December 28, 1999

To: NPCC Reference Manual Recipients

Subject: NPCC Reference Manual - Revision Number 12

The main items in revision 12 to the NPCC Reference Manual are:

- the NPCC Membership Agreement as amended to November 9, 1999,
- the Compliance Monitoring and Assessment Subcommittee (CMAS) scope, and several new and revised working group scopes,
- one new Procedure (Document C-30).

A detailed list of the revisions is provided in Attachment 1.

Revisions to the NPCC Reference Manual will primarily be distributed through the Criteria/Ref. Manual folder on the NPCC Home Page (http://www.npcc.org/) and via e-mail upon requests to jhaahr@npcc.org. Starting with this revision, Reference Manual material will be distributed in Adobe format only, and the Criteria/Ref. Manual folder on the Home Page will shortly be revamped accordingly. Copies of NPCC Documents in Word format can be obtained by request to NPCC staff.

For those of you that will continue to maintain an up-to-date hard copy of the Reference Manual, the revised items can be downloaded and printed from the bookmarked rvsion12.pdf Adobe 4.0 file located at: ftp://www.npcc.org/documents/refman/rvsion12.pdf

For those of you that refer to the on-line versions of the Reference Manual located on the NPCC Home Page, the revised items—as described in Attachment 1—have been updated. The direct link to the Reference Manual folder is: http://www.npcc.org/Criteria/criteria.htm.

Hard copies can also be provided by mail in response to specific requests to me at NPCC. Hard copies will continue to be distributed to control center managers and the members of the Task Force on Coordination of Operation that provide copies for control centers. Also, e-mail or hard copies will be sent to those of you who already have requested such copies.

Very truly yours,

/Jorn C. Haahr/

Jorn C. Haahr
Senior Engineer

Attachment
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**NPCC Committees, Task Forces, Working Groups etc.**

*Normal distribution, unless e-mail with attachments or hard copy has been requested*

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- Members, Public Information Committee
- Members, Compliance and Assessment Subcommittee
- Members, Task Force on Coordination of Operation
- Members, Task Force on Coordination of Planning
- Members, Task Force on Energy Management Technology
- Members, Environmental Matters Working Group
- Members, Load, Capacity & Fuels Working Group
- Members, Joint Glossary Working Group
- Members, Task Force on System Protection
- Members, Task Force on System Studies
- Members, CO-1 Working Group
- Members, CO-2 Working Group
- Members, CO-7 Working Group
- Members, CO-8 Working Group
- Members, CP-7 Working Group
- Members, SS-37 Working Group
- Members, SS-38 Working Group
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  - Robert Calus - RG&E
  - L. J. Gelbien - Keyspan
  - Boris Shulim - O&R
Attachment 1

Revision 12 to the NPCC Reference Manual

The revisions, and instructions for updating a hard copy of the Reference Manual, are listed in the order of the tabs in the manual.

- **In front**

  **Table of Contents**
  
  The new *Table of Contents* replaces the existing table, and reflects the following revisions:
  
  **Revision Record, Revision 12**
  
  The new *Revision Record* replaces the existing record. It shows the Documents that were replaced in the previous revisions and those that are being replaced now.

  **Structure and Distribution**
  
  The revised *Structure and Distribution* section, dated December 1999, replaces the existing section, dated January 1998. The section is located right after the *Table of Contents*.

  **Membership Agreement**
  
  The *Membership Agreement* as amended to November 9, 1999 replaces the previous *Membership Agreement*, as amended to November 5, 1998.

- **NPCC Task Force Scopes (includes Subcommittee and Working Group scopes)**

  Please insert the cover page and the scope for the Compliance Monitoring and Assessment Subcommittee (CMAS) in front of the Task Force Scopes cover page.

  (When the tabs for the Reference Manual binder were designed, this tab should have been called "Scopes" and not "NPCC Task Force Scopes").

  **Task Force Scopes**
  

  **Working Group Scopes**
  
  Please insert or replace revised working group scopes as follows:


Working Group Scopes - continued

Please remove the scope for the Working Group on Review of Interconnection Assistance Reliability Benefits – CP-5.

Please insert the scope for the Working Group on Review of Resource and Transmission Adequacy – CP-8, dated November 9, 1999. This is a new working group, and the scope should follow the scope for working group CP-7.

Please insert the scope for the Lake Erie Security Process Working Group – LESPWG, dated April 21, 1999. This is a new scope and it should follow the scope for Joint Glossary Working Group – JGWG.


• **NPCC Directory**

  The NPCC Directory is updated periodically and the latest version can be downloaded separately from the NPCC Home Page. The direct link to the Directory folder is:

**NPCC Documents**

• **Criteria**

  No changes

• **Guidelines**

  Under Tab B-6, please insert the page indicating that the Automatic Load Shedding Employing Underfrequency Threshold Relays (Document B-6), dated November 25, 1983 was incorporated into the new Automatic Underfrequency Load Shedding Program Relaying Guideline (Document B-7) as of March 2, 1999. This change was part of Revision 11.

• **Procedures**

  *Listing of NPCC Documents by Type* (Document C-0).

  The new Document, dated December 1999, replaces the existing Document, dated November 1999 (the Document is located right after the green “Procedures” tab in the manual). The complete document is included in the Adobe file, but only the cover page and pages 7 & 13 have been revised and will be distributed in hard copy.

  *Procedures for Task Force on System Protection Review of Disturbances* (Document C-30)

  Under tab C-30 Please insert this new document, which is dated December 6, 1999.

Finally, Revision 12 (filename rversion12.pdf) also includes a copy of this cover letter.
Northeast Power Coordinating Council
Reference Manual

**Table of Contents**  
(Revision 12 entries are bolded)

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Handbook for ECAR-MAAC-NPCC-VACAR
Joint Interregional Review Committee ..............................................December 1, 1987

### NERC Certificate of Incorporation

Certificate of Incorporation............................................................... July 11, 1994

### NPCC Directory


### NERC Glossary of Terms

NERC Glossary of terms...........................................................................August 1996
(Replaces Document C-0 under “NPCC Documents” tab as of Revision 7)

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<td>March 2, 1999</td>
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<td>November 6, 1997</td>
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Guidelines - continued

B-4 Guidelines for NPCC Area Transmission
Reviews ................................................................. August 7, 1996

B-5 Guideline B-5 was changed to Procedure C-22
as of February 8, 1994

B-6 Guideline B-6 was incorporated into Document B-7
as of March 2, 1999 (reminder page included)

B-7 Automatic Underfrequency Load Shedding Program
Relaying Guideline .................................................. March 2, 1999

B-8 Guidelines for Area Review of Resource
Adequacy ............................................................... February 14, 1996


B-10 Guidelines for Requesting Exclusion to Section
5.1 (B) and 6.1 (B) of the NPCC Basic Criteria
for Design and Operation of Interconnected Power
Systems ................................................................. June 26, 1998

B-11 Special Protection System Guideline ......................... March 2, 1999

B-12 Guidelines for On-Line Computer System Performance
During Disturbances ................................................ November 5, 1998


Procedures

C-0 Listing of NPCC Documents by Type ....................... December 1999
(Changes to the cover page and pages 7 & 13 only)

C-1 Procedure C-1, the former Glossary of Standard Operating
Terms, was discontinued in September 1998 with the approval
of the NPCC Glossary of Terms (Document A-7).

C-2 Procedure C-2 was changed to Guideline B-13
as of June 25, 1997

C-3 Procedures for Communications
During Emergencies ................................................. January 21, 1997
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<td>Monitoring Procedures for <em>Guidelines for Inter-AREA Voltage Control</em></td>
<td>March 25, 1998</td>
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<td>Monitoring Procedures for <em>Emergency Operation Criteria</em></td>
<td>May 15, 1997</td>
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<td>Procedure C-6 has been discontinued as of February 8, 1994</td>
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<td>Monitoring Procedures for <em>Operating Reserve Criteria</em></td>
<td>March 25, 1998</td>
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<td>Monitoring Procedure for Interconnected System Frequency Response</td>
<td>March 25, 1998</td>
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<td>Procedures for Shared Activation of Ten Minute Reserve</td>
<td>March 25, 1998</td>
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<td>Operational Planning Coordination</td>
<td>May 15, 1997</td>
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<tr>
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<td>Appendix D - NPCC Critical Facilities List</td>
<td>November 1998</td>
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<td>C-14</td>
<td>Procedure C-14 was incorporated in Procedure C-13 as of May 15, 1997</td>
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<td>C-16</td>
<td>Procedure for NPCC Review of New or Modified Bulk Power System Special Protection Systems (SPS)</td>
<td>September 28, 1995</td>
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<td>C-17</td>
<td>Monitoring Procedures for <em>Guidelines for On-Line Computer System Performance During Disturbances</em></td>
<td>September 24, 1998</td>
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<td>C-18</td>
<td>Procedure for Testing and Analysis of Extreme Contingencies</td>
<td>January 29, 1999</td>
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<td>Procedures During Shortages of Operating Reserve</td>
<td>July 18, 1995</td>
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<td>Procedures During Abnormal Operating Conditions</td>
<td>May 12, 1994</td>
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<td>C-21</td>
<td>Monitoring Procedures for Conformance with Normal and Emergency Transfer Limits</td>
<td>January 21, 1997</td>
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<td>C-22</td>
<td>Procedure for Reporting and Reviewing Proposed Protection Systems for the Bulk Power System</td>
<td>April 14, 1999</td>
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<td>Procedure to Collect Real Time Data for Inter-Area Dynamic Analysis</td>
<td>February 1, 1996</td>
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<td>C-26</td>
<td>Procedure for Task Force on System Protection Compliance Monitoring and Surveys</td>
<td>November 3, 1999</td>
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## Revision Record for NPCC Documents

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2) Cover Page, pages 1-2, 7-8, 11-2, and 13 only
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1.0 **Purpose**

The NPCC Reference Manual is a compendium of the Council's organizational agreements and all current documents. Also included are the relevant charges to the Subcommittee, Task Forces and Working Groups as outlined in their respective scopes.

