

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

DIST. 3

Lease Serial No. **SF-078194**

6. If Indian, Allottee or tribe Name

7. If Unit or CA Agreement, Name and No

8. Lease Name and Well No.

Ludwick LS 17E

9. API Well No.

30-045-34006

10. Field and Pool, or Exploratory

Basin Dakota & Blanco Mesaverde

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

SECTION 29 T30N & R10W

H E/2

12. County or Parish

SAN JUAN

13. State

NEW MEXICO

1a. Type of Work: ☒ DRILL

☐ REENTER

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

2. Name of Operator

BP AMERICA PRODUCTION COMPANY

3a. Address

P.O. BOX 3092 HOUSTON, TX 77079-2064

3b. Phone No. (include area code)

281-366-3866

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

At surface **2070' FNL & 685' FEL SENE**

At proposed prod. Zone **SAME**

14. Distance in miles and direction from nearest town or post office*

4.3 MILES SOUTHEAST FROM AZTEC, NM

15. Distance from proposed*

Location to nearest
Property or lease line, ft.

(Also to nearest drig. Ujnit line, if any) **685'**

16. No. of Acres in lease

319.62

17. Spacing Unit dedicated to this well

319.62

18. Distance from proposed location*

to nearest well, drilling, completed,
applied for, on this lease, ft.

19. Proposed Depth

7369' MD

20. BLM/BIA Bond No. on file

WY2924

21. Elevations (show whether DF, KDB., RT, GL, etc.)

6253' GL

22. Approximate date work will start*

06/12/2007

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

Kristina Hurts

10/10/2006

Title

Regulatory Analyst

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.

*(Instructions on reverse)

NOTIFY AZTEC OCD
IN TIME TO WITNESS

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".

NMOCD 8/21/07

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

2006 OCT 12 PM 11 15

☐ AMENDED REPORT

RECEIVED
OCTOBER 12 2006
OIL CONS. DIV.

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-34006	² Pool Code 71599 & 72319	³ Pool Name BASIN DAKOTA & BLANCO MEAVERDE
⁴ Property Code 200811	⁵ Property Name Ludwick LS	⁶ Well Number # 17E
⁷ GRID No. 778	⁸ Operator Name BP AMERICA PRODUCTION COMPANY	⁹ Elevation 6253

¹⁰ Surface Location

UL or Lot No. Lot 8 (H)	Section 29	Township 30 N	Range 10 W	Lot Idn	Feet from the 2070	North/South line NORTH	Feet from the 685	East/West line EAST	County SAN JUAN
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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
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¹² Dedicated Acres 319.62	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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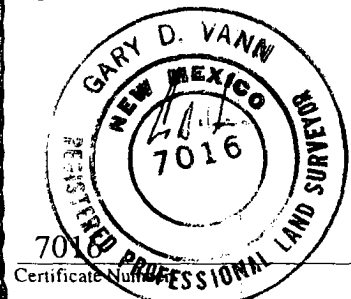
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16	5163(R)	Lot 4	Lot 3	Lot 2	Lot 1	2070'	685'	5427(R)	¹⁷ OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. Signature Kristina Hurts Printed Name KRISTINA HURTS Title Regulatory Analyst Date 10-10-06
5217(R)	Lot 5	Lot 6	Lot 7	Lot 8					
29	Lot 12	Lot 11	Lot 10	Lot 9					
520(R)	Lot 13	Lot 14	Lot 15	Lot 16					

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.

June 21, 2006
Date of Survey

Signature and Seal of Professional Surveyor



Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
May 27, 2004

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. <u>30-045-3400</u> New Well
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Ludwick LS
8. Well Number 17E
9. OGRID Number 000778
10. Pool name or Wildcat Basin Dakota & Blanco Mesaverde
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6253'
Pit or Below-grade Tank Application <input checked="" type="checkbox"/> or Closure <input type="checkbox"/>
Pit type <u>DRILLING</u> Depth to Groundwater <u>>100'</u> Distance from nearest fresh water well <u>>1000'</u> Distance from nearest surface water <u><1000'</u>
Pit Liner Thickness: <u>12</u> mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: **LINED DRILLING PIT**



OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Construct a lined drilling pit per BP America – San Juan Basin Drilling/ Workover Pit Construction Plan issued date of 11/17/2004. Pit will be closed according to closure plan on file.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Kristina Hurts TITLE Regulatory Analyst DATE 10/10/06

Type or print name Kristina Hurts
For State Use Only

E-mail address: hurtk0@bp.com

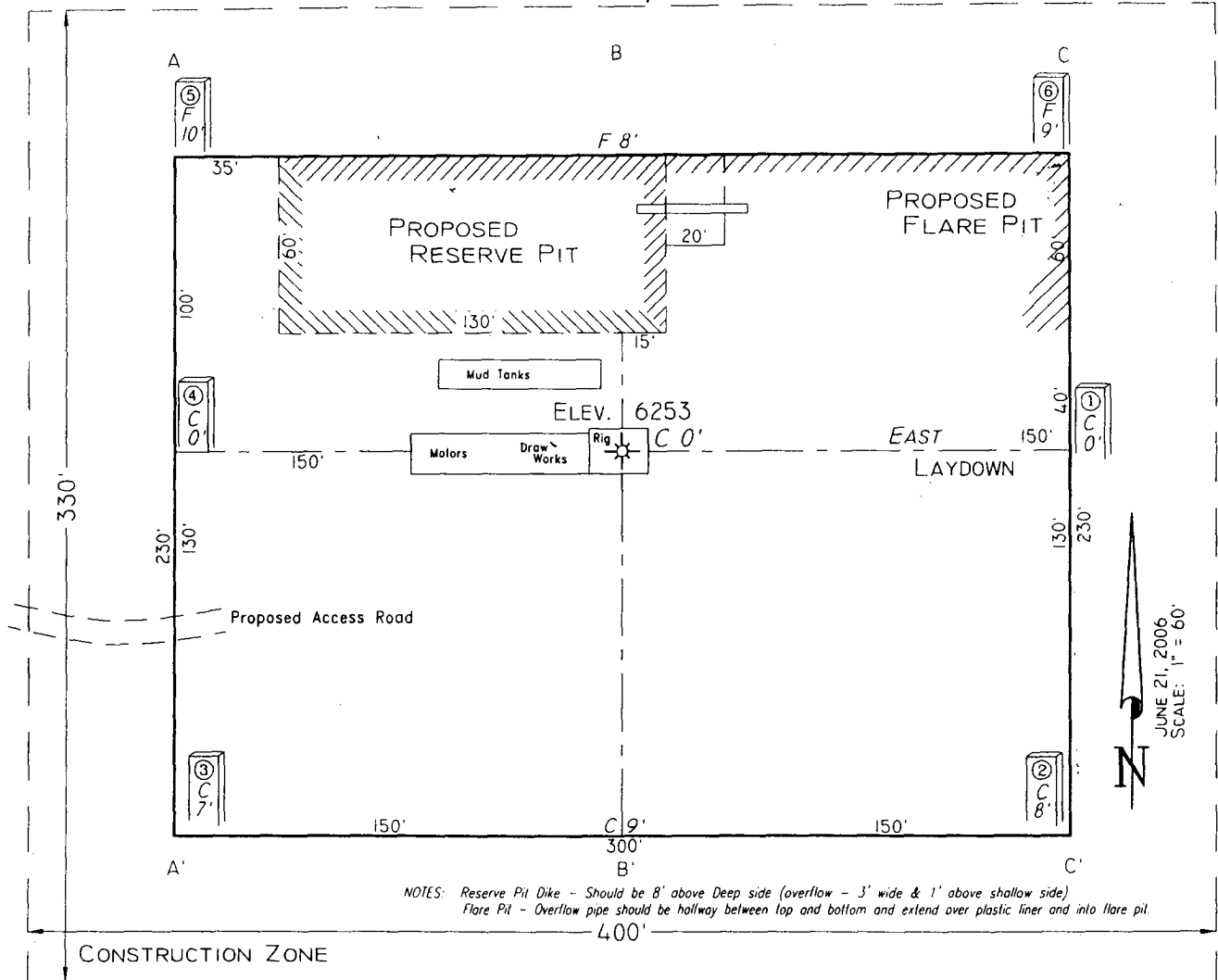
Telephone No. 281-366-3866

APPROVED BY: [Signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. 01 DATE FEB 01 2007

