

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 077002 078046
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. HUGHES LS 1M
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. API Well No. 30-045-32418
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface NESW 1855FSL 1250FWL 36.42100 N Lat, 107.43100 W Lon At proposed prod. zone NESW 2400FSL 1200FWL 36.42100 N Lat, 107.43100 W Lon		10. Field and Pool, or Exploratory BASIN DAKOTA & BLANCO MESAVE
14. Distance in miles and direction from nearest town or post office* 20.3 MILES EAST OF BLOOMFIELD		11. Sec., T., R., M., or Blk. and Survey or Area K Sec 19 T29N R8W Mer NMP
15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1250	16. No. of Acres in Lease 7651 MD 7605 TVD	12. County or Parish SAN JUAN ✓
18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth 7651 MD 7605 TVD	13. State NM
21. Elevations (Show whether DF, KB, RT, GL, etc.) 6455 GL	22. Approximate date work will start 08/15/2004	17. Spacing Unit dedicated to this well 347.60
		20. BLM/BIA Bond No. on file WY2924
		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 (Electronic Submission)	Name (Printed/Typed) CHERRY HLAVA	Date 06/09/2004
Title REGULATORY ANALYST		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed)	Date 9-16-04
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 #31633 verified by the BLM Well Information System
For BP AMERICA PRODUCTION COMPANY, sent to the Farmington

HOLD COPY FOR Directional Survey
OPERATIONS AUTHORIZED ARE
SUBJECT TO COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS".

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

** 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 APT Number 30-045-32418		2 Pool Code 71599; 72319		3 Pool Name Basin Dakota / Blanco Mesaverde	
4 Property Code 000699		5 Property Name Hughes LS			6 Well Number #1M
7 OGRID No. 000778		8 Operator Name BP AMERICA PRODUCTION COMPANY			9 Elevation 6455

10 Surface Location

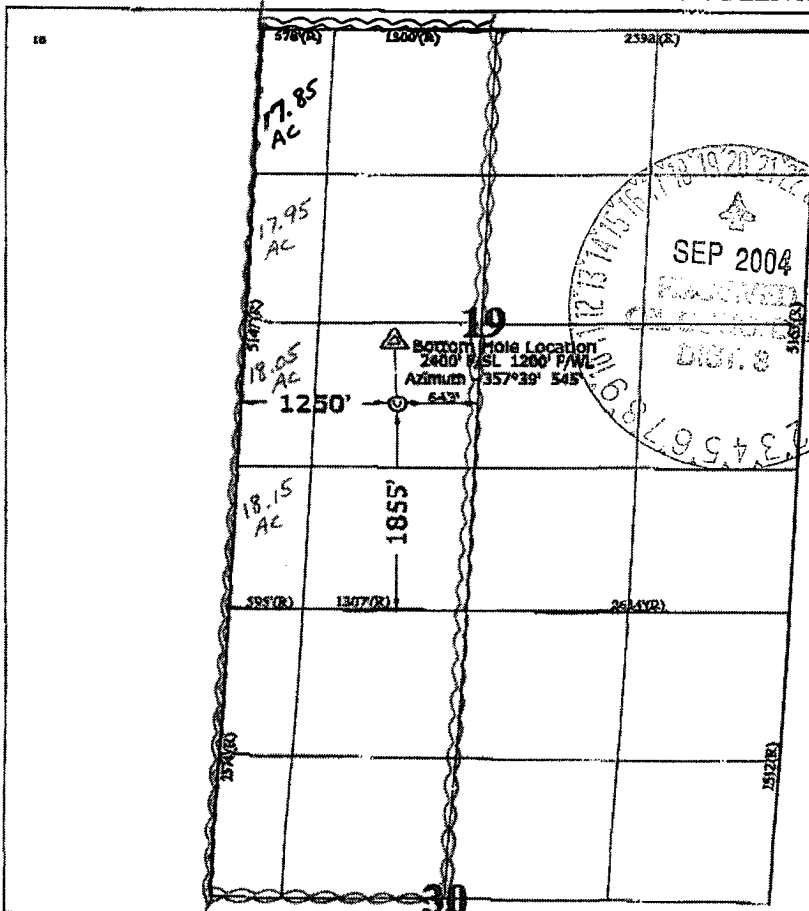
UL or Lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	19	29 N	8 W		1855	SOUTH	1250	WEST	SAN JUAN