2.0 **Contents and Format**

2.1 General Sections

- NPCC Memorandum of Agreement
- NPCC Task Force Scopes (includes Compliance Monitoring and Assessment Subcommittee (CMAS) and Working Group Scopes)
- NPCC Agreements with ECAR/MAAC
- NERC Certificate of Incorporation
- NPCC Directory (updated via the NPCC Home Page only)
- NERC Glossary of Terms

2.2 NPCC Documents

- **Criteria: Type "A"**

  Type "A" documents, with approval by two thirds of both voting classes of the Full Members (Transmission Providers and Transmission Customers) voting within each class, describe the minimum criteria for Member Systems of NPCC functioning as part of the coordinated interconnected network.

- **Guides: Type "B"**

  Type "B" documents, with approval by the Reliability Coordinating Committee, are the guides or guidelines for the achievement of acceptable system performance that implement criteria of Type "A" documents.

- **Procedures: Type "C"**

  Type "C" documents are procedures that provide for uniform implementation, interpretation and monitoring of compliance with the general criteria, guide and reporting requirements of Type "A" and "B" documents.
3.0 **Distribution and Document Revisions**

3.1 **Distribution**

The Reference Manual and revisions thereto are distributed in Adobe format to the following as described in 3.2 below:

- NPCC Officers
- NPCC Full Member Representatives and Alternates
- NPCC Public Interest Members
- Reliability Coordinating Committee Members
- Compliance and Assessment Subcommittee Members
- Public Information Committee Members
- NPCC Task Force Members
- NPCC Working Group Members
- NPCC Area Control Center Staffs
- NPCC Staff

Hard copies, and electronic copies in Word format, are available upon request to the NPCC staff. The cost to non-members for a hard copy is $100.00 (free to NERC or other reliability councils).

3.2 **Document Revisions**

When appropriately revised and all necessary approvals are obtained, any NPCC document, be it an "A," "B" or "C" category, will be reissued to the holders of the NPCC Reference Manual as stated in 3.1 above. Included in the document revisions will be a corrected “Table of Contents” noting the changes, and a “Revision Record” showing revision dates of all revised documents.

Revisions will primarily be distributed in Adobe format as follows:

1) through the NPCC Home page on the Internet (http://www.npcc.org/)
   or
2) via e-mail upon requests to the NPCC Staff

Hard copies, and electronic copies in Word format, can be provided by requests to the NPCC Staff.

Effective Date: January 13, 1987
Revised: December 1994
January 1996
March 1997
January 1998
December 1999
WHEREAS, reliable electric service is critical to the economic and social welfare of the millions of residents and businesses in Northeastern North America (as defined herein); and

WHEREAS, the reliable and efficient operation of bulk power systems in Northeastern North America is fundamental to achieving and maintaining reliability of power supply, requiring extensive coordination of system design and operations; and

WHEREAS, an open, inclusive process for assuring the establishment of, and compliance with regional design and operating criteria by all entities and industry sectors participating in the electricity market in Northeastern North America, in coordination with its members, including the ISO/Control Areas and sub-regional Councils within the region, is essential to assuring reliable service; and

WHEREAS, Northeast Power Coordinating Council is the appropriate authority to establish regional criteria and assess mandatory compliance with NERC/NAERO broad-based standards and such regional criteria in Northeastern North America;

NOW, THEREFORE, the members of Northeast Power Coordinating Council hereby agree as follows:

I. Purpose of Northeast Power Coordinating Council

The Full Members hereby agree to amend the Membership Agreement, which established the Northeast Power
Coordinating Council (the "Council"), as provided herein effective November 9, 1999.

The purpose of the Council is to promote the reliable and efficient operation of the interconnected bulk power systems in Northeastern North America through the establishment of criteria, coordination of system planning, design and operations, and assessment of compliance with such criteria.

II. Membership of the Council

A. The members of the Council as of September 1, 1999 are listed on Schedule A hereto.

B. Upon suitable application describing the nature and activities of the applicant, additional entities shall be accepted by the Executive Committee as members in the appropriate categories, defined as follows:

1. Full Membership shall be available to entities which participate in the interconnected electricity market in Northeastern North America.

2. Public-Interest Membership shall be available to regulatory agencies with jurisdiction over participants in the electricity market in Northeastern North America and to public-interest organizations expressing interest in the reliability of electric service in Northeastern North America.
C. Independent System Operators ("ISO’s") and Control Areas operating in Northeastern North America are expected to be Full Members of the Council. The New York State Reliability Council and any other sub-regional reliability councils which may be formed are also expected to be Full Members.

D. For purposes of this Agreement, two voting classes, each consisting of several sectors are hereby established. The two voting classes shall be composed solely of either Transmission Providers or Transmission Customers, defined as follows:

(1) A Transmission Provider means any entity operating in Northeastern North America which owns, operates, or controls facilities used for the transmission of electric energy in international, interstate, or inter-provincial commerce; provided, however, that those facilities must be beyond the generator step-up transformers or radial generator leads and be employed in the interconnected bulk power system; or any sub-regional reliability council.

(2) A Transmission Customer means any entity not primarily a Transmission Provider operating in Northeastern North America which enters into a transmission service agreement with, or receives transmission service from, a Transmission Provider or an ISO within Northeastern North America.
E. (1) Upon acceptance of a new applicant for membership, the applicant shall indicate its voting class preference subject to Executive Committee approval.

(2) Executive Committee assignments of members to voting class shall be binding on the member and on the Council. Such assignments shall be subject to reevaluation and change upon request or at the discretion of the Executive Committee.

F. For purposes of this Agreement, the term "Northeastern North America" shall be deemed to comprise the geographical area within the perimeter border enclosing the State of New York, the six New England States of the United States, and the Canadian Provinces of Ontario, Quebec, Newfoundland, and the Maritime Provinces of New Brunswick, Nova Scotia and Prince Edward Island including any radial load or generation connecting to these systems.

III. Organization of the Council

A. Each Full Member shall designate a representative and an alternate representative with full authority to act for it in carrying out the work of the Council.

B. The Council shall have an Executive Committee to consist of the Council Chair, ex officio, who shall also be Chair of the Executive Committee, Vice Chair[s], the Executive Director, and the Secretary,
all *ex officio*; and additional members to be selected by the two voting classes of Full Members, as follows:

(1) Transmission Providers:

Transmission Providers shall designate ten Executive Committee members as follows:

- ISO-New England 1
- New England Transmission Provider 1
- New York ISO 1
- New York State Reliability Council 1
- Independent Electricity Market Operator 1
- Ontario Transmission Provider 1
- TransEnergie Hydro-Quebec 2
- Maritime Provinces Transmission Providers 2

(2) Transmission Customers:

The Transmission Customers shall designate ten Executive Committee members, reflecting, insofar as practicable, the diversity of membership among the sectors in the voting class so as to distribute voting power equitably within the voting class.

The Council’s officers, when serving *ex officio* shall not have any vote on the Executive Committee.
The term of office of the voting members of the Executive Committee shall be three years. Initial terms of Committee members shall be staggered by the Committee so that members serve initial terms of one, two, or three years. There shall be no limit on the number of terms which may be served by any individual.

C. The officers of the Council shall consist of a Chair, one or more Vice Chairs, a Secretary and a Treasurer, with assistants as appropriate, and such additional officers as may be approved by both voting classes. Officers shall hold office for one year or until the next Annual Meeting of Members of the Council and until their successors are duly elected and qualified. In the temporary absence of the Chair, a Vice Chair designated by two-thirds vote of the individual Full Members represented on the Executive Committee shall perform the duties of the chair.

The Council shall also employ an Executive Director and Staff, as required to carry out the Council’s mission and to perform the functions of the Council.

D. In the event a vacancy occurs in the membership of the Executive Committee, or in the office of Vice Chair, Secretary, or Treasurer in the interim between Annual Meetings of Members of the Council, the Chair may designate a person (from the same voting class when
applicable) to fill such vacancy with the approval of two-thirds of the Full Members represented on the Executive Committee.

In the event a vacancy occurs in the Office of Chair in the interim between Annual Meetings of Members of the Council, the Executive Committee may fill such vacancy by approval of both voting classes. The term of office of the persons designated to fill any such vacancy shall expire on the date of the next subsequent Annual Meeting of Members of the Council.

The authority and responsibilities of the Chair and of the Executive Director shall be defined by the Executive Committee.

