

FORM APPROVED
OMB NO. 1004-0135
Expires: November 30, 2000

5. Lease Serial No.
NMSF - 078513

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
ARNAUD A 1S

9. API Well No.
30-045-31430

10. Field and Pool, or Exploratory
BASIN FRUITLAND COAL

11. County or Parish, and State
SAN JUAN COUNTY, NM

NMOC

Additional data for EC transaction #23707 that would not fit on the form

32. Additional remarks, continued

to the FFO-PMT geologist (Chip Harraden) at the BLM. We will also run a chromatograph to provide gas analysis.

If you have any technical questions please call Dan Crosby @ 281-366-0769.

DRILLING AND COMPLETION PROGRAM

6-26-03

Prospect Name: Arnaud A

Lease:

Well No: 1S

Surface Location: Section 17 T32N, R9W; 2280'
FSL, 905' FEL

County: San Juan

Field: Basin Fruitland Coal

State: New Mexico

Date: February 20, 2003

OBJECTIVE: Drill to a TD of 3977' md - topset FT with 7" casing and air drill the Fruitland Coal interval.

METHOD OF DRILLING		APPROXIMATE DEPTHS OF GEOLOGICAL MARKER			
TYPE OF TOOLS	DEPTH OF DRILLING	Estimated GL: 6972		Estimated KB: 6984	
Rotary	0 - 3977' MD, 3989' KB				
LOG PROGRAM		MARKER		SUBSEA	MEAS. DEPTH
TYPE	DEPTH INVERAL	Ojo Alamo		4737	2235
Mud log & gas chromatograph	3000 - 3977	Kirtland		4599	2373
		Fruitland		3685	3287
		Fruitland Coal	#	3532	3440
		Pictured Cliffs	-	3143	3829
		TOTAL DEPTH		2995	3977
		# Probable completion interval		* Possible Pay	
SPECIAL TESTS		DRILL CUTTING SAMPLES		DRILLING TIME	
TYPE		FREQUENCY	DEPTH	FREQUENCY	DEPTH
None		none	none	Geolograph	0-3977
REMARKS:					

REMARKS:

At TD and prior to completion of the Fruitland coal interval, the operator will FAX or email a copy of the mud log covering the lower basal Fruitland coal seam and Pictured Cliffs Formation to the FFO-PMT geologist (Chip Harraden @ 505-599- 8997 or chip_harraden@nm.blm.gov).

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 - 3300 (1)	Water/LSND	8.6-9.2		<6	
3300 - 3977	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"			12.5"	1
Intermediate	3300	7"			8.75"	1
Production						

REMARKS:

(1) Circulate Cement to Surface

CORING PROGRAM:

None

COMPLETION PROGRAM:

Rigless, Single Stage Limited Entry Hydraulic Frac

GENERAL REMARKS:

Notify BLM/NMOCDD 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:

BP America Production Company BOP Pressure Testing Requirements

Well Name: Arnaud A
County: San Juan

1S
State: New Mexico

Formation	TVD	Anticipated Bottom Hole Pressure	Maximum Anticipated Surface Pressure **
Ojo Alamo	2235		
Kirtland	2373		
Fruitland Coal	3440	500	0
PC	3829	1300	458
Lewis Shale			
Cliff House			
Menefee Shale			
Point Lookout			
Mancos			
Dakota			

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

Requested BOP Pressure Test Exception: 850 psi

Cementing Program

Well Name:	Arnud A 1S	Field:	Basin Fruitland Coal
Location:	Sec 17 - 32N - 9W, 2280' FSL, 905' FEL	API No.	
County:	San Juan	Well Flac	
State:	New Mexico	Formation:	Fruitland Coal
		KB Elev (est)	6984
		GL Elev. (est)	6972

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	12.5	9.625	ST&C	Surface	NA	
Production -	3300	8.75	7	LT&C	Surface	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
Production -		7	20 K-55	3740	2270	234	0.0405	8.456

Mud Program

Apx. Interval (ft.)	Mud Type	Mud Weight	Recommended Mud Properties Prior Cementing:	
			PV	<20
			YP	<10
			Fluid Loss	<6
0 - SCP	Water/Spud	8.6-9.2		
SCP - TD	Water/LSND	NA		
SCP - TD	Gas/Air/N2/Mist	Air		

Cementing Program:

	Surface	Production
Excess %, Lead	100	40
Excess %, Tail	NA	40
BHST (est deg. F)	75	120
Special Instructions	1,6,7	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	80 sx Class G Cement		
TOC@Surface	+ 2% CaCl ₂ (accelerator)		
	0.25 #/sk Cellophane Flake (lost circulation additive)		
	0.1% D46 antifoam		
			0.347 cuft/ft OH

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

Cementing Program

Production:

Fresh Water	10 bbl	CW100	
		7" CSG	600
Lead		230 sx Class "G" Cement	585 cuft
Slurry 1		+ 3% D79 extender	
TOC@Surface		+ 2% S1 Calcium Chloride	
		+ 1/4 #/sk. Cellophane Flake	
		+ 0.1% D46 antifoam	114
Tail		80 sx 50/50 Class "G"/Poz	105 cuft
Slurry 2		+ 2% gel (extender)	
500 ft fill		0.1% D46 antifoam	0.1503 cuft/ft OH
		+ 1/4 #/sk. Cellophane Flake	0.1746 cuft/ft csg ann
		+ 2% CaCl2 (accelerator)	

Slurry Properties:

	Density (lb/gal)	Yield (ft ³ /sk)	Water (gal/sk)
Slurry 1	11.4	2.61	17.77
Slurry 2	13.5	1.27	5.72

714 ft³

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 Top Rubber Plug
- 1 Thread Lock Compound