

Project Title Identification of Location, Functionality, Staffing and Cut-Over Requirements for the Backup Control Center of the Independent System Operator in Bosnia and Herzegovina

Contracting Agency Independent System Operator in Bosnia and Herzegovina (NOS BiH)

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

Summary The project aimed at designing a solution that provides for *truly uninterrupted* control and supervision of the power system in Bosnia and Herzegovina regardless of any unforeseen event. The approach consists of migrating from the current single-control center configuration towards a mirrored two-control center architecture encompassing a Main Control Center and a Backup Control Center such that, in case of major emergency or for whatever other reason, the supervision and control functions of NOS BiH would be performed continuously and without significant loss of operational and historical data

Background NOS BiH has full dispatch responsibility and authority for the operation of the BiH power system and balancing market, which comprises the electrical generation and transmission facilities in the entire country and is operated as a Single Control Area within the Union for the Coordination of Transmission of Electricity (UCTE) Control Block encompassing Bosnia and Herzegovina, Croatia and Slovenia. In order to fulfill its operational mission, NOS BiH implemented a state-of-the-art Control Center, extended backbone fiber network, as well as Remote Terminal Units (RTUs) and Integrated Substation Automation Systems (ISAS). The SCADA/EMS became fully operational in June 2008 and has been designed for, and is currently being operated at, the highest level of availability of state-of-the-art SCADA/EMS solutions. In the worst case scenario, software and/or equipment failures in the Control Center would not cause accumulated service interruptions in excess of 4.38 hours per year, which corresponds to a reliability index of 99.95%.

However, this remarkable level of availability would be in jeopardy should a major disaster occur, such as earthquake, fire or terrorist attack. NOS BiH recognized that the only way to assure truly uninterrupted control and supervision of the power system in Bosnia and Herzegovina is to migrate from the current single-control center configuration towards a mirrored two-control center architecture encompassing a Main Control Center and a Backup Control Center such that, in case of major emergency or for whatever other reason, the supervision and control functions at NOS BiH would be performed continuously and without significant loss of operational and historical data.

On this basis, NOS BiH contracted Energy Consulting International, Inc. (ECI) to conduct the study "Identification of Location, Functionality, Staffing and Cut-Over Requirements for the Backup Control Center of the Independent System Operator in Bosnia and Herzegovina".

- Objectives**
- Design a two-control center architecture that meets both the Market Rules in Bosnia and Herzegovina and the UCTE requirements for uninterrupted service
 - Identify functional, data model and performance requirements and, to the extent possible, functions that are normally performed in the Main Control Center but could also be reliably executed at the Backup Control Center
 - Formulate criteria for the selection of the Backup Control Center location
 - Propose an implementation strategy, cut-over approach, and tentative schedule for the two-control center architecture envisioned by NOS BiH
- Scope of Work**
- Collected background and technical information and appraised the capability of the existing SCADA/EMS, RTU, ISAS and communications infrastructure to conform to a two-control center architecture
 - Evaluated staffing, building, location and logistic aspects entailed in the implementation of the Backup Control Center
 - Identified technical, operational and regulatory requirements and constraints
 - Developed objective criteria that form the basis for the proposed solution
 - Recommended an approach that is both technically feasible and economically viable
 - Formulated an implementation strategy, cut-over, and schedule for the two-control center architecture of NOS BiH
- Period of Performance** November 2008 – March 2009