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	19	29 N	8 W		2400	SOUTH	1200	WEST	SAN JUAN

12 Dedicated Acres 347.60	13 Joint or Infill	14 Consolidation Code	15 Order No. R-60 #3 - MV R-6246 - JK
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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



17 OPERATOR CERTIFICATION

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

Cherry Hlava
Signature
Cherry Hlava
Printed Name
Regulatory Analyst
Title
6-9-04
Date

18 SURVEYOR CERTIFICATION

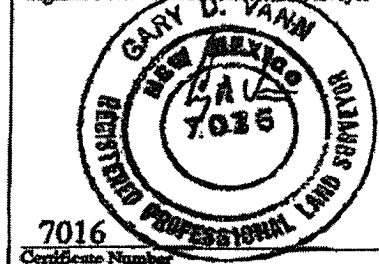
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Revised: June 9, 2004

March 18, 2004

Date of Survey

Signature and Seal of Professional Surveyor



(R) - BLM Record

Spacing for DK/MV
also includes lots 1, 2; E/2 NW/4 Sec 30

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

Prospect Name: Hughes LS
Lease: Hughes
County: San Juan
State: New Mexico

Well No: 1 M
Surface Location: 19-29N-8W, 1855 FSL, 1250 FWL
Bottom Location: 19-29N-8W, 2400 FSL, 1200 FWL
Field: Blanco Mesaverde/Basin Dakota

Date: May 11, 2004

OBJECTIVE: Drill 250' below the top of the Two Wells; set 4-1/2" production casing. Stimulate CH, MF, PL and DK intervals					
METHOD OF DRILLING			APPROXIMATE DEPTHS OF GEOLOGICAL MARKER		
TYPE OF TOOLS Rotary		DEPTH OF DRILLING 0 - TD	Estimated GL: 6455		Estimated KB: 6469
LOG PROGRAM					
<u>TYPE</u>	<u>DEPTH INTERVAL</u>		<u>MARKER</u>	<u>MD</u>	<u>Subsea</u>
<u>OPEN HOLE</u>					<u>TVD</u>
None			Ojo Alamo	2023'	4469
			Kirkland	2123'	4371
			Fruitland	2453'	4046
			Fruitland Coal	* 2844'	3661
			Pictured Cliffs	* 3065'	3444
			Lewis Shale	# 3285'	3227
			Cliff House	# 4594'	1921
			Menefee Shale	# 4854'	1661
			Point Lookout	# 5294'	1221
			Mancos	5744'	771
			Greenhorn	7298'	-783
			Bentonite Marker	7354'	-839
			Two Wells	# 7401'	-886
			Paguate	# 7495'	-980
			Cubero Upper	# 7523'	-1008
			Cubero Lower	# 7561'	-1046
			Encinal Canyon	# 7601'	-1086
			TOTAL DEPTH	7651'	-1136
			# Probable completion interval		* Possible Pay
SPECIAL TESTS			DRILL CUTTING SAMPLES		DRILLING TIME
TYPE None			FREQUENCY 10'	DEPTH 3387' -TD	FREQUENCY Geologist
					DEPTH 0-TD
REMARKS:					
- Please report any flares (magnitude & duration).					
MUD PROGRAM:					
Approx. Interval		Type Mud	Weight, #/ga	Vis, sec/qt	W/L cc's/30 min
0 - 120		Spud	8.6-9.2		
120 - 3387 (1)		Water/LSND	8.6-9.2	<6	
3387 - 7651		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
Surface/Conductor	120	9 5/8"	H-40 ST&C	32#	13.5"
Intermediate 1	3387 - 3342	7"	J/K-55 ST&C	20#	8.75"
Production	7605	4 1/2"	J-55	11.6#	6.25"
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/JLP/JMP				May 11, 2004	
Form 46 12-00 MNP				Version 2.1	

