

Brazos Electric Power Cooperative QSE Final Audit Report

for Compliance with

NERC Reliability Standards

Public Version

Audit Date: September 13, 2007
Audit Location: Waco, Texas
Report Date: January 10, 2008

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1.0 EXECUTIVE SUMMARY

The on-site compliance audit of Brazos Electric Power Cooperative QSE (BEPC) was conducted on September 13, 2007. The NERC reliability standards that are being actively monitored for 2007 were reviewed based on Brazos Electric Power Cooperative QSE's registration as a Generation Operator. The audit team consisted of six representatives from Texas Regional Entity (Texas RE).

Based on the review of documentation provided by Brazos Electric Power Cooperative QSE and the interviews of Brazos Electric Cooperative Power QSE personnel, Brazos Electric Cooperative Power QSE met all of the NERC Standard requirements that were reviewed. One of the reliability standards applicable to generator operators was classified as not applicable to BEPC.

2.0 AUDIT PROCESS

The compliance audit process is detailed in the NERC Compliance Monitoring and Enforcement Program (CMEP). This document can be found on the NERC website at www.nerc.com. The NERC CMEP generally conforms to the United States Government Accountability Office Government Auditing Standards and other generally accepted audit practices.

2.1 Objectives

All registered entities are subject to audit for compliance with all reliability standards applicable to the functions for which the registered entity is registered.¹ The audit objectives are:

- Independently review BEPC's compliance with the requirements of the reliability standards that are applicable to BEPC based on BEPC's registered functions.
- Validate compliance with applicable reliability standards from the NERC 2007 CMEP Implementation Plan list of actively monitored standards.
- Validate evidence of self-reported violations and review the status of associated mitigation plans.

2.2 Scope

The scope of this compliance audit is inclusive of all requirements of the NERC Standards that are being actively monitored in 2007 and any others that may be identified by the audit

¹ North American Electric Reliability Corporation CMEP, paragraph 3.1, Compliance Audits

team at the time of the audit applicable to an entity registered as a NERC Generator Operator. Included in the audit, was also a review of reliability standards that were previously self-reported by BEPC. BEPC has certified that the mitigation plans for these standards are complete. Texas RE conducted a follow-up assessment to verify that actions in the Mitigation Plans had been completed. The audit was performed by five Texas RE representatives and one Texas RE observer.

For the 2007 CMEP, the monitoring period for the compliance audit will be the past 12 months or periods specified in individual reliability standards. The monitoring period is not limited to the time period for which penalties and sanctions are assessed, which began on June 18th, 2007. The list of reliability standards along with their corresponding monitoring timeframes and applicability are listed in the Appendix A of this report.

2.3 Methodology

Once an audit date was set by Texas RE, Brazos Electric Power Cooperative QSE was sent a pre-audit questionnaire and the Reliability Standard Auditors Work Sheets (RSAWS) for the list of actively monitored NERC Standards. An audit agenda and the work history of audit team members were also provided, in advance, to BEPC.

An introduction overview meeting was led by the audit team leader. During the introduction, the audit process and confidentiality issues were discussed with BEPC. The audit team followed the agenda that was provided.

During the audit, Texas RE reviewed the responses to the RSAWS and pre-audit questions with BEPC management and supervisors. The audit team worked in one group for this part of the audit. The audit team reviewed documented evidence and asked BEPC management additional questions. During the afternoon, one audit team group interviewed system operators. The other audit team group interviewed IT, Communications, and Planning personnel to get answers to questions and verify documentation. Texas RE audit team interviewed BEPC's operations personnel to substantiate those operations personnel were trained and capable of following the procedures to ensure reliable operations from that entity.

The audit team met privately as one group to discuss findings and determine compliance with the reliability standards. The audit team conducted an exit briefing immediately following the audit with BEPC. The audit team verbally shared its preliminary results with BEPC's management. The audit team leader also reviewed with BEPC the audit process going forward.

