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NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

NERC Balancing Authority (BA) Certification of Plum Point Energy Associates (PLUM) and Osceola Municipal Light and Power (OMLP) to be Operated by Constellation Energy Control and Dispatch (CECD)

Site Visit Conducted
July 8-9, 2009
Constellation Energy Control and Dispatch Control Center
Houston, TX

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to ensure
the reliability of the
bulk power system

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Introduction

This report presents the results of the SERC Reliability Corporation (SERC) NERC Balancing Authority (BA) Certification of Plum Point Energy Associates (PLUM or Plum Point) and Osceola Municipal Light and Power (OMLP or Osceola) who have contracted with Constellation Energy Control and Dispatch (CECD) for BA services.

BAs have a primary responsibility for maintaining the reliability of the interconnected system. They accomplish this by directly controlling their generation and/or load resources to continuously balance their actual interchange with their scheduled interchange while regulating and stabilizing the alternating-current frequency of the Interconnection. Acceptable reliability levels can be maintained only if the BAs and other entities which make up the Interconnection function in accord with good operating practices and reliability criteria, including planning and operating standards as defined by the North American Electric Reliability Corporation (NERC) Reliability Standards. Good operating practices include, but are not limited to, full compliance with the NERC Standards without regard to economic consideration, and burdening neighboring systems.

Certification Team

CECD notified SERC and NERC and requested a NERC BA certification of Plum Point and Osceola as a BA. This letter began the process for certification that is outlined in the NERC Rules of Procedure (RoP) Section 500 and RoP Appendix 5. Following receipt of CECD's request to certify Plum Point and Osceola as NERC certified BAs, a certification team was formed. The team rosters for members of both the BA Certification Team (CT) and CECD team are listed in Attachment 1.

Objective and Scope

The objective of this review is to assess CECD's process, procedures, and tools which will allow them to provide BA services for Plum Point and Osceola. The scope of the review included: (1) Interviewing CECD's management and reviewing pertinent documentation for verification of basic requirements for BA operation; (2) reviewing procedures, and other documentation developed by CECD to meet the applicable standards/requirements; (3) interviewing CECD system operations personnel; (4) reviewing CECD's physical backup control center facility, Energy Management System (EMS), communication facilities, operator displays, etc.; and (5) performing other validation reviews as considered necessary. The review was conducted on July 8-9, 2009 at CECD's primary facility in Houston, TX.

Overall Conclusion

The certification process was completed in reasonable accordance with the aforementioned Rules to determine if the applicants have the necessary tools, processes, and procedures to perform the function as NERC certified BAs. The applicants presented to the certification team the necessary evidence for its review, as it relates to the applicable standards/requirements. Because of this review, the certification team has reasonable assurance the applicants do have the tools, processes, and procedures in place to reliably perform the necessary BA services on behalf of the Plum Point and Osceola BA. Therefore, the BA certification team recommends to SERC that they approve certification of Plum Point and Osceola as NERC certified BAs.

The Plum Point and Osceola BA operation is currently slated to begin on or about October 1, 2009.

Needed for Operation

While the team recommends to SERC that Plum Point and Osceola be granted certification, the following work-in-process items must be completed prior to Plum Point and Osceola going operational:

1. Complete the Point to Point testing of tie-line and frequency meters
2. Complete the EMS one-line displays and applicable alarms
 - a. Operating conditions, real/reactive, generator status
3. ESTAR point to point testing and monitoring to be completed
 - a. Screenshots of associated operating parameters
4. SPP ORWG approval of Osceola into the RSG and RC operating agreement
5. Signed operating agreement with Entergy
6. Install and test UFLS equipment
 - a. Agreement with Osceola to maintain the UFLS equipment with periodicity
7. Need to update CECD Procedure BAL-002, Section 5.0, to account for loss of unit vs. loss of a mill as the most significant single contingency

Positive Observations

- Well prepared in the presentation of evidence
 - Master matrix alignment to the evidence
 - Documents are well organized with revision history
- Strong compliance culture
- Disaster recovery employee considerations
 - Operational flexibility
- Consistency of operator response – Alignment
- Daily Tailboard meetings
- Operator tools

Operator Preparedness

The CT found the CECD operators to be fully equipped with excellent operating tools and they are well prepared as a result of extensive training. All operators are NERC certified with 90 percent of the system operators certified at the RC level.

CECD currently provides BA services for seven BAs in the SERC Region, two of which are generation only BAs.