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
March 4, 2004

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

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.)		WELL API NO. SF - 077082 New Well
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/>		5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
2. Name of Operator BP AMERICA PRODUCTION CO		6. State Oil & Gas Lease No.
3. Address of Operator P.O. BOX 3092 HOUSTON, TX 77079-2064		7. Lease Name or Unit Agreement Name Hughes LS
4. Well Location Unit Letter K : 1855 feet from the South line and 1250 feet from the West line Section 19 Township 29N Range 08W NMPM SAN JUAN County		8. Well Number 1 M
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6455'		9. OGRID Number
Pit or Below-grade Tank Application (For pit or below-grade tank closures, a form C-144 must be attached)		
Pit Location: UL K Sect 19 Twp 29N Rng 08W Pit type Drilling Depth to Groundwater >100' Distance from nearest fresh water well >1000' Distance from nearest surface water >1000' Below-grade Tank Location UL K Sect 19 Twp 29N Rng 08W ; 1955' feet from the South line and 1250 feet from the West line		

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"/> PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPLETION <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>
OTHER: Pit Permit <input 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.	

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 6/09/04

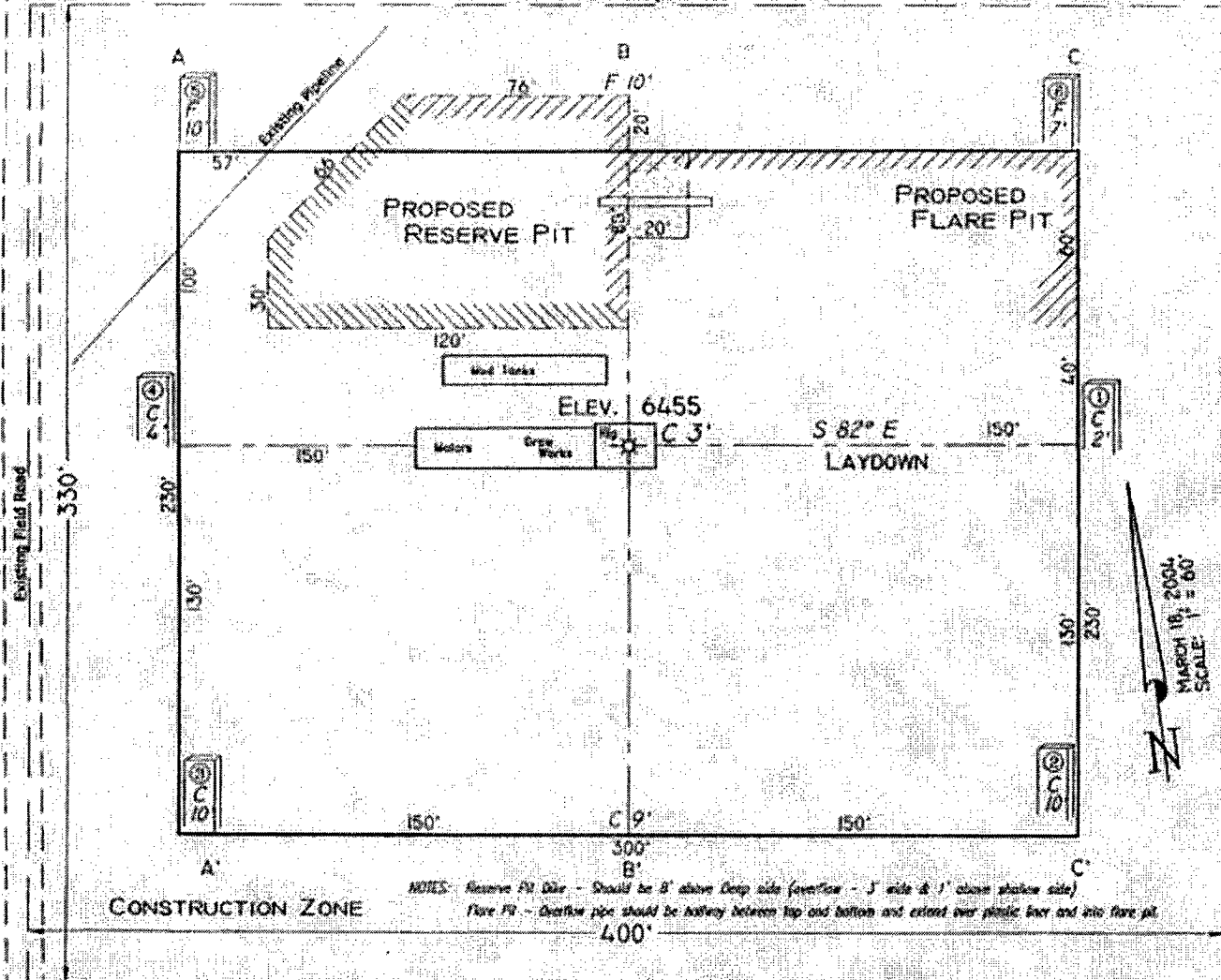
Type or print name Cherry Hlava E-mail address: hlavacl@bp.com Telephone No. 281-366-4081

