Transmission Line Rebuild (Pooled), p. 27 of 96, $5,915,000

Q. What methods (i.e. industry standards, observation of failed plant, on site testing, or other probabilistic techniques) has NP used to determine the transmission line design criteria as it relates to ice loading?

A. The basic standard that Newfoundland Power uses for ice loading design is CSA C22.3 No. 1-06. However, data acquired from observation of failed plant and actual field measurements during ice loading events is also used where appropriate and available to determine ice loading design criteria.

Following a severe December 1994 system failure which resulted from excessive ice loading, Newfoundland and Labrador Hydro ("Hydro") and Newfoundland Power undertook a comprehensive assessment of design criteria as it relates to ice loading. One of the results of this assessment was the creation of regional design criteria for ice loading for the Island interconnected grid. These design criteria have been updated to remain consistent with further developments and information.

Attachment A is a copy of a map outlining the current distribution and transmission ice loading design criteria for Newfoundland Power's service territory.

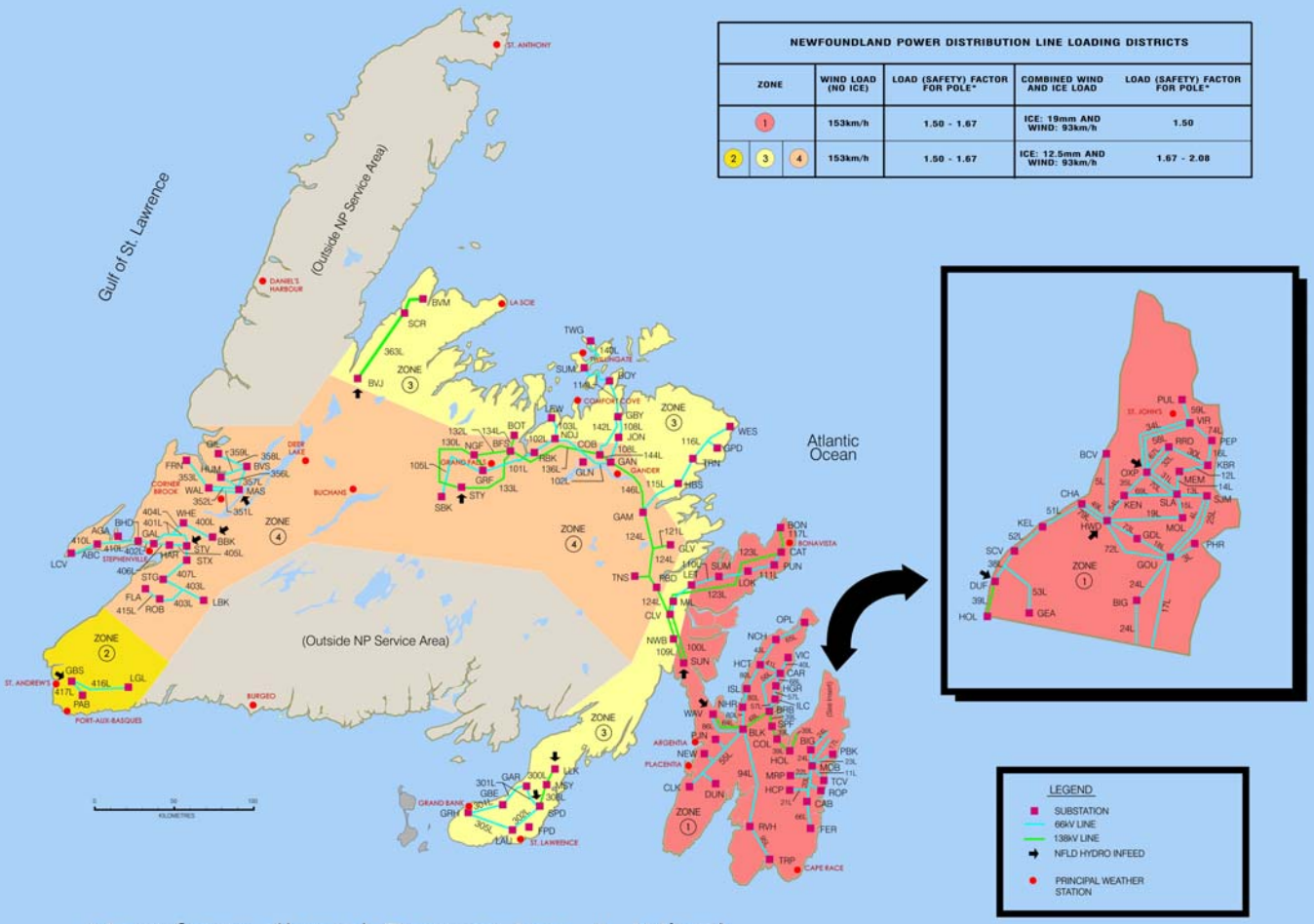
Newfoundland Power
Ice and Wind Loading Districts

CSA - C22.3 No. 1 MINIMUM WEATHER LOADS FOR NEWFOUNDLAND					
ZONE			ICE LOAD (NO WIND)	WIND LOAD (NO ICE)	COMBINED WIND AND ICE LOAD	LOAD (SAFETY) FACTOR FOR POLE*
1			19.0mm	NO DATA GIVEN	ICE: 19mm AND WIND: 93km/h	1.5
2	3	4	12.5mm	NO DATA GIVEN	ICE: 12.5mm AND WIND: 93km/h	1.5

* FACTOR BY WHICH THE SPECIFIED LOAD IS MULTIPLIED TO ALLOW FOR UNCERTAINTIES IN LOADING CONDITIONS AND STRENGTH OF MATERIALS.

NEWFOUNDLAND POWER TRANSMISSION LINE LOADING DISTRICTS				
ZONE	ICE LOAD (NO WIND)	WIND LOAD (NO ICE)	COMBINED WIND AND ICE LOAD	LOAD (SAFETY) FACTOR FOR POLE*
1	25 - 40mm	150 - 175km/h	ICE: 19mm AND WIND: 93 - 120km/h	2
2	25 - 30mm	160 - 175km/h	ICE: 12.5 - 19mm AND WIND: 93 - 120km/h	2
3	25 - 30mm	150 - 160km/h	ICE: 12.5 - 19mm AND WIND: 93km/h	2
4	20 - 25mm	145 - 160km/h	ICE: 12.5mm AND WIND: 93km/h	2

NEWFOUNDLAND POWER DISTRIBUTION LINE LOADING DISTRICTS				
ZONE	WIND LOAD (NO ICE)	LOAD (SAFETY) FACTOR FOR POLE*	COMBINED WIND AND ICE LOAD	LOAD (SAFETY) FACTOR FOR POLE*
1	153km/h	1.50 - 1.67	ICE: 19mm AND WIND: 93km/h	1.50
2 3 4	153km/h	1.50 - 1.67	ICE: 12.5mm AND WIND: 93km/h	1.67 - 2.08



Newfoundland Power Ice & Wind Loading Districts