

HYDRAULICS CALCULATIONS

PLASTIC VISCOSITY 22.37 cP
 YIELD POINT 12.33 lb/ft²
 POWER LAW K .4333
 POWER LAW n .7199
 DEPTH 2603.93 m (8557')
 VERTICAL DEPTH 2607.91 m
 DEPTH OF RETURNS 2603.12 m
 CUTTINGS BULK DENSITY 2.30 spc grv
 MUD DENSITY 9.30 lb/gal
 ACTIVE SURFACE MUD VOLUME 378 bbl
 FLOW RATE 562 gal/min
 BOOSTER FLOW 0 gal/min
 PUMP PRESSURE 2513 psi
 PUMP gal/stk 4.95 gal/stk
 BIT NOZZLES 13, 13, 13, 8

CALCULATED RESULTS:

FROM m	TO m	LENGTH m	ANNULUS/PIPE in	ANN VELO. ft/min	CRIT VELO ft/min	FLOW REGIME	PRESS LOSS psi
3.00	134.55	134.55	18.750/ 5.000	42.2	153.0	LAMINAR	.1
134.55	1651.4	1546.9	12.347/ 5.000	103.1	220.1	LAMINAR	13.3
1651.4	2294.3	642.90	12.250/ 5.000	110.1	221.8	LAMINAR	5.7
2294.2	2461.7	167.33	12.250/ 5.000	110.1	221.8	LAMINAR	1.5
2461.6	2603.0	146.35	12.250/ 8.000	160.1	371.7	LAMINAR	4.2

Annulus Dian	Pipe		
	j.i.	o.d.	i.i.
18.750	6.375	5.000	4.276
12.347	6.375	5.000	4.276
12.250	6.375	5.000	4.276
12.250	6.375	5.000	3.000
12.250	8.000	8.000	2.375

MUD HYDROSTATIC 9.28 lb/gal
 FLOW CONTRIBUTION .06 lb/gal
 CUTTINGS CONTRIBUTION .04 lb/gal
 EQUIVALENT CIRCULATING DENSITY 9.37 lb/gal

SURFACE PRESSURE LOSS 38 psi NOZZLE VELOCITY 411.7 ft/sec
 PIPEBORE PRESSURE LOSS 1066 psi HYDRAULIC POWER 461.5 hp
 ANNULAR PRESSURE LOSS 25 psi JET IMPACT FORCE 1113.8 lbs
 BIT PRESSURE LOSS 1407 psi % OF PRESS LOSS AT BIT 55
 TOTAL CALC. PRESS LOSS 2536 psi

VOLUMES:	gal	bbl	Strokes	Minutes @ 113 s.p.m.
1) Pipe Capacity	5978	142	1205	10.6
2) Pipe Displacement	3766	90	759	6.7
3) Total Annulus	45657	1337	9237	31.3 ← LAG
4) Mud in active pits	15872	378	3200	28.2
Circulation (1) + (3)	51645	1230	17412	91.9
Hole Volume (1)+(2)+(3)	55411	1319	11172	93.6
Total Mud Circulation	67517	1603	13612	120.1
HOLE OUT OF GAUGE:				
CIRCULATION CORRECTION FACTOR =	1.0564			
Corrected Annulus	48579	1157	9794	85.4 ← LAG
Corrected Hole	58323	1389	11759	103.8

