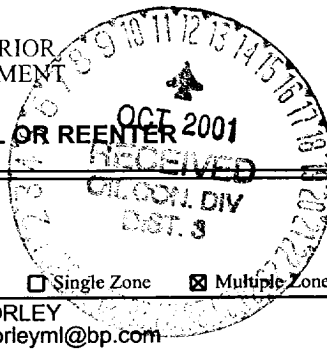


UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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

APPLICATION FOR PERMIT TO DRILL OR REENTER



1a. Type of Work: ☒ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☐ Single Zone ☒ Multiple Zone

2. Name of Operator  
AMOCO PRODUCTION COMPANY

Contact: MARY CORLEY  
E-Mail: corleym@bp.com

3a. Address  
P.O. BOX 3092  
HOUSTON, TX 77253

3b. Phone No. (include area code)  
Ph: 281.366.4491 Fx: 281.366.0700

5. Lease Serial No.  
SF - 078051

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.  
MUDGE LS 22M

9. API Well No.  
30-045-30757

10. Field and Pool, or Exploratory  
BASIN DAKOTA/BLANCO MESAVERDE

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*

At surface SESE Lot P 1120FSL 860FEL 36.55400 N Lat, 107.59400 W Lon

At proposed prod. zone

11. Sec., T., R., M., or Blk. and Survey or Area

P Sec 4 T31N R11W Mer NMP

14. Distance in miles and direction from nearest town or post office\*  
9 MILES FROM AZTEC

12. County or Parish  
SAN JUAN

13. State  
NM

15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)  
860

16. No. of Acres in Lease  
309.31

17. Spacing Unit dedicated to this well

309.31 E/2

18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft.

19. Proposed Depth  
7530 MD

20. BLM/BIA Bond No. on file

21. Elevations (Show whether DF, KB, RT, GL, etc.)  
6075 GL

22. Approximate date work will start  
08/27/2001

23. Estimated duration

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

Name (Printed/Typed)  
MARY CORLEY

Date  
07/27/2001

Title  
AUTHORIZED REPRESENTATIVE

Approved by (Signature)

Name (Printed/Typed)

Date

Title

Office

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 #6014 verified by the BLM Well Information System  
For AMOCO PRODUCTION COMPANY, sent to the Farmington  
Committed to AFMSS for processing by Maurice Johnson on 08/01/2001 ()

procedural review pursuant to 43 CFR 3165.3  
and appeal pursuant to 43 CFR 3165.4,

DRILLING OPERATIONS AUTHORIZED ARE  
SUBJECT TO COMPLIANCE WITH ATTACHED  
"GENERAL REQUIREMENTS"

\*\* ORIGINAL \*\* ORIGINAL \*\* ORIGINAL \*\* ORIGINAL \*\* ORIGINAL \*\* ORIGINAL \*\* ORIGINAL \*\*

District I  
PO Box 1980, Hobbs NM 88241-1980  
District II  
PO Drawer KK, Artesia, NM 87211 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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|   |  |   |
|---|--|---|
| <sup>1</sup> API Number<br>30-045-30757 | <sup>2</sup> Pool Code<br>71599-72319                  | <sup>3</sup> Pool Name<br>BASIN DAKOTA - BLANCO MESAVERDE |
| <sup>4</sup> Property Code<br>000911    | <sup>5</sup> Property Name<br>Mudge LS                 | <sup>6</sup> Well Number<br># 22M                         |
| <sup>7</sup> OGRID No.<br>000778        | <sup>8</sup> Operator Name<br>AMOCO PRODUCTION COMPANY | <sup>9</sup> Elevation<br>6075                            |

<sup>10</sup> Surface Location

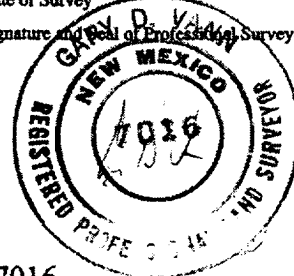
|                    |              |                  |               |         |                       |                           |                      |                        |                    |
|--------------------|--------------|------------------|---------------|---------|-----------------------|---------------------------|----------------------|------------------------|--------------------|
| UL or Lot No.<br>P | Section<br>4 | Township<br>31 N | Range<br>11 W | Lot Idn | Feet from the<br>1120 | North/South line<br>SOUTH | Feet from the<br>860 | East/West line<br>EAST | County<br>SAN JUAN |
|--------------------|--------------|------------------|---------------|---------|-----------------------|---------------------------|----------------------|------------------------|--------------------|

