

HYDRAULICS CALCULATIONS

PLASTIC VISCOSITY 23.00 cP
 YIELD POINT 13.00 lb/cft²
 POWER LAW k .4860
 POWER LAW n .6335
 DEPTH 5460.0 ft (1664.1m)
 VERTICAL DEPTH 5459.5 ft
 DEPTH OF RETURNS 5460.0 ft
 CUTTINGS BULK DENSITY 2.50 spc grv
 MUD DENSITY 8.90 lb/gal
 ACTIVE SURFACE MUD VOLUME 470 bbl
 FLOW RATE 815 gal/min
 BOOSTER FLOW 0 gal/min
 PUMP PRESSURE 1300 psi
 PUMP gal/stk 4.96 gal/stk
 BIT NOZZLES 32, 32, 32

CALCULATED RESULTS:

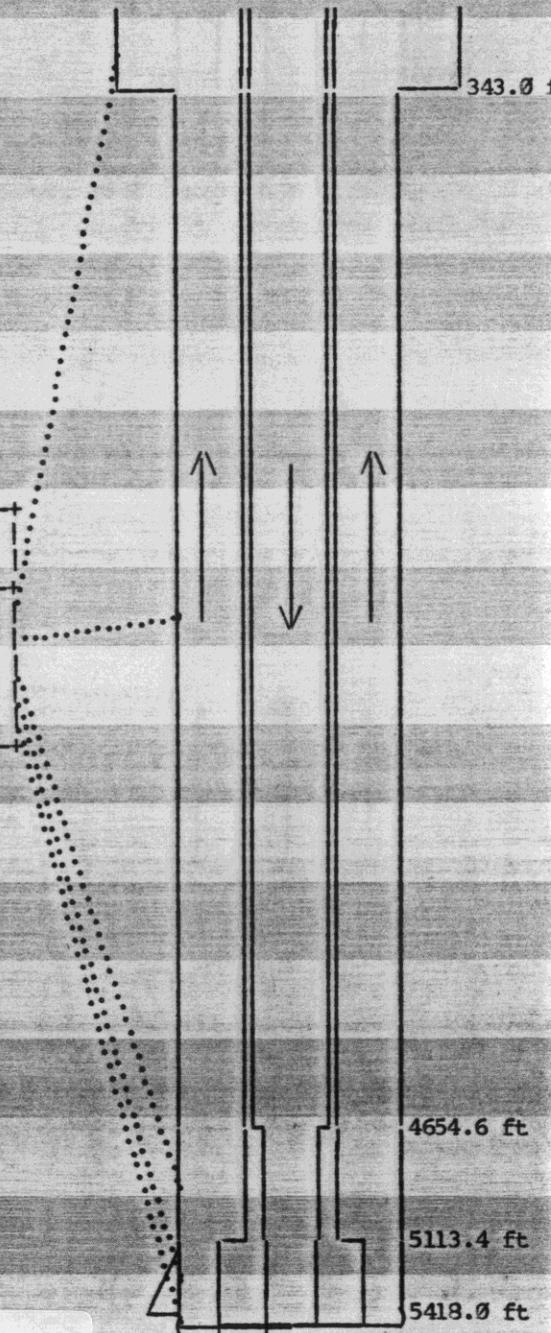
FROM ft	TO ft	LENGTH ft	ANNULUS/PIPE in	ANN VELO. ft/min	CRIT VELO ft/min	FLOW REGIME	PRESS LOSS psi
0.0	343.0	343.0	18.750/ 5.000	61.2	171.4	LAMINAR	.2
343.0	4654.6	4311.6	12.347/ 5.000	156.7	239.9	LAMINAR	15.7
4654.0	5113.4	458.8	12.347/ 5.000	156.7	239.9	LAMINAR	1.7
5113.0	5418.0	304.6	12.347/ 8.000	225.8	317.3	LAMINAR	3.4
5418.0	5460.0	42.0	12.250/ 8.000	232.1	321.0	LAMINAR	.5

Annulus		Pipe	
Diam	j.d.	o.d.	i.d.
18.750	6.375	5.000	4.276
12.347	6.375	5.000	4.276
12.347	6.375	5.000	3.000
12.347	8.000	8.000	2.875
12.250	8.000	8.000	2.875

MUD HYDROSTATIC 8.90 lb/gal
 FLOW CONTRIBUTION .08 lb/gal
 CUTTINGS CONTRIBUTION 0.00 lb/gal
 EQUIVALENT CIRCULATING DENSITY 8.98 lb/gal

SURFACE PRESSURE LOSS 72 psi NOZZLE VELOCITY 111.0 ft/sec
 PIPEBORE PRESSURE LOSS 1248 psi HYDRAULIC POWER 46.5 hp
 ANNULAR PRESSURE LOSS 21 psi JET IMPACT FORCE 416.6 lbs
 BIT PRESSURE LOSS 98 psi % OF PRESS LOSS AT BIT 7
 TOTAL CALC. PRESS LOSS 1439 psi

VOLUMES:	gal	bbl	Strokes	Minutes @ 164 s.p.m.
1) Pipe Capacity	3757	89	758	4.6
2) Pipe Displacement	2523	60	509	3.1
3) Total Annulus	30173	718	6083	37.0 ← LAG
4) Mud in active pits	19740	470	3980	24.2
Circulation (1) + (3)	33930	808	6841	41.6
Hole Volume (1)+(2)+(3)	36454	868	7350	44.7
Total Mud Circulation	53670	1278	10921	65.9



1765