

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: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. SF - 078194
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator BP AMERICA PRODUCTION COMPANY		7. If Unit or CA Agreement, Name and No.
Contact: CHERRY HLAVA E-Mail: hlavacl@bp.com		8. Lease Name and Well No. LUDWICK LS 15M
3a. Address P.O. BOX 3092 HOUSTON, TX 77253-3092	3b. Phone No. (include area code) Ph: 281.366.4081 Fx: 281.366.0700	9. APL Well No. 30-045-32366
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWSE 2450FSL 1780FEL 36.47800 N Lat, 107.55400 W Lon At proposed prod. zone		10. Field and Pool, or Exploratory BASIN DAKOTA & BLANCO MESAVERI
14. Distance in miles and direction from nearest town or post office* 5 MILES EAST OF CITY HALL IN AZTEC		11. Sec., T., R., M., or Blk. and Survey or Area J Sec 19 T30N R10W Mer NMP
15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1780'	16. No. of Acres in Lease	12. County or Parish SAN JUAN
18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft. 1400'	19. Proposed Depth 7467 MD	13. State NM
21. Elevations (Show whether DF, KB, RT, GL, etc.) 6269 GL	20. BLM/BIA Bond No. on file WY2924	17. Spacing Unit dedicated to this well 310.56 E/2
22. Approximate date work will start 06/28/2004	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.                                                                                                | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).    |
| 2. A Drilling Plan.                                                                                                                             | 5. Operator certification                                                                          |
| 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). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature (Electronic Submission)	Name (Printed/Typed) CHERRY HLAVA	Date 05/17/2004
Title REGULATORY ANALYST		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed)	Date 6-18-04
Title 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 #30803 verified by the BLM Well Information System  
For BP AMERICA PRODUCTION COMPANY, sent to the Farmington

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

DRILLING OPERATIONS AUTHORIZED APT  
SUBJECT TO COMPLIANCE WITH ATTACHED  
"GENERAL REQUIREMENTS".

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

NMOCD

## Additional Operator Remarks:

15m

Notice of Staking was submitted on 03/26/04.

BP America Production Company respectfully requests permission to drill this well to a total depth of approximately 7467', complete in the Basin Dakota Pool, produce the well to establish a production rate, perform a deliverability test, isolate the Dakota then complete into the Blanco Mesaverde Pool and commingle production downhole.

Application for Downhole commingling authority (NMOCD order R-11363) will be submitted to all appropriate for approval after Permit to Drill has been approved.

### SUPPLEMENTAL TO SURFACE USE PLAN

#### New Facilities:

A 4" diameter buried steel pipeline that is +/- 600 feet in length will be constructed. The pipe wall thickness is .156 and the pipe wall strength is 42,000#. It will be adjacent to the access road and tie the well into an existing gas meter operated by BP America Production Company. The pipeline will not be used to transport gas to drill the well. After the well is spud the pipeline will be authorized by a right-of-way issued by El Paso.

If terrain allows, it is our intent to pre-set the 9 5/8" casing by drilling a surface hole with air/air mist in lieu of drilling mud and the surface casing be cemented with 94.5 cu/ft type I-II, 20% FLYASH, 14.5 PPG, 7.41 gas/sk, 1.61 cf/sk Yield, 80 DEG BHST ready mix cement. If the area will not allow for pre-set the approved cement program will be followed.