E. Duties of the Executive Committee

The Executive Committee shall develop Council policies, direct the activities of the Council, accept additional entities as members, review and approve or modify the assignment of Full Members to their appropriate voting class, and make assignments to the committees of the Council. The duties of the Executive Committee shall include consideration and resolution of all budgetary matters, including the levying of any special assessments, and determination of the annual membership fee for Full Members. However, the Executive Committee may not amend this Agreement or establish, modify or eliminate any of the Council’s reliability criteria, guides, or procedures; nor may
the Executive Committee add, modify, or eliminate voting classes established pursuant to this Agreement.

To carry out the purposes of the Council, the Executive Committee, acting through the Executive Director and Council staff, shall enlist such personnel from members as may be necessary; and, within the limits of the annual budget, may employ such personnel, incur such administrative expenses, and retain such independent professional consulting services for the Council and the committees of the Council as it may deem desirable.

The Council shall also have Standing Committees known as the Reliability Coordinating Committee (the Council’s principal technical committee), the Public Information Committee, and such other committees, task forces, and working groups as the Executive Committee or the Standing Committee may deem appropriate. Standing Committees’ members shall be nominated by the Full Members and approved by the Executive Committee in accordance with guidelines established by the Executive Committee.

IV. Voting Rights

A. Class Voting by the General Membership.

(1) Each Full Member also shall have one vote when voting within its voting class on issues to be
decided by the general membership by class voting in accordance with this Agreement.

(2) Issues related to the following matters, and any other issues expressly so designated by this Agreement, shall be resolved by the general membership by class voting:

- Establishment, modification, or elimination of any regional reliability criteria consistent with the North American Electric Reliability Council/North American Electric Reliability Organization (NERC/NAERO) broad-based standards
- Election of Officers
- Selection of the members of the Council’s Executive Committee other than those serving ex officio
- Addition, modification, or deletion of voting classes
- Amendment of this Agreement

The resolution of such issues shall require the approval of both voting classes by two-thirds vote of the Full Members voting within each class when a quorum of the voting class has been obtained. Full Members may vote within a voting class by personal representative, by teleconference, by prior written consent, or by proxy. A majority of all Full Members
in a voting class shall constitute a quorum sufficient to permit class voting by that voting class. A voting class failing to establish a quorum of the voting class through participation in person, by teleconference, by prior written consent or by proxy may not vote; and, in that event, the issue shall be resolved by vote of the voting class which has established a quorum.

B. Class Voting by the Executive Committee and Standing Committees.

The resolution of all issues before the Executive Committee and the Standing Committees shall require the approval of both voting classes by two-thirds vote of the Full Members represented on each Committee voting within each voting class when a quorum of the voting class has been obtained.

Full Members may vote within a voting class by personal representative, by teleconference, by prior written consent, or by proxy. A majority of all Full Members in a voting class shall constitute a quorum sufficient to permit class voting by that voting class. A voting class failing to establish a quorum of the voting class through participation in person, by teleconference, by prior written consent or by proxy may not vote; and, in that event, the issue shall be resolved by the voting class which has established a quorum.
C. Task Force, Working Group, and other subcommittee procedures, including voting procedures, shall be established by the Standing Committee.

D. Any Full Member dissatisfied with the outcome of a vote at a meeting of a Standing Committee, task force, or working group may bring the matter up for reconsideration by the Standing Committee or for consideration by the Executive Committee in accordance with procedures established by the Executive Committee which may include Alternate Dispute Resolution.

E. Public-Interest Members shall not have any voting rights.

V. Membership Rights and Obligations

A. Full Members shall have the following additional rights and obligations:

(1) Rights:

(a) Attendance at all meetings of the general membership of the Council; and, subject to procedures established by the Reliability Coordinating Committee and to the terms of applicable confidentiality agreements, attendance at meetings of the Council’s committees, task forces and working groups.

(b) Access to all committee, task force, and working group minutes; and to reports and technical data developed by the Council’s
staff, subject to procedures established by the Reliability Coordinating Committee and to the terms of applicable confidentiality agreements.

(2) Obligations:

(a) Each Full Member shall plan and design its bulk power system in compliance with Criteria, Guides, and Procedures established by the Council and applicable NERC/NAERO Standards.

(b) Each Full Member shall conduct its operations in compliance with Criteria, Guides, and Procedures established by the Council and applicable NERC/NAERO Standards.

(c) Each Full Member shall assure that, whenever it enters into arrangements with non-members which could have an impact on service reliability on the interconnected bulk power systems in Northeastern North America, the arrangements accord with criteria established by the Council, the North American Electric Reliability Council, its successor, or the regional reliability councils established in areas in which the facilities used for such arrangements are located.

(d) Each Full Member shall notify the Council of its existing facilities and operating
procedures and of its plans for major additions or modifications affecting the operation of the interconnected systems; and shall report to the Council any decision as to significant alterations or changes proposed for their respective electric systems, whether in generation, transmission, inter-system communication or control and protective equipment, or in operating procedures; such report to be submitted promptly and, except in cases of emergency, before final commitments are undertaken or changes in operating procedures become effective.

(e) Each Full Member shall promptly notify the Council and all other members in writing or electronically if, due to extraordinary circumstances, its bulk power system is not being designed or operated, or its operations are not being conducted in compliance with Criteria, Guides, and Procedures established by the Council, stating its reasons, and providing its plan and schedule to achieve compliance.

(f) Each Full Member shall undertake and perform the administrative and financial obligations described in Article IX of this Agreement.
B. Public-Interest Members shall have the following rights:

(1) Attendance at all meetings of the general membership of the Council; and, subject to procedures established by the Reliability Coordinating Committee and to the terms of applicable confidentiality agreements attendance at meetings of the Council’s committees, task forces and working groups.

(2) Access to all committee, task force, and working group minutes and reports, subject to procedures established by the Reliability Coordinating Committee and to the terms of applicable confidentiality agreements.

VI. Coordination of Design and Operations

Subject to approval by both of the voting classes of the general membership of the Council, the Reliability Coordinating Committee shall from time to time establish or modify criteria for such elements of design as affect the operation of the interconnected bulk power systems of the members, and establish or modify criteria for such elements of operating procedure as affect the operation of the interconnected systems. Such criteria, as a minimum, shall be consistent with applicable policies and criteria established by the North American Electric Reliability Council or its successor.
The Executive Director shall promptly inform the Reliability Coordinating Committee of any reports received from a member advising the Council of additions, modifications, alterations, and changes proposed for its bulk power system which have been submitted pursuant to Article V A(2)(d) of this Agreement. The Executive Director shall also promptly inform all members of the Council and the Reliability Coordinating Committee of reports of non-compliance with Council criteria submitted pursuant to Article V A(2)(e) of this Agreement.

On receipt of reports of proposals for additions, modifications, alterations, and changes or notification of noncompliance with Council Criteria, Guides, and Procedures received pursuant to Article V hereof, the Council, through its Reliability Coordinating Committee, shall proceed expeditiously to study and evaluate the proposed alterations or changes or non-compliance. Each member shall cooperate fully in the study and shall provide information requested by the Council concerning such proposals or reports of non-compliance.

Upon completion of such study and evaluation, the Executive Director shall report to each member the findings, conclusions, and recommendations of the Reliability Coordinating Committee with respect to such matters. If the Reliability Coordinating Committee determines that the proposals for alterations or changes or the announced non-compliance with Council criteria could have a significant or
persistent adverse impact upon the reliability of the interconnected bulk power systems, the Executive Committee may, and upon request of any member shall, call a special meeting of the members of the Council to consider further the effect of any such proposed additions, modifications, alterations, changes, or noncompliance on the interconnected systems and to consider the feasibility of any reasonable alternatives thereto.

In addition to its efforts to resolve issues arising out of such reports, the Executive Committee shall establish Alternate Dispute Resolution procedures pursuant to which Full Members may seek to voluntarily resolve disputes which could have a significant or persistent adverse impact on the service reliability of the interconnected bulk power systems in Northeastern North America.

VII. Meetings

Meetings of the Council may be held on such dates as the Chair from time to time determines and shall be held in such places as the Chair may from time to time designate. Special meetings may be called from time to time by the Chair, by the Executive Committee, or by three or more Full Members of the Council. Notice of all meetings, stating the time and place, shall be given by the Council staff in writing to each member by issuing the notice at least one week prior to the date of the meeting. The Secretary,
Assistant Secretary, or, in their absence, a secretary pro tempore, shall keep the records of Council meetings. When appropriate, the general membership and the committees may use proxies or teleconference facilities. Such participation shall satisfy quorum requirements. The general membership, the Executive Committee, the Standing Committees, task forces and working groups of the Council may take action without a meeting by unanimous written consent of all Full Members entitled to vote at a meeting.

VIII. Budget

The Executive Committee, acting on behalf of the Council, shall adopt an administrative expense budget for each calendar year. Each Full Member shall be notified of the annual administrative expense budget and of its Membership Fee or assessment of its proportional share of expenses due on or before December 1st of the preceding year.

IX. Funding

The Council’s annual administrative expenses, including any special assessments approved by the Executive Committee, shall be apportioned to and funded by the Full Members of the Council in fixed and variable components, as follows:

(A) Each Full Member, other than Full Members which are ISO/Control Areas, shall be assessed and pay
an annual Membership Fee of $5,000 as established by the Executive Committee.

