

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION OF FOR PERMIT TO DRILL OR REENTER

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

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 20E

9. API Well No.

30-045-33992

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

D

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)

281-366-4081

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

At surface **765' FNL & 760' FWL NWNW Lat 36.78805 Long 107.91393**

At proposed prod. Zone **SAME**

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

6 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) **760'**

16. No. of Acres in lease

313.30

17. Spacing Unit dedicated to this well

313.3 (W/2)

18. Distance from proposed location*

to nearest well, drilling, completed,
applied for, on this lease, ft. (est) **1000'**

19. Proposed Depth

7242' MD

20. BLM/BIA Bond No. on file

WY2924

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

6162' GL

22. Approximate date work will start*

02/14/07

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

Cherry Hlava

Name (Printed/typed)

Cherry Hlava

Date

10/04/2006

Title

Regulatory Analyst

Approved by (Signature)

[Signature]

Name (Printed/Typed)

Office

FEO

Date

1/9/07

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)

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

NMOCD

1/11/07

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

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

2006 OCT 6 PM 12 24

RCVD JAN 10 '07
OIL CONS. DIV

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-33992	² Pool Code 71599, 72319	³ Pool Name Basin Dakota Blanco Mesaverde
⁴ Property Code 000811	⁵ Property Name Ludwick LS	⁶ Well Number # 20E
⁷ OGRID No. 00778	⁸ Operator Name BP AMERICA PRODUCTION COMPANY	⁹ Elevation 6162

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
Lot 4 (D)	29	30 N	10 W		765	NORTH	760	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 313.3	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

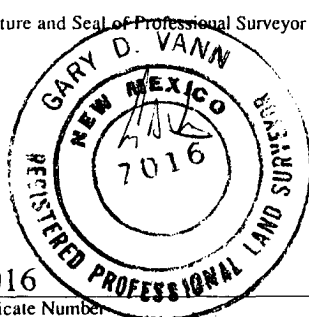
¹⁶ 765' 760' Lot 4	Lot 3	Lot 2	Lot 1
Lot 5	Lot 6	Lot 7	Lot 8
Lot 12	Lot 11	Lot 10	Lot 9
Lot 13	Lot 14	Lot 15	Lot 16

29

¹⁷ OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

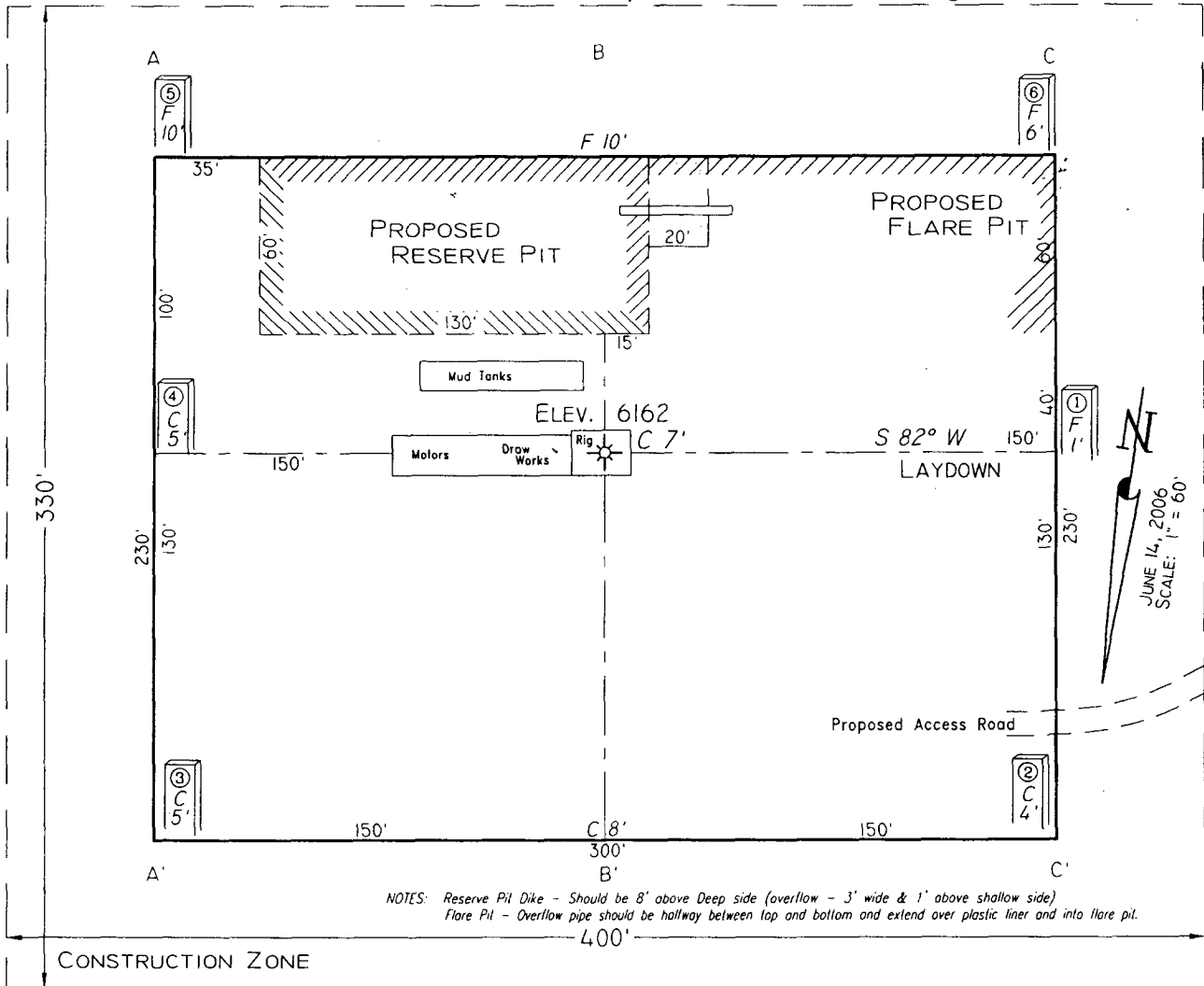
Signature *Cherry Hlava*
Printed Name **Cherry Hlava**
Title **Regulatory Analyst**
Date **10-4-06**

