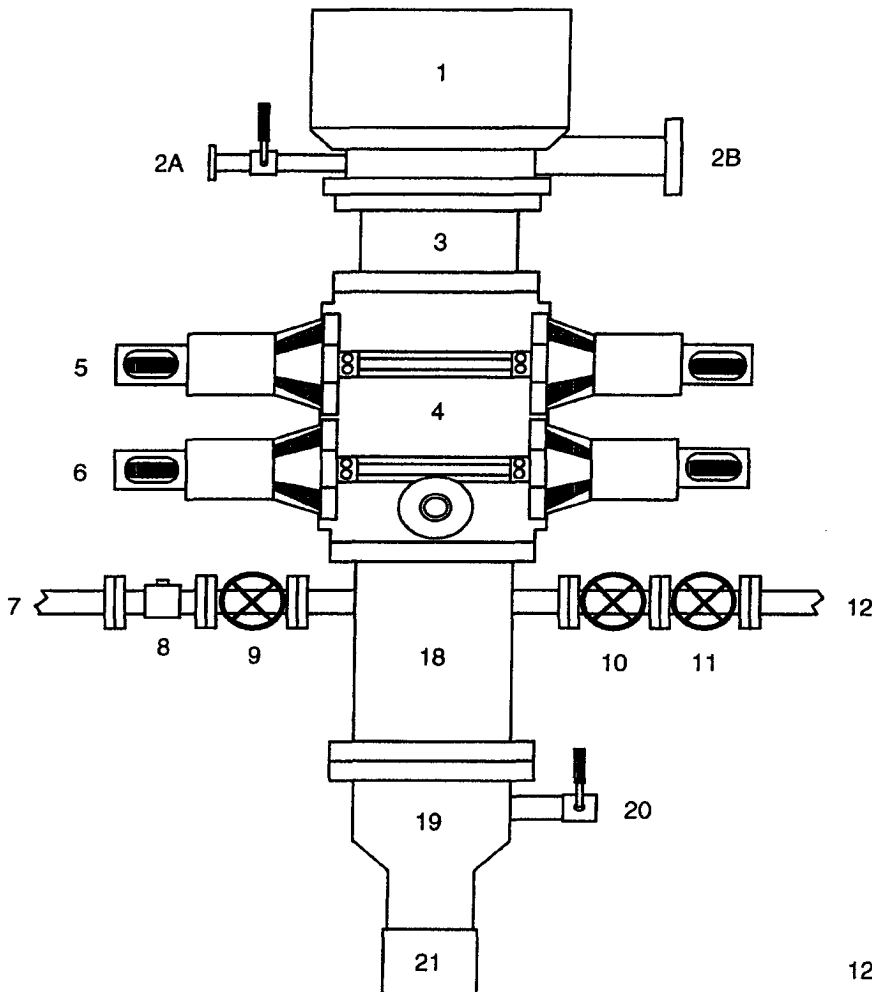
LINER TOP 3003'

SHOE 3023', 7", 20 ppf, J-55

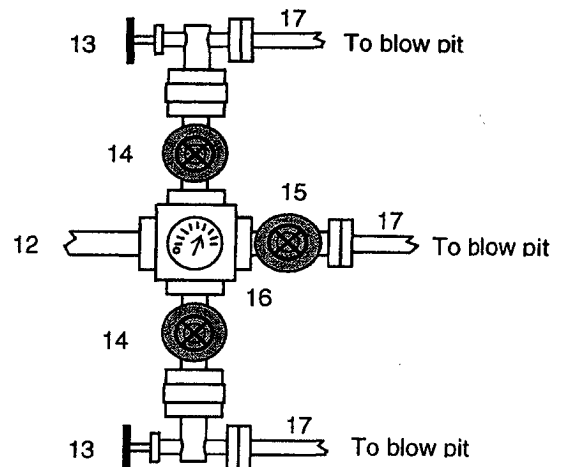
LINER BOTTOM 3250' (Uncemented)

