Distribution Planning Guidelines

CA-20 (b)
Attachment D

NEWFOUNDLAND POWER
A FORTIS COMPANY

2.2.2.2 Underground Cables:

Table 2 and Table 3 present the planning ampacities of the various primary underground cables used by Newfoundland Power.

PILC ampacity is based on the Neher-McGrath Analytical Method as per the AIEE-IPCEA Power Cable Ampacity Handbook. XLPE Ampacity is based on CEA report 104D189, Development of Underground Multi-Conductor Extruded Dielectric HV Distribution Cables. This CEA report provides a consolidation of the various manufacturers ratings. CLPU simulations were performed using the Cable Ampacity Program from CYME International.

For winter peaking underground cables, the planning ampacity is the continuous winter ampacity based on the following set of environmental and operating conditions:

80°C conductor temperature for PILC
90°C conductor temperature for XLPE
5°C ambient earth temperature
100% load factor
90 [°C x cm/watt] earth thermal resistivity

PILC (Copper) Continuous Winter Ampacity (Planning Ampacity)								
Size	Direct Buried		Number of Cables in Ductbank					
	1 Circuit	2 Circuit	1	2	3	4	5	10
4/0	327	305	294	267	241	226	212	173
250	361	335	323	294	265	248	231	188
350	438	404	390	353	317	296	275	222
400	470	434	418	378	338	315	293	235
500	535	492	473	426	380	354	329	263
750	669	609	682	522	462	430	398	315
1000	774	701	666	595	523	486	448	353

Table 2