(This space for State use)

APPROVED BY [Signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. 2 DATE SEP 20 2004
Conditions of approval, if any:

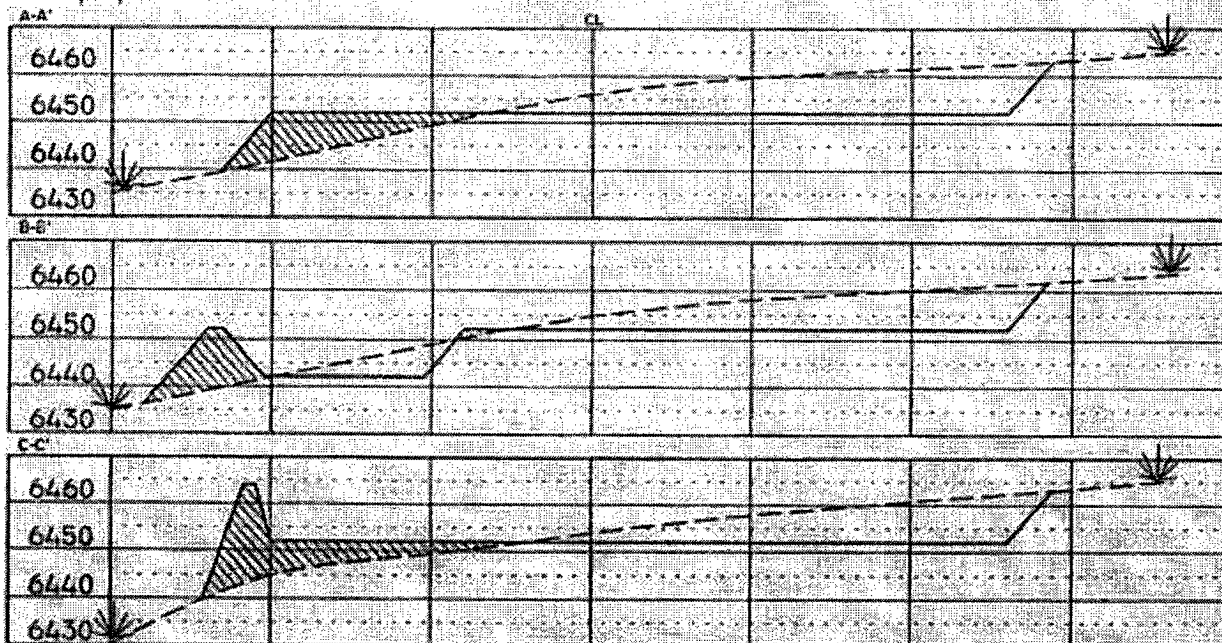
PAD LAYOUT PLAN & PROFILE
BP AMERICA PRODUCTION COMPANY
 Hughes LS # 1M
 1855' F/SL 1250' F/WL
 SEC. 19, T29N, R8W, N.M.P.M.
 SAN JUAN COUNTY, NEW MEXICO

Lat: 36°42'32"
 Long: 107°43'08"



Area of Construction Zone - 132'x400' or 2.03 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 sidewalks and driveways. Final Pad Dimensions are to be verified by Contractor.

VANN SURVEYS
 P. O. Box 1306
 Farmington, NM

BOP Test Pressure

BP America Production Company BOP Pressure Testing Requirements

Well Name: Hughes LS
County: San Juan

1 M
State: New Mexico

Formation	TVD	Anticipated Bottom Hole Pressure	Maximum Anticipated Surface Pressure **
Ojo Alamo	2000		
Fruitland Coal	2808		
PC	3025		
Lewis Shale	3242		
Cliff House	4548	500	0
Menefee Shale	4808		
Point Lookout	5248	600	0
Mancos	5698		
Dakota	7355	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.

