



NORTHEAST POWER COORDINATING COUNCIL, INC.
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Compliance Audit Report Public Version

**Cross Sound Cable Company LLC.
(CSC)
NERC ID # NCR07055**

April 27 to May 8, 2009

**Confidential Information (including Privileged and
Critical Energy Infrastructure Information)
Has Been Removed**

May 8, 2009

TABLE OF CONTENTS

Executive Summary	3
Audit Process	3
Objectives	3
Scope	4
Confidentiality and Conflict of Interest.....	4
Off-site Audit	4
Methodology.....	5
Audit Overview.....	5
Audit.....	5
Exit Briefing.....	5
Company Profile	6
Audit Specifics.....	6
Audit Results	7
Findings	7
Compliance Culture.....	10

Executive Summary

This final compliance audit report is the public version. Confidential information (including privileged and critical energy infrastructure information) has been redacted from this report. The full final compliance audit report was submitted to the audited entity and NERC.

The off-site compliance audit of Cross Sound Cable Company LLC (CSC), NERC ID #NCR07055 was conducted between April 27 and May 8, 2009. At the time of the audit, CSC was registered for the TO and TSP functions. The audit was completed using data submitted by CSC prior to the off-site audit being started and data provided by way of follow-up emails and phone calls as a result of questions raised during the off-site audit.

The auditor evaluated Cross Sound Cable Company LLC's compliance with twelve reliability standards and seventy-six requirements and sub-requirements in the 2009 NERC Compliance Monitoring and Enforcement Program (CMEP). The audit reviewed reliability standards identified in the NERC 2009 Implementation Plan for the period of the last twelve months or monitoring timeframes specified in each reliability standard. Of the twelve standards and seventy-six requirements and sub-requirements audited for the functions CSC is registered for, nine standards and their thirty-six requirements and sub-requirements were judged to be compliant. Three standards and thirty-eight requirements and sub-requirements were judged to be not applicable. Two requirements were judged to be not applicable for this audit period as the actions specified were either not necessary or not requested.

Cross Sound Cable Company LLC provided an overview resulting in a more clear understanding of their business model and accelerated the audit process. The evidence provided to demonstrate compliance was well presented and well organized. The auditor would like to thank the CSC audit preparation team for the support offered throughout the audit.

There were no ongoing or recently completed mitigation plans and, therefore, none were reviewed by the audit team.

Audit Process

The compliance audit process steps are detailed in the NERC CMEP. The NERC CMEP generally conforms to the United States Government Accountability Office Government Auditing Standards and other generally accepted audit practices.

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 to:

- Independently review Cross Sound Cable Company LLC's compliance with the requirements of the reliability standards that are applicable to CSC based on the functions CSC is registered for.
- Validate compliance with applicable reliability standards from the NERC 2009 Implementation Plan list of actively monitored standards and additional NERC reliability standards selected by NERC.
- Validate compliance with applicable Regional Standards from the NPCC 2009 Implementation Plan list of actively monitored standards.
- Validate evidence of self-reported violations and previous self-certifications and confirm compliance with other requirements of the reliability standard.
- Review the status of associated mitigation plans.
- Observe and document Cross Sound Cable Company LLC's compliance program and culture.

Scope

The audit included all standards identified in the February 3, 2009 audit letter. The audit was a regularly scheduled audit and no self-reported violations or compliance investigations were involved.

At the time of the audit, CSC was registered for the functions TO and TSP. The audit team evaluated CSC for compliance during the period of June 18, 2007 and May 8, 2009.

Confidentiality and Conflict of Interest

Confidentiality and Conflict of Interest of the audit team are governed under the Delegation Agreement with NERC and Section 1500 of the NERC Rules of Procedure.

The audited entity was informed in advance of the audit that the independent contractors executed confidentiality agreements and code of conduct documentation was in place for the NERC representative and regional entity staff. Work history and conflict of interest forms submitted by each audit team member are on file in the NPCC corporate offices. The audited entity was given an opportunity to object to an audit team member on the basis of a possible conflict of interest or the existence of other circumstances that could interfere with the audit team member's impartial performance of duties. The audited entity accepted the audit team member participants with no objections.

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

Off-site Audit

Cross Sound Cable Company LLC was provided with a pre-audit request letter identifying the standards and requirements subject to audit. The audit letter was sent to Cross Sound Cable Company LLC more than 60 days in advance of the scheduled audit. This is an off-site audit conducted every six years or as determined to be necessary by the region. CSC had not self reported any violations. Cross Sound Cable Company LLC is registered for TO and TSP functions in NPCC.

