

Well Name:	Hardie L.S. 4-B	Field:	Blanco Mesaverde
Location:	SE Sec 23, T29N, R8W	API No.	
County:	San Juan	Well Flac	
State:	New Mexico	Formation:	Mesa Verde
		KB Elev (est)	6408'
		GL Elev. (est)	6398'

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	250	12.25	9.625	ST&C	Surface	NA	
Intermediate	2593	8.75	7	ST&C	Surface	NA	
Production - (liner)	5908	6.25	4.5	ST&C	2343		Liner Top calculated for a minimum 200' lap

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	36	K-55	3520	2020	423	0.0773	8.765
Intermediate	7	20	K-55	3740	2270	254	0.0405	6.331
Production - (liner)	4.5	10.5	K-55	4790	3310	146	0.0159	3.927

Mud Program

Apx. Interval (ft.)	Mud Type	Mud Weight	<u>Recommended Mud Properties Prio Cementing:</u>
			PV <20
			YP <10
0 - SCP	Water/Spud	8.6-9.2	Fluid Los <15
SCP - ICP	Water/LSND	8.6-9.2	
ICP - TD	Gas/Air Mist	NA	

Cementing Program:

	Surface	Intermediate	Liner *
Excess %, Bit	100%	80	35
Excess %, Caliper	NA	NA	15
BHST (est deg. F)	60	120	148
Pipe Movement	NA	Rotate/Reciprocate	as per Liner Co.
Rate, Max (bpm)	7	6	6
Rate Recommended (bpm)	6	6	4
Pressure, Max (psi)	200	2000	2000
Shoe Joint	40	80	40
Batch Mix	NA	NA	NA
Circulating prior cmtng (hr)	0.5	1.5	1
Time Between Stages, (hr)	NA	NA	NA
Special Instructions	1,6,7	1,6,8	2,3,4,6

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 liner cement job to minimize drillout.
- ** After cement set time the liner top will be drilled out and liner circulated clean with treated water.
- *** Run TMD cased hole logs to identify pay; Perforating and CH logs can be run rigless.