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 30-045-32366	<sup>2</sup> Pool Code 71599-72359	<sup>3</sup> Pool Name Basin Dakota Blanco Mesavende
<sup>4</sup> Property Code 811	<sup>5</sup> Property Name Ludwick LS	<sup>6</sup> Well Number # 15M
<sup>7</sup> OGRID No. 000778	<sup>8</sup> Operator Name BP AMERICA PRODUCTION COMPANY	<sup>9</sup> Elevation 6269

<sup>10</sup> Surface Location

UL or Lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J (Lot 14)	19	30 N	10 W		2450	SOUTH	1780	EAST	SAN JUAN

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

<sup>7</sup> UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<sup>12</sup> Dedicated Acres 310.56	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</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> 1237(R)	<sup>17</sup> 1295(R)	<sup>18</sup> OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. Signature: Cherry Hlava Printed Name: Cherry Hlava Title: Regulatory Analyst Date: 5-17-04	
Lot 8	Lot 7	Lot 6	Lot 5
Lot 9	Lot 10	Lot 11	Lot 12
<sup>19</sup> 3292(R)	<sup>20</sup> 1780'	<sup>21</sup> 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. Date of Survey: March 10, 2004 Signature and Seal of Professional Surveyor: GARY D. VANN 7016 Certificate Number	
Lot 16	Lot 15	Lot 14	Lot 13
Lot 17	Lot 18	Lot 19	Lot 20
<sup>22</sup> 1212(R)	<sup>23</sup> 1289(R)	<sup>24</sup> 2450'	<sup>25</sup> 3472(R)

**BP AMERICA PRODUCTION COMPANY  
DRILLING AND COMPLETION PROGRAM**

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

**Well No:** 15 M  
**Surface Location:** 19-30N-10W, 2450 FSL, 1780 FEL  
**Field:** Blanco Mesaverde/Basin Dakota

**Date:** May 13, 2004

**OBJECTIVE:** Drill 240' below the top of the Two Wells member of the Dakota, set 4-1/2" production casing. Stimulate MF, PL and DK intervals

METHOD OF DRILLING		APPROXIMATE DEPTHS OF GEOLOGICAL MARKER			
TYPE OF TOOLS	DEPTH OF DRILLING	Estimated GL: 6269		Estimated KB: 6283	
Rotary	0 - TD				
<b>LOG PROGRAM</b>					
<b>TYPE</b>	<b>DEPTH INTERVAL</b>	<b>MARKER</b>		<b>SUBSEA</b>	<b>TVD.</b>
<u>OPEN HOLE</u>		Ojo Alamo		4841'	1442'
None		Kirkland		4754'	1529'
		Fruitland		4089'	2194'
		Fruitland Coal	*	3844'	2440'
		Pictured Cliffs	*	3529'	2754'
		Lewis Shale	#	3256'	3027'
		Cliff House	#	1966'	4317'
		Menefee Shale	#	1714'	4569'
		Point Lookout	#	1208'	5075'
<u>CASED HOLE</u>		Mancos		831'	5452'
GR-CCL-TDT	TDT - TD to 7" shoe	Greenhorn		-825'	7110'
CBL	Identify 4-1/2" cement top	Bentonite Marker		-883'	7166'
<b>REMARKS:</b>		Two Wells	#	-944'	7227'
- Please report any flares (magnitude & duration).		Paguate	#	-1021'	7304'
		Cubero Upper	#	-1080'	7363'
		Cubero Lower	#	-1115'	7398'
		Encinal Canyon	#	-1146'	7429'
		<b>TOTAL DEPTH</b>		<b>-1184'</b>	<b>7467'</b>
		# Probable completion interval		* Possible Pay	
<b>SPECIAL TESTS</b>		<b>DRILL CUTTING SAMPLES</b>		<b>DRILLING TIME</b>	
<b>TYPE</b>		<b>FREQUENCY</b>	<b>DEPTH</b>	<b>FREQUENCY</b>	<b>DEPTH</b>
None		10'	3127' -TD	Geolograph	0-TD
<b>REMARKS:</b>					

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 - 3127 (1)	Water/LSND	8.6-9.2		<6	
3127 - 7467	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	3127	7"	J-55 ST&C	20#	8.75"	1,2
Production	7467	4 1/2"	J-55	11.6#	6.25"	3, 4 Hydrill