Conditions of Approval (if any):

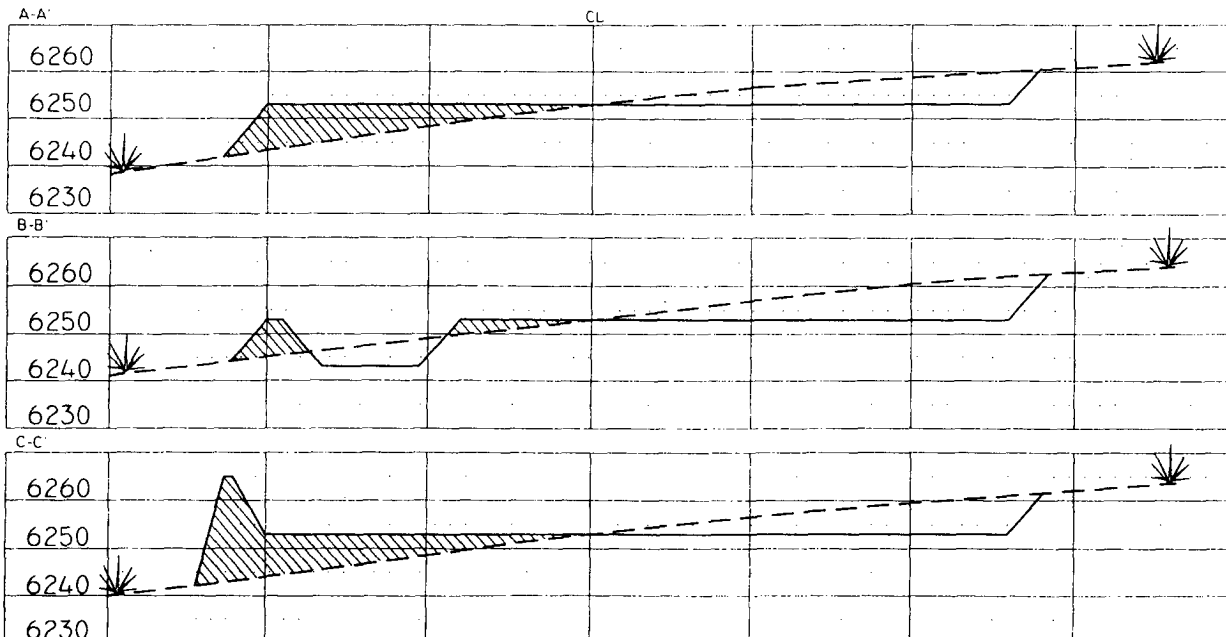
PAD LAYOUT PLAN & PROFILE
BP AMERICA PRODUCTION COMPANY
 Ludwick LS #17E
 2070' F/NL 685' F/EL
 SEC. 29, T30N, R10W, N.M.P.M.
 SAN JUAN COUNTY, NEW MEXICO

Lat: 36.78519°
 Long: 107.90114° (83)



Area of Construction Zone - 330'x400' or 3.03 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

BP AMERICA PRODUCTION COMPANY

DRILLING AND COMPLETION PROGRAM

7/17/2006

Lease:	Ludwick LS	Well Name & No.	Ludwick LS #17E	Field:	Blanco Mesaverde/Basin Dakota
County:	San Juan, New Mexico	Surface Location:	29-30N-10W: 2070' FNL, 685' FEL		
Minerals:	Federal	Surface:	Lat: 36.7851174 deg; Long: -107.9007257 deg		
Rig :	Aztec 184	BH Location:	same		

OBJECTIVE: Drill 250' below the top of the Two Wells Mbr, set 4-1/2" production liner, Stimulate DK, MF, and PL intervals.