Company Background

Constellation Energy, a Fortune 200 company, is the parent company of CECD. Constellation Energy is based in Baltimore, Maryland with businesses that include CECD, Baltimore Gas and Electric (BG&E) a regulated utility, and Constellation Commodities Group a power generation and wholesale marketing entity. CECD operates from a control center located in Houston, Texas.

Plum Point is a 665 MW single pulverized coal-fired boiler with steam turbine technology located in Osceola, Arkansas (3 miles south) at the intersection of Highway 198 and 239, in Mississippi County. The generating facility interconnects to the Entergy 500 kV San Souci Switchyard. At 100% output, while burning the 8800 btu/lb design fuel, the unit is expected to consume 8600 tons per day. The unit was designed to operate on a broad range of Powder River Basin coal quality, meaning that the facility should still be able to maintain full output while using 8400 btu/lb and still have a spare mill (1 of 5).

Plum Point is a jointly owned facility (see below for owners and long term contracts) by:

Plum Point Energy Associates, LLC (PPEA) – 378 MW Long Term Contracts (see below)

- South Mississippi Electric Power Authority (SMEPA) 200 MW
- MJMEUC (MoPEP 1 members) 50 MW
- Southwestern Electric Cooperative, Inc. (SWECI) 78 MW
- Empire 50 MW

East Texas Electric Coop, Inc (ETEC) – 50 MW

Missouri Joint Municipal Electric Utility Commission (MJMEUC) – 147 MW

- MJMEUC – Arkansas Cities (88 MW) and Missouri Cities (59 MW)

The Empire District Electric Company (Empire) – (50 MW)

Municipal Energy Agency of Mississippi (MEAM) – (40 MW)

Plum Point is operated by North American Energy Services (NAES). The parties identified above have an ownership share or long term purchases in the Plum Point generating facility.

Each party is responsible for working with their designated PSE to ensure there is an electronic tag for their share of the generating facility output as determined based on unit availability.

The City of Osceola is located in Mississippi County in the state of Arkansas (172 miles northeast of Little Rock, AR). The electric system is serviced by Osceola Municipal Light and Power (Osceola). There are four physical points of interconnection between Osceola and the interconnected Transmission Operator, Entergy (EES). There is also one pseudo-tie between the North Little Rock Balancing Authority and Osceola, with EES as the intermediate Balancing Authority. Osceola has a full requirement supply contract with Constellation Energy Commodities Group, who will serve as Osceola's agent for managing transmission and supply, long term and short term.

Operating Facility Details

The CECD Control Center is located in Houston. All EMS support (administrative and IT) is located within the perimeter of the control center. The CECD control system consists of an AREVA (formerly Alstom/ESCA) standard control system that was upgraded in February 2005 and can accommodate up to 75 BAs. The center contains 10 AREVA Work Stations with five 21-inch screens each for operator interface and **nine** large 50" diagonal LCD screens that can be accessed from the AREVA work stations to display control information from each of the 12 BAs CECD operates (14 BAs following certification of Plum Point and Osceola). CECD has 12 NERC Certified Operators and 2 supervisors that are also NERC certified. There are also five CECD personnel in training. Normal staffing currently consists of two operators per shift (12 hour shifts) with an increase to three operators during day shift during the summer peak period. CECD has implemented a Integration Desk (the I-Desk) to focus on intermittent resource facilities.

Dual redundancy is provided in data communications, which uses Multiple Protocol Labeling Switching (MPLS) connections provided by Verizon formerly MCI/WorldCom. There are primary and secondary paths from each plant or BA to Baltimore and primary and secondary paths from Baltimore to Houston. The data is also mirrored from the primary data center to a secondary data center.

CECD's primary operator communication system is provided by Cisco IP phones. Telephone numbers can be redirected or forwarded to any location making the redirection transparent to CECD's clients and operational counterparties. Operators also have the option of accessing a British Telecom Virtual Turret across a secure connection, replicating all of the stored numbers and features of their control center phones in a disaster recovery situation. This Virtual Turret can be configured to dial out of and receive phone calls into any land-based phone line or cellular phone. A designated back-up cell phone is kept charged at all times, with all pertinent phone numbers stored. Wireless Priority Service is in place and accessible at all times for use with this phone or personal cell phones. Additional communications capability includes Satellite Phones, Nortel phones, fax, and email communications.

