

Project Title Consulting Services Related with the Project SCADA/EMS Upgrade for the National Dispatch Center of ETESA (*Consultoría SCADA/EMS en relación al proyecto de Renovación Tecnológica del Centro Nacional de Despacho*) at ETESA, Panama

Contracting Agency Empresa de Transmisión Eléctrica (ETESA). Project execution and supervision under the responsibility of the Centro Nacional de Despacho (CND)

Project Organization Prime Contractor: Energy Consulting International, Inc. The consulting work has been performed by Savu C. Savulescu

Summary The consulting services specified in this assignment have been provided to ETESA for the purpose of assisting the National Dispatch Center (CND) during various phases of the Project *SCADA/EMS Upgrade for the National Control Center*. The entire amount of consulting work has been performed by Dr. Savu C. Savulescu and encompassed assistance during bid evaluation, Statement of Work, Factory Acceptance Testing (FAT) and Site Acceptance Testing (SAT). In addition, ECI has also been responsible for reviewing the: Technical Specifications prepared by CND; project documents prepared by the EMS Vendor; FAT and SAT plans and procedures; and functionality, performance and availability indices of the new system

Background In the context of the Panamanian Electricity Market, CND is both *System Operator* and *Market Operator*. In terms of organization, it operates as an independent unit of Empresa de Transmisión Eléctrica ETESA. At the center of the system supervision and control facilities at CND is a SCADA/EMS Ranger which: monitors and controls the generation and the transmission, including interchanges within the Central American region; provides support to operations planning and scheduling; and allows the retrieval and long term storage of , and access to, operational data.

Up to know, the system performed satisfactorily, was maintained on a continuous basis, and underwent several rounds of upgrades and improvements. However, the technological obsolescence caused by the discontinuation of Compaq's Alpha platform and Tru64 Unix operating system became unavoidable and determined CND to move forward and replace the existing system with a modern SCADA/EMS solution.

On this basis, the company proceeded with the next stage of this significant undertaking and, in August 2011, contracted ECI to provide expert assistance for the SCADA/EMS Upgrade for the National Control Center of ETESA (*Consultoría SCADA/EMS en relación al proyecto de Renovación Tecnológica del Centro Nacional de Despacho*)

Objectives Provide qualified consulting services, attend project meetings in Panama City, and review project documents in conjunction with the following activities:

- Bid evaluation

- Statement of Work (SOW)
- Factory Acceptance Testing (FAT)
- Site Acceptance Testing (SAT)
- Task 1: Bid Evaluation and Award of Letter of Intent
- Task 2: Contract Negotiation and Preparation of the SOW Document
- Task 3: Factory Acceptance
- Task 4: Site (Final) Acceptance

Scope of Work

Period of Performance

August 2011 through April 2014