With the establishment of fiber optic networking to carry voice data protection signals (sic) between substations and the system control center in St. John's, it was stated in the project justification that this project is justified on the basis of power system reliability improvements – supporting faster clearing of system faults and minimizing fault impact on the power system.

Q. In reference to substations, please advise as to the alternative form of communications available – landline telephones, wireless, vhf pagers, mobile radios, etc.

A. Table 1 below lists the communications systems currently in use at Newfoundland Power substations, the purpose for which each is employed and considerations relevant to the suitability of the various systems for particular purposes.

Table 1
Substation Communications

Technology	Application	Considerations
Fibre optic cable	Protection circuits, SCADA data, wide area network communications, voice communications, public telephone access	Used where high speed, high bandwidth and electrical isolation are essential.
Landline copper communications cable	Older protection circuits, SCADA data, wide area network communications, voice communications, public telephone access	Requires protection from ground potential rise; susceptible to corrosion.
VHF Mobile Radio	Voice communication.	Historically, the only option for remote voice communication. Still provided in locations where no other viable communication options exist. Inadequate speed, security and reliability for system protection purposes.
Fixed cellular telephone	Voice communication	Provided in locations where wire line service is not practical.
Cellular Packet Data (CDPD)	SCADA data backup system	Cost prohibitive; used as backup communications only

The fibre optic network was installed specifically to accommodate the system protection upgrades described in the Company's response to Request for Information CA-110 (a). Because transmission system fault clearing requires communication circuits that provide fast, continuous, secure, and highly reliable communications, dial-up telephone, wireless equipment, VHF pagers and mobile radios are not suitable alternatives to fibre optic links.

Some of the Company's older systems rely on landline copper communications cables to carry system protection signals. However, copper communications systems are more susceptible to corrosion as they age. In addition, in some configurations, ground potential rise resulting from faults on other electrical lines can induce false trips of the transmission system or damage the copper cables themselves. Consequently, copper communications cables are no longer the Company's standard technology for the purpose of carrying system protection signals

Microwave communication technology can be used to carry protection signals. However, for the short distances between substations in the St. John's area, this technology would be significantly more expensive to implement than fibre optic technology.