Form 3160-5
(August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

JUL 2001
RECEIVED
OIL CON. DIV
DIST. 3

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other	5. Lease Serial No. SF - 078051
2. Name of Operator AMOCO PRODUCTION COMPANY Contact: MARY CORLEY E-Mail: corleymr@bp.com	6. If Indian, Allottee or Tribe Name
3a. Address P.O. BOX 3092 HOUSTON, TX 77253 3b. Phone No. (include area code) Ph: 281.366.4491 Fx: 281.366.0700	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)* Sec 33 T32N R11W Mer NESE 2370FSL 780FEL 36.56400 N Lat, 107.59300 W Lon	8. Well Name and No. MUDGE LS 24M 9. API Well No. 10. Field and Pool, or Exploratory BASIN DAKOTA/BLANCO MESAVERDE 11. County or Parish, and State SAN JUAN COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ APDCH
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Application for Permit to Drill for the subject well was submitted on 04/09/2001. Amoco Production Company respectfully submits for your approval amendments to our drilling and completion Program as per the attached two (2) documents. The major change is in the casing and cementing program.

The subject well also requires NMOCD approval for a Non-Standard drilling location for the Basin Dakota completion. A request for an exception to the Non-Standard well location is being submitted to the NMOCD under a separate application.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #5094 verified by the BLM Well Information System
For AMOCO PRODUCTION COMPANY, sent to the Farmington
Committed to AFMSS for processing by Maurice Johnson on 06/19/2001 ()

Name *(Printed/Typed)* MARY CORLEY — Title AUTHORIZED REPRESENTATIVE

Signature — Date 06/19/2001

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date 7/3/01

Conditions of approval, if any, are attached. Approval of this notice 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. Office

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.

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NMOCD

AMOCO PRODUCTION COMPANY
DRILLING AND COMPLETION PROGRAM

Prospect Name: Mudge LS
Lease: MUDGE LS
County: San Juan
State: New Mexico
Date: June 19, 2001

Well No: 24M
Surface Location: 33-32N-11W, 2370 FSL,780 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

TYPE OF TOOLS	DEPTH OF DRILLING
Rotary	0 - TD

LOG PROGRAM

TYPE	DEPTH INVERAL
OPEN HOLE	
GR-Induction	TD to 7" shoe
Density/Neutron	TD to 7" shoe
CASED HOLE	
GR-CCL-TDT	TDT – TD to 7" shoe
CBL	Identify 4 ½" cement top

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

APPROXIMATE DEPTHS OF GEOLOGICAL MARKER

Estimated GL: 6092 Estimated KB: 6106

MARKER		SUBSEA	MEAS. DEPTH
Ojo Alamo		4963	1143
Fruitland Coal	*	3943	2163
Pictured Cliffs	*	3311	2796
Lewis Shale	#	3233	2873
Cliff House	#	1546	4560
Menefee Shale	#	1384	4722
Point Lookout	#	1036	5070
Mancos		881	5225
Greenhorn		-1025	7131
Bentonite Marker		-1078	7184
Two Wells	#	-1138	7244
Dakota MB	#	-1242	7348
Burro Canyon	*	-1387	7493
Morrison	*	-1437	7543
TOTAL DEPTH		-1528	7634

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, #/ga	Vis, sec/qt	W/L cc's/30 min	Other Specification
0	- 120-135	3 jts.	Spud	8.6-9.2			
120-135	- 2973	(1)	Water/LSND	8.6-9.2		<6	
2973	- 7493		Gas/Air/N2/Mist	Volume sufficient to maintain a stable and clean wellbore			
7493	7634	(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	120-135	9 5/8"	H-40 ST&C	32#	12.25"	1
Intermediate 1	2973	7"	J/K-55 ST&C	20#	8.75"	1,2
Production	7634	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/KAT		May 8, 2001 Version 3.0	

Form 46 12-00 KAT

BOP Test Pressure

Amoco Production Company
BOP Pressure Testing Requirements

Well Name: Mudge LS 24M
County: San Juan **State:** New Mexico

Formation	TVD	Anticipated Bottom Hole Pressure	Maximum Anticipated Surface Pressure **
Ojo Alamo	1143		
Fruitland Coal	2163		
PC	2796		
Lewis Shale	2873		
Cliff House	4560	500	0
Menefee Shale	4722		
Point Lookout	5070	600	0
Mancos	5225		
Dakota	7244	2600	1450

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

Requested BOP Pressure Test Exception: 3000 psi

Cementing Program

Well Name: [redacted]
Location: [redacted] 70 FSL,780 FEL
County: [redacted]
State: [redacted]

Field: [redacted] rde / Basin Dakota
API No. [redacted]
Well Flac [redacted]
Formation: [redacted] Verde
KB Elev (est) [redacted]
GL Elev. (est) [redacted]

Casing Program:

Casing String	Est. Depth (ft.)	Hole Size (in.)	Casing Size (in.)	Thread	TOC (ft.)	Stage Tool Or TOL (ft.)	Cmt Cir. Out (bbl.)
Surface	[redacted]	12.25	9.625	ST&C	Surface	NA	
Intermediate		8.75	7	LT&C	Surface	NA	
Production -		6.25	4.5	?	2873	NA	

Casing Properties: (No Safety Factor Included)

Casing String	Size (in.)	Weight (lb/ft)	Grade	Burst (psi.)	Collapse (psi.)	Joint St. (1000 lbs.)	Capacity (bbl/ft.)	Drift (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 (ft.)	Mud Type	Mud Weight
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

Recommended Mud Properties Prio Cementing:
PV <20
YP <10
Fluid Loss <15

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.	FreshWater	
Slurry 1	73 sx Class G Cement		85 cuft
TOC@Surface	+ 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 (lb/gal)	Yield (ft3/sk)	Water (gal/sk)

Cementing Program

	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

Intermediate:

Fresh Water	20 bbl	fresh water	
Lead Slurry 1 TOC@Surface		226 sx Class "G" Cement + 3% D79 extender + 2% S1 Calcium Chloride +1/4 #/sk. Cellophane Flake + 0.1% D46 antifoam	656 cuft
Tail Slurry 2 500 ft fill		107 sx 50/50 Class "G"/Poz + 2% gel (extender) 0.1% D46 antifoam +1/4 #/sk. Cellophane Flake + 2% CaCl2 (accelerator)	135 cuft 0.1503 cuft/ft OH 0.1746 cuft/ft csg ann 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", 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 centalizers @ base of Ojo
7 Centalizers one every 4th joint from Ojo to base of surface casing
1 Top Rubber Plug
1 Thread Lock Compound

Production:

Fresh Water	10 bbl	CW100	
Lead Slurry 1 TOC@Surface		145 LiteCrete D961 / D124 / D154 + 0.03 gps D47 antifoam + 0.5% D112 fluid loss + 0.11% D65 TIC	311 cuft
Tail Slurry 2 1909 ft fill		150 sx 50/50 Class "G"/Poz + 5% D20 gel (extender) + 0.1% D46 antifoam + 1/4 #/sk. Cellophane Flake + 0.25% D167 Fluid Loss	215 cuft + 5 #/sk D24 gilsonite + 0.15% D65 TIC + 0.1% D800 retarder 0.1026 cuft/ft OH 10 % excess 0.1169 cuft/ft csg ann

Slurry Properties:	Density (lb/gal)	Yield (ft3/sk)	Water (gal/sk)

Cementing Program

Slurry 1	9.5	2.14	6.36	
Slurry 2	13	1.44	6.5	Top of Mancos [redacted]

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.