<sup>11</sup> Bottom Hole Location If Different From Surface

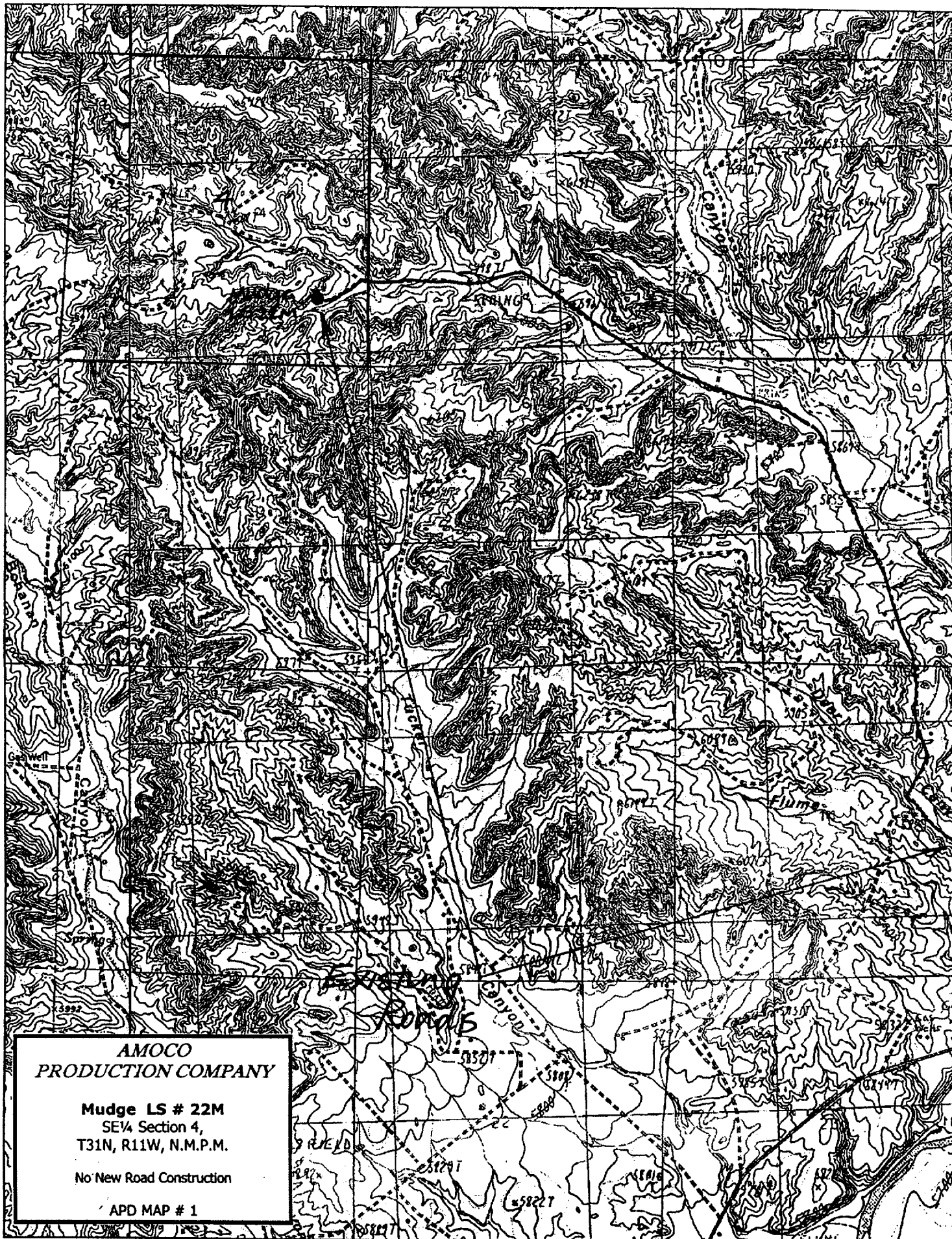
|                             |         |          |       |         |               |                  |               |                |        |
|-----------------------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| <sup>12</sup> UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|-----------------------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|

|   |                               |                                  |                         |
|---|-------------------------------|----------------------------------|-------------------------|
| <sup>13</sup> Dedicated Acres<br>309.31 | <sup>14</sup> Joint or Infill | <sup>15</sup> Consolidation Code | <sup>16</sup> 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