Additional Operator Remarks:

Notice of Staking was submitted on 04/07/04.

BP America Production Company respectfully requests permission to drill this well to a total depth of approximately 7651', 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 conditions allow, 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.

Also see attached pit permit application for NMOCD purposes.

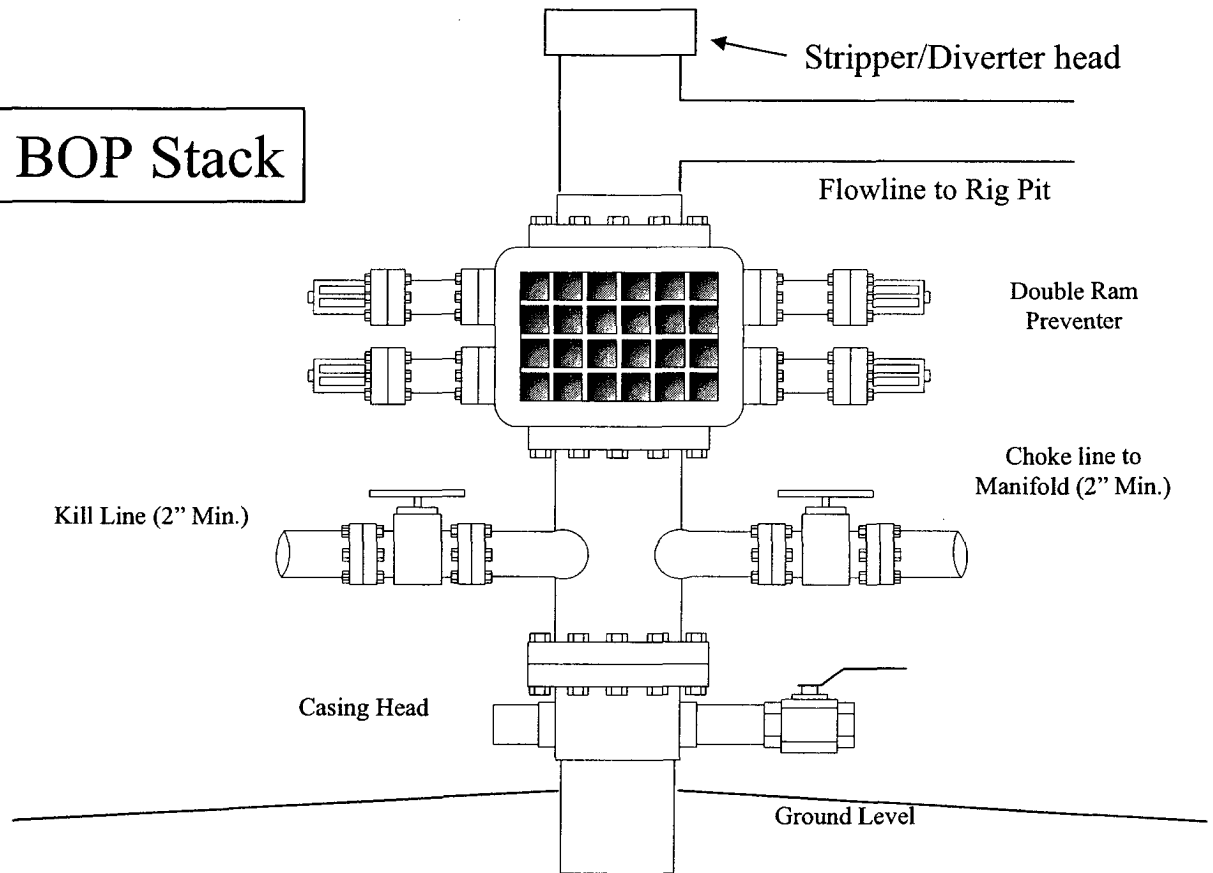
FEDERAL CEMENTING REQUIREMENTS

- 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 impart a swirling action around the casing and 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.**

