FORM 3160-3
(July 1992)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0136
Expires February 28, 1995

# UNITED STATES
# DEPARTMENT OF THE INTERIOR
## BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR DEEPEN

5. LEASE DESIGNATION AND SERIAL NO.
SF - ~~078116-A~~ 080244

6. IF INDIAN, ALOTTEE OR TRIBE NAME

1a. TYPE OF WORK DRILL [X] DEEPEN [ ]

7. UNIT AGREEMENT NAME

b. TYPE OF WELL OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [X]

8. FARM OR LEASE NAME, WELL NO.
RIDDLE 1M

2. NAME OF OPERATOR
AMOCO PRODUCTION COMPANY
P.O. BOX 3092
HOUSTON , TX 77079

9. API WELL NO.
30-045-30626

3. ADDRESS AND TELEPHONE NO.
MARY CORLEY
AUTHORIZED REPRESENTATIVE
PHONE:281.366.4491 EXT:
FAX: 281.366.0700
EMAIL:corleyml@bp.com

10. FIELD AND POOL, OR WILDCAT
BASIN DAKOTA/BLANCO MESAVERDE

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At Surface
1080FNL AND 2385FWL NENW SEC 21 T30N R9W
At proposed prod. zone

11. SEC.,T.,R.,M., OR BLK. AND SURVEY OR AREA
SECTION 21 T30N R9W
MERIDIAN NMP

14. DISTANCE IN MILES AND DIRECTION FROM THE NEAREST TOWN OR POST OFFICE
12 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 drlg. unit line, if any) | 16. NO. ACRES IN LEASE | 17. NO. OF ACRES ASSIGNED TO THIS WELL |
|---|---|---|
| | 320.00 | 320.00 |
| **18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE FT.** | **19. PROPOSED DEPTH** | **20. ROTARY OR CABLE TOOLS** |
| | 7383 MD / TVD | ROTARY |

21. ELEVATIONS ( Show whether DF, RT, GR, etc.)
5959 GL

22. APPROX. DATE WORK WILL START*
05/20/2001

23. PROPOSED CASING AND CEMENTING PROGRAM

| SIZE OF HOLE | GRADE, SIZE OF CASING | WEIGHT PER FOOT | SETTING DEPTH | QUANTITY OF CEMENT |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

**Notice of Staking Submitted 12/07/2000. Amoco Production Company respectfully request permission to drill the subject well to a total depth of approximately 7383', complete in the Basin Dakota Pool, produce the well for approximately 30 days to establish production rate, add the Blanco Mesaverde Pool and commingle production downhole. Application for downhole commingling authority (NMOCD order R-11363) will be submitted to all appropriate parties for approval after production has been established in the Basin Dakota Pool and prior to completion of and downhole commingling with the Blanco Mesaverde. Please see attached documents in support of our application**

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed 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.
ELECTRONIC SUBMISSION #3561 VERIFIED BY THE BLM WELL INFORMATION SYSTEM
FOR AMOCO PRODUCTION COMPANY SENT TO THE FARMINGTON FIELD OFFICE

SIGNED MARY CORLEY TITLE AUTHORIZED REPRESENTATIVE DATE 04/10/2001

PERMIT NO. _____ APPROVAL DATE 6/8/01

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 theron.
CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY /s/ Lee Otteni TITLE _____ DATE _____

NMOCD

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

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-045-30676 | 71599 & 72319 | BASIN DAKOTA & BLANCO MESAVERDE |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 00971 | RIDDLE | #1M |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 00778 | AMOCO PRODUCTION COMPANY | 5959 |