|  |   |  |
|--|---|--|
| <sup>16</sup><br>1314(R)<br>Lot 8<br>1301(R)<br>Lot 9<br>2602(R) | <sup>17</sup> OPERATOR CERTIFICATION<br>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.<br><br>Signature <u>Mary Corley</u><br>Printed Name <u>Mary Corley</u><br>Title <u>SA Regulatory Analyst</u><br>Date <u>7.27.01</u> | <sup>18</sup> SURVEYOR CERTIFICATION<br>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.<br><br>Date of Survey <u>May 29, 2001</u><br>Signature and Seal of Professional Surveyor <u>GARY D. VANDERKAM</u><br><br>Certificate Number <u>7016</u> |
|  |   |  |

(R) - BLM Record



**AMOCO PRODUCTION COMPANY  
DRILLING AND COMPLETION PROGRAM**

**Prospect Name:** Mudge LS  
**Lease:** MUDGE LS  
**County:** San Juan  
**State:** New Mexico  
**Date:** July 27, 2001

**Well No:** 22M  
**Surface Location:** 4-31N-11W, 1120 FSL, 860 FEL  
**Field:** Blanco Mesaverde/Basin Dakota

**OBJECTIVE:** Drill 450' below the base of the Greenhorn Limestone, set 41/2" production casing, Stimulate LS, CH, MF, PL and DK intervals

| METHOD OF DRILLING                                 |                          | APPROXIMATE DEPTHS OF GEOLOGICAL MARKER |  |                    |  |
|--|--------------------------|---|--|--------------------|--|
| TYPE OF TOOLS                                      |                          | Estimated GL: 6075                      |  | Estimated KB: 6089 |  |
| Rotary   |                          | 0 - TD                                  |  |                    |  |
| LOG PROGRAM  |                          |   |  |                    |  |
| TYPE   |                          | DEPTH INVERAL                           |  |                    |  |
| <u>OPEN HOLE</u>                                   |                          |   |  |                    |  |
| GR-Induction                                       | TD to 7" shoe            |   |  |                    |  |
| Density/Neutron                                    | TD to 7" shoe            |   |  |                    |  |
| <u>CASED HOLE</u>                                  |                          |   |  |                    |  |
| GR-CCL-TDT   | TDT – TD to 7" shoe      |   |  |                    |  |
| CBL  | Identify 4 ½" cement top |   |  |                    |  |
| REMARKS:   |                          |   |  |                    |  |
| - Please report any flares (magnitude & duration). |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          |   |  |                    |  |
|  |                          | </                                      |  |                    |  |

| MUD PROGRAM:     |                 |   |             |                 |                     |
|------------------|-----------------|---|-------------|-----------------|---------------------|
| Approx. Interval | Type Mud        | Weight, #/ga  | Vis, sec/qt | W/L cc's/30 min | Other Specification |
| 0 - 200          | Spud            | 8.6-9.2   |             |                 |                     |
| 200 - 3221 (1)   | Water/LSND      | 8.6-9.2   |             | <6              |                     |
| 3221 - 7384      | Gas/Air/N2/Mist | Volume sufficient to maintain a stable and clean wellbore |             |                 |                     |
| 7384 - 7530 (2)  | LSND            | 9.0-9.2   |             | <6              |                     |

**REMARKS:**

- (1) The hole will require sweeps to keep unloaded while fresh water drilling. Let hole conditions dictate frequency.  
(2) Mud up 50' above Morrison +/-.

**CASING PROGRAM:** (Normally, tubular goods allocation letter specifies casing sizes to be used. Hole sizes will be governed by Contract)

| Casing String     | Estimated Depth | Casing Size | Grade       | Weight | Hole Size | Landing Pt, Cmt, Etc. |
|-------------------|-----------------|-------------|-------------|--------|-----------|-----------------------|
| Surface/Conductor | 200             | 9 5/8"      | H-40 ST&C   | 32#    | 12.25"    | 1                     |
| Intermediate 1    | 3221            | 7"          | J/K-55 ST&C | 20#    | 8.75"     | 1,2                   |
| Production        | 7530.2          | 4 1/2"      | J-55        | 11.6#  | 6.25"     | 3                     |

**REMARKS:**

- (1) Circulate Cement to Surface  
(2) Set casing 100' into Lewis Shale  
(3) Bring cement 100' above 7" shoe

**CORING PROGRAM:**

None

**COMPLETION PROGRAM:**

Rigless, 4-6 Stage Limited Entry Hydraulic Frac

**GENERAL REMARKS:**

Notify BLM/NMOCD 24 hours prior to Spud, BOP testing, and Casing and Cementing.