(B) A two-year transition to ISO/CA Net Energy for Load based funding is outlined as follows:

(1) For the budget year 2000 - transitional year one, each ISO/Control Area shall be assessed and pay its proportional share of the remaining expenses of the Council in proportion to a .3333/.6667 weighted average of the ISO/CA percentages based upon the ratio of the Control Area’s 1998 Net Energy for Load to the aggregate Net Energy for Load within all Control Areas in Northeastern North America and the 1999 assessment percentages (NB 2.33%, NS 1.43%, Ontario 19.22%, Quebec 17.88%, NE 24.17%, NY 34.97%).

(2) For the budget year 2001 - transitional year two, each ISO/Control Area shall be assessed and pay its proportional share of the remaining expenses of the Council in proportion to a .6667/.3333 weighted average of the ISO/CA percentages based upon the ratio of the Control Area’s 1999 Net Energy for Load to the aggregate Net Energy for Load within all Control Areas in Northeastern North America and the 1999 assessment
percentages (NB 2.33%, NS 1.43%, Ontario 19.22%, Quebec 17.88%, NE 24.17%, NY 34.97%).

(3) For Budget assessments starting in the year 2002 and thereafter, each ISO/Control Area shall be assessed and pay its proportional share of the remaining expenses of the Council in proportion to the ratio of the second previous year’s Net Energy for Load within the Control Area to the aggregate Net Energy for Load within all Control Areas in Northeastern North America.

(C) Public-Interest Members shall not be assessed any charge.

(D) Except in the event of dissolution of the Council, no member shall, without its consent, be responsible for administrative expenses of the Council in any one calendar year in excess of its Membership Fee or assessed portion of the amount budgeted for administrative expenses for that year, whichever is applicable; provided, however, that special assessments may be separately budgeted and their cost allocated by the Executive Committee to the Full Members which are ISO/Control Areas.

(E) The costs of dissolution of the Council shall be borne only by Full Members which are ISO/Control Areas.
Areas in the same manner as that described in Article IX (B)(3) of this Agreement.

X. Termination of Membership and Dissolution of the Council

A. Termination

A Full Member may terminate its rights and obligations under this Agreement (other than its obligation to pay its (i) Membership Fee or (ii) its proportionate share of the administrative expenses of the Council, including special assessments or the costs of dissolution of the Council, if applicable, for the full calendar year within which such termination is effective) at any time upon one year’s written notice to the Executive Director; whereupon, it shall cease to be a member of the Council as of the date such termination is effective. The Executive Director shall promptly inform all members of receipt of any such notices.

Public-Interest Members may terminate their membership in the Council at any time upon fifteen days written or electronic notice without liability to the Council.

B. Dissolution

The Council may be dissolved by vote of a majority of the Full Members which are ISO/Control Areas.
XI. **General**

A. This Agreement may be amended with the approval of both voting classes by vote of two-thirds of the Full Members in each voting class.

B. Notices to the Council pursuant to this Agreement may be written or electronic and shall be addressed to the Executive Director at the Council’s office in New York City, New York. Notices shall be effective upon receipt.

C. This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

D. No member shall be liable for the failure of any other member to perform its obligations hereunder.

E. This Agreement shall not create any rights in non-members of the Council.

F. Those entities listed as members on Schedule A and subsequent applicants granted membership in the Council shall be deemed to have accepted and to be bound by all the terms and conditions of this Agreement, as adopted on November 9, 1999 and as subsequently amended, without the need to sign this Agreement.

G. The modifications of this Agreement, adopted on November 9, 1999 shall become effective on November 9, 1999.

Executed as of January 19, 1966

As amended to November 9, 1999
Schedule A

MEMBERS

on September 1, 1999

FULL MEMBERS*

Boston Edison Company   TP   New York Power Pool   TP
Central Hudson Gas & Electric Corporation TP   New York State Electric & Gas Corporation TP
Central Maine Power Company TP   New York State Reliability Council TP
Cinergy Services, Inc.   TC   Niagara Mohawk Power Corporation TP
Citizens Power Sales     TC   Northeast Utilities   TP
Commonwealth Electric Company TP   Nova Scotia Power Incorporated TP
Consolidated Edison Company of New York, Inc. TP   Ontario Hydro Services Company TP
                           Ontario Power Generation, Inc.   TC
Constellation Power Source, Inc. TC   Orange and Rockland Utilities, Inc. TP
Eastern Utilities Associates TP   PECO Energy Company   TC
ENRON Capital and Trade Resources TC   PG&E Generating Company   TC
Green Mountain Power Corporation TC   PP&L, Inc   TC
Hydro-Quebec Energy Services Group TC   Reliant Energy Services, Inc.   TC
Independent Electricity Market Operator TP   Rochester Gas and Electric Corporation TP
ISO New England, Inc. TP   Sithe Energies, Inc.   TC
Long Island Power Authority TP   Southern Company Energy Marketing, L.P.   TC
New Brunswick Power TP   The United Illuminating Company TP
New England Electric System TP   TransEnergie Hydro-Quebec TP
New York Power Authority TP   Vermont Electric Power Company, Inc. TP

PUBLIC INTEREST MEMBERS

New York State Department of Public Service
Québec Energy Board

*Full Members vote within Transmission Provider (TP) or Transmission Customer (TC) voting classes.
In spite of the name on the Tab, this section includes scopes for the following:

Compliance Monitoring and Assessment Subcommittee (CMAS)

NPCC Task Forces

Permanent NPCC Working Groups

The CMAS Scope and Process, dated July 27, 1999, follow

December 1999
Compliance Monitoring and Assessment Subcommittee (CMAS)

Scope

**Purpose:** Perform independent compliance monitoring and assessment functions, and provide compliance award/sanction recommendations for the NPCC Reliability Compliance Program (RCP). Develop compliance monitoring and assessment, award/sanction recommendation, and alternate dispute resolution (ADR) processes for the Pilot Program with the intention that they be utilized in the ongoing NPCC RCP.

**Responsibilities:**
1. Manage the 1999 NPCC Pilot Compliance Program.
2. For those Standards and Criteria for which NPCC has compliance monitoring and assessment and compliance enforcement responsibility:
   a) Establish and implement compliance monitoring and assessment and compliance award/sanction recommendation processes.
   b) Prepare compliance assessment and award/sanction reports and submit them as described in the CMAS Process Flow Diagram (path 1).
   c) Monitor and assess the execution of any mitigation plan or action proposed to achieve compliance.
   d) Propose NPCC award/sanction matrix to RCC for approval. Periodically review and propose revisions to the matrix.
   e) Recommend to the RCC the appropriate compliance awards or sanctions to be implemented by the Executive Committee.
   f) Monitor the effectiveness of any sanction or award.
   g) Employ technical input and reports from the NPCC Task Forces as appropriate.
3. For those Standards and Criteria for which NPCC has reporting responsibility and NERC has compliance assessment responsibility, prepare compliance reports and submit them as described in the CMAS Process Flow Diagram (path 2).
4. For those Standards and Criteria for which NPCC has an oversight responsibility and the Areas have compliance monitoring and enforcement responsibilities:
   a) Provide oversight and review of the Area's compliance assessment and enforcement processes. Each Area will employ their own assessment and enforcement programs and submit the results to CMAS. CMAS will provide an oversight report of all Area compliance assessment and enforcement results and submit as described in the CMAS Process Flow Diagram (path 3).
   b) Communicate with the NPCC Areas and Members as necessary.
5. Develop and recommend compliance monitoring and enforcement ADR process to the RCC.
6. Prepare periodic status reports to the NPCC Reliability Coordinating Committee (RCC).
NPCC Compliance Monitoring & Assessment Process

Notes:
1. NPCC has compliance monitoring and assessment responsibility.
2. NPCC has reporting responsibility; NERC has compliance, monitoring, assessment and enforcement responsibility.
3. NPCC has oversight responsibility.

* Oversight report consists of a report on Area's Compliance Assessment and Enforcement Processes.
Northeast Power Coordinating Council
Task Force on Energy Management Technology

SCOPE

General Statement

The purpose of the NPCC Task Force on Energy Management Technology is to promote and enhance the reliability of the Interconnected Power System in Northeastern North America by focusing attention on the performance of Electric System Monitoring and Control Computers, Security Coordinator/Control Area Operating Tools and the Telecommunications Systems that serve and interconnect them.

Responsibilities

It shall be considered within the scope of the activities of this task force to:

1. Formulate Guidelines and monitor and report conformance pertaining to the reliability, availability and performance of member system Energy Management Systems, Operating Tools and the Telecommunications Networks which serve and interconnect them.

2. Provide coordination for the administration of inter-Area and inter-Regional data communications networks used to interconnect control centers.

3. Monitor and/or participate in the activities of NERC/NAERO task forces or working groups involved in the development and/or implementation of Operating Tools or Telecommunications Networks. Address any NPCC related issues or gaps.

4. Represent NPCC in inter-Regional activities pertaining to Telecommunications, Energy Management System or Operating Tools issues and actively promote a coordinated means of resolving these issues.

5. Under policy direction of the Task Force on Coordination of Operation, provide assistance to the Reliability Coordinating Committee, other NPCC Task Forces, and to NPCC staff in the area of Telecommunications, Energy Management Systems and Operating Tools issues.