## [10] Surface Location

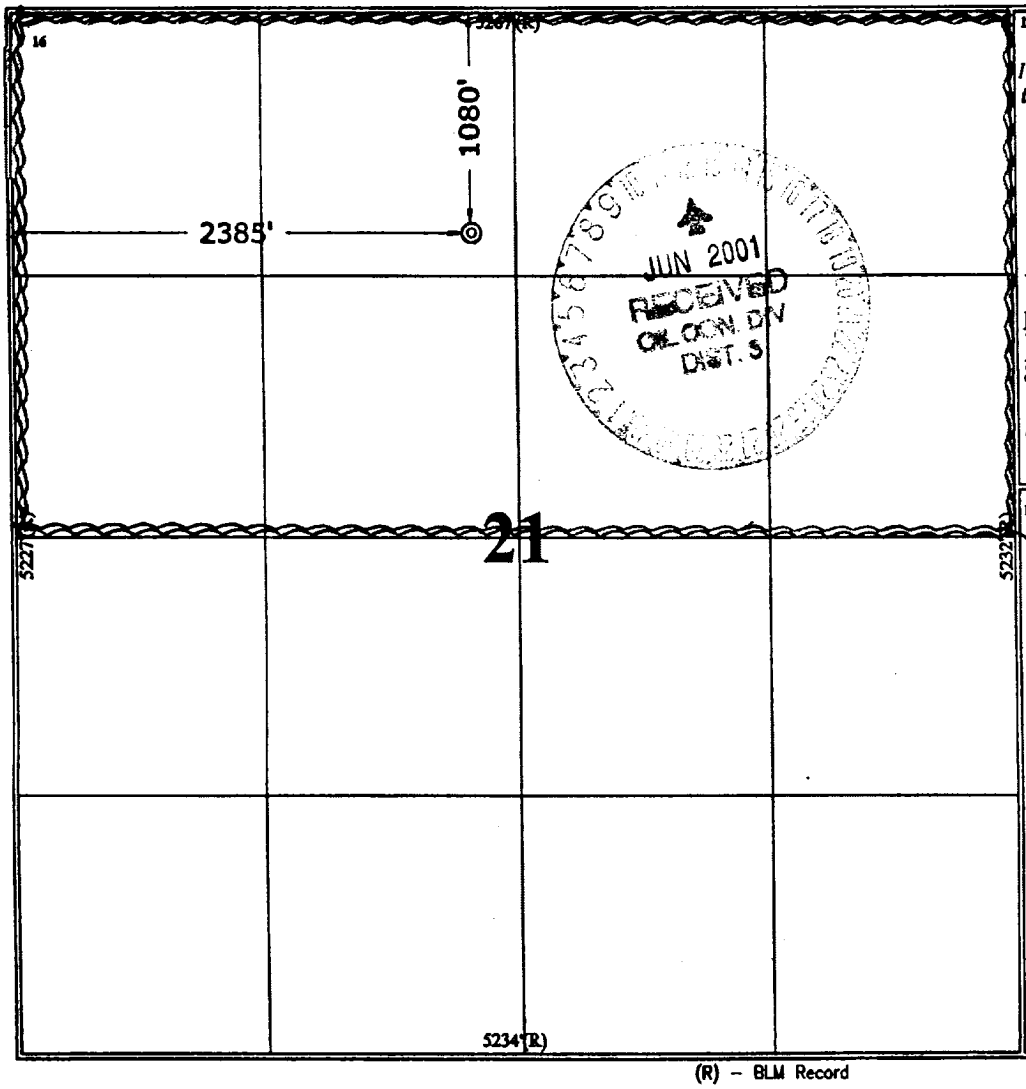
| UL or Lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 21 | 30 N | 9 W | | 1080 | NORTH | 2385 | WEST | SAN JUAN |

## [11] Bottom Hole Location If Different From Surface

| [7] 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 | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 320.00 | | | |

