Form 3160-3
(August 1999)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMSF - 078194

6. If Indian, Allottee or Tribe Name

1a. Type of Work: ☒ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.
LUDWICK LS 15N

2. Name of Operator
BP AMERICA PRODUCTION COMPANY
Contact: MARY CORLEY
E-Mail: corleyml@bp.com

9. API Well No.
30045320811

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

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

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

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

At surface SESE Lot P 1140FSL 915FEL 36.47600 N Lat, 107.55200 W Lon

At proposed prod. zone

11. Sec., T., R., M., or Blk. and Survey or Area
P Sec 19 T30N R10W Mer NMP
SME: BLM

14. Distance in miles and direction from nearest town or post office*
5.9 MILES FROM AZTEC, NEW MEXICO

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)
915

16. No. of Acres in Lease
310.56

17. Spacing Unit dedicated to this well
310.56 W/2

18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft.
2500

19. Proposed Depth
7361 MD

20. BLM/BIA Bond No. on file
WY2924

21. Elevations (Show whether DF, KB, RT, GL, etc.
6223 GL

22. Approximate date work will start
02/05/2004

23. Estimated duration
7 DAYS

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	Name (Printed/Typed)	Date
(Electronic Submission)	MARY CORLEY	12/17/2003

Title
AUTHORIZED REPRESENTATIVE

Approved by (Signature)	Name (Printed/Typed)	Date
/s/ David J. Mankiewicz		FEB 19 2004
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 #26230 verified by the BLM Well Information System
For BP AMERICA PRODUCTION COMPANY, sent to the Farmington

This action is subject to technical and 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".

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

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
	71599 & 72319	BASIN DAKOTA & BLANCO MESAVERDE

[4] Property Code	[5] Property Name	[6] Well Number
000811	Ludwick LS	# 15N

[7] OGRID No.	[8] Operator Name	[9] Elevation
000778	BP AMERICA PRODUCTION COMPANY	6223

[10] Surface Location

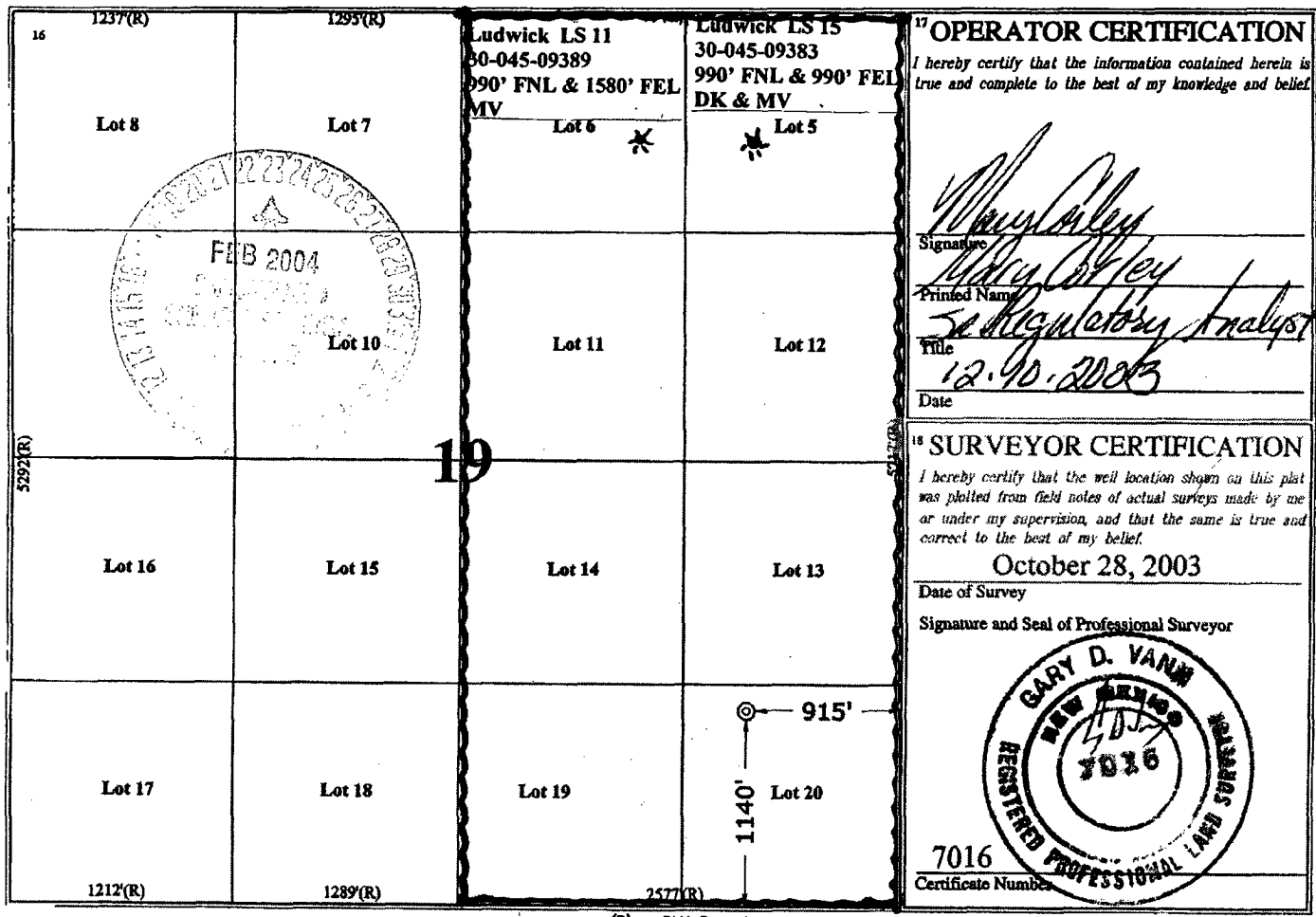
UL or Lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P (Lot 20)	19	30 N	10 W		1140	SOUTH	915	EAST	SAN JUAN