6. Form ad-hoc working groups, as required, to study specific issues in the areas of assigned responsibility and recommend required actions to the task force. Issues may include technological advances, new operating tool requirements, information technology risk areas, etc.
7. Hold periodic workshops, seminars, and meetings, open to the general NPCC membership, for the purpose of developing and maintaining levels of expertise in those areas of concern to the task force.


9. Operate under the direction of the Reliability Coordinating Committee.

10. On an annual basis, develop a two-year statement of measurable goals and specific action plans that will be presented to the Reliability Coordinating Committee.

August 22, 1999

Approved by the Reliability Coordinating Committee on November 9, 1999
Working Group Scopes

CO-1   Working Group on Control Performance
CO-2   Working Group on Dispatcher Training
CO-7   Operational Review Team
CO-8   System Operations Managers Working Group
CP-7   Working Group on Review of NERC Planning Standards
CP-8   Working Group on Review of Resource and Transmission Adequacy
EMT-1  Working Group on Energy Management Technology Workshop
EMWG  Environmental Matters Working Group
JGWG   Joint Glossary Working Group
LESPWG Lake Erie Security Process Working Group
LCFWG  Load, Capacity & Fuels Working Group
SS-37  Working Group on Base Case Development
SS-38  Working Group on Inter-Area Dynamic Analysis

Note:
CP-5   The Working Group on Review of Interconnection Assistance Reliability Benefits has been replaced by CP-8.

December 1999
Northeast Power Coordinating Council
Task Force on Coordination of Operation

Working Group on Dispatcher Training -- CO-2

Scope

Objective

Review System Dispatcher training relating to NPCC inter–Area matters, established criteria, terminology, policies and operating instructions; prepare and present material at dispatcher training sessions; and, exchange information on internal dispatcher training methods and evaluate and propose new techniques and training aids as they become available.

The above objective has been broken down into the following three categories:

1. Dispatcher Training

   The Working Group should review training programs used by each Area for training of Operating Personnel with regard to new, or changes to, existing NPCC Criteria Guides, and Procedures. Also, the Working Group may be asked to meet to prepare training programs for other topics as deemed necessary by the CO-8 Working Group. A TFCO or CO-8 Working Group member may meet with the Working Group to explain any new or modified NPCC document or other topic which would require training. This will provide for consistency in interpretation and hopefully consistency of operator training in each Area. The individual Working Group members will be responsible for administration of the training programs in their respective Area.

2. Dispatcher Seminars - develop agendas for semiannual Dispatcher seminars. The agenda for each seminar should always include presentations related to the following:

   System Operation such as

   A. Unusual Incidents
   B. Pre and post-Seasonal Assessment
   C. Informational Topics

   and

   Major changes in the energy business affecting System Operations.
The agenda’s should also include concerns identified by CO-2 members as well as suggestions that arise from joint meetings held twice a year with the CO-8 Working Group.

The CO-2 Working Group will meet as required to develop the Dispatcher Seminars. At each Working Group meeting prior to the Dispatcher Seminars, the CO-2 Working Group members should prepare a draft agenda for the upcoming seminar. This agenda should be presented to the CO-8 Working Group at the joint meeting for discussion and final approval. The draft agenda should be sent to both the CO-2 Working group and the CO-8 Working Group members three weeks prior to the joint Working group meetings.

Suggested agenda topics for the next seminar should also be discussed at the joint meetings.

- Fall Agenda - September CO2/CO8 Working Groups meeting (and Preliminary Spring Agenda)
- Spring Agenda - March CO2/CO8 Working Groups (and Preliminary Fall Agenda)

The host Area for the upcoming seminar will be responsible for finalizing the agenda.

3. **Training Methods** - review and evaluate new techniques and training aids as they become available to Trainers.

The Working Group members should meet to discuss new training techniques and training aids with a guest speaker as appropriate.

To accomplish the above objectives, the CO-2 Working Group members will meet as required and/or hold conference calls as necessary to develop the Dispatcher Training Programs, Dispatcher Seminars and to review Training Techniques.

**Tasks**

1. Review current topics for use in Dispatcher Training relating to NPCC inter-Area matters, established Criteria, Standards, Procedures, and operating instructions and terminology.
2. Recommend to CO-8 Working Group specific agendas and venues for Dispatcher Seminars in NPCC on a semiannual basis.

3. Arrange for the conduct of Dispatcher Seminars as approved by CO-8 Working Group.

4. Exchange information on internal methods of Dispatcher selection, training and training material.

5. Review NPCC procedures, TFCO Monitoring Procedures, etc. within the scope of the Working Group Assignment or as specifically assigned by CO-8 and identify gaps and problem areas.

6. Review the Working Group Scope on an annual basis and advise CO-8 Working Group of recommended changes.

7. Report annually to CO-8 Working Group on the activities of the Working Group relative to each of the assigned Tasks and, where appropriate, summarize annual performance or trends relative to existing standards. Also, all Working Group meeting and conference call minutes should be forwarded to the CO-8 chairman.

8. The Working Group Chairman elected by a majority vote of the members to hold office for two years and until his successor is duly elected. Where possible, the chairmanship should rotate between Areas.

Approved by the Reliability Coordinating Committee
November 5, 1998
Northeast Power Coordinating Council  
Task Force on Coordination of Operation  
Working Group CO-8: System Operations Managers

Scope

Objective

Provide a forum for the Managers of the NPCC control centers to identify and discuss security concerns in the operation of the interconnected bulk power supply system, and specific concerns related to the integration of operation between and among the evolving control centers. The System Operations Managers Working Group (SOM) will also assist the Task Force on Coordination of Operation in their work on issues related to system security and the operation of the control centers, and provide advice to the TFCO, as requested.

Activities

To meet the intent of the objective, the SOM will:

1. meet a minimum of four times a year, to identify and discuss evolving issues, share information, and reach agreements on needed processes. Critical issues will be identified and brought to the attention of the Task Force on Coordination of Operation. Regular meetings will be scheduled prior to the summer operating period (March and May) and the winter operating period (September and November)

2. initiate conference calls to provide management support in the event of situations that are causing or may cause severe stress to the interconnected bulk power supply system. The dissemination of information through this process will be restricted to control center staff and will be used for security reasons only

3. provide representation to the meetings of the Task Force on Coordination of Operation to review SOM initiatives, bring issues for resolution to the Task Force, and return assigned charges from the TFCO to the SOM Working Group

4. translate NPCC Criteria, Guides and Procedures, and NERC Operating Policies, into control room procedures, and coordinate among the Areas the implementation of these procedures
5. The System Operations Managers Working Group (SOM) will further support the Working Group on Dispatcher Training (Working Group CO - 2) in their work on issues related to training and seminars by:
   - supporting the biannual seminars
   - committing to a minimum number of dispatcher attendees by control area per seminar
   - proposing, commenting and approving subjects or invited guests for seminars
   - committing to obtain the financial support needed for the biannual seminars
   - guaranteeing the participation in the CO-2 working group by maintaining a back up person for each of the CO-2 members.

6. Members of the CO-8 working group will guaranty their participation by maintaining an active alternate.

7. Joint meetings with CO-2 and CO-8 will be held twice a year to prepare the seminars.
1. Objectives

Resource and transmission adequacy is improved by considering interconnections with neighboring systems in reliability evaluations. NPCC Areas are currently able to meet the NPCC resource reliability criterion with a lower installed reserve than would be required without interconnections. As planned reserves of the NPCC Areas change in the future, the dependence on interconnections for emergency assistance to provide adequate reliability will vary. The objectives of CP-8 will be to:

- Ensure maintenance of the G.E. MARS database in order to calculate NPCC Area resource adequacy.
- Evaluate whether or not the interconnection benefits assumed by each Area in demonstrating compliance with the NPCC resource reliability criterion are reasonable.
- Evaluate whether or not an Area’s proposed resources meet the NPCC resource reliability criterion assuming the Area's load forecast uncertainty.
- Identify any potential reliability impacts that may result from an Area’s proposed resources fuel supply and/or environmental restrictions.

2. Scope

The scope of CP-8 WG will be to:

A. Interconnection level:

1. Ensure that the G.E. MARS database created by the CP-5 Working Group remains current in order to facilitate NPCC and/or Areas studies.
2. Assess whether or not the interconnection benefits assumed by each Area in demonstrating compliance with the NPCC resource reliability criterion are reasonable.
3. Consider the impacts of Sub-Area transmission constraints.
4. Develop a detailed G. E. MARS reliability representation for regions bordering NPCC.
5. Examine the impact of evolving market rules on overall NPCC interconnection assistance assumptions.
B. Resource Adequacy level

1. Annually assess the short-term resource adequacy of NPCC and neighboring Areas to meet next year’s forecasted demand, recognizing scheduled outages of transmission and generation facilities.

2. Review the technical aspects of Comprehensive Reviews of Resource Adequacy prior to their submission to TFCP and assess the appropriateness of interim annual assessment.

3. Examine the impact of evolving market rules on the overall NPCC resource reliability criterion.

4. Participate and provide technical assistance to TFCP and CMAS in areas of NPCC and Area compliance with NERC planning standards as related to Resource Adequacy.