**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**




## [17] OPERATOR CERTIFICATION

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

Signature

MARY CORLEY
Printed Name

SR. REGULATORY ANALYST
Title

04-09-2001
Date

## [18] 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.*

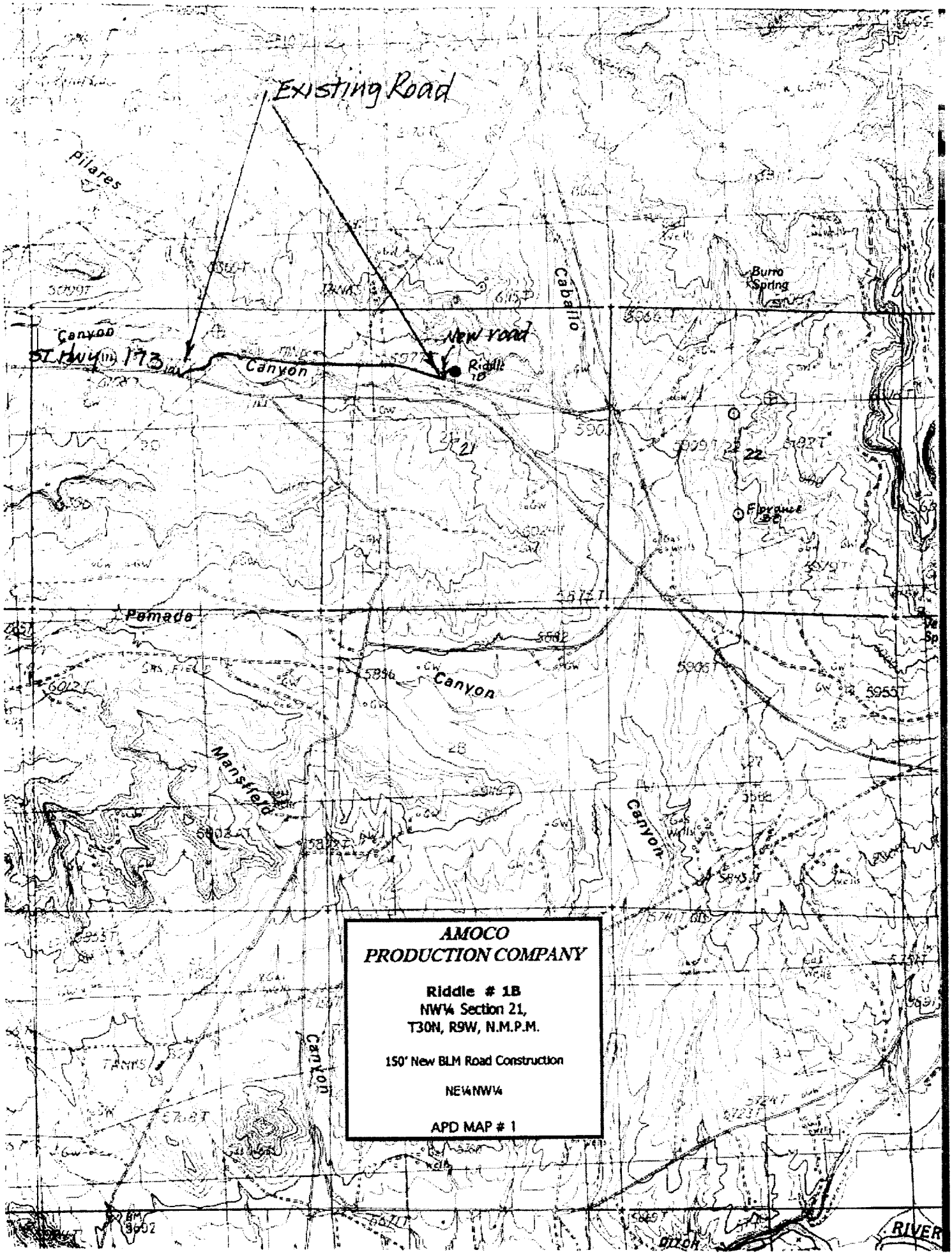
November 16, 2000
Date of Survey

Signature and Seal of Professional Surveyor

GARY D. VANN
NEW MEXICO
7016
REGISTERED PROFESSIONAL LAND SURVEYOR

7016
Certificate Number

(R) – BLM Record


Existing Road
Pilares
Canyon
St Hwy (in) 173
Canyon
New road
Riddle
1B
Caballo
Burro Spring
Florance
Pomade
Canyon
Mansfield
Canyon
Canyon
RIVER
AMOCO
PRODUCTION COMPANY
Riddle # 1B
NW¼ Section 21,
T30N, R9W, N.M.P.M.
150' New BLM Road Construction
NE¼NW¼
APD MAP # 1

# AMOCO PRODUCTION COMPANY
# DRILLING AND COMPLETION PROGRAM

**Prospect Name:** Riddle
**Lease:** RIDDLE
**County:** San Juan
**State:** New Mexico
**Date:** April 10, 2001

**Well No:** 1M
**Surface Location:** 21-30N-9W, 1080 FNL,2385 FWL
**Field:** Blanco Mesaverde/Basin Dakota

**OBJECTIVE:** Drill 400' below the base of the Greenhorn Limestone, set 4" Liner across Dakota, Stimulate LS, CH, MF, PL and DK intervals

