

**2003 Capital Expenditure Status Report**

**Q. Explain why the “complexity and communication incompatibility” requiring “additional communications interface devices” was not anticipated at the time the budget was put forward for approval (Item 12) [Item 11, 1<sup>st</sup> Revision].**

A. Item 11 of the 2003 Notes to the Capital Expenditure Status Report, 1<sup>st</sup> Revision, includes the phrases “complexity and communication incompatibility” and “additional communications interface devices”.

Communication standards for intelligent electronic devices used in substations are in the early stage of their development. As a result, many manufacturers are still maintaining proprietary standards, or are partially implementing standards that are becoming more widely accepted. Manufacturers are moving towards 100% compliance with these standards, however they are frequently too optimistic in their estimates of when the compliant devices will be available in the marketplace. As a result, advanced planning of projects heavily reliant on new technology may not fully address equipment interface issues in anticipation of new compliant devices being available from the manufacturer.

Until 100% compliance with standards is achieved, compatibility between devices supplied by different manufacturers is difficult to determine until all devices with the appropriate firmware are placed in a test bed environment. In this project, the challenges with communication involved interfacing Alstom relays in multiple substations through an RFL fibre optic multiplexer system. The fibre optic interface on the Alstom relay is proprietary technology that “loosely” conforms to a standard acceptable to the RFL multiplexer. However, in practice it was found not to be reliable. Therefore, an intermediate technology solution was used in converting the fibre optic signals to electrical signals to support the communications of protection data. Additional costs were incurred in the equipment purchase and engineering effort to design the new solution.