Form 46 Reviewed by: \_\_\_\_\_ Logging program reviewed by: \_\_\_\_\_ N/A

| PREPARED BY: | APPROVED: | DATE:                       |  |
|--------------|-----------|-----------------------------|--|
| HGJ/MNP      |           | 21 June 2001<br>Version 1.0 |  |

**Amoco Production Company  
BOP Pressure Testing Requirements**

Well Name: MUDGE LS 22M

County: San Juan

State: New Mexico

| Formation      | TVD  | Anticipated<br>Bottom Hole Pressure | Maximum Anticipated<br>Surface Pressure ** |
|----------------|------|-------------------------------------|--|
| Ojo Alamo      | 1769 |                                     |  |
| Fruitland Coal | 2564 |                                     |  |
| PC             | 2766 |                                     |  |
| Lewis Shale    | 3121 |                                     |  |
| Cliff House    | 4500 | 500                                 | 0  |
| Menefee Shale  | 4603 |                                     |  |
| Point Lookout  | 5005 | 600                                 | 0  |
| Mancos         | 5373 |                                     |  |
| Dakota         | 7146 | 2600                                | 1418                                       |

\*\* Note: Determined using the following formula:  $ABHP - (.22 * TVD) = ASP$

|   |
|---|
| Requested BOP Pressure Test Exception: 3000 PSI |
|---|

---

**SAN JUAN BASIN  
Dakota Formation  
Pressure Control Equipment**

**Background**

The objective Dakota formation maximum surface pressure is anticipated to be less than 1000 PSI, based on shut-in surface pressures from adjacent wells. Pressure control equipment working pressure minimum requirements are therefore 2000 PSI. Equipment to be used will conform to API RP-53 (Figure 2.C.2) for a 2000 PSI system per Federal Onshore Order No. 2. Due to available conventional equipment within the area, 3000 PSI rated pressure control equipment will typically be utilized in a double ram type arrangement. Regional drilling rights to be utilized have substructure height limitations which exclude the use of annular preventers; therefore a rotating head will be installed above these rams. This pressure control equipment will be utilized for conventional drilling below conductor to total depth in the Basin Dakota. No abnormal temperature, pressure, or H2S anticipated.

**Equipment Specification**

**Interval**

**BOP Equipment**

Below conductor casing to total depth

11" nominal or 7 1/16", 3000 PSI  
double ram preventer with rotating head.

All ram type preventers and related control equipment will be hydraulically tested to 250 PSI (low pressure) and 2000 PSI (high pressure), upon installation, following any repairs or equipment replacements, or at 30 day intervals. Accessories to BOP equipment will include kelly cock, upper kelly cock with a handle available, floor safety valves and choke manifold which will also be tested to equivalent pressure.

# Cementing Program

|  |  |
|--|--|
| Well Name: Mudge LS 22M                | Field: Blanco Mesaverde / Basin Dakota |
| Location: 4-31N-11W, 1120 FSL, 860 FEL | API No.                                |
| County: San Juan                       | Well Flac                              |
| State: New Mexico                      | Formation: Dakota Mesa Verde           |
|  | KB Elev (est) 6089                     |
|  | GL Elev. (est) 6075                    |

## Casing Program:

| Casing String | Est. Depth<br>(ft.) | Hole Size<br>(in.) | Casing Size<br>(in.) | Thread | TOC<br>(ft.) | Stage Tool<br>Or TOL (ft.) | Cmt Cir. Out<br>(bbl.) |
|---------------|---------------------|--------------------|----------------------|--------|--------------|----------------------------|------------------------|
| Surface       | 200                 | 12.25              | 9.625                | ST&C   | Surface      | NA                         |                        |
| Intermediate  | 3221                | 8.75               | 7                    | LT&C   | Surface      | NA                         |                        |
| Production -  | 7530                | 6.25               | 4.5                  | ?      | 3121         | NA                         |                        |