BLOWOUT PREVENTER ARRANGEMENT & PROGRAM

For Drilling to Intermediate Casing Point & Setting 7" Intermediate Casing



1. Rotating Head
- 2A. Fill-up Line & valve
- 2B. Flowline
3. Spacer Spool
4. Double Ram BOP (11", 3000 psi)
5. Pipe Rams
6. Blind Rams
7. Kill Line
8. Kill Line Check Valve
9. Kill Line Valve
10. Inner Choke Line Valve (3")
11. Outer Choke Line Valve (3")
12. Choke Line (3")
13. Variable Choke
14. Choke Line Valve (2")
15. Panic Line Valve (3")
16. Choke Manifold Pressure Gauge
17. Choke Line (2")
18. Mud Cross Spacer Spool
19. Casing Head "A" Section
20. Casing Head "A" Section 2" Valve
21. 9 5/8" Casing Collar



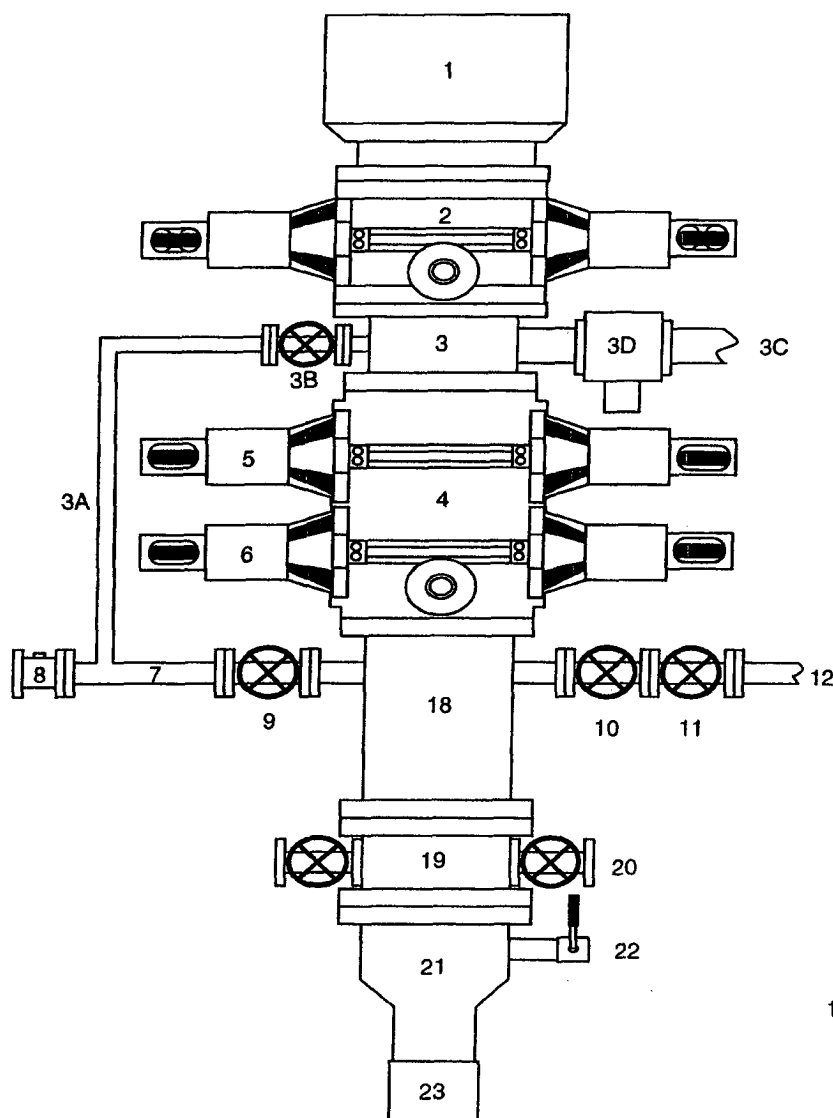
A 12-1/4" hole will be drilled to approximately 220' and the 9-5/8" surface casing will be run and cemented. The Casing Head "A" Section will be screwed onto the 9-5/8" surface casing stub. The BOP will be installed on the Casing Head "A" Section. A test plug will be set in the wellhead and the pipe rams and choke manifold will be tested to 200 psi to 300 psi (low pressure test) for 10 minutes and to 1000 psi (high pressure test) for 10 minutes. Then the test plug will be removed, and the **9-5/8" casing will be pressure tested** against closed blind rams to 200 psi to 300 psi for 10 minutes and to **1000 psi for 30 minutes** (this value is one 44% of the minimum internal yield pressure of the 9-5/8" casing). (Note: per regulatory requirements we will wait on cement at least 8 hrs after placement before testing the 9-5/8" surface casing). Then an 8-3/4" hole will be drilled to intermediate casing point and 7" intermediate casing will be run and cemented.

