

AMOCO AUST. Tilana No.1  
Date : 11 Sep 85 Time : 04:33

## HYDRAULICS CALCULATIONS

PLASTIC VISCOSITY 8.00 cP  
YIELD POINT 18.00 lb/cft<sup>2</sup>  
POWER LAW k 2.3886  
POWER LAW n .3870  
DEPTH 3472.7 ft (1058.4m).  
VERTICAL DEPTH 3472.6 ft  
DEPTH OF RETURNS 3430.3 ft  
CUTTINGS BULK DENSITY 2.30 spc grv  
MUD DENSITY 8.80 lb/gal  
ACTIVE SURFACE MUD VOLUME 378 bbl  
FLOW RATE 764 gal/min  
BOOSTER FLOW 0 gal/min  
PUMP PRESSURE 2400 psi  
PUMP gal/stk 4.96 gal/stk  
BIT NOZZLES 15, 15, 18

### CALCULATED RESULTS:

FROM ft	TO ft	LENGTH ft	ANNULUS/PIPE in	ANN VELO. ft/min	CRIT VELO ft/min	FLOW REGIME	PRESS LOSS psi
0.0	343.0	343.0	18.750/ 5.000	57.3	283.7	LAMINAR	.6
343.0	1356.0	1013.0	18.730/ 5.000	57.5	283.8	LAMINAR	1.7
1356.0	2599.7	1243.7	12.250/ 5.000	149.7	333.3	LAMINAR	7.4
2599.0	2964.2	364.5	12.250/ 5.000	149.7	333.3	LAMINAR	2.2
2964.0	3472.7	508.5	12.250/ 8.000	217.6	380.9	LAMINAR	7.2

Annulus Diam	Pipe		
	j.d.	o.d.	i.d.
18.750	6.370	5.000	4.276
18.730	6.370	5.000	4.276
12.250	6.370	5.000	4.276
12.250	6.375	5.000	3.000
12.250	8.000	8.000	2.875

MUD HYDROSTATIC 8.69 lb/gal  
FLOW CONTRIBUTION .11 lb/gal  
CUTTINGS CONTRIBUTION .23 lb/gal  
EQUIVALENT CIRCULATING DENSITY 9.03 lb/gal

SURFACE PRESSURE LOSS 61 psi NOZZLE VELOCITY 412.9 ft/sec  
PIPEBORE PRESSURE LOSS 542 psi HYDRAULIC POWER 597.1 hp  
ANNULAR PRESSURE LOSS 19 psi JET IMPACT FORCE 1436.8 lbs  
BIT PRESSURE LOSS 1340 psi % OF PRESS LOSS AT BIT 68  
TOTAL CALC. PRESS LOSS 1962 psi

VOLUMES:	gal	bbl	Strokes	Minutes @ 154 s.p.m.
1) Pipe Capacity	2245	53	453	2.9
2) Pipe Displacement	2199	52	443	2.9
3) Total Annulus	27839	663	5613	36.4 ← LAG
4) Mud in active pits	15872	378	3200	20.8
Circulation (1) + (3)	30083	716	6065	39.4
Hole Volume (1)+(2)+(3)	32282	769	6509	42.3
Total Mud Circulation	45955	1094	9265	60.2
HOLE OUT OF GAUGE:				
CIRCULATION CORRECTION FACTOR =	1.0465			
Corrected Annulus	29237	696	5894	38.3 ← LAG
Corrected Hole	33680	802	6790	44.1