2.4 Company Profile

Brazos Electric Cooperative QSE

As one of the largest wholesale power suppliers in Texas, Brazos Electric Power Cooperative serves 17 member distribution cooperatives in 68 counties. Brazos Electric Power Cooperative supplies power to its member cooperatives through the six generation plants it owns or controls and by purchasing power on the open market. There is a seventh plant under construction. They also invest in renewable energy or green power through hydro generation plants. They are one of fourteen members of a national cooperative power marketer. Brazos Electric Power Cooperative was audited based on the company's NERC registration as a Generator Operator.

2.5 Audit Specifics

Audit Date: September 13, 2007

Audit Location: 2404 LaSalle Av
Waco Texas

Texas RE Audit Team:

Name	Company/Title
Robert Potts	Texas RE/Audit Team Leader
Jeff Whitmer	Texas RE/Auditor
Bob Collins	Texas RE/Auditor
Rashida Williams	Texas RE/Auditor
Tony Shiekhi	Texas RE/Auditor
Farzaneh Tafreshi	Texas RE/Observer

Brazos Electric Power Cooperative QSE Audit Participants:

Name	Company/Title
Josh Clevenger	Brazos Manager of Market Operations
Wayne Bolton	Brazos Resource Supervisor
Reagan Rhodes	Brazos Market Operation Specialist
David Carpenter	Legal Counsel/ Segrest & Segrest Law
Tony Kroskey	Brazos Manager of Transmission System Op.
Steve Tepe	Brazos Supervisor Communication Techs

Name	Company/Title
Chuck Johnson	Brazos /EMS Administrator
Jody Riddle	Resource Operator II

3.0 AUDIT RESULTS

3.1 Findings

The audit team documented the reviewed evidence and conducted interviews to determine compliance with each reliability standard. Some of the reviewed evidence was in a scenario fashion such as a database. The audit team found that Brazos Electric Power Cooperative QSE was compliant with all 2007 actively monitored NERC Standards at the time of the audit.

The following table is a summary of the auditor's notes for those NERC standards reviewed during the audit. These included self reported standards before June 18, 2007 that were assessed during the audit.

Reliability Standard	Auditor Notes	Finding
CIP-001-1	Included in Appendix B: Confidential & Security Sensitive Information	Compliant
CIP-002-1 through CIP-009-1	There is a plan in place with a group dedicated to investigate long term CIP Standards and how to conform to these. CIP-002 was specifically discussed and Brazos Electric Power Cooperative QSE appears to have a program to address the requirements.	Reviewed
IRO-001-1	R8 There is an electronic logging system (broken into categories) that is archived and backed up. The existence of a Market Operations System program was verified. BEC provided instances where they followed deployment directives from ERCOT. In instances where the QSE would be unable to comply, a statement exists in the procedure to notify ERCOT immediately.	Compliant
IRO-004-1	R4 The duties are outlined in a procedure to provide plans and capability. Employees are available to complete duties in absence of Resource Supervisor. Data submitted by 11:00 am to ERCOT.	Compliant

Reliability Standard	Auditor Notes	Finding
EOP-009-0	Brazos Electric Cooperative QSE has no black start units.	Not Applicable
TOP-003-0	<p>R1 There is a procedure in place to maintain 12-month outage and maintenance schedule. The system logs showed that verbal communication is made almost immediately. This was confirmed during the audit interview with the operator.</p> <p>R1.1 2008 outage schedule was reviewed that states resources and projected outage time. The procedure states that outage schedules will be kept current.</p> <p>R1.3 Brazos files their plan by 11:00 Central Standard time.</p> <p>R2 Log with operator's communication with ERCOT was reviewed by the audit team. The log showed coordination with ERCOT. BEPC has not had any voltage equipment taken out; however, there is a place in the log to record voltage equipment outage if needed.</p> <p>R3 Log with operators communication with ERCOT was reviewed that showed coordination with ERCOT</p>	Compliant
BAL -005-0	There is meter data communication with ERCOT. The meter data communication procedure was reviewed.	Compliant
COM-002-2	A QSE Operations Communication Document was developed by BEPC. This document was verified by the audit team.	Compliant
EOP-004-1	A QSE Disturbance Monitoring and Reporting document was developed by BEPC. The document containing the reporting forms is kept on the operator's desk.	Compliant
PRC-001-1	QSE Protective Systems Policies and Guidelines document developed by BEPC. The seasonal capability and uniform identifiers are addressed in the policies.	Compliant
TOP-001-1	QSE Compliance with Dispatch instruction procedure developed by BEPC.	Compliant

