

HYDRAULICS CALCULATIONS

PLASTIC VISCOSITY 17.00 cp
 YIELD POINT 7.33 lb/cft²
 POWER LAW k .2343
 POWER LAW n .7726
 DEPTH 2533.00 m (8200')

VERTICAL DEPTH 2499.33 m
 DEPTH OF RETURNS 2498.00 m
 CUTTINGS BULK DENSITY 2.10 spc grv
 MUD DENSITY 9.23 lb/gal
 ACTIVE SURFACE MUD VOLUME 460 bbl
 FLOW RATE 613 gal/min
 BOOSTER FLOW 0 gal/min
 PUMP PRESSURE 2393 psi
 PUMP gal/stk 4.96 gal/stk
 BIT NOZZLES 14, 14, 14

CALCULATED RESULTS:

FROM	TO	LENGTH	ANNULUS/PIPE	ANN VELO.	CRIT VELO	FLOW	PRESS LOSS
m	m	m	in	ft/min	ft/min	REGIME	psi
0.00	134.55	134.55	13.750/ 5.000	46.0	99.0	LAMINAR	.1
134.55	1651.4	1546.9	12.347/ 5.000	117.3	143.6	LAMINAR	8.6
1651.4	2135.3	534.97	12.250/ 5.000	123.1	149.8	LAMINAR	3.1
2135.3	2353.7	167.38	12.250/ 5.000	123.1	149.3	LAMINAR	1.0
2353.4	2500.0	146.35	12.250/ 3.000	174.5	211.3	LAMINAR	2.9

Annulus	Pipe		
Diam	j.d.	o.d.	i.d.
13.750	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	3.733
12.250	3.000	3.000	2.375

MUD HYDROSTATIC 9.19 lb/gal
 FLOW CONTRIBUTION .34 lb/gal
 CUTTINGS CONTRIBUTION .31 lb/gal
 EQUIVALENT CIRCULATING DENSITY 9.24 lb/gal

SURFACE PRESSURE LOSS 44 psi NOZZLE VELOCITY 435.9 ft/sec
 PIPEBORE PRESSURE LOSS 1136 psi HYDRAULIC POWER 558.1 hp
 ANNULAR PRESSURE LOSS 16 psi JET IMPACT FORCE 1272.1 lbs
 BIT PRESSURE LOSS 1561 psi % OF PRESS LOSS AT BIT 57
 TOTAL CALC. PRESS LOSS 2756 psi

VOLUMES:	gal	bbl	Strokes	Minutes @ 124 s.p.m.
1) Pipe Capacity	5714	136	1152	9.3
2) Pipe Displacement	3657	87	737	5.0
3) Total Annulus	43869	1045	3345	71.6 ← LAG
4) Mud in active pits	19303	460	3392	31.5
Circulation (1) + (3)	49583	1181	9997	33.9
Hole Volume (1)+(2)+(3)	53241	1263	10734	36.9
Total Mud Circulation	63337	1640	13333	112.4
HOLE OUT OF GAUGE:				
CIRCULATION CORRECTION FACTOR =	1.0135			
Corrected Annulus	44785	1066	9329	73.1 ← LAG
Corrected Hole	54156	1299	10919	38.4