**REMARKS:**  
 (1) Circulate Cement to Surface  
 (2) Set casing 100' into Lewis Shale  
 (3) Bring cement 100' above 7" shoe  
 (4) 100' Overlap

**CORING PROGRAM:** None

**COMPLETION PROGRAM:**  
 Rigless, 1 - 2 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

<b>PREPARED BY:</b> HGJ/JLP/JMP	<b>APPROVED:</b>	<b>DATE:</b> May 13, 2004 Version 2.0
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Form 46 12-00 MNP

## BOP Test Pressure

# BP America Production Company BOP Pressure Testing Requirements

Well Name: Ludwick LS  
County: San Juan

15 M  
State: New Mexico

Formation	TVD	Anticipated Bottom Hole Pressure	Maximum Anticipated Surface Pressure **
Ojo Alamo	1442		
Fruitland Coal	2440		
PC	2754		
Lewis Shale	3027		
Cliff House	4317	500	0
Menefee Shale	4569		
Point Lookout	5075	600	0
Mancos	5452		
Dakota	7227	2600	1449

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

Requested BOP Pressure Test Exception: 1500 psi

**SAN JUAN BASIN**  
**Dakota/MV 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: Ludwick LS 15M	Field: Blanco Mesaverde / Basin Dakota
Location: 19-30N-10W, 2450 FSL, 1780 FEL	API No.
County: San Juan	Well Flac
State: New Mexico	Formation: Dakota Mesa Verde
	KB Elev (est) 6283
	GL Elev. (est) 6269

## 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	3127	8.75	7	LT&C	Surface	NA	
Production -	7467	6.25	4.5	ST&C	3027	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	Recommended Mud Properties Prio Cementing:
			PV <20
			YP <10
			Fluid Los: <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 %, 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 minimize drillout.

## Surface:

Preflush	20 bbl.	Fresh Water	
Slurry 1	100 sx Class C Cement		117 cuft
TOC@Surface	+ 2% CaCl2 (accelerator)		
			0.4887 cuft/ft OH

Slurry Properties:	Density (lb/gal)	Yield (ft3/sk)	Water (gal/sk)
Slurry 1	15.2	1.27	5.8

# Cementing Program

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

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## Intermediate:

Fresh Water	20 bbl	fresh water	
Lead Slurry 1 TOC@Surface		260 sx Class "G" Cement + 3% D79 extender + 1/4 #/sk. Cellophane Flake + 5 lb/sk Gilsonite	680 cuft
Tail Slurry 2		60 sx 50/50 Class "G"/Poz + 2% gel (extender) + 1/4 #/sk. Cellophane Flake + 2% CaCl2 (accelerator) + 5 lb/sk Gilsonite	75 cuft
500 ft fill			0.1503 cuft/ft OH 0.1746 cuft/ft csg ann

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

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## Production:

Fresh Water	10 bbl	CW100	
Lead Slurry 1 TOC, 400' above 7" shoe		190 LiteCrete D961 / D124 / D154 + 0.03 gps D47 antifoam + 0.5% D112 fluid loss + 0.11% D65 TIC	471 cuft
Tail Slurry 2		160 sx 50/50 Class "G"/Poz + 5% D20 gel (extender) + 0.1% D46 antifoam + 1/4 #/sk. Cellophane Flake + 0.25% D167 Fluid Loss + 5 lb/sk Gilsonite	218 cuft
1515 ft fill			

