



5X-980227-CLN-01

TO: DISTRIBUTION
FROM: C NEUMEYER
SUBJECT: PF COIL CONTINUOUS CURRENT CAPACITY

In terms of continuous current capacity, the limiting cases for the inner and outer PF coils (the cross sectional area of all the inner PF coils is the same, and that of all the outer PF coils is the same), respectively (those with the longest winding/cooling path length) are PF1a and PF3.

In order to limit the outlet water temperature to less than 80C, the allowable continuous currents are indicated in the table below.

	PF1a	PF3	
Flow	3.1	1.8	GPM
Rtherm	1.23E-03	2.10E-03	degC/watt
Relec	2.80E-03	4.15E-03	Ω
Tallowable	80.0	80.0	degC
Tinlet	20.0	20.0	degC
Δ Tallowable	60.0	60.0	degC
Idc allowable	4171.7	2627.1	amp
Iac (sec)	3252.7	2048.3	amp rms
Iac (pri)*	176.8	111.3	amp rms

*Note: this assume only one of two secondaries active on the transformer; in case both active it will be double

cc:

J Chrzanowski
R Hatcher
A Ilic
R Marsala
B McCormack
D O'Neill
S Ramakrishnan

NSTX File