METHOD OF DRILLING		APPROXIMATE DEPTHS OF GEOLOGICAL MARKER									
TYPE OF TOOLS		DEPTH OF DRILLING		Actual GL: 6253		Estimated KB: 6,267.0'					
Rotary		0 - TD		Marker		SUBSEA		TVD		APPROX. MD	
LOG PROGRAM				Ojo Alamo		4,882'		1,385'		1,385'	
Type		Depth Interval		Kirtland		4,720'		1,547'		1,547'	
Single Run				Fruitland		4,147'		2,120'		2,120'	
				Fruitland Coal		3,757'		2,510'		2,510'	
				Pictured Cliffs		3,530'		2,737'		2,737'	
				Lewis		3,276'		2,991'		2,991'	
Cased Hole				Cliff House		1,988'		4,279'		4,279'	
RST- CBL		TD to 7" shoe		Menefee		1,731'		4,536'		4,536'	
		Identify 4 ½" cement top		Point Lookout		1,242'		5,025'		5,025'	
REMARKS:				Mancos		834'		5,433'		5,433'	
				Greenhorn		-742'		7,009'		7,009'	
				Graneros (bent,mkr)		-797'		7,064'		7,064'	
				Two Wells		# -852'		7,119'		7,119'	
The recommended TD is intended to penetrate the ENCN (~30') in order to				Paguate		# -930'		7,197'		7,197'	
evaluate, and possibly produce it. Offsetting wells encountered no water flow				Cubero		# -983'		7,250'		7,250'	
at this depth. See attached cross-section.				L. Cubero		# -1,022'		7,289'		7,289'	
The intermediate casing should be set 100 ft. into the MENF to minimize the				Encinal Cyn		# -1,078'		7,345'		7,345'	
risks encountered drilling through the possibly water productive CLFH.				TOTAL DEPTH:				-1,102'		7,369'	
				# Probable completion interval				* Possible Pay			

The recommended TD is intended to penetrate the ENCN (~30') in order to evaluate, and possibly produce it. Offsetting wells encountered no water flow at this depth. See attached cross-section.

The intermediate casing should be set 100 ft. into the MENF to minimize the risks encountered drilling through the possibly water productive CLFH.

SPECIAL TESTS	DRILL CUTTING SAMPLES		DRILLING TIME	
TYPE	FREQUENCY	DEPTH	FREQUENCY	DEPTH
None	30'/10' intervals	4,636' to TD	Geologist	0 - TD

MUD PROGRAM:					
Interval	TypeMud	#/gal	Vis, sec/qt	/30 min	Other Specification
200'	Spud	8.8 - 9.0	Sufficient to clean hole.		
4,636'	Water/LSND	8.4 - 9.0		<9	Sweep hole while whilst water drilling, LCM onsite
7,369'	Air	1	1000 cfm for hammer		Volume sufficient to maintain a stable and clean wellbore

CASING PROGRAM:							
CasingString	Depth	Size	Casing Size	Grade, Thread	Weight	Landing Point	Cement
Surface/Conductor	200'	13 1/2"	9-5/8"	H-40 ST&C	32#		cmt to surface
Intermediate	0' - 4000'	8-3/4"	7"	J/K-55 ST&C	20#		
Intermediate	4000' - 4636'	8 3/4"	7"	N-80 ST&C	23#	100' below MENF	cmt to surface
Production	7,369'	6-1/4"	4-1/2"	J-55	11.6#	DKOT	150' inside Intermediate - TOC survey required

CORING PROGRAM:	
None	

COMPLETION PROGRAM:	
Rigless, 2-3 Stage Limited Entry Hydraulic Frac, FMC Unihead	

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

BOP Pressure Testing Requirements			
Formation	Depth	Anticipated bottom hole pressure	Max anticipated surface pressure**
Cliffhouse	4,279'	500	0
Point Lookout	5,025'	600	0
Dakota	7,119'	2600	1033.82
Requested BOP Pressure Test Exception = 1500 psi		** Note: Determined using the following formula: ABHP - (.22*TVD) = ASP	

Form 46 Reviewed by:	Logging program reviewed by:		
PREPARED BY:	APPROVED:		
HGJ JMP	17-Jul-06		
Form 46 7-84bw	For Drilling Dept.		
	For Production Dept.		