# Cementing Program

+0.1% d800, retarder  
+0.15% D65, dispersant

0.1026 cuft/ft OH

## Slurry Properties:

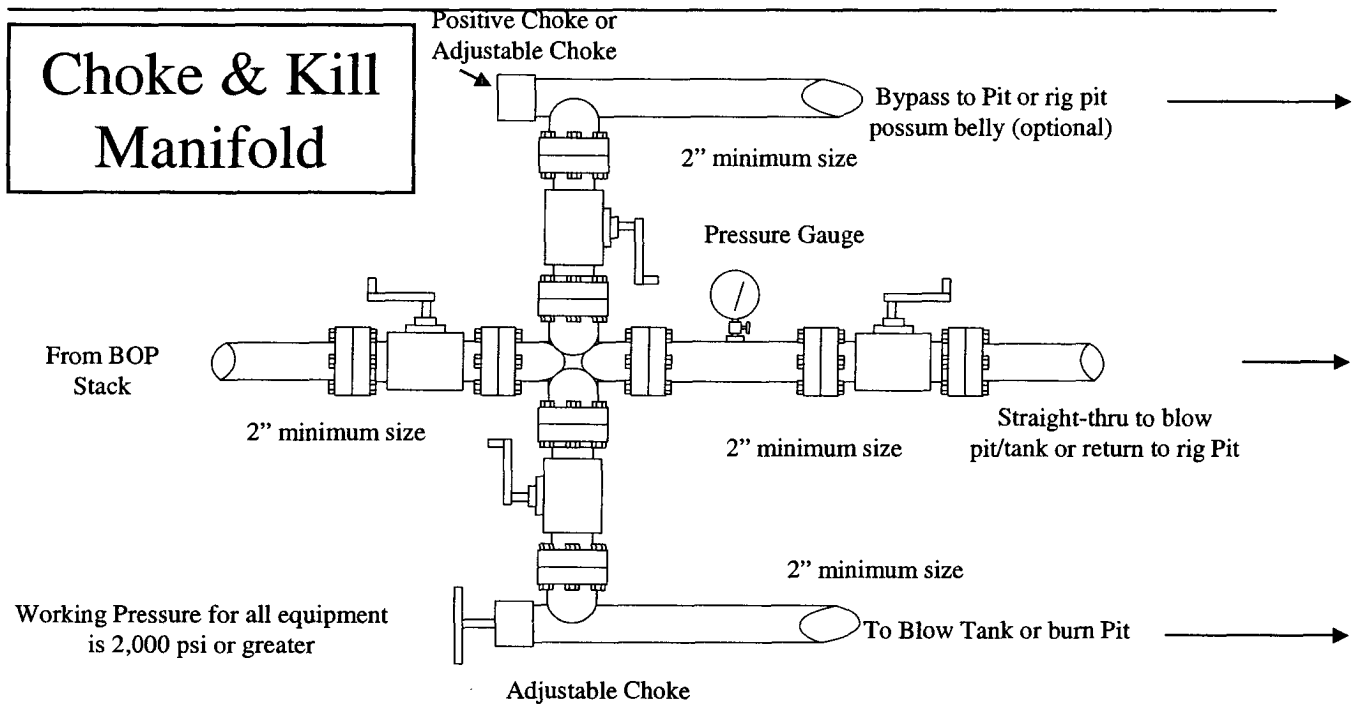
