

HYDRAULICS CALCULATIONS

PLASTIC VISCOSITY 23.33 cP
 YIELD POINT 13.33 lb/cft²
 POWER LAW k .4350
 POWER LAW n .6335
 DEPTH 5312.0 ft (1619.0m).
 VERTICAL DEPTH 5312.0 ft
 DEPTH OF RETURNS 5312.0 ft
 CUTTINGS BULK DENSITY 2.13 spc grv
 MUD DENSITY 8.93 lb/gal
 ACTIVE SURFACE MUD VOLUME 343 bbl
 FLOW RATE 372 gal/min
 BOOSTER FLOW 0 gal/min
 PUMP PRESSURE 1613 psi
 PUMP gal/stk 4.96 gal/stk
 BIT NOZZLES 32, 32, 32

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	18.753/ 5.000	63.2	171.4	LAMINAR	.2
343.0	4536.6	4163.6	12.347/ 5.000	154.2	239.9	LAMINAR	15.0
4536.0	4965.4	458.8	12.347/ 5.000	154.2	239.9	LAMINAR	1.7
4965.0	5312.0	346.6	12.347/ 3.000	222.2	317.3	LAMINAR	3.8

Annulus		Pipe	
Dian	j.d.	o.d.	i.d.
18.753	6.375	5.000	4.275
12.347	6.375	5.000	4.275
12.347	6.375	5.000	3.000
12.347	3.000	3.000	2.375

MUD HYDROSTATIC 8.93 lb/gal
 FLOW CONTRIBUTION .03 lb/gal
 CUTTINGS CONTRIBUTION 0.00 lb/gal
 EQUIVALENT CIRCULATING DENSITY 8.93 lb/gal

SURFACE PRESSURE LOSS 57 psi NOZZLE VELOCITY 139.2 ft/sec
 PIPEBORE PRESSURE LOSS 1195 psi HYDRAULIC POWER 44.3 hp
 ANNULAR PRESSURE LOSS 21 psi JET IMPACT FORCE 433.2 lbs
 BIT PRESSURE LOSS 95 psi % OF PRESS LOSS AT BIT 7
 TOTAL CALC. PRESS LOSS 1378 psi

VOLUMES:	gal	bbl	Strokes	Minutes @ 162 s.p.m.
1) Pipe Capacity	3647	37	735	4.5
2) Pipe Displacement	2473	59	500	3.1
3) Total Annulus	29615	735	5971	36.9 ← LAG
4) Mud in active pits	14339	343	2931	17.9
Circulation (1) + (3)	33262	792	6706	41.5
Hole Volume (1)+(2)+(3)	35749	851	7206	44.6
Total Mud Circulation	47651	1135	9607	59.4