## Casing Properties:

(No Safety Factor Included)

| Casing String | Size<br>(in.) | Weight<br>(lb/ft) | Grade     | Burst<br>(psi.) | Collapse<br>(psi.) | Joint St.<br>(1000 lbs.) | Capacity<br>(bbl/ft.) | Drift<br>(in.) |
|---------------|---------------|-------------------|-----------|-----------------|--------------------|--------------------------|-----------------------|----------------|
| Surface       |               | 9.625             | 32 H-40   | 3370            | 1400               | 254                      | 0.0787                | 8.845          |
| Intermediate  |               | 7                 | 20 K-55   | 3740            | 2270               | 234                      | 0.0405                | 6.456          |
| Production -  |               | 4.5               | 11.6 J-55 | 5350            | 4960               | 154                      | 0.0155                | 3.875          |

## Mud Program

| Apx. Interval<br>(ft.) | Mud Type     | Mud Weight | Recommended Mud Properties Prio Cementing: |
|------------------------|--------------|------------|--|
|                        |              |            | PV <20                                     |
|                        |              |            | YP <10                                     |
|                        |              |            | Fluid Loss <15                             |
| 0 - SCP                | Water/Spud   | 8.6-9.2    |  |
| SCP - ICP              | Water/LSND   | 8.6-9.2    |  |
| ICP - ICP2             | Gas/Air Mist | NA         |  |
| ICP2 - TD              | LSND         | 8.6 - 9.2  |  |

## Cementing Program:

|                              | Surface | Intermediate       | Production         |
|------------------------------|---------|--------------------|--------------------|
| Excess %, Bit                | 100%    | 80                 | 10                 |
| Excess %, Caliper            | NA      | NA                 | 30                 |
| BHST (est deg. F)            | 60      | 120                | 160                |
| Pipe Movement                | NA      | Rotate/Reciprocate | Rotate/Reciprocate |
| Rate, Max (bpm)              | 7       | 4                  | 2                  |
| Rate Recommended (bpm)       | 6       | 4                  | 2                  |
| Pressure, Max (psi)          | 200     | 2000               | 2000               |
| Shoe Joint                   | 40      | 80                 | 40                 |
| Batch Mix                    | NA      | NA                 | NA                 |
| Circulating prior cmtng (hr) | 0.5     | 1.5                | 2                  |
| Time Between Stages, (hr)    | NA      | NA                 | NA                 |
| Special Instructions         | 1,6,7   | 1,6,8              | 2,4,6              |

1. Do not wash pumps and lines.
2. Wash pumps and lines.
3. Reverse out
4. Run Blend Test on Cement
5. Record Rate, Pressure, and Density on 3.5" disk
6. Confirm densitometer with pressurized mud scales
7. 1" cement to surface if cement is not circulated.
8. If cement is not circulated to surface, run temp. survey 10-12 hr. after landing plug.

## Notes:

- \*Do not wash up on top of plug. Wash lines before displacing production cement job to minimize drillout.  
 \*\*\* Run TMD cased hole logs to identify pay; Perforating and CH logs can be run rigless.

## Surface:

|          |         |             |
|----------|---------|-------------|
| Preflush | 20 bbl. | Fresh Water |
|----------|---------|-------------|