In addition to the equipment in the above diagram the following equipment will comprise the BOP system:

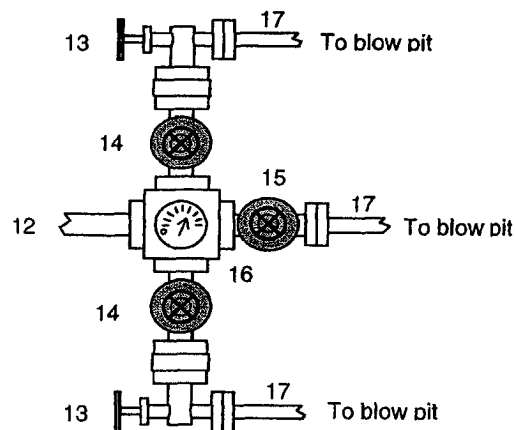
1. Upper Kelly cock Valve with handle
2. Stab-in TIW valve for all drillstrings in use

BLOWOUT PREVENTER ARRANGEMENT & PROGRAM

For Cavitation Program



1. Stripping Head
2. Single Ram BOP (7-1/16", 3M)
3. Mud Cross
- 3A. Equalizing Line (2")
- 3B. Wing Valve (2-1/16", 3M)
- 3C. Borehole Line (2 ea, 5" OD)
- 3D. HCR Valve (1 ea per line, 4-1/16")
4. Double Ram BOP (7-1/16", 3M)
5. Pipe Rams
6. Blind Rams
7. Kill Line
8. Kill Line Check Valve
9. Kill Line Valve
10. Inner Choke Line Valve (3")
11. Outer Choke Line Valve (3")
12. Choke Line (3")
13. Variable Choke
14. Choke Line Valve (2")
15. Panic Line Valve (3")
16. Choke Manifold Pressure Gauge
17. Vent Line (2")
18. Spacer Spool
19. Tubing Head
20. Tubing Head Valves (2- 9/16")
21. Casing Head "A" Section
22. Casing Head "A" Section 2" Valve
23. 9-5/8" Casing Collar



This BOP arrangement and test program is for the cavitation program. The BOP will be installed on the tubing head. The 7" casing will be pressure tested against closed blind rams to 200 psi to 300 psi for 10 minutes and to 1800 psi for 30 minutes - this test pressure is 48% of the minimum internal yield strength of 3740 psi for the 7", 20#, J-55, STC casing. The pipe rams and choke manifold will be tested to 200 psi to 300 psi (low pressure test) for 10 minutes and to 1800 psi (high pressure test) for 10 minutes - This test will be done with a test plug or possibly without a test plug (ie against casing). If we conduct this test without a test plug we will ensure that we have sufficient drillstring weight in the hole to exceed the upward force generated by the test.

We use a power swivel and air/mist to drill the 6-1/4" hole in our cavitation program. We do not use a kelly. In addition to the equipment in the above diagram the following equipment will comprise the BOP system:

1. String floats will be used inside the drillpipe
2. Stab-in TIW valve for all drillstrings in use
3. Each borehole line is equipped with a hydraulically controlled valve (HCR valve).

Revision Date: September 1, 2004