## METHOD OF DRILLING

| TYPE OF TOOLS | DEPTH OF DRILLING |
|---|---|
| Rotary | 0 - TD |

## LOG PROGRAM

| TYPE | DEPTH INVERAL |
|---|---|
| OPEN HOLE | |
| GR-Induction | TD to 5 ½" shoe |
| Density/Neutron | TD to 5 ½" shoe |
| Sonic | TD to 5 ½" shoe |
| CASED HOLE | |
| GR-CCL-TDT | TDT - PBTD-7 5/8" shoe |
| | GR-CCL - PBTD-0' |
| CBL | Top of 4" - 50' above 7 5/8 "shoe |

REMARKS:
- Please report any flares (magnitude & duration).

## APPROXIMATE DEPTHS OF GEOLOGICAL MARKER

Estimated GL: 5959 Estimated KB: 5973

| MARKER | | SUBSEA | MEAS. DEPTH |
|---|---|---|---|
| Ojo Alamo | | 4622 | 1351 |
| Fruitland Coal | * | 3851 | 2123 |
| Pictured Cliffs | * | 3297 | 2676 |
| Lewis Shale | # | 3228 | 2745 |
| Cliff House | # | 1660 | 4314 |
| Menefee Shale | # | 1482 | 4491 |
| Point Lookout | # | 1045 | 4928 |
| Mancos | | 950 | 5024 |
| Greenhorn | | -946 | 6919 |
| Bentonite Marker | | -1010 | 6983 |
| Two Wells | # | -1052 | 7025 |
| Dakota MB | # | -1190 | 7163 |
| Burro Canyon | * | -1365 | 7338 |
| Morrison | * | -1415 | 7388 |
| TOTAL DEPTH | | -1410 | 7383 |

# Probable completion interval * Possible Pay

## SPECIAL TESTS

TYPE
None

REMARKS:

## DRILL CUTTING SAMPLES

| FREQUENCY | DEPTH |
|---|---|
| 10 feet | Production hole |

## DRILLING TIME

| FREQUENCY | DEPTH |
|---|---|
| Geolograph | 0-TD |

## MUD PROGRAM:

| Approx. Interval | | | Type Mud | Weight, #/gal | Vis, sec/qt | W/L cc's/30 min | Other Specification |
|---|---|---|---|---|---|---|---|
| 0 | - 120-135 | 3 jts. | Spud | 8.6-9.2 | | | |
| 120-135 | - 2073 | (1)(2) | Water/LSND | 8.6-9.2 | | | |
| 2073 | - 6983 | | Gas/Air/Mist | Volume sufficient to maintain a stable and clean wellbore | | | |
| 6983 | 7383 | | LSND | 8.6-9.2 | | | |

REMARKS:
(1) The hole will require sweeps to keep unloaded while fresh water drilling. Let hole conditions dictate frequency.
(2) Top set Fruitland Coal to minimize lost circulation, air volume to maintain hole stability.

## 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 | 120-135 | 10 3/4" | J-55 ST&C | 40.5# | 14.75" | 1 |
| Intermediate 1 | 2073 | 7 5/8" | K-55 LT&C | 26.4# | 9.875" | 1,2 |
| Intermediate 2 | 6983 | 5 ½" | K-55 LT&C | 15.5# | 6.75" | 4 |
| Production (liner) | 7383 | 4" | K-55 H 511 | 11# | 4.75" | 3 |

REMARKS:
(1) Circulate Cement to Surface
(2) Set casing 50' above Fruitland Coal
(3) Liner Lap should be a minimum of 100'
(4) Bring cement 200' above 7 5/8" 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: | |
|---|---|---|---|
| KAS/KAT | | January 5, 2001<br>Version 1.0 | |