# Cementing Program

|                    |   |  |                   |
|--------------------|---|--|-------------------|
| Slurry 1           |   | 108  | 125               |
| TOC@Surface        |   | 125 cuft   |                   |
|                    |   | + 2% CaCl2 (accelerator)                               |                   |
|                    |   | 0.25 #/sk Cellophane Flake (lost circulation additive) | 0.3132 cuft/ft OH |
|                    |   | 0.1% D46 antifoam                                      | 100 % excess      |
| Slurry Properties: | Density   | Yield  | Water             |
|                    | (lb/gal)  | (ft3/sk)   | (gal/sk)          |
| Slurry 1           | 15.8  | 1.16   | 4.95              |
| Casing Equipment:  | 9-5/8", 8R, ST&C  |  |                   |
|                    | 1 Guide Shoe  |  |                   |
|                    | 1 Top Wooden Plug   |  |                   |
|                    | 1 Autofill insert float valve   |  |                   |
|                    | 4 Centralizers  |  |                   |
|                    | 1 Stop Ring   |  |                   |
|                    | 1 Thread Lock Compound  |  |                   |
| <hr/>              |   |  |                   |
| Intermediate:      |   |  |                   |
| Fresh Water        | 20 bbl  | fresh water  |                   |
| Lead               | 247   | 717  |                   |
| Slurry 1           | 247   | 717  |                   |
| TOC@Surface        | 247   | 717  |                   |
|                    | sx Class "G" Cement   |  |                   |
|                    | + 3% D79 extender   |  |                   |
|                    | + 2% S1 Calcium Chloride  |  |                   |
|                    | +1/4 #/sk. Cellophane Flake   |  |                   |
|                    | + 0.1% D46 antifoam'  |  |                   |
| Tail               | 107   | 135  |                   |
| Slurry 2           | 107   | 135  |                   |
|                    | sx 50/50 Class "G"/Poz  |  |                   |
|                    | + 2% gel (extender)   |  |                   |
| 500 ft fill        | 0.1% D46 antifoam   |  |                   |
|                    | + 1/4 #/sk. Cellophane Flake  |  |                   |
|                    | + 2% CaCl2 (accelerator)  |  |                   |
|                    | 0.1503 cuft/ft OH   |  |                   |
|                    | 0.1746 cuft/ft csg ann  |  |                   |
|                    | 80 % excess   |  |                   |
| Slurry Properties: | Density   | Yield  | Water             |
|                    | (lb/gal)  | (ft3/sk)   | (gal/sk)          |
| Slurry 1           | 11.4  | 2.9  | 17.77             |
| Slurry 2           | 13.5  | 1.27   | 5.72              |
| Casing Equipment:  | 7", 8R, ST&C  |  |                   |
|                    | 1 Float Shoe (autofill with minimal LCM in mud)                         |  |                   |
|                    | 1 Float Collar (autofill with minimal LCM in mud)                       |  |                   |
|                    | 1 Stop Ring   |  |                   |
|                    | 10 Centralizers (one in middle of first joint, then every third collar) |  |                   |
|                    | 2 Fluidmaster vane centralizers @ base of Ojo                           |  |                   |
|                    | 7 Centalizers one every 4th joint from Ojo to base of surface casing    |  |                   |
|                    | 1 Top Rubber Plug   |  |                   |
|                    | 1 Thread Lock Compound  |  |                   |

|                                 |  |   |          |
|---------------------------------|--|---|----------|
| <hr/>                           |  |   |          |
| <b>Production:</b>              |  |   |          |
| Fresh Water                     |  | 10 bbl  | CW100    |
| Lead<br>Slurry 1<br>TOC@Surface |  | 140 LiteCrete D961 / D124 / D154<br>+ 0.03 gps D47 antifoam<br>+ 0.5% D112 fluid loss | 299 cuft |

# Cementing Program

+ 0.11% D65 TIC

Tail  
Slurry 2

1657 ft fill

130 sx 50/50 Class "G"/Poz  
+ 5% D20 gel (extender)  
+ 0.1% D46 antifoam  
+ 1/4 #/sk. Cellophane Flake  
+ 0.25% D167 Fluid Loss

187 cuft  
+ 5 #/sk D24 gilsonite  
+ 0.15% D65 TIC  
+ 0.1% D800 retarder

Slurry Properties:

Density  
(lb/gal)

Yield  
(ft<sup>3</sup>/sk)

Water  
(gal/sk)

0.1026 cuft/ft OH  
10 % excess  
0.1169 cuft/ft csg ann

Slurry 1  
Slurry 2

9.5  
13

2.14  
1.44

6.38  
6.5

Top of Mancos  
5373

Casing Equipment:

4-1/2", 8R, ST&C

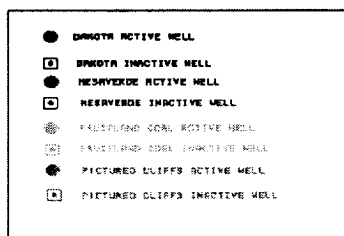
1 Float Shoe (autofill with minimal LCM in mud)  
1 Float Collar (autofill with minimal LCM in mud)  
1 Stop Ring  
39 Centralizers (every third joint)

1 Top Rubber Plug  
1 Thread Lock Compound

Note:

1. The job should be pumped at 2-3 bpm max rate. Do not exceed 3 bpm on displacement
2. Wash pump and lines before displacement. Slow to 1 bpm for the last 30 bbl of displacement.





|         |          |               |                  |
|---------|----------|---------------|------------------|
| DOC# 2  | SEARCHED | C. E. SACKETT | DATE 18-JUN-2001 |
| INDEXED |          |               |                  |