If necessary, the auditor would have requested interviews with Cross Sound Cable Company LLC employees representing subject matter expertise regarding all of the registered functions of CSC. These interviews in conjunction with the submitted evidence would provide the auditor with a basis for professional judgment when validating compliance with reliability standards.

Methodology

The auditor prepared reliability standard audit worksheets (RSAWs) to evaluate each standard. The RSAWs are used to ensure consistency and to document evidence of compliance or non-compliance with the standards. All relevant documents are considered and to the extent they form a portion of the audit trail are included in the RSAWs.

Audit Overview

The initial audit overview was conducted on April 28, 2009. The call was led by the auditor for NPCC and participating for Cross Sound Cable Company LLC was the Asset Manager and the Chief Operating Officer. An explanation of the audit process was given and the timelines were discussed. CSC was given an opportunity to reject the auditor but accepted the auditor and his credentials for this audit.

Audit

The audit was performed off-site by the Lead Auditor with the Manager of the Compliance Audit Program of NPCC assisting. Additional questions were provided to Cross Sound Cable Company LLC by way of emails and phone calls, and the CSC staff then took the time necessary to develop the answers and submitted them by way of email and phone calls to the auditor.

Exit Briefing

The exit briefing was conducted by conference call on May 8, 2009. It was led by the Auditor and was attended by the Asset Manager and Chief Operating Officer of Cross Sound Cable Company LLC. The Auditor reviewed the audit process and summarized the preliminary findings of the audit.

The results of the audit were that of the twelve standards and seventy-six requirements and sub-requirements audited for the functions CSC is registered for, nine standards and their thirty-six requirements and sub-requirements were judged to be compliant. Three standards and thirty-eight requirements and sub-requirements were judged to be not applicable. Two requirements were judged to be not applicable for this audit period as the actions specified were either not necessary or not requested.

The exit briefing is also a forum for the auditor to offer informal recommendations for process improvement. These recommendations are not included in the audit report but would be captured in a separate document and sent to CSC. This was not necessary for this audit.

Company Profile

Cross Sound Cable Company LLC is the owner and operator of the Cross Sound Cable Project, a High Voltage Direct Current submarine transmission system linking New Haven, CT and Shoreham, NY. Cross Sound Cable Company LLC is a member of the Babcock & Brown Infrastructure (BBI) Group. BBI owns numerous energy assets around the world including electric transmission and distribution, natural gas facilities and coal transportation facilities. CSC Operations, LLC was formed to provide engineering, operation and maintenance support for the Cross Sound Cable Project.

The Cross Sound Cable Project consists of 330MW converter stations located in New Haven, CT and Shoreham, NY and is connected by a 24 mile $\pm 150\text{kV}$ submarine transmission cable that is run underneath the seabed of Long Island Sound. The Halvarsson Converter Station in New Haven, CT is located on the New Haven Harbor Station property near United Illuminating's East Shore 9G Substation. Halvarsson interconnects with the 387 line at 345kV. The Tomson Converter Station in Shoreham, NY is located on the former Shoreham Nuclear Power Station facility next to LIPA's Shoreham 8Z Substation. Tomson interconnects with the 8Z Substation over a short 138kV overhead line known as the 138-892. Transformers are used to connect to the incoming transmission lines and provide 200kV AC to the Converter Station filter buses. Power electronics rectify the voltage to $\pm 150\text{kV}$ at one station for transmission over the submarine cable, and then invert the power back to AC at the other station. The system is capable of transmitting up to 330MW in either direction. The actual amount of power transmitted is scheduled through ISO-NE. ISO-NE serves as the Transmission Operator and Balancing Authority for Cross Sound Cable. Transmission flow across the cable is determined by ISO-NE who provides hourly dispatch orders directly to the CSC control room. CONVEX serves as a local control center for the Halvarsson Converter in New Haven, CT and is responsible for providing Voltage Setpoints and coordinating switching activities with CSC personnel. National Grid Electric System Operations performs the same function, on the behalf of LIPA, for the Tomson Converter Station in Shoreham, NY.

Audit Specifics

The compliance audit was conducted off-site between April 27 and May 8, 2009. The audit team members and CSC staff did an excellent job in completing the audit.

NPCC Audit Team Role	Name	Title	Company
Lead		Contracted Consultant	NPCC-Compliance Audit Program
Regional staff		Manager Compliance	NPCC-Compliance Audit Program

Cross Sound Cable Company LLC.

Name and Title		Audited Entity's Organization	
	Asset Manager	Cross Sound Cable	Company
	Chief Operating Officer		

Audit Results

The auditor evaluated Cross Sound Cable Company's compliance with twelve reliability standards and seventy-six requirements and sub-requirements identified in the NERC 2009 Implementation Plan for the period of the last twelve months or monitoring timeframes specified in each reliability standard.