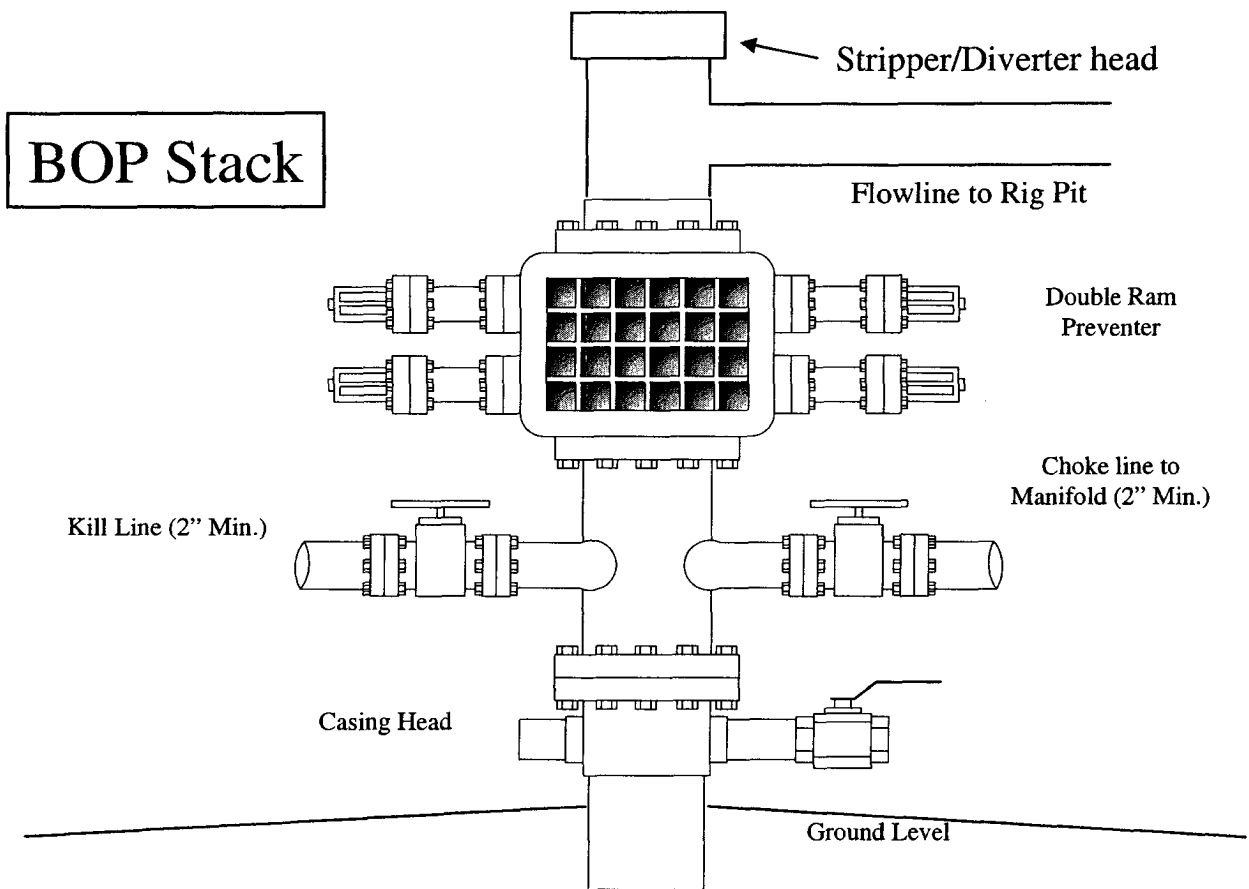
	Density (lb/gal)	Yield (ft <sup>3</sup> /sk)	Water (gal/sk)	
Slurry 1	9.5	2.52	6.38	0.1169 cuft/ft csg ann
Slurry 2	13	1.44	6.5	Top of Mancos 5452