5. Conduct other studies on an “as required” basis by TFCP regarding Area reliability and NERC compliance.

3. Schedule and Budget

CP-8 WG will meet at least every 3 months, approximately 2-3 weeks prior to the scheduled TFCP meeting. Additional meetings will be scheduled to complete the annual adequacy assessment by April, prior to the summer load period. The estimated annual manpower budget is $45,500 (10*(350+300)*7 meetings).

Approved by the Reliability Coordinating Committee
November 9, 1999
Scope of Work for
Lake Erie Security Process - 1999

1.0 Terms of Reference

The objective of the task is to further develop the Lake Erie Emergency Redispatch (LEER) procedure to extend it to cover conditions of a non-emergency nature and to enhance the effectiveness of security coordination to address reliability and commercial concerns specific to the Control Areas surrounding Lake Erie. Participation in the development and use of these procedures is open to all Transmission Provider and Commercial segment participants.

Specific tasks included in this work are:

1. Further develop, in stages, the LEER procedure to achieve the following dual purposes:

   A. As a system redispatch procedure for non-emergency conditions and as a complementary procedure to the proposed NERC Market Redispatch procedure, and

   B. As a market redispatch procedure that will work in conjunction or parallel with the NERC Market Redispatch procedure addressing the concerns specific to the Control Areas surrounding lake Erie.

2. Identify and pursue the process, agreement, and regulations needed to implement the Lake Erie System and Market Redispatch procedures.

3. Implement the Lake Erie Redispatch Procedure in the Lake Erie Control Areas system control centres for application, where appropriate, to supplement the NERC TLR procedures.

4. Facilitate the tools required to implement the Lake Erie Redispatch Procedures.

5. To assess and promote more effective methods of congestion management and alternatives to implementing TLR curtailments through representation on NERC groups.

2.0 Participating Areas and Working Group Structure

Application of the NERC TLR procedures may require interruption of inter-Area transactions arranged by the commercial entities. Redispatch procedures will require the identification of key generators or generation groups to be assessed for effective relief of transmission constraints, and the creation of a process to facilitate commercial arrangements. In light of these commercial impacts, full participation from the commercial representatives in each of the Lake Erie Areas is essential to the development of the Lake Erie Redispatch Procedure. To ensure effective development of the enhanced Lake Erie Redispatch Procedure, representative from both the commercial and transmission provider sectors will be assembled to tackle the technical and commercial aspects of this task.
1. **Representation from the Transmission Provider Sector**

The technical members will be primarily responsible for developing the technical infrastructure of the revised procedure. Included in the technical infrastructure are:

- facilities (in addition to those provided by NERC) to be assessed/monitored by the Security Coordinators surrounding the Lake Erie area
- impacts of inter-Area transfers on these facilities (PDTFs)
- impacts of generation shifts (GSFs) individually or as a group on critical facilities
- Operating agreements/instructions to be implemented in the system control centres

The Transmission Provider representatives are:

NYPP Karl Tammar  
Ontario IMO Pete Henderson  
MECS Jon Weist (MECS), Chuck Waits (CE)  
AP Dave Zwergel  
PJM Dave Souder  
AEP John Price  

Transmission Provider representatives from other Areas may also participate in this task.

2. **Representative from the Commercial Sector**

The Commercial representatives will be primarily responsible for developing a commercial framework agreement within which the Lake Erie Redispatch Procedure is to apply. Included in the agreement are:

- List of generators, including groups where appropriate, that could be made available for redispatch  
- Contact person(s) to arrange for generation redispach  
- Time period for redispach negotiation  
- Billing and settlement process

The Commercial Representatives are:

NYPP Mike Schiavone  
OPGI Tasos Karatsoreos  
MECS Ron Bauer (DECo), Dave Lapinski (CE)  
AP Robin Libbos  
AE Tom Barnes  
PJM Lydia Vollmer, Herb Yan  
AEP Greg Hall  
FE Chuck Idle  

Non affiliated market representatives and other commercial representatives are welcome to participate in this task.
3.0 Basic Principles for the Lake Erie Security Process

The basic principles for the Lake Erie Security Process have been developed based on these philosophies:

a. The Lake Erie Redispatch Procedure should not conflict with the existing NERC Operating Policies and Procedures, or with the NERC’s proposed Market Redispatch Procedure,

b. Prior agreement is absolutely essential to ensure proper actions are taken when needed,

c. Act now and review later for lessons learned,

d. Operators shall be provided with the necessary information and authority to implement the system redispatch procedures,

e. Market participants shall be provided all information necessary, subject to data sensitivity constraints, to assess and arrange for redispatch options,

f. To the extent possible, tools and facilities currently available or expected to be available from NERC should be used.

4.0 Work Schedule

- March 18 - Comment on basic principles and agree on work schedule
- March 31 - Finalize basic principles and work schedule
- May 10 - Identify technical requirements (additional flowgates, PTDFs, generation grouping)
- June 1 - Implement LEER procedures by completing dry runs and training
- July 5 - Develop framework agreement and draft process
- September 1 - Prepare final draft of enhanced Lake Erie Redispatch Procedure
- Sept 13-15 - Present final draft procedure to NERC SCS and MIC
- Date to be determined - File LESP Redispatch Procedure with FERC
- December 1 - Implement procedure in all five Areas’ control rooms.
Northeast Power Coordinating Council  
Task Force on System Studies  
Working Group on Inter-Area Dynamic Analysis -- SS-38

Scope

Background

Stable and well damped dynamic performance of the interconnected system is essential for reliability. NPCC has been involved in studying the dynamic system performance of the interconnected system to facilitate planning and operation of the interconnected system such that local as well as interarea modes of oscillations are well damped. SS-38 Working Group of Task Force on System Studies contributes in these studies by refining system and equipment models, analytical tools and their applications, and processes of assembling data. It also monitors trends of system dynamic performance and replicates actual dynamic events as necessary.

Objective/ Purpose

The overall objective of the Working Group is to analyze dynamic phenomena which may affect interconnected system reliability, especially in the area of low frequency oscillations (LFO). The group also promotes ongoing improvement of inter-regional data collection procedures and dynamic analysis capabilities. The following individual tasks, make up the above charge:

Task #1: Develop and maintain a mechanism to collect and assemble system data for performing large scale event replication.

Purpose: Accurate event replication requires timely collection of the necessary data since required data may be purged periodically. The procedure and list of contacts should be maintained by SS-38.

Task #2: Replicate and analyze actual events as directed by the Task Force on System Studies.

Purpose: Event replication can be extremely beneficial in understanding unusual system responses that are observed on the power system and in controlling future occurrences.

Task #3: At the request of TFSS assist in analyzing system studies showing unusual inter-Area dynamic responses.
Purpose: If, in the course of a study, unusual inter-Area system dynamic responses are observed the Working Group’s expertise can be utilized to further investigate the situation.

Task #4: Identify emerging trends in inter-area system dynamic performance.

Purpose: With the behavior of the power system changing, particularly as to how it is used to transfer power, the Working Group provides a group of specialists who can respond quickly with analyses of theses changes. Such analyses could help to minimize any detrimental impacts to system reliability or economic operation.

Task #5: Recommend a procedure for maintaining and updating the modeling of system components used in simulating large scale disturbances. This procedure should acknowledge the use of established intra- and, inter-regional base case development procedures.

Purpose: Having readily available up to date models of system components is essential for the rapid and accurate replication of a desired system event using loadflow and dynamic simulations. In addition it has been shown that more detailed system representation allows for more accurate results, therefore utilizing established intra- and, inter-regional base case development procedures would be beneficial.

Task #6: Continue work in the area of monitoring devices, emphasizing their benefits in event replication. Provide recommendations regarding the capabilities of these devices and identify parameters for the selection of their preferred locations. Update the "Report on Disturbance Monitoring Equipment" (SS38 - 6) on a triennial basis. Coordinate the exchange of information regarding the application of monitoring devices and recorded data with the other regions of the Eastern U.S.-Canadian Interconnection.

Purpose: The use of monitoring devices to capture and record system data is invaluable in the accurate replication of system events. The Working Group’s data regarding monitoring devices could provide utilities with useful information should they consider the installation of these devices in the future.

Task #7: Monitor Area activities regarding the verification of turbine/generator dynamic models (e.g., excitation systems). Coordinate with SS-37 in regard to implementation of updated model data in system study data bases.
Purpose: Simulations are only as good as the data and models used. Therefore it is imperative to continually review these for accuracy. Verification of system model data against actual field test results is one method of improving overall data quality.

Task #8: Monitor Area activities regarding load models for dynamic simulations. Coordinate with SS-37 in regard to implementing any changes.

Purpose: As with the modeling of system machines, the modeling of load dynamics is critical in simulating accurate system performance. Therefore every effort should be made to improve these models.

Task #9: Investigate deficiencies in the modeling of system control of frequency (e.g., of unit governing response, AGC, etc.) by examining the representation of prime movers and their controls and their effect on system damping and frequency restoration. Develop recommendations for modeling these control systems.

Purpose: Dynamic analysis shows poorer correlation between actual results and simulations in the areas of system damping and frequency restoration than in the replication of oscillatory response. This suggests that further work should be done to improve results in these areas, therefore improving overall results.