Form 46 12-00 KAT

# Cementing Program: RIDDLE 1M

| | Surface | Intermediate | I2 | Liner |
|---|---|---|---|---|
| Excess %, Bit | 100% | 80 | 50 | 10 |
| Excess %, Caliper | NA | NA | NA | 30 |
| BHST (est deg. F) | 60 | 120 | 150 | 160 |
| Pipe Movement | NA | Rotate/Reciprocate | Rotate/Reciprocate | as per Liner Co. |
| Rate, Max (bpm) | 7 | 4 | 4 | 2 |
| Rate Recommended (bpm) | 6 | 4 | 3 | 2 |
| Pressure, Max (psi) | 200 | 2000 | 2000 | 2000 |
| Shoe Joint | 40 | 80 | 80 | 40 |
| Batch Mix | NA | NA | NA | NA |
| Circulating prior cmtng (hr) | 0.5 | 1.5 | 2.5 | 2 |
| Time Between Stages, (hr) | NA | NA | NA | NA |
| Special Instructions | 1,6,7 | 1,6,8 | 1,6,9 | 2,3,4,6 |

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 liner cement job to minimize drillout.
** After cement set time the liner top will be drilled out and liner circulated clean with treated water.
*** Run TMD cased hole logs to identify pay; Perforating and CH logs can be run rigless.

**Surface:**

| | | | |
|---|---|---|---|
| Preflush | 20 bbl. FreshWater | | |
| Slurry 1 | 120sx Class G Cement | | 139cuft |
| TOC@Surface | + 2% CaCl2 (accelerator) | | |
| | 0.25 #/sk Cellophane Flake (lost circulation additive) | | 0.5563cuft/ft OH |
| | 0.1% D46 antifoam | | 100% excess |

| Slurry Properties: | Density (lb/gal) | Yield (ft3/sk) | Water (gal/sk) |
|---|---|---|---|
| Slurry 1 | 15.8 | 1.16 | 4.95 |

Casing Equipment:
10-3/4", 8R, ST&C
1 Guide Shoe
1 Top Wooden Plug
1 Autofill insert float valve
4 Centralizers
1 Stop Ring
1 Thread Lock Compound

# Cementing Program: RIDDLE 1M

**Intermediate:**

| | | | | |
|---|---|---|---|---|
| | Fresh Water | 20 bbl | fresh water | |
| | Lead | 208 | sx Class "G" Cement | 605 cuft |
| | Slurry 1 | | + 3% D79 extender | |
| | TOC@Surface | | + 2% S1 Calcium Chloride | |
| | | | +1/4 #/sk. Cellophane Flake | |
| | | | + 0.1% D46 antifoam' | |
| | Tail | 152 | sx 50/50 Class "G"/Poz | 1931 cuft |
| | Slurry 2 | | + 2% gel (extender) | |
| | 500 ft fill | | 0.1% D46 antifoam | 0.2148 cuft/ft OH |
| | | | +1/4 #/sk. Cellophane Flake | 0.2338 cuft/ft csg ann |
| | | | + 2% CaCl2 (accelerator) | 80 % excess |

| Slurry Properties: | Density (lb/gal) | Yield (ft3/sk) | Water (gal/sk) |
|---|---|---|---|
| Slurry 1 | 11.4 | 2.9 | 17.77 |
| Slurry 2 | 13.5 | 1.27 | 5.72 |

Casing Equipment:

7-5/8", 8R, ST&C
1 Float Shoe (autofill with minimal LCM in mud)
1 Float Collar (autofill with minimal LCM in mud)
1 Stop Ring
9 Centralizers (one in middle of first joint, then every third collar)
2 Fluidmaster vane centalizers @ base of Ojo
8 Centalizers one every 4th joint from Ojo to base of surface casing
1 Top Rubber Plug
1 Thread Lock Compound