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.

Date of Survey **June 14, 2006**
Signature and Seal of Professional Surveyor

Certificate Number **7016**

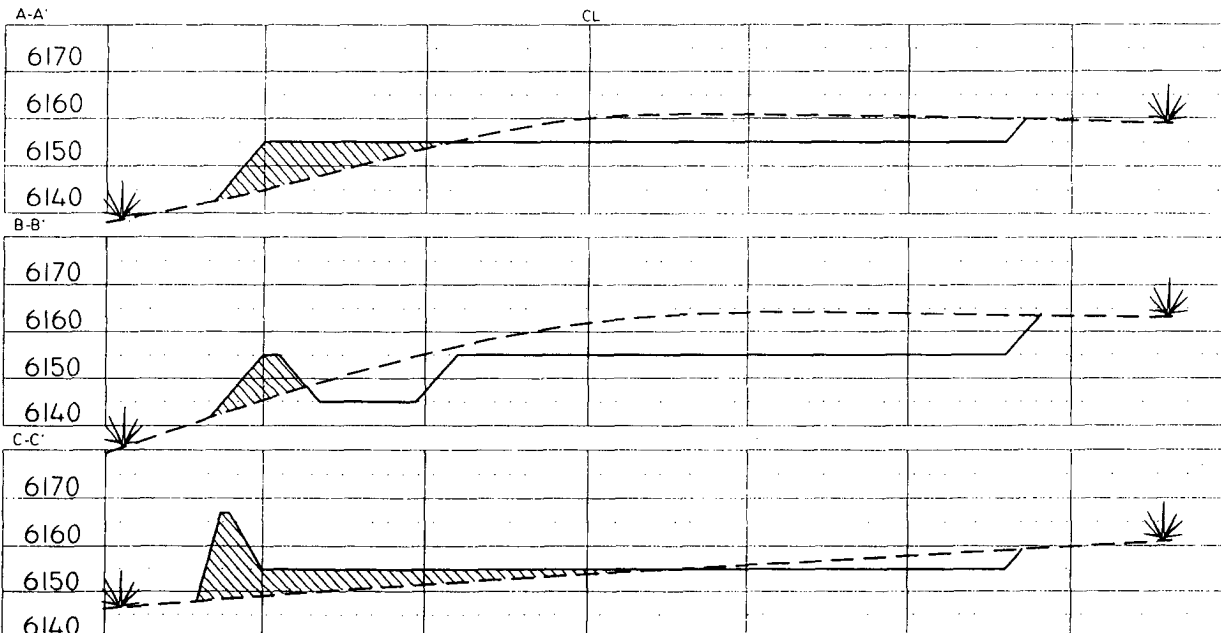
PAD LAYOUT PLAN & PROFILE
BP AMERICA PRODUCTION COMPANY
 Ludwick LS # 20E
 765' F/NL 760' F/WL
 SEC. 29, T30N, R10W, N.M.P.M.
 SAN JUAN COUNTY, NEW MEXICO