Task #10: Evaluate and apply state-of-the-art methods of analyzing low frequency oscillations (e.g., use of small signal stability analysis).

Purpose: Time simulations fall short in the modeling of system low frequency oscillations. Efforts should be encouraged to further investigate state-of-the-art analysis techniques.

Membership

The SS-38 Working Group consists of members from the NPCC as well as representatives from ECAR, MAAC and SERC. Since the working group studies interconnected system dynamic behavior it is recommended that participation outside of NPCC be continued and extended to include other regions (SPP, MAAC, SERC, ECAR, MAPP and MAIN). The chairman will be appointed and will, in addition to coordinating the work of the group, act as liaison between the Working Group and the Task Force on System Studies and other NPCC Working Groups, as appropriate. Though organized as a TFSS Working Group, participation of operating personnel is encouraged.
Budget

This is a standing Working Group and reimbursement of its NPCC members will be funded annually in the NPCC budget. Based on current NPCC reimbursement charges the total amount to be included in the NPCC budget for this working group is estimated to be $20,000.

Schedule

The Working Group will maintain a detailed work plan prioritizing the tasks outlined above. Since some of these activities are ongoing in nature, schedules for specific assignments will be established as needed. The Chairman will provide a status report to TFSS, on a regular basis. This status report should include a milestone schedule and progress report for TFSS approval.

Approved by RCC
November 9, 1999
Document B-6 has been discontinued:

The *Automatic Load Shedding Employing Underfrequency Threshold Relays* (Document B-6), dated November 25, 1983 was incorporated into the new *Automatic Underfrequency Load Shedding Program Relaying Guideline* (Document B-7) effective March 2, 1999.
Listing of NPCC Documents by Type

Updated: December 1999
Note:
Terms in bold typeface are defined in the *NPCC Glossary of Terms* (Document A-7).
<table>
<thead>
<tr>
<th>Criteria – type &quot;A&quot; Documents</th>
<th>Latest Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1 Criteria For Review and Approval of Documents</td>
<td>March 1997</td>
</tr>
<tr>
<td>Appendix A - NPCC Glossary - has been superceded by the <em>NPCC Glossary of Terms</em> (Document A-7)</td>
<td></td>
</tr>
<tr>
<td>Description: This guide outlines the review and approval procedures to be followed for all NPCC documents.</td>
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<tr>
<td>Lead Task Force: Task Force on Coordination of Planning</td>
<td></td>
</tr>
<tr>
<td>Reviewed for concurrence by: TFCO, TFSP and TFSS</td>
<td></td>
</tr>
<tr>
<td>A-2 Basic Criteria for Design and Operation of Interconnected Power Systems</td>
<td>August 9, 1995</td>
</tr>
<tr>
<td>Description: Criteria are established for proper design and operation concerning Resource Adequacy and Transmission Capability.</td>
<td></td>
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<tr>
<td>Lead Task Force: Task Force on Coordination of Planning</td>
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</tr>
<tr>
<td>Reviewed for concurrence by: TFCO, TFSP, TFSS and the TFEMT Chairman</td>
<td></td>
</tr>
<tr>
<td>A-3 Emergency Operation Criteria</td>
<td>January 1999</td>
</tr>
<tr>
<td>Description: Objectives, principles and requirements are presented to assist the NPCC Areas in formulating plans and procedures to be followed in an emergency or during conditions which could lead to an emergency.</td>
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<tr>
<td>Lead Task Force: Task Force on Coordination of Operation</td>
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<tr>
<td>Reviewed for concurrence by: TFCP, TFSP, and TFSS</td>
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</table>
### Criteria – type "A" Documents – continued

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<th>Document ID</th>
<th>Title</th>
<th>Latest Version</th>
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</thead>
<tbody>
<tr>
<td>A-4</td>
<td>Maintenance Criteria for Bulk Power System Protection</td>
<td>September 1998</td>
</tr>
<tr>
<td></td>
<td>Description: Establishes the maintenance intervals and practices which should result in dependable and secure <strong>protection system</strong> operation.</td>
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<td>Lead Task Force: Task Force on System Protection</td>
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<td></td>
<td>Reviewed for concurrence by: TFCO and TFSS</td>
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<tr>
<td>A-5</td>
<td>Bulk Power System Protection Criteria</td>
<td>September 1998</td>
</tr>
<tr>
<td></td>
<td>Description: This document establishes the minimum design objectives and recommends design practices to minimize the severity and extent of system disturbances and to minimize possible damage to system equipment.</td>
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<td>Lead Task Force: Task Force on System Protection</td>
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<td></td>
<td>Reviewed for concurrence by: TFCO, TFCP and TFSS</td>
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<tr>
<td>A-6</td>
<td>Operating Reserve Criteria</td>
<td>September 1998</td>
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<tr>
<td></td>
<td>Description: This Criteria establishes standard terminology and minimum requirements governing the amount, availability and distribution of operating reserve.</td>
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<td>Lead Task Force: Task Force on Coordination of Operation</td>
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<tr>
<td></td>
<td>Reviewed for concurrence by: TFCP and TFSS</td>
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<tr>
<td>A-7</td>
<td>NPCC Glossary of Terms</td>
<td>September 1998</td>
</tr>
<tr>
<td></td>
<td>Description: This Glossary includes terms from NPCC Criteria (A), Guideline (B) and Procedure (C) Documents, as well as from the North American Electric Reliability Council (NERC) <em>Glossary of Terms</em>, August 1996.</td>
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<td>Lead Task Force: Task Force on Coordination of Planning</td>
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<tr>
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<td>Reviewed for concurrence by: TFCO, TFEMT, TFSP and TFSS</td>
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</tbody>
</table>
Guides – type "B" Documents

B-1  Guide for the Application of Autoreclosing to the Bulk Power System

Description: This document establishes guidelines for the application of automatic reclosing facilities to circuit breakers on the NPCC bulk power system.

Lead Task Force: Task Force on System Protection
Reviewed for concurrence by: TFSS, TFCO and TFCP

B-2  Control Performance Guide During Normal Conditions

Description: Establishes a performance measure of NPCC Areas and systems within the Areas' ability to carry out their responsibilities regarding control performance.

Lead Task Force: Task Force on Coordination of Operation
Reviewed for concurrence by: TFCP, TFSS

B-3  Guidelines for Inter-Area Voltage Control

Description: This document establishes procedures and principles to be considered for occasions where a deficiency or an excess of reactive power can affect bulk power system voltage levels in a large portion of an Area or in two adjacent Areas.

Lead Task Force: Task Force on Coordination of Operation
Reviewed for concurrence by: TFCP, TFSS
Guides – type "B" Documents - continued

B-4 Guidelines for NPCC Area Transmission Reviews

Description: Guidelines to help TFSS ascertain that each Area's transmission expansion plan, based on its proposed generation additions, has been developed in accordance with the NPCC Basic Criteria for Design and Operation of Interconnected Power Systems (Document A-2).

Lead Task Force: Task Force on System Studies
Reviewed for comments by: TFCO and TFCP

B-5 Guideline B-5 was changed to Procedure C-22 as of February 8, 1994

B-6 The content of Guideline B-6 was incorporated into Guideline B-7 as of March 2, 1999

B-7 Automatic Underfrequency Load Shedding Program Relaying Guideline

Description: This guide presents relay application and testing requirements necessary to accomplish the objectives of the Emergency Operation Criteria (Document A-3) related to automatic underfrequency load shedding and automatic underfrequency load shedding associated with generator underfrequency tripping.

Lead Task Force: Task Force on System Protection
Reviewed for comments by: TFCO, TFSS and TFCP
Guides – type "B" Documents - continued

B-8  Guidelines for Area Review of Resource Adequacy

Description: Guidelines to help TFCP ascertain that each Area's resource plan is in accordance with the NPCC Basic Criteria for Design and Operation of Interconnected Power Systems (Document A-2).

Lead Task Force: Task Force on Coordination of Planning
Reviewed for comments by: TFSS

B-9  Guide for Rating Generating Capability

Description: Establishes standards for rating and verifying Net Generating Capability.

Lead Task Force: Task Force on Coordination of Operation
Reviewed for comments by: TFCP

B-10 Guidelines for Requesting Exclusions to Section 5.1(B) and 6.1(B) of the NPCC Basic Criteria for Design and Operation of Interconnected Power Systems

NOTE: Member Representatives shall be advised of approvals by the Reliability Coordinating Committee of applications for exclusions.

Description: Establishes procedure for requesting exclusion from a certain contingency in the Basic Criteria (Document A-2).

Lead Task Force: Task Force on System Studies
Reviewed for concurrence by: TFCP, TFCO
Guides – type "B" Documents - continued

B-11  Special Protection System Guideline

Description: This guideline categorizes a special protection system (SPS) according to the criteria fault for which it is designed and the impact its failure would have on the network. It further provides guidelines for the design, testing and operation of the SPS.

Lead Task Force: Task Force on System Protection
Reviewed for concurrence: TFCO, TFSS

B-12  Guidelines for On-Line Computer System Performance During Disturbances

Description: Establishes guidelines for the performance of NPCC Area on-line computer systems during a power system disturbance.