Reliability Standard	Auditor Notes	Finding
TOP-002-2	QSE Resource Scheduling- Related duties procedure developed by BEPC.	Compliant
TOP-006-1	A procedure covering QSE Resource Scheduling and related duties was developed by BEPC.	Compliant
VAR-002-1	A QSE Voltage Control procedure was developed by BEPC.	Compliant

3.2 Conclusion

Brazos Electric Power Cooperative QSE was found in compliance with the standards that were audited.

4.0 SUMMARY OF BRAZOS ELECTRIC POWER COOPERATIVE RESPONSE TO THE AUDIT FINDINGS

APPENDIX A

APPLICABLE RELIABILITY STANDARDS

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
BAL-001-0	All	Real Power Balancing Control Performance	BA	To maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time.	The data that supports the calculation of CPS1 and CPS2 (Attachment 1-BAL-001-0) are to be retained in electronic form for at least a one-year period. If the CPS1 and CPS2 data for a Balancing Authority Area are undergoing a review to address a question that has been raised regarding the data, the data are to be saved beyond the normal retention period until the question is formally resolved. Each Balancing Authority shall retain for a rolling 12-month period the values of: one-minute average ACE (ACEi), one-minute average Frequency Error, and, if using variable bias, one-minute average Frequency Bias.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
BAL-002-0	All	Disturbance Control Performance	BA, RSG, RRO	To ensure the Balancing Authority is able to utilize its Contingency Reserve to balance resources and demand and return Interconnection frequency within defined limits.	Compliance for DCS will be evaluated for each reporting period. Reset is one calendar quarter without a violation. The data that support the calculation of DCS are to be retained in electronic form for at least a one-year period.	N
BAL-003-0	All	Frequency Response and Bias	BA	This standard provides a consistent method for calculating the Frequency Bias component of ACE.	Yearly or by request.	N
CIP-001-1	All	Sabotage Reporting	RC, BA, TOP, GOP, LSE	Disturbances or unusual occurrences, suspected or determined to be caused by sabotage, shall be reported to the appropriate systems, governmental agencies, and regulatory bodies.	By request and any events in the last year.	Y
CIP-002-1 through CIP-009-1	All	Critical Infrastructure Protection Standards	BA, GO, GOP, IA, LSE, NERC, RC, RRO, TO, TOP, TSP	Cyber Security Standards- Follow revised Implementation Plan for Cyber Security Standards CIP-002-1 through CIP-009-1	By request.	Y