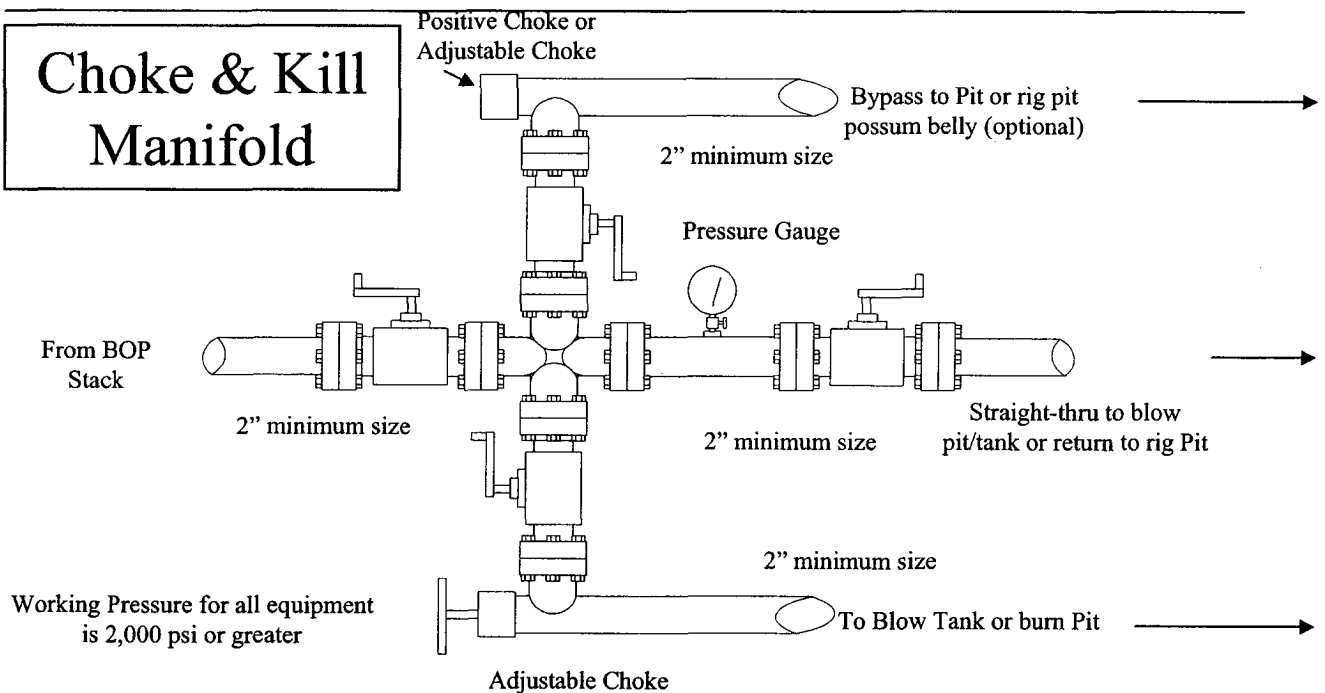
BP American Production Company
Well Control Equipment Schematic



BOP Stack



Choke & Kill Manifold



Cementing Program

Well Name: Hughes LS 1M Location: 19-29N-08W, 1855 FSL, 1250 FWL County: San Juan State: New Mexico	Field: Blanco Mesaverde / Basin Dakota API No. Well Flac Formation: Blanco Mesaverde/Basin Dakota KB Elev (est) 6469 GL Elev. (est) 6455
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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	3387	8.75	7	ST&C	Surface	NA	
Production -	7651	6.25	4.5	ST&C	3287	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	2270	1400	254	0.0787
Intermediate	7	20	K-55	3740	2270	21234	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 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	100 sx Class C Cement		117 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

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

Intermediate:

Fresh Water	20 bbl	fresh water	
Lead		290 sx Class "G" Cement	749 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	Yield	Water
	(lb/gal)	(ft3/sk)	(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	476 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	202 cuft
Slurry 2		+ 5% D20 gel (extender)	
1407 ft fill		+ 0.1% D46 antifoam	
		+ 1/4 #/sk. Cellophane Flake	
		+ 0.25% D167 Fluid Loss	
		+ 5 lb/sk Gilsonite	

Cementing Program

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

Slurry Properties:	Density	Yield	Water	0.1026 cuft/ft OH
	(lb/gal)	(ft ³ /sk)	(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 5744

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