Lat: 36.78805°
 Long: 107.91393° (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

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

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

Form C-103
May 27, 2004

WELL API NO. <u>30-045-33992</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 20 E
9. OGRID Number 000778
10. Pool name or Wildcat Basin Dakota & Blanco Mesaverde

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other <input type="checkbox"/>	
2. Name of Operator BP AMERICA PRODUCTION COMPANY	
3. Address of Operator P.O. BOX 3092 HOUSTON, TX 77079-2064	
4. Well Location Unit Letter <u>D</u> : <u>765</u> feet from the <u>North</u> line and <u>760</u> feet from the <u>West</u> line Section <u>29</u> Township <u>30N</u> Range <u>10W</u> NMPM <u>SAN JUAN</u> County	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6162'	
Pit or Below-grade Tank Application <input checked="" type="checkbox"/> or Closure <input type="checkbox"/> 1200'	
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:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: LINED DRILLING PIT <input checked="" type="checkbox"/>		OTHER: <input type="checkbox"/>	

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 Cherry Hlava TITLE Regulatory Analyst DATE 10/04/06

Type or print name Cherry Hlava E-mail address: hlavaci@bp.com Telephone No. 281-366-4081
For State Use Only

APPROVED BY: [Signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. IV DATE JAN 11 2007
Conditions of Approval (if any):

BP AMERICA PRODUCTION COMPANY

DRILLING AND COMPLETION PROGRAM

7/10/2006

Lease:	Ludwick LS	Well Name & No.	Ludwick LS #20E	Field:	Blanco Mesaverde/Basin Dakota
County:	San Juan, New Mexico	Surface Location:	29-30N-10W: 765' FNL, 760' FWL		
Minerals:	Oil	Surface:	Lat: 36.7880043 deg; Long: -107.9133474 deg		
Rig:	Aztec 184	BH Location:	same		

OBJECTIVE: Drill 225' 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:	6162	Estimated KB: 6,176.0'	
Rotary	0 - TD	Marker		SUBSEA	TVD
LOG PROGRAM					APPROX. MD
Type	Depth Interval	Ojo Alamo		4,881'	1,295'
Single Run		Kirtland		4,733'	1,443'
		Fruitland	*	4,100'	2,076'
		Fruitland Coal	*	3,827'	2,349'
		Pictured Cliffs	*	3,551'	2,625'
		Lewis	*	3,329'	2,847'
Cased Hole	TD to 7" shoe	Cliff House	#	2,040'	4,136'
RST- CBL		Menefee	#	1,751'	4,425'
	Identify 4 1/2" cement top	Point Lookout	#	1,219'	4,957'
REMARKS:		Mancos		842'	5,334'
		Greenhorn		-738'	6,914'
		Graneros (bent,mkr)		-786'	6,962'
		Two Wells	#	-841'	7,017'
		Paguate	#	-915'	7,091'
		Cubero	#	-968'	7,144'
		L. Cubero	#	-1,004'	7,180'
		Encinal Cyn	#	-1,029'	7,205'
		TOTAL DEPTH:		-1,066'	7,242'
		# Probable completion interval		* Possible Pay	
SPECIAL TESTS		DRILL CUTTING SAMPLES		DRILLING TIME	
TYPE		FREQUENCY	DEPTH	FREQUENCY	DEPTH
None		30'/10' intervals	4,525' to TD	Geograph	0 - TD
REMARKS:					

MUD PROGRAM:					
Interval	TypeMud	#/gal	Vis, sec/qt	/30 min	Other Specification
200'	Spud	8.8 - 9.0	Sufficient to clean hole.		
4,525'	Water/LSND	8.4 - 9.0		<9	Sweep hole while whilst water drilling, LCM onsite
7,242'	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' - 4525'	8 3/4"	7"	N-80 ST&C	23#	100' below MENF	cmt to surface
Production	7,242'	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/NMOCDD 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	4,136'	500	0
Point Lookout	4,957'	600	0
Dakota	7,017'	2600	1056.26

Requested BOP Pressure Test Exception = 1500 psi

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

Form 46 Reviewed by:	Logging program reviewed by:	DATE:	APPROVED:	DATE:
HGJ	JMP/GGZ	10-Jul-06		
Form 46 7-84bw	For Drilling Dept.		For Production Dept.	