[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.
310.56			

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



(R) – BLM Record

[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

12.10.2003

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.

October 28, 2003

Date of Survey

Signature and Seal of Professional Surveyor

GARY D. VANN
NEW MEXICO
7016
REGISTERED PROFESSIONAL LAND SURVEYOR

7016

Certificate Number

BP AMERICA PRODUCTION COMPANY
DRILLING AND COMPLETION PROGRAM

Prospect Name: **Ludwick LS**
Lease: Ludwick LS
County: San Juan
State: New Mexico

Well No: **15 N**
Surface Location: 19-30N-10W, 1140 FSL, 915 FEL

Field: Blanco Mesaverde/Basin Dakota

Date: November 3, 2003

OBJECTIVE: Drill 240' below the top of the Two Wells; set 41/2" production casing. Stimulate CH, MF, PL and DK intervals

METHOD OF DRILLING

TYPE OF TOOLS	DEPTH OF DRILLING
Rotary	0 - TD

LOG PROGRAM

TYPE	DEPTH INTERVAL
OPEN HOLE	
None	
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: 6223 Estimated KB: 6237

MARKER		SUBSEA	TVD.
Ojo Alamo		4854'	1383'
Kirkland		4762'	1475'
Fruitland		4066'	2171'
Fruitland Coal	*	3766'	2471'
Pictured Cliffs	*	3529'	2708'
Lewis Shale	#	3287'	2950'
Cliff House	#	1995'	4242'
Menefee Shale	#	1774'	4463'
Point Lookout	#	1237'	5000'
Mancos		862'	5375'
Greenhorn		-772'	7009'
Bentonite Marker		-834'	7071'
Two Wells	#	-884'	7121'
Paguate	#	-956'	7193'
Cubero Upper	#	-1014'	7251'
Cubero Lower	#	-1055'	7292'
Encinal Canyon	#	-1094'	7331'
TOTAL DEPTH		-1124'	7361'

Probable completion interval * Possible Pay

SPECIAL TESTS

TYPE
None

REMARKS:

DRILL CUTTING SAMPLES

FREQUENCY	DEPTH
10'	3050' -TD

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		Spud	8.6-9.2			
120	- 3050	(1)	Water/LSND	8.6-9.2		<6	
3050	- 7361		Gas/Air/N2/Mist	Volume sufficient to maintain a stable and clean wellbore			

REMARKS:
(1) The hole will require sweeps to keep unloaded while fresh water drilling. Let hole conditions dictate frequency.