Cementing Program

Well Name: Ludwick LS #17E
 Location: 29-30N-10W: 2070' FNL, 685' FEL
 County: San Juan
 State: New Mexico

Well Flac
 Formation: Blanco Mesaverde/Basin Dakota
 KB Elev (est) 6267
 GL Elev. (est) 6253

Casing Program:

Casing String	Est. Depth (ft.)	Hole Size (in.)	Casing Size (in.)	Thread	TOC (ft.)
Surface	200	13.5	9.625	ST&C	Surface
Intermediate	4636	8.75	7	ST&C	Surface
Production -	7369	6.25	4.5	ST&C	4486

Casing Properties:

(No Safety Factor Included)

Casing String	Size (in.)	Weight (lb/ft)	Grade	Burst (psi.)	Collapse (psi.)
Surface		9.625	32 H-40	2270	1400
Intermediate		7	20 K-55	3740	2270
Intermediate		7	23 N80	6340	3830
Production -		4.5	11.6 J-55	5350	4960

Mud Program

Apx. Interval (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 %, 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	154 sx Class C Cement		195 cuft
TOC@Surface	+ 2% CaCl2 (accelerator)		
			0.4887 cuft/ft OH

Slurry Properties:

	Density (lb/gal)	Yield (ft ³ /sk)	Water (gal/sk)
Slurry 1	15.2	1.27	5.8

Casing Equipment:

9-5/8", 8R, ST&C
 1 Guide Shoe
 1 Top Wooden Plug
 1 Autofill insert float valve
 Centralizers, as needed

Cementing Program

1 Stop Ring
1 Thread Lock Compound

Intermediate:

Fresh Water	20 bbl	fresh water	
Lead		407 sx Class "G" Cement	1070 cuft
Slurry 1		+ 3% D79 extender	
TOC@Surface		+1/4 #/sk. Cellophane Flake	
		+ 5 lb/sk Gilsonite	
Tail		59 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 as needed		
	1 Top Rubber Plug		
	1 Thread Lock Compound		

Production:

Fresh Water	10 bbl	CW100	
Lead		100 LiteCrete D961 / D124 / D154	252 cuft
Slurry 1		+ 0.03 gps D47 antifoam	
TOC, 400' above 7" shoe		+ 0.5% D112 fluid loss	
		+ 0.11% D65 TIC	
Tail		143 sx 50/50 Class "G"/Poz	206 cuft
Slurry 2		+ 5% D20 gel (extender)	
1436 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)
Slurry 1	9.5	2.52	6.38
Slurry 2	13	1.44	6.5
			0.1169 cuft/ft csg ann
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, as needed		
	1 Top Rubber Plug		
	1 Thread Lock Compound		
			Top of Mancos 5433

**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 single 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", 2000 psi Single ram preventer with 3000 psi annular preventer and rotating head. All ram type and annular preventers as well as related control equipment will be hydraulically tested to 250 psi (low pressure) and 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, upper Kelly cock with a handle available, floor safety valves and choke manifold which will also be tested to equivalent pressure.

Additional Operator Remarks
Ludwick LS 17E
APD

NOTICE OF STAKING WAS SUBMITTED ON 07/19/06

BP America Production Company respectfully requests permission to drill the subject well to a total depth of approximately 7369' MD. Complete in the Basin Dakota Pool, isolate the Dakota; complete into the Blanco Mesaverde, establish a production rate; drill out the bridge plug 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.

If terrain allows it is our intent to pre-set the 9 5/8" casing on the above mentioned well 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 gal/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.

SUPPLEMENTAL TO SURFACE USE PLAN

New Facilities:

A 4.5" diameter buried steel pipeline that is +/- 2000 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 Field Services.

APD/ROW

BP American Production Company

Well Control Equipment Schematic