**Int 2:**

| | | | | |
|---|---|---|---|---|
| | Fresh Water | 10 bbl | CW100 | |
| | Lead | 487 | LiteCrete D961 / D124 / D154 | 1043 cuft |
| | Slurry 1 | | + 0.03 gps D47 antifoam | |
| | TOC@Surface | | + 0.5% D112 fluid loss | |
| | | | + 0.11% D65 TIC | |
| | Tail | 80 | sx 50/50 Class "G"/Poz | 115 cuft |
| | Slurry 2 | | + 5% D20 gel (extender) | + 5 #/sk D24 gilsonite |
| | 500 ft fill | | + 0.1% D46 antifoam | + 0.15% D65 TIC |
| | | | + 1/4 #/sk. Cellophane Flake | + 0.1% D800 retarder |
| | | | + 0.25% D167 Fluid Loss | |
| | | | | 0.1521 cuft/ft OH |
| | | | | 50 % excess |
| | | | | 0.0999 cuft/ft csg ann |

| Slurry Properties: | Density (lb/gal) | Yield (ft3/sk) | Water (gal/sk) |
|---|---|---|---|
| Slurry 1 | 9.5 | 2.14 | 6.38 |
| Slurry 2 | 13 | 1.44 | 6.5 |

Casing Equipment:

5-1/2", 8R, ST&C
1 Float Shoe (autofill with minimal LCM in mud)
1 Float Collar (autofill with minimal LCM in mud)
1 Stop Ring
35 Centralizers (every third joint
1 Top Rubber Plug
1 Thread Lock Compound

## Cementing Program: RIDDLE 1M

**Production (liner):**

| | | | | |
|---|---|---|---|---|
| Preflush | | 10 bbl. | CW100 / LCM wash | |
| Lead Cement | | 2350/50 Poz/G | | 34 cuft |
| Slurry 1 | | 5% D20 bentonite | 0.1% D46 antifoam | |
| | 100 ft lap | 0.25#/sk D29 cellophane | | |
| | 100 ft cap | 0.25% D167 Fluid loss | | 0.0358 cuft/ft OH |
| | | 0.15% D65 TIC | | 0.0464 cuft/ft csg ann |
| | | 0.15% D800 retarder | | 0.1336 cuft/ft csg |

| Slurry Properties: | Density (lb/gal) | (ft3/sk) | Water (gal/sk) | 10% excess |
|---|---|---|---|---|
| Slurry 1 | 13 | 1.44 | 6.5 | |

Liner Float Equipment: Float Shoe and Float Collar (furnished by Liner Hanger Company)
1 Thread Lock Compound

Note:

1. Coordinate w/Liner hand to drop plug, or set/release Liner as required
2. The job should be pumped at 2-3 bpm max rate. Do not exceed 3 bpm on displacement
3. Wash pump and lines before displacement. Slow to 1 bpm for the last 30 bbl of displacement.
4. This is to be a rigless completion. After cement set time, liner top will be dressed off an liner circulated clean with 2 % KCl or 2 gal/1000 gal L64.

## FEDERAL CEMENTING REQUIREMENTS

1. **All permeable zones containing fresh water and other usable water containing 10,000 PPM or less total dissolved solids will be isolated and protected from contamination by cement circulated in place for the protection of permeable zones per the NTL-FRA 90-1 Section III A.**
2. **The hole size will be no smaller than 1 ½" larger diameter than the casing O.D. across all water zones.**
3. **An adequate spacer will be pumped ahead of the cement slurry to help prevent mud contamination of the cement.**
4. **An adequate number of casing centralizers will be run through usable water zones to ensure that the casing is centralized through these zones. The adequate number of centralizers to use will be determined by API SPEC 10D.**
5. **Centralizers will impart a swirling action around the casing and will be used just below and into the base of the lowest usable water zone.**
6. **A chronological log will be kept recording the pump and slurry information and will be sent to the BLM with the subsequent sundry.**

Amoco Production Company
BOP Pressure Testing Requirements

Well Name: RIDDLE 1M
County: San Juan State: New Mexico

| Formation | TVD | Anticipated Bottom Hole Pressure | Maximum Anticipated Surface Pressure ** |
|---|---|---|---|
| Ojo Alamo | 1351 | | |
| Fruitland Coal | 2123 | | |
| PC | 2676 | | |
| Lewis Shale | 2745 | | |
| Cliff House | 4314 | 500 | 0 |
| Menefee Shale | 4491 | | |
| Point Lookout | 4928 | 600 | 0 |
| Mancos | 5024 | | |
| Dakota | 7025 | 2600 | 1495 |

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

**Requested BOP Pressure Test Exception: 3000 PSI**

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**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.**