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	9 5/8"	H-40 ST&C	32#	13.5"	1
Intermediate 1	3050	7"	J/K-55 ST&C	20#	8.75"	1,2
Production	7361	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, 3-4 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/JMP		November 3, 2003 Version 1.0

Form 46 12-00 MNP

BP America Production Company
BOP Pressure Testing Requirements

Well Name: Ludwick LS 15 N
County: San Juan **State:** New Mexico

Formation	TVD	Anticipated Bottom Hole Pressure	Maximum Anticipated Surface Pressure **
Ojo Alamo	1383		
Fruitland Coal	2471		
PC	2708		
Lewis Shale	2950		
Cliff House	4242	500	0
Menefee Shale	4463		
Point Lookout	5000	600	0
Mancos	5375		
Dakota	7121	2600	1449

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

Requested BOP Pressure Test Exception: ~~750 psi~~ 1500 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 rigs 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	9", 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 ~~750~~ 1500 psi (high pressure), upon installation, following any repairs or equipment replacements, or at 30 day intervals. Accessories to BOP equipment will include kelly cock with a handle available, floor safety valves and choke manifold which will also be tested to equivalent pressure.

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 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.**

BP is currently using 3% CaCl2 in our slurry and achieves 300 psi ~~compressive~~ strength after 1 hr 50 min and 500 psi after 3 hrs 8 min. We, ~~therefore, request~~ approval to initiate blowout preventer (BOP) nipple up operations ~~after a 2 hour~~ wait on cement time in lieu of the 6 hour time frame required by rule ~~to achieve~~ 300 psi compressive strength with Class B cement slurry at 80 deg F.

See BLM General Requirements

Cementing Program

Well Name:	Ludwick LS 15N	Field:	Blanco Mesaverde / Basin Dakota
Location:	19-30N-10W, 1140 FSL, 915 FEL	API No.	
County:	San Juan	Well Flac	
State:	New Mexico	Formation:	Dakota MesaVerde
		KB Elev (est)	6237
		GL Elev. (est)	6223

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	120	13.5	9.625	ST&C	Surface	NA	
Intermediate	3050	8.75	7	LT&C	Surface	NA	
Production -	7361	6.25	4.5	ST&C	2950	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 %, Lead	100	75	40
Excess %, Tail	NA	0	40
BHST (est deg. F)	75	120	183
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 minmize drillout.

Surface:

Preflush	20 bbl.	FreshWater	
Slurry 1	110 sx Class G Cement		117 cuft
TOC@Surface	+ 3% CaCl2 (accelerator)		
	+ 0.25 #/sk Cellophane Flake (lost circulation additive)		0.4887 cuft/ft OH

Slurry Properties:	Density (lb/gal)	Yield (ft3/sk)	Water (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
Centralizers, 1 per joint except top joint
1 Stop Ring
1 Thread Lock Compound

Intermediate:

Fresh Water	20 bbl	fresh water	

Cementing Program

Lead	260 sx Class "G" Cement	660 cuft
Slurry 1	+ 3% D79 extender	
TOC@Surface	+1/4 #/sk. Cellophane Flake	
	+ 5 lb/sk Gilsonite	
Tail	60 sx 50/50 Class "G"/Poz	75 cuft
Slurry 2	+ 2% gel (extender)	
500 ft fill	+1/4 #/sk. Cellophane Flake	0.1503 cuft/ft OH
	+ 2% CaCl2 (accelerator)	0.1746 cuft/ft csg ann
	+ 5 lb/sk Gilsonite	

Slurry Properties:	Density (lb/gal)	Yield (ft3/sk)	Water (gal/sk)
Slurry 1	11.4	2.63	15.8
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
Centralizers one in middle of first joint, then every third collar
1 Top Rubber Plug
1 Thread Lock Compound

Production:

Fresh Water	10 bbl	CW100

Lead	190 LiteCrete D961 / D124 / D154	471 cuft
Slurry 1	+ 0.03 gps D47 antifoam	
TOC, 400' above 7" shoe	+ 0.5% D112 fluid loss	
	+ 0.11% D65 TIC	
Tail	150 sx 50/50 Class "G"/Poz	213 cuft
Slurry 2	+ 5% D20 gel (extender)	
1486 ft fill	+ 0.1% D46 antifoam	
	+ 1/4 #/sk. Cellophane Flake	
	+ 0.25% D167 Fluid Loss	
	+ 5 lb/sk Gilsonite	
	+0.1% d800, retarder	
	+0.15% D65, dispersant	
		0.1026 cuft/ft OH

Slurry Properties:	Density (lb/gal)	Yield (ft3/sk)	Water (gal/sk)	0.1169 cuft/ft csg ann
Slurry 1	9.5	2.52	6.38	
Slurry 2	13	1.44	6.5	Top of Mancos 5375

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
Centralizers, every 4th joint in mud drilled holes, none in air drilled holes.
1 Top Rubber Plug
1 Thread Lock Compound