Cementing Program

Well Name: Ludwick LS #20E
 Location: 29-30N-10W 765' FNL, 760' FWL
 County: San Juan
 State: New Mexico

Well Flac
 Formation: Blanco Mesaverde/Basin Dakota
 KB Elev (est) 6176
 GL Elev. (est) 6162

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	4525	8.75	7	ST&C	Surface
Production -	7242	6.25	4.5	ST&C	4375

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% CaCl ₂ (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
- 1 Stop Ring
- 1 Thread Lock Compound

Cementing Program

Intermediate:

Fresh Water	20 bbl	fresh water	
Lead		396 sx Class "G" Cement	1041 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% CaCl ₂ (accelerator)	0.1746 cuft/ft csg ann
		+ 5 lb/sk Gilsonite	

Slurry Properties:	Density (lb/gal)	Yield (ft ³ /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:

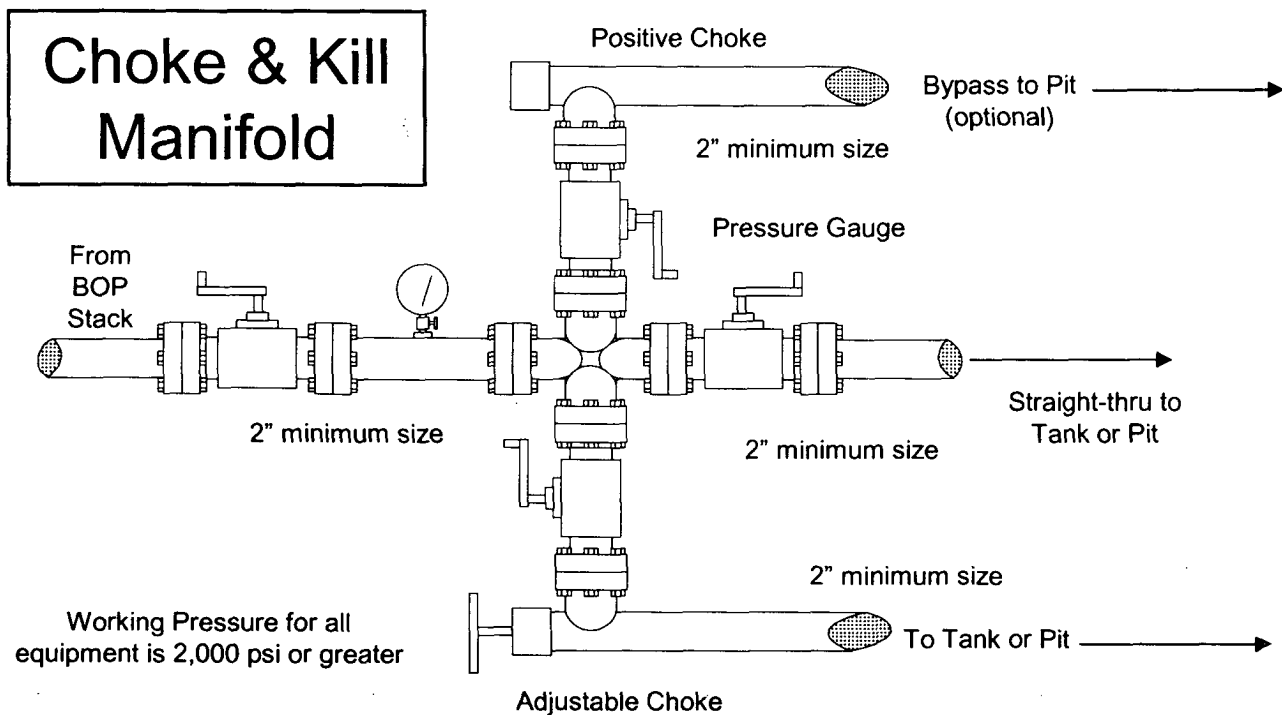