The results of the audit were that of the twelve standards and seventy-six requirements and sub-requirements audited for the functions CSC is registered for, nine standards and their thirty-six requirements and sub-requirements were judged to be compliant. Three standards and thirty-eight requirements and sub-requirements were judged to be not applicable. Two requirements were judged to be not applicable for this audit period as the actions specified were either not necessary or not requested.

Cross Sound Cable Company provided an overview resulting in a more clear understanding of their business model and accelerated the audit process. The evidence provided to demonstrate compliance was well presented and well organized. The auditor would like to thank the CSC audit preparation team for the support offered through the audit.

Findings

The following table details findings for compliance with the reliability standards listed in the NERC 2009 Implementation Plan.

N/A+ indicates not applicable for this monitored audit period

Reliability Standard	Requirement	Finding
FAC-001-0	R1.	N/A
FAC-001-0	R1.1.	N/A
FAC-001-0	R1.2.	N/A
FAC-001-0	R1.3.	N/A
FAC-001-0	R2.	N/A
FAC-001-0	R2.1.	N/A
FAC-001-0	R2.1.1.	N/A
FAC-001-0	R2.1.10.	N/A
FAC-001-0	R2.1.11.	N/A
FAC-001-0	R2.1.12.	N/A
FAC-001-0	R2.1.13.	N/A
FAC-001-0	R2.1.14.	N/A
FAC-001-0	R2.1.15.	N/A
FAC-001-0	R2.1.16.	N/A
FAC-001-0	R2.1.2.	N/A
FAC-001-0	R2.1.3.	N/A
FAC-001-0	R2.1.4.	N/A
FAC-001-0	R2.1.5.	N/A
FAC-001-0	R2.1.6.	N/A
FAC-001-0	R2.1.7.	N/A
FAC-001-0	R2.1.8.	N/A
FAC-001-0	R2.1.9.	N/A
FAC-001-0	R3.	N/A
FAC-003-1	R1.	Compliant
FAC-003-1	R1.1.	Compliant
FAC-003-1	R1.2.	Compliant
FAC-003-1	R1.2.1.	Compliant
FAC-003-1	R1.2.2.	Compliant
FAC-003-1	R1.2.2.1.	Compliant
FAC-003-1	R1.2.2.2.	Compliant
FAC-003-1	R1.3.	Compliant
FAC-003-1	R1.4.	N/A
FAC-003-1	R1.5.	N/A

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Reliability Standard	Requirement	Finding
FAC-003-1	R2.	Compliant
FAC-008-1	R1.	Compliant
FAC-008-1	R1.1.	Compliant
FAC-008-1	R1.2.	Compliant
FAC-008-1	R1.2.1.	Compliant
FAC-008-1	R1.2.2.	Compliant
FAC-008-1	R1.3.	Compliant
FAC-008-1	R1.3.1.	Compliant
FAC-008-1	R1.3.2.	Compliant
FAC-008-1	R1.3.3.	Compliant
FAC-008-1	R1.3.4.	Compliant
FAC-008-1	R1.3.5.	Compliant
FAC-008-1	R2.	Compliant
FAC-008-1	R3.	N/A+
FAC-009-1	R1.	Compliant
FAC-009-1	R2.	Compliant
IRO-001-1	R8.	Compliant
IRO-004-1	R4.	Compliant
IRO-004-1	R7.	Compliant
IRO-005-1	R13.	Compliant
PRC-004-1	R1.	Compliant
PRC-004-1	R2.	N/A
PRC-004-1	R3	N/A+
PRC-005-1	R1.	Compliant
PRC-005-1	R1.1.	Compliant
PRC-005-1	R1.2.	Compliant
PRC-005-1	R2.	Compliant
PRC-005-1	R2.1.	Compliant
PRC-005-1	R2.2.	Compliant
PRC-008-0	R1.	N/A
PRC-008-0	R2.	N/A
PRC-017-0	R1.	N/A
PRC-017-0	R1.1.	N/A
PRC-017-0	R1.1.1.	N/A
PRC-017-0	R1.1.2.	N/A
PRC-017-0	R1.1.3.	N/A
PRC-017-0	R1.1.4.	N/A
PRC-017-0	R1.2.	N/A
PRC-017-0	R1.3.	N/A

Reliability Standard	Requirement	Finding
PRC-017-0	R1.4.	N/A
PRC-017-0	R1.5.	N/A
TOP-002-2	R3.	Compliant
TOP-002-2	R18.	Compliant

Compliance Culture

The audit team reviewed Cross Sound Cable Company's compliance culture. During all contact, CSC staff was professional in their approach to compliance and understood the importance of the compliance and its role in maintaining reliability.