

1990 DY DRILL PROGRAM

-----CEMENTING CALCULATIONS-----

HOLE VOLUMES:

HQ: 36.3 US gal/100' (30.25 Imp. gal. / 100')

HQ: 58.3 US gal/100' (48.6 Imp. gal. / 100')

1 imp. gal of water 10.02 lbs.

1 cu. ft. = 6.23 gal.

1 cu. ft. = 62.43 lbs.

CEMENTING MIXTURES:

i) cement fondus

1 lb. water will require 0.4 to 0.46 lbs of cement

2% calcium chloride to weight of cement will accelerate proces

DRILL HOLE 90DY-04-DS (PILOT HOLE) CEMENTING REQUIREMENTS (HQ/NQ):

NQ: (1926' - 2173')
 LENGTH..... 247 ft
 (collapsed below 1963')

HQ: (0' - 1926')
 LENGTH..... 1926 ft (top of hole)

***(calculation does not include wedges)

NQ:	2.47 X 30.2 =	74.72 gal
HQ:	19.26 X 48.6 =	936.04 gal
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		1010.75 imp. gallons
	total:	10,128 lbs of water

(water vol. X cement ratio)	lbs. cement	assume formation
10,128 X 0.40	4,051	5,266
10,128 X 0.44	4,456	5,793
10,128 X 0.46	4,659	6,056
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		assume formation
	.40 cement ratio	6,077
	.44 cement ratio	6,684
	.46 cement ratio	6,988

DRILL HOLE 90DY-05 CEMENTING REQUIREMENTS (MQR):

EOH..... 2159 ft
 TOP OF CEMENT..... 1477 ft (top of dyke)
 682 feet to be cemented

$6.82 \times 30.2 = 206.31 \text{ gal}$

2067.1761 lbs of water

	lbs. cement	assume formation
2067.1 X 0.40	826.87	1074.93
2067.1 X 0.44	909.56	1182.42
2067.1 X 0.46	950.90	1236.17

	assume formation
.40 cement ratio	1240.31
.44 cement ratio	1364.34
.46 cement ratio	1426.35

PROJECTED CEMENTING REQUIREMENTS FOR BALANCE OF DRILL HOLES TO TEST DEC
 ASSUME 5 HOLES TO BE DRILLED AND CEMENTED FOR DECLINE DRILL PR

ESTIMATED LENGTH TO BE CEMENTED IN EACH OF THE 5 HOLES:

500' X 5 = 2500.00 ft. to be cemented, all NQ
 756.25 imp. gal
 7577.63 lbs of water

	lbs. cement	assume formation
7577.63 X 0.40.....	3031.05	3940.37
7577.63 X 0.44.....	3334.16	4334.40
7577.63 X 0.46.....	3485.71	4531.42
		assume formation
	.40 cement ratio	4546.58
	.44 cement ratio	5001.23
	.46 cement ratio	5228.56

SUMMARY OF ESTIMATED CEMENT REQUIREMENTS

	ASSUMING 30% LOSS TO FORMATION			ASSUMING 50% LOSS TO FORMATION		
	.40 RATIO	.44 RATIO	.46 RATIO	.40 RATIO	.44 RATIO	.46 RATIO
90DY-04-DS (PILOT HOLE)	60	66	69	69	76	79
90DY-05	12	13	14	14	16	16
5 OTHER DECLINE HOLES	45	49	51	52	57	59
TOTALS	117	129	134	135	148	155
(FONDU) ESTIMATED COST	\$6,660	\$7,326	\$7,659	\$7,684	\$8,453	\$8,837