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
COM-001-1	R2 and R5	Telecommunications	TO, BA, RC, NERC, Net User Organizations.	Each Reliability Coordinator, Transmission Operator and Balancing Authority needs adequate and reliable telecommunications facilities internally and with others for the exchange of Interconnection and operating information necessary to maintain reliability.	By request.	N
EOP-001-0	All	Emergency Operations Planning	BA, TOP	Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator.	By request.	N
EOP-003-1	All	Load Shedding Plans	BA, TOP	A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the Interconnection.	R1, R5, R6 - Event Driven. Has an event occurred in the past year? R2, R3, R4, R7, R8 – By request	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
EOP-005-1	All	System Restoration Plans	BA, TOP	To ensure plans, procedures, and resources are available to restore the electric system to a normal condition in the event of a partial or total shut down of the system	By request. Note: entity must follow the timelines specified in the standard: show that the plan is reviewed annually; simulation or testing must be done every 5 years.	N
EOP-006-1	All	Reliability Coordination – System Restoration	RC	The Reliability Coordinator must have a coordinating role in system restoration to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.	By request.	N
EOP-008-0	All	Plans for Loss of Control Center Functionality	BA, RC, TOP	Each reliability entity must have a plan to continue reliability operations in the event its control center becomes inoperable.	By request.	N
EOP-009-0	All	Documentation of Blackstart Generating Unit Test Results	GO, GOP	To ensure that the quantity and location of system blackstart generators are sufficient and that they can perform their expected functions.	By request. Note entity must meet testing frequency specified in EOP-007-0.	Y

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
FAC-003-1	All	Vegetation Management	RRO, TO	To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines	By request – program documentation and last 4 quarterly outage reports.	N
FAC-008-1	All	Facility Ratings Methodology	GO, TO	To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on an established methodology	By request the current methodology and any superseded portions of the methodology within the past 12 months.	N
FAC-009-1	All	Establish and Communicate Facility Ratings	GO, TO	To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on an established methodology or methodologies.	By request.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
IRO-001-1	All	Reliability Coordination – Responsibilities and Authorities	BA, GOP, LSE, PSE, RC, RRO, TOP, TSP	Reliability Coordinators must have the authority, plans, and agreements in place to immediately direct reliability entities within their Reliability Coordinator Areas to re-dispatch generation, reconfigure transmission, or reduce load to mitigate critical conditions to return the system to a reliable state. If a Reliability Coordinator delegates tasks to others, the Reliability Coordinator retains its responsibilities for complying with NERC and regional standards. Standards of conduct are necessary to ensure the Reliability Coordinator does not act in a manner that favors one market participant over another.	By request.	Y
IRO-004-1	All	Reliability Coordination — Operations Planning	BA, GO, GOP, LSE, RC, TO, TOP, TSP	Each Reliability Coordinator must conduct next-day reliability analyses for its Reliability Coordinator Area to ensure the Bulk Electric System can be operated reliably in anticipated normal and Contingency conditions.	By request.	Y