Lead Task Force: Task Force on Energy Management Technology
Reviewed for concurrence: TFCO

B-13  Guide for Reporting System Disturbances

Description: This document establishes the Task Force on Coordination of Operation's (TFCO) requirements and guidelines for reporting system disturbances to enable the TFCO to review, with emphasis on inter-Area implications, disturbances which affect a significant part of one Area. (This Guide was formerly known as Procedure C-2).

Lead Task Force: Task Force on Coordination of Operation
Procedures – type "C" Documents

C-0 Listing of NPCC Documents by Type

Description: This listing describes all existing NPCC Criterion (type "A"), Guide (type "B") and Procedure (type "C") Documents.

C-1 Procedure C-1, the former *Glossary of Standard Operating Terms*, was discontinued in September 1998 with the approval of the *NPCC Glossary of Terms* (Document A-7).

C-2 Procedure C-2 was elevated to Guideline B-13 as of June 25, 1997

C-3 Procedures for Communications During Emergencies

Description: This Procedure addresses three separate but related areas of emergency of communications: 1) Operators’ communication during an emergency, 2) Communications with external agencies during extended Emergencies, and 3) Collection of data during or following a major system event. (The Procedure is a combination of three former Procedures: C-3, C23 and C-24).

Lead Task Force: Task Force on Coordination of Operation

C-4 Monitoring Procedures for *Guidelines for Inter-Area Voltage Control*

Description: This procedural document establishes TFCO's monitoring and reporting requirements for conformance with NPCC's *Guidelines for Inter-Area Voltage Control* (Document B-3).

Lead Task Force: Task Force on Coordination of Operation
C-5  Monitoring Procedures for *Emergency Operation Criteria*  

**Description:** This procedural document establishes TFCO’s monitoring and reporting requirements for conformance with NPCC’s *Emergency Operation Criteria* (Document A-3).

Lead Task Force: Task Force on Coordination of Operation

C-6  Procedure C-6 has been discontinued as of February 8, 1994.

The sections that were under TFSS’s responsibility have been incorporated in Guide B-10.

The sections that were under TFCO’s responsibility have been incorporated in the new Procedure C-21.

C-7  Monitoring Procedures for *Guide for Rating Generating Capability*

**Description:** This procedural document establishes the TFCO’s monitoring and reporting requirements for conformance with the NPCC, *Guide for Rating Generating Capability* (Document B-9).

Lead Task Force: Task Force on Coordination of Operation

C-8  Monitoring Procedures for *Control Performance Guide During Normal Conditions*

**Description:** This procedural document establishes a performance measure for NPCC Areas and systems and outlines the reporting function for NPCC *Control Performance Guide During Normal Conditions* (Document B-2)

Lead Task Force: Task Force on Coordination of Operation
<table>
<thead>
<tr>
<th>Document</th>
<th>Title</th>
<th>Description</th>
<th>Latest Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-9</td>
<td>Monitoring Procedures for Operating Reserve Criteria</td>
<td>This procedural document establishes the TFCO's monitoring and reporting requirements for conformance with the NPCC Operating Reserve Criteria (Document A-6)</td>
<td>March 25, 1998</td>
</tr>
<tr>
<td>C-10</td>
<td>Procedure C-10 was discontinued as of July 11, 1991</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-11</td>
<td>Monitoring Procedures for Interconnected System Frequency Response</td>
<td>This procedural document defines procedures for monitoring frequency responses to large generation losses.</td>
<td>March 25, 1998</td>
</tr>
<tr>
<td>C-12</td>
<td>Procedures for Shared Activation of Ten Minute Reserve</td>
<td>This procedural document outlines procedures to share the activation of ten minute reserve on an Area basis.</td>
<td>March 25, 1998</td>
</tr>
<tr>
<td>C-13</td>
<td>Operational Planning Coordination</td>
<td>This document coordinates the notification of planned facility outages among the Areas. It also establishes formal procedures for Area communications in advance of a period of likely capacity shortages as well as for weekly and emergency NPCC conference call among the Areas.</td>
<td>May 15, 1997</td>
</tr>
</tbody>
</table>
C-14  Procedure C-14 was incorporated in Procedure C-13 as of May 15, 1997

C-15  Procedures for Solar Magnetic Disturbances on Electrical Power Systems

Description: This procedural document clarifies the reporting channels and information available to the operator during solar alerts and suggests measures that may be taken to mitigate the impact of a solar magnetic disturbance.

Lead Task Force: Task Force on Coordination of Operation

C-16  Procedure for NPCC Review of New or Modified Bulk Power System Special Protection Systems (SPS)

Description: This document outlines procedures for reporting new or modified bulk power system special protection systems.

Lead Task Force: Task Force on Coordination of Planning

C-17  Monitoring Procedures for Guidelines for On-Line Computer System Performance During Disturbances

Description: This document establishes TFEMT’s monitoring and reporting procedures for conformance with NPCC’s Guidelines for Computer System Performance During Disturbances (Document B-12).

Procedures – type "C" Documents - continued

C-18 Procedure For Testing and Analysis of Extreme Contingencies

Description: This document establishes a procedure for the testing and analysis of Extreme Contingencies.

Lead Task Force: Task Force on System Studies

C-19 Procedures During Shortages of Operating Reserve

Description: This procedure is intended to provide specific instructions for the redistribution of Operating Reserve among the Areas when one or more Area(s) are experiencing an Operating Reserve deficiency.

Lead Task Force: Task Force on Coordination of Operation

C-20 Procedures During Abnormal Operating Conditions

Description: This procedure is intended to complement the Emergency Operation Criteria (Document A-3) by providing specific instructions to the System Operator during such conditions in an NPCC Area or Areas.

Lead Task Force: Task Force on Coordination of Operation

C-21 Monitoring Procedures for Conformance with Normal and Emergency Transfer Limits

Description: This procedural document establishes TFCO monitoring and reporting requirements for transfer limits during normal and emergency operations as stipulated in the Basic Criteria for Design and Operation of Interconnected Power Systems (Document A-2).

Lead Task Force: Task Force on Coordination of Operation
C-22 Procedure for Reporting and Reviewing Proposed Protection Systems for the Bulk Power System

Description: This procedure ensures that new facilities or modifications to existing facilities are presented to the TFSP in order to ascertain conformance with the principles of the Bulk Power System Protection Criteria (Document A-5). (This Procedure was formerly known as Guide B-5).

Lead Task Force: Task Force on System Protection

C-23 Procedure C-23 was incorporated in Procedure C-3 as of January 21, 1997

C-24 Procedure C-24 was incorporated in Procedure C-3 as of January 21, 1997

C-25 Procedure to Collect Real Time Data for Inter-Area Dynamic Analysis

Description: This procedure provides a mechanism to collect real time data following a power system disturbance for the purpose of analyzing the dynamic performance of the NPCC bulk power system.

Lead Task Force: Task Force on System Studies

C-26 Procedures for Task Force on System Protection Compliance Monitoring and Surveys

Description: This procedure documents the TFSP's procedures for compliance monitoring and surveys.

Lead Task Force: Task Force on System Protection
C-30  Procedure for Task Force on System Protection
Review of Disturbances

Description:  This procedure documents the TFSP’s procedures for review of disturbances that have occurred both inside and outside NPCC.

Lead Task Force:  Task Force on System Protection
Procedure for
Task Force on System Protection
Review of Disturbances

Approved by the Task Force on System Protection on December 6, 1999
Note:

Terms in bold typeface are defined in the NPCC Glossary of Terms (Document A-7)
1.0 Introduction

The scope of the Task Force on System Protection (TFSP) requires that it “review and analyze the performance of protection systems following selected major power system events, inside as well as outside NPCC…” for the purpose of assuring the adequacy and sufficiency of NPCC protection criteria. This document outlines the process the TFSP follows to fulfill this requirement.

2.0 Sources of Information

2.1 Disturbances Inside NPCC

For disturbances that are reportable to NPCC: the NPCC office will furnish the TFSP copies of all disturbance reports submitted to NPCC.

For disturbances that are not otherwise reportable to NPCC: the NPCC/TFSP member system representatives shall inform the Task Force of any disturbance on the systems for which they have reporting responsibility that could be considered to be of value in terms of its applicability to NPCC protection criteria.

2.2 Disturbances Outside NPCC

The NPCC office will furnish the TFSP copies of all disturbance reports made available to NPCC. In addition, the Task Force will review all reports available to the NERC Disturbance Analysis Working Group (DAWG) as posted to the NERC/DAWG www site, as well as other reports and postings to other sites of which the Task Force is aware.

3.0 Reviews and Actions Taken

At each TFSP meeting, the Task Force will review all disturbances reported since the previous meeting. The minutes of the meeting shall record each disturbance reviewed and the action taken.

The Task Force may request member system representatives to provide additional information to assist in the review.
Typical outcomes that may result from the review include:

- A determination that NPCC criteria are adequate for the circumstances.
- A determination that clarification of an NPCC criteria requirement is necessary.
- A determination that a modification to an NPCC criteria requirement is necessary.
- A determination that an additional NPCC criteria requirement is necessary.

In the latter three cases, the determination shall be posted on the NPCC Open Process Forum website and the document revision and review process initiated, if warranted. This is in addition to the determination being recorded in the minutes of the meeting.

Prepared by: Task Force on System Protection

Review frequency: 3 years

References:  *NPCC Glossary of Terms* (Document A-7)

TFSP Scope