SECTION- 6 SUPPORT SERVICES
Chapter 1- Training

This section describes general requirements that apply to all training courses. The Contractor shall submit the training proposal along with the bid. The training content, schedule and location shall be finalised during project execution. This section also describes the project's spares and maintenance (FMS) requirements.

1.0 General

(a) Training will be conducted by Contractors personnel, who are experienced instructors and speak understandable English.

(b) All necessary training materials shall be provided by the Contractor. Each trainee shall receive individual copies of all technical manuals and all other documents used for training.

(c) Class materials, including the documents sent before the training courses as well as class handouts, shall become the property of owner. Employer/owner reserves the right to copy such materials, but for in-house training and use only.

(d) Hands-on training shall utilize equipment similar to that being supplied under the contract.

(e) For all training courses, the travel and per-diem expenses will be borne by the owner.

(f) The Contractor shall quote training prices under project management cost. & shall be included in the bid

(g) The schedule, location, and detailed contents of each course will be finalized during employer and Contractor discussions shortly after placement of the award. The Consultant/Employer shall review and approve the contents of the overview training prior to the start of the training.

1.1 Training Course Requirements

Employer's training course requirements are described below in terms of the contents of each course to be provided. Training shall be provided on actual database for the application software course and the associate training courses.

1.1.1 Database, Display Building & Report generation Course

The database and display building course shall be the first course to be given in the overall training sequence. It shall be a hands-on course using the hardware and software to be supplied by the contractor. The course shall be designed to train owner personnel in how to develop the databases, displays, reports, and logs for the offered system.

Course objectives shall include:

(a) How to set up a database & display development system

(b) How to identify database fields, entries, records, tables, and contents

(c) How to structure RTU /FRTU table definitions

(d) How to build tables, arrays, and report formats and displays.

(e) How to perform database maintenance

(f) How to generate the database from source information

(g) How to maintain symbol libraries, display colour groups, and display string lists.

On course completion, all participants shall be able to prepare the necessary input data to define the system operating environment, build the system database and displays, and prepare the database administrator to maintain and modify the database and its structures.

1.1.2 Computer System Hardware & Software Course

The computer system hardware & Software course shall be offered, at the system level only. The training course shall be designed to give owner hardware & software personnel sufficient knowledge of the overall design and operation of the system so that they can correct obvious problems, configure the hardware, perform preventive maintenance, run diagnostic programs. The following subjects shall be covered:

(a) <u>System Hardware Overview</u>: Configuration of the system hardware.

(b) <u>Operating System</u>: Including the user aspects of the operating system, such as program loading and integrating procedures; scheduling, management service, and utility functions; and system expansion techniques and procedures

(c) <u>System Initialization and Fail over</u>: Including design, theory of operation, and practice

(d) <u>Equipment Maintenance</u>: Basic theory of operation, maintenance techniques and diagnostic procedures for each element of the computer system, e.g., processors, auxiliary memories, LANs, routers and printers. Configuration of all the hardware equipments.

(e) <u>Diagnostics</u>: Including the execution of diagnostic procedures and the interpretation of diagnostic outputs,

(f) <u>System Expansion</u>: Techniques and procedures to expand and add equipment such as loggers, monitors, and communication channels.

(g) <u>System Maintenance</u>: Theory of operation and maintenance of the hardware configuration, fail over of redundant hardware etc.

(h) <u>Operational Training</u>: Practical training on preventive and corrective maintenance of all equipment, including use of testing tools.

1.1.3 Application Software Course

The Contractor shall provide training on Application software courses covering all applications other than those already covered above. The training shall include:

(a) <u>Overview</u>: Block diagrams of the application software and data flows. Programming standards and program interface conventions.

(b) <u>Application Functions</u>: Overview of Functional capabilities, design, and algorithms. Associated maintenance and expansion techniques.

(c) <u>System Programming</u>: An introduction to software architecture, Effect of tuning parameters (OS software, Network software, database software and Application Software etc.) on the performance of the system. Administration of Database (both real-time and RDBMS),

(d) <u>Software Documentation</u>: Orientation in the organization and use of system software and Application software documentation.

(e)   Hands-on Training: shall be provided with allocated computer time for trainee performance of unstructured exercises and with the course instructor available for assistance as necessary.

1.1.4 RTU/FRTU Course

The Contractor shall provide an RTU/FRTU course that covers the following subjects as a minimum:

(a)   Theory of operation of all RTU/FRTU functions

(b)   Operational procedures for various modes of operation, including diagnostic tests and interpretation of the associated test results

(c)   Implementing and maintaining multiple communication ports

(d)   Converting an RTU/FRTU from one protocol to a different protocol

(e)   Demonstration of complete RTU/FRTU test set use,including test set connection and set up for all possible modes of operation, all operational procedures, the exercise of each command or feature associated with each mode of operation, the interpretation of results, and how to use the test set to diagnose and isolate RTU problems

(f)   Disconnection and replacement of all RTU/FRTU equipment, including all modules within the RTU/FRTU

1.1.5 Operator Training Course

This training course shall provide training to Owner's operators on SCADA/DMS and Billing & Customer Care Systems so that operators can manage the system effectively.

The training shall include:

(a)   System Overview: Configuration of the system, a functional overview, and an overview of system capabilities and performance.

(b)   General Operating Procedures: Hierarchical structure of displays, display capabilities and features, user procedures, log-on and user access restrictions, and error messages.

(c)   System Applications: Theory of operation, capabilities, and operating procedures for each application function.

(d)   Handling of Equipment: Minor maintenance operations, such as removal of stuck paper in printers etc., which do not require spares/specialised skills.

(e)   Operator Documentation: Orientation in the organization and application of all user documentation for Operator and verification of the information contained therein.

The course shall focus on hands-on training on the system. The trainees shall perform instructor-defined procedures with the help of the dispatcher documentation. In addition there shall be training for Instructor to use DTS.

1.1.6 Communication System Training:

The training shall focus on critical aspects associated with installation, testing & commissioning of fibre optic system, radio. Leased network equipment is however, responsibility of service provider & contractor who has signed SLA with utility, but required level of knowledge for troubleshooting, upkeeping the equipment will be required**.** This shall include the state-of-the art techniques employed in laying, splicing & testing of fibre optic cable & terminal equipments etc. The owner's personnel shall be trained in such a way that the basic maintenance of terminal equipments & cable etc. can be carried out effectively.

1.1.7 Auxiliary Power Supply Training

The training shall cover various aspects covering installation, testing & commissioning of DC power supply, & UPS system. Proper emphasis of the training shall be for effective operation & maintenance of Auxiliary Power Supply System on routine/emergency basis by the owner's personnel.