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
IRO-014-1	All	Procedures, Processes, or Plans to Support Coordination Between Reliability Coordinators	RC	To ensure that each Reliability Coordinator's operations are coordinated such that they will not have an Adverse Reliability Impact on other Reliability Coordinator Areas and to preserve the reliability benefits of interconnected operations.	By request.	N
IRO-015-1	All	Notifications and Information Exchange Between Reliability Coordinators	RC	To ensure that each Reliability Coordinator's operations are coordinated such that they will not have an Adverse Reliability Impact on other Reliability Coordinator Areas and to preserve the reliability benefits of interconnected operations.	Rolling 12 months of information provided on request.	N
IRO-016-1	All	Coordination of Real-time Activities Between Reliability Coordinators	RC	that they will not have an Adverse Reliability Impact on other Reliability Coordinator Areas	Rolling 12 months of information provided on request.	N
PER-002-0	All	Operating Personnel Training	BA, TOP	Each Transmission Operator and Balancing Authority must provide their personnel with a coordinated training program that will ensure reliable system operation.	By request training program and training records.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
PER-003-0	All	Operating Personnel Credentials	BA, RC, TOP	Certification of operating personnel is necessary to ensure minimum competencies for operating a reliable Bulk Electric System.	By request latest certification information and present calendar year plus previous calendar year staffing plan.	N
PER-004-1	All	Reliability Coordination — Staffing	RC	Reliability Coordinators must have sufficient, competent staff to perform the Reliability Coordinator functions.	By request - Each Reliability Coordinator shall keep evidence of compliance for the previous two calendar years plus the current year.	N
PRC-004-1	All	Analysis and Mitigation of Transmission and Generation Protection System Misoperations	DP*, GO, TO	Provide trip operation / misoperation information per regional process.	By request – last 12 months of protection system Misoperation analysis.	N
PRC-005-1	All	Transmission and Generation Protection System Maintenance and Testing	DP*, GO, TO	Document/implement transmission protection system maintenance/testing/monitoring PROGRAM	By request - maintenance and testing program and testing records to show that testing intervals are on schedule.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
PRC-008-0	All	Implementation and Documentation of Underfrequency Load Shedding Equipment Maintenance Program	DP, TO	Document/implement UFLS maintenance/testing PROGRAM	By request - maintenance and testing program and testing records to show that testing intervals are on schedule.	N
PRC-010-0	All	Technical Assessment of the Design and Effectiveness of Undervoltage Load Shedding Program.	DP, LSE, TO, TOP	ASSESS design and effectiveness of UVLS programs	By request – current assessment.	N
PRC-011-0	All	UVLS System Maintenance and Testing	DP, TO	Document/implement UVLS maintenance/testing PROGRAM	By request - maintenance and testing program and testing records to show that testing intervals are on schedule.	N
PRC-016-0	All	Special Protection System Misoperations	DP, GO, TO	DOCUMENT/analyze misoperations	By request – last 12 months of special protection system Misoperation analysis.	N
PRC-017-0	All	Special Protection System Maintenance and Testing	DP, GO, TO	Document/implement SPS maintenance/testing PROGRAM	By request - maintenance and testing program and testing records to show that testing intervals are on schedule.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
PRC-021-1	All	Under-Voltage Load Shedding Program Data	DP, TO	DOCUMENTATION of undervoltage load shedding program	By request – latest UVLS data.	N
TOP-003-0	All	Planned Outage Coordination	BA, GOP, RC, TOP	Scheduled generator and transmission outages that may affect the reliability of interconnected operations must be planned and coordinated among Balancing Authorities, Transmission Operators, and Reliability Coordinators.	By request.	Y
TOP-004-1	R6	Transmission Operations	TOP	To ensure that the transmission system is operated so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single Contingency and specified multiple Contingencies.	By request - Each Transmission Operator shall keep 90 days of historical data for Measure 1. Each Transmission Operator shall have current, in-force policies and procedures, as evidence of compliance to Measure 2.	N
TOP-005-1	All	Operational Reliability Information	BA, PSE, RC, TOP	To ensure reliability entities have the operating data needed to monitor system conditions within their areas.	By request.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
TOP-007-0	All	Reporting System Operating Limit (SOL) and Interconnection Reliability	RC, TOP	Ensure SOL and IROL violations are being reported to the Reliability Coordinator so that the Reliability Coordinator may evaluate actions being taken and direct additional corrective actions as needed.	Event driven.	N
TPL-001-0	All	System Performance Under Normal (No Contingency) Conditions	PA, TPL	System performance under normal conditions	By request – latest annual assessment.	N
TPL-002-0	All	System Performance Following Loss of a Single Bulk Electric System Element	PA, TPL	System performance under single contingency	By request – latest annual assessment.	N
TPL-003-0	All	System Performance Following Loss of Two or More Bulk Electric System Elements	PA, TPL	System performance under multiple contingencies	By request – latest annual assessment.	N

Std #	Requirements	Standard	Who	Purpose	Monitoring Timeframe	Applicable to Brazos Electric Power Cooperative QSE Audit? Yes or No
TPL-004-0	All	System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk Electric System Elements	PA, TPL	System performance under extreme contingencies	By request – latest annual assessment.	N
VAR-001-1	All	Voltage and Reactive Control	PSE, TOP	To ensure voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection.	By request – last 12 months of data.	N

APPENDIX B

CONFIDENTIAL & SECURITY SENSITIVE INFORMATION

Note: This section contains confidential & security sensitive information which is not included with the public version, but retained by Texas RE and NERC and is sent privately to the audited entity