Connectivity to the Houston Control Center is provided through diverse circuits which enhance the reliability of communications. The primary connection is a Verizon MPLS circuit with a Verizon backup DS3 circuit. There is also a secondary connection consisting of a 100 Mbps circuit with Time Warner. In the event of a failure with the local ISP service, internal gateway

protocols will allow for the rerouting of this traffic to Baltimore, where Constellation utilizes AT&T and Verizon Business for ISP access.

CECD maintains a backup control program, which includes backup facilities in two geographically diverse locations. CECD also has its primary and backup control systems set up to interface with the operator computer profiles so that the operators can log onto the system from any location, with a secure virtual private network (VPN) connection on assigned operator laptops or a remote desktop, applying appropriate user authentication protocols. This flexibility allows for extremely thorough disaster recovery plans that cover all conceivable scenarios. It also includes organizational assistance for meeting the personal and family requirements of operators.

CECD operator displays are adequate to perform the BA service for the Plum Point and Osceola BAs. Plum Point and Osceola displays will include: CPS1 and CPS2, DCS status, ACE value, L₁₀, MW schedules for the BA, tie-line readings at the point of interconnection with Entergy, AGC status, frequency, actual and required contingency reserves, generator breaker status, time-error, TEC Status, Primary and Secondary Inadvertent, and one-line diagrams. Plum Point and Osceola's PSE will also have access to most of the information contained above via the secure CECD data page which refreshes every 10 seconds.

CECD currently uses Open Access Technology International (OATI) electronic tagging software. CECD will be the tag approval authority for Plum Point and Osceola.

Documentation List

Copies of all of the supporting CECD documents were collected as evidence of CECD's preparedness and will be kept as a record of evidence to support the certification team's recommendation. These documents will be retained at the SERC office in Charlotte, North Carolina for a period of seven years.

None of the documents listed below are included with the distribution of this final report. Per the NERC Rules of Procedure and due to the confidential nature of this material, these documents are available for review at the SERC offices after proper authorization is obtained through SERC and NERC.

- CECD BA questionnaire
- Neighboring BA questionnaire
- Master BA Matrix
- Letters requesting Plum Point and Osceola Certification
- CECD's various BA evidence files
- Documentation resulting from the "Needed for Operation" items

CIP Requirements

CECD and Plum Point provided the certification team documents as evidence of their compliance to CIP-001. These documents however are not available for public viewing and are retained at the SERC office in Charlotte, North Carolina for a period of seven years. Because Plum Point and Osceola are considered a table four entity, CIP-002 through CIP-009 were not in scope of this certification.

Evaluation of the BA Standards

The certification team was able to assess the applicant's ability to reasonably meet the BA standards/requirements as documented in the **Master BA Matrix**.

Attachment 1

The BA Certification Team

- Jim Hughes – NERC
- Robert "Bob" Goss – SERC
- David Dockery – AECI
- James Harrell – SERC
- Ron Hollaway – SPP

The CECD and PPEA Staff Personnel that Participated in the On-site Visit

- J.T. Thompson – CECD Vice President
- Denise Ayers - CECD Vice President
- Rebecca Martinez - CECD Associate
- Vicki Higginbotham – CECD Project Mgr.
- C.J. Ingersoll - CECD Director, Compliance
- Scott Angelmaier, System Dispatcher
- Ben Bernier, Associate Gen Control

Attachment 2

Certification Process Steps

Documentation Review

The certification team also reviewed the appropriate documentation that provided reasonable assurance that CECD has the tools, processes, procedures, and training to operate PLUM and OMLP as a NERC certified BAs.

The certification team used a spreadsheet to catalog the documentation evidence provided by CECD, namely *Master BA Matrix*. The spreadsheet contains all the applicable NERC standards and associated requirements for an entity to be evaluated as a NERC Certified BA along with CECD document references where evidence was provided by CECD that met the applicable standards and requirements.

Applications Review

The site visit focused on documentation review, interview of certified BA operators, and evaluation of the BA applications and operator toolset that CECD has available for their operators. The certification team reviewed CECD online applications that will be used to perform the Plum Point/Osceola/CECD BA requirements. CECD developed a series of EMS demonstrations that were led by the BA operators. These demonstrations provided the certification team with an understanding of CECD applications, as well as demonstrate the operator readiness to assume the duties of the BA Operator.

Operational Testing

CECD, Osceola, and Plum Point have conducted a series of operational tests. Operational testing is primarily focused with testing the necessary signals in order to facilitate the EMS, operating process, Energy (ESTAR), and GCC Scheduling tools.