

ANNEXURE I

Implementation of IEC 61850 Edition 2 Server functionality in Bay Control Unit

1.0 Introduction

This document describes the specification to implement the IEC 61850 Edition 2 server protocol, which is basically an up-gradation of Edition 1 protocol already available in the Bay control Unit (BCU).

The application shall be based on the latest MMS-EASELite Source code libraries of SISCO, which will be provided by BHEL. The application runtime environment will be QNX 6.5 Operating System over x86 hardware platform, which will also be provided by BHEL.

2.0 Scope:

The scope of the work includes:

- 2.1 Submitting the detailed design document in line with the requirement specifications within a week from the date of Purchase Order.
- 2.2 Developing the software as per the approved design document.
- 2.3 Demonstration of the implemented software features at BHEL R&D.
- 2.4 Supply of the software – source code of application and executables, along with the software documentation including data diagrams, flow charts, user's manuals etc.
- 2.5 Installing the software at BHEL R&D in their hardware and testing.
- 2.6 Training on the development and configuration of the software.
- 2.7 Maintenance and Warranty for a period of one year after successful installation, testing and acceptance.

3.0 Deliverables

The deliverables will include:

- 3.1 IEC 61850 Edition 2 server software.
- 3.2 Design documentation and user manual.
- 3.3 Training on implementation / software.
- 3.4 MICS, PICS, TICS and PIXIT documents.

4.0 Detailed functional requirements of the software

4.1 The IEC61850 server driver should support options for adding logical devices, logical nodes, Data, data attributes, Datasets, GOOSE Control Blocks, Report control Blocks. The server software should be based on IEC61850 part 6,7-1,7-2,7-3,7-4 and 8-1 Edition 2 and SCL schema version 3.1. The server software shall support mapping of following ACSI models and services as defined in IEC 61850-7-2 Edition 2 of Annex A (ACSI Conformance Statement) .

1. Application association
2. Server and Logical devices, Logical nodes, Data and Data attributes model
3. Dataset Model
4. Service Tracking
5. Substitution model
6. Setting Group model
7. Un-buffered Report Control model
8. Buffered Report Control model
9. Log Control model
10. GOOSE control model (Goose Publish and Goose subscription)
11. Control Model

12. File transfer
13. Time and Time synchronization
14. Sampled value subscription.

4.2 The IEC61850 Server should also support PRP and HSR Network redundancy.

5.0 General

5.1 The successful bidder shall submit a design document within 1 week time from the date of Purchase Order.

1. After the design is approved by BHEL R&D, vendor shall take up the implementation.
2. BHEL R&D shall review the work at suitable stages of the development.
3. The functioning of the software shall be inspected periodically.
4. Vendor shall install the software at BHEL R&D, on the target hardware platform provided by BHEL. This shall include modifications on the source code incorporating Tissues from website (www.tissues.iec61850.com), compiling in the development environment and porting on to the runtime platform at BHEL R&D.
5. Testing shall be done at BHEL R&D as per IEC61850-10 Edition 2 and UCAiug Conformance Test Procedures for Server Devices with IEC81850 Edition 2 interface.

5.2 The source code deliverable to BHEL, shall be compiled and executed at BHEL R&D.

5.3 The application and configuration software modules for server are the sole property of BHEL R&D and should not be used for any other purpose by the vendor.

6.0 Pre-Qualification Criteria

6.1 The application shall be developed based on the latest SISCO's MMS-EASELite source code libraries only.

6.2 The vendor has to substantiate his competence in executing the job. The qualification criteria will include IEC61850 standard communication protocol implementation in either Linux or QNX OS environment using SISCO source code libraries for at least 2 devices with compliance certification by an UCA accredited Level A third party testing lab for at least two devices.