

In reference to Schedule "B", page 23 of 82 – Substation Protection and Monitoring Improvements, at a project cost of \$425,000:

Q. Please provide specific material and labour costs to add synchronizing clocks to (sic) transducers and voltage measuring devices at various substations. Please advise as to which substations these are to be added and the total number of synchronizing clocks, transducers and voltage measuring devices to be purchased and the cost of these items per item.

A. Synchronizing clocks will be added to the Kenmount, Ridge Road, Virginia Waters, Kings Bridge, Memorial, Molloy's Lane and Glendale substations.

There are currently 332 transducers/voltage measuring devices in service at the Company's substations. These devices record system operating information (i.e. voltage, frequency and power) for ultimate transmittal to the SCADA system. These units range in age from 15 to 30 years. Beginning in 2003, Newfoundland Power will commence a program of replacing these devices. In 2003, the Company plans to replace 32 watt/var transducers, 24 voltage transducers, 3 frequency transducers and 5 resistance transducers. This work will be completed in conjunction with other work ongoing at various substations to ensure the work is completed in the most efficient manner possible. The Company has not yet identified the specific substations for replacement of the transducers/voltage measuring devices in 2003.

Table 1 below identifies the per unit cost to purchase and install the synchronizing clocks and the transducer/voltage measuring devices.

Table 1 Substation Protection and Monitoring Improvements Synchronizing Clocks, Transducers and Voltage Measuring Devices					
Item Description	No. of units	Per Unit Cost			Total Cost
		Labour	Material	Total	
Synchronizing Clocks	7	\$1,100	\$6,100	\$7,200	\$50,400
Watt/Var Transducer	32	\$910	\$1,725	\$2,635	84,330
Voltage Transducer	24	\$910	\$250	\$1,160	27,840
Frequency Transducer	3	\$910	\$550	\$1,460	4,380
Resistance Transducer	5	\$910	\$1,700	\$2,610	13,050
Total					\$180,000