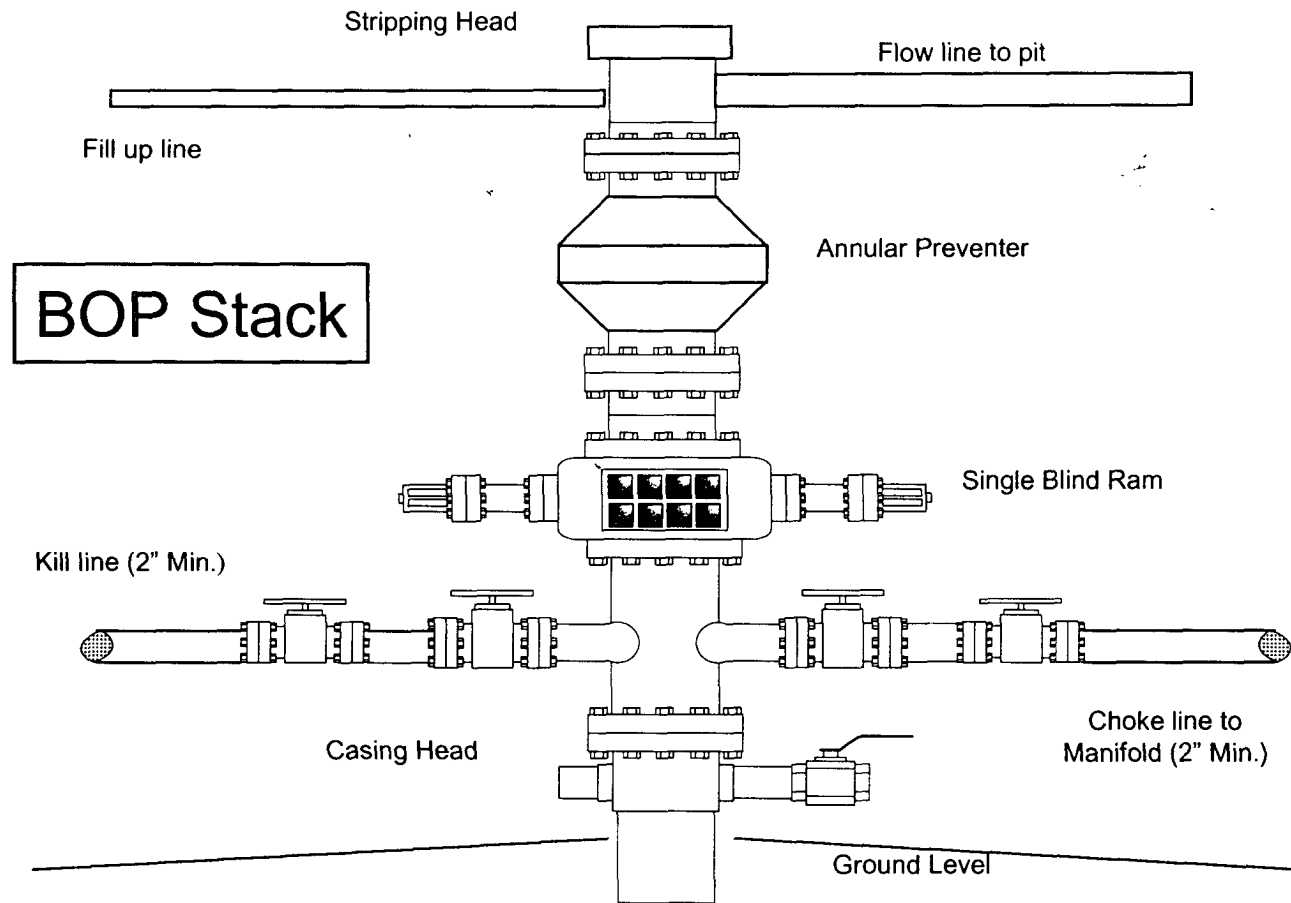
Fresh Water	10 bbl	CW100	
Lead		101 LiteCrete D961 / D124 / D154	253 cuft
Slurry 1		+ 0.03 gps D47 antifoam	
TOC, 400' above 7" shoe		+ 0.5% D112 fluid loss	
		+ 0.11% D65 TIC	
Tail		140 sx 50/50 Class "G"/Poz	202 cuft
Slurry 2		+ 5% D20 gel (extender)	
1408 ft fill		+ 0.1% D46 antifoam	
		+ 1/4 #/sk. 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 (ft ³ /sk)	Water (gal/sk)
Slurry 1	9.5	2.52	6.38
Slurry 2	13	1.44	6.5
			Top of Mancos
			5334

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

BP American Production Company

Well Control Equipment Schematic



Additional Operator Remarks
Ludwick LS 20E
APD

NOTICE OF STAKING WAS SUBMITTED ON 07/11/2006

BP America Production Company respectfully requests permission to drill the subject well to a total depth of approximately 7242'. 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