## 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

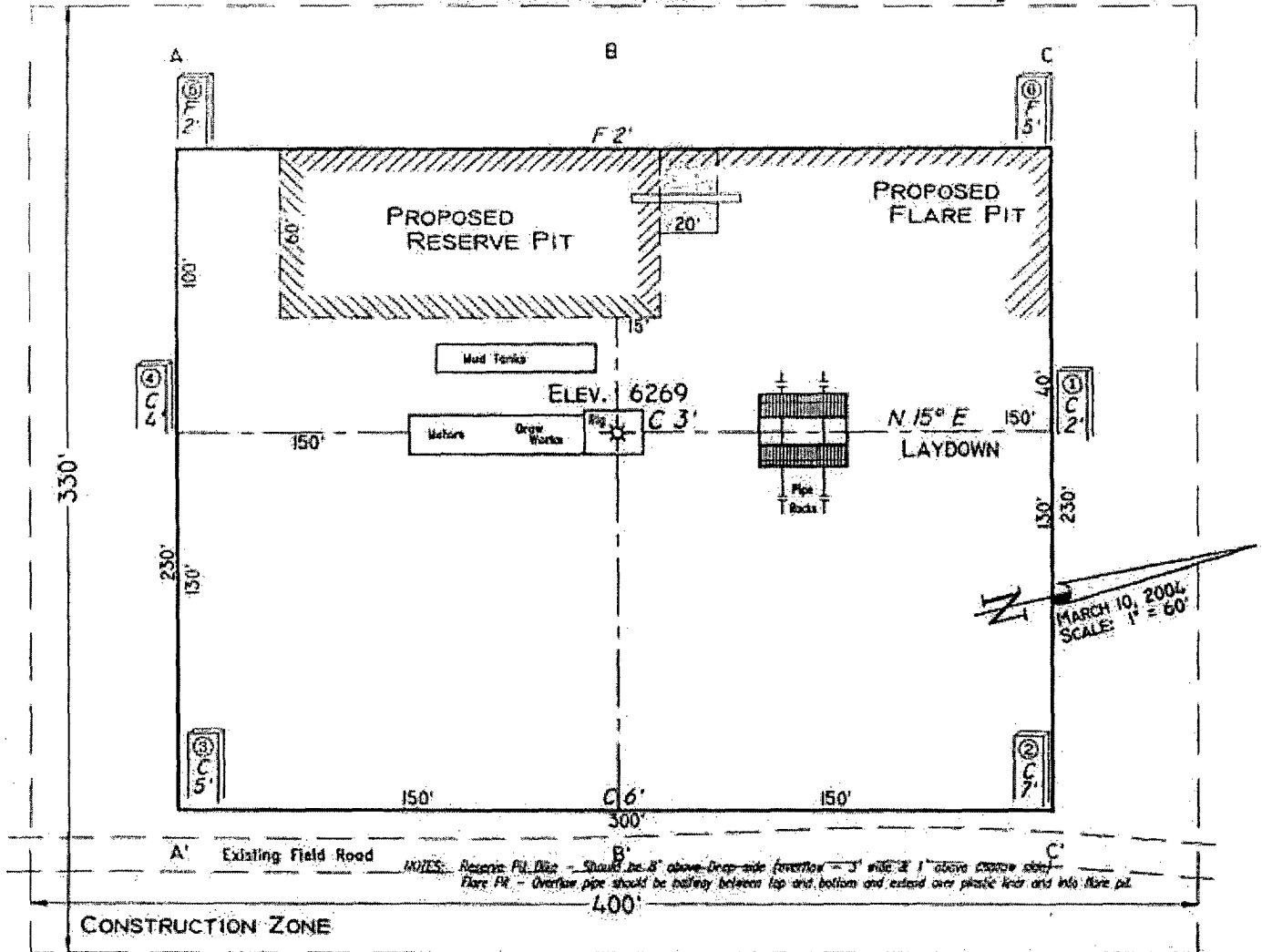


**BP American Production Company**  
Well Control Equipment Schematic



PAD LAYOUT PLAN & PROFILE  
 BP AMERICA PRODUCTION COMPANY  
 Ludwick LS #15M  
 2450' F/SL 1780' F/EL  
 SEC. 19, T30N, R10W, N.M.P.M.  
 SAN JUAN COUNTY, NEW MEXICO

Lat: 36°47'48"  
 Long: 107°55'21"



Area of Construction Zone = 330'x400' or 1.03 acres, more or less.

SCALE: 1"=60'-HORIZ.  
1"=40'-VERT.



NOTE: Contractor should call One-Call for location of any marked or unmarked buried pipelines or cables on well pad and/or access road at least two (2) working days prior to construction.

Cuts and fills shown are approximate - final finished elevation is to be adjusted so earthwork will balance. Corner stakes are approximate and do not include additional areas needed for sideslopes and drainages. Final Pad Dimensions are to be verified by Contractor.

VANN SURVEYS  
 P. O. Box 1306  
 Farmington, NM