



# NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

Princeton Forrestal Village, 116-390 Village Boulevard, Princeton, New Jersey 08540-5731

## Resources Subcommittee Meeting

February 8–10, 2006  
Phoenix, Arizona

### Minutes

A regular meeting of the North American Electric Reliability Council Resources Subcommittee was held on February 8–10, 2006 in Phoenix, Arizona. The meeting announcement, agenda, and attendance list are attached as **Exhibits A, B, and C**, respectively. Individual statements and minority opinions are affixed as **Exhibits D and E**. (There were none.)

Resources Subcommittee Chairman Terry Bilke presided. The secretary announced that a quorum was present.

### Minutes of the Previous Meeting

The Resources Subcommittee approved the October 26–28, 2005 meeting minutes.

### Resources Subcommittee Scope and Membership

The secretary announced that the Operating Committee approved the Resources Subcommittee revised scope at its December 2005 meeting. The revised scope can be viewed on the NERC Resources Subcommittee Web site.

### Resources Subcommittee Action Item List

The subcommittee reviewed and updated the action item list, which is affixed as **Exhibit F**.

### Task Force Reports

#### Control Criteria Task Force — Chairman Alan Oneal

##### *Real Power Balancing Control Performance Reference Documents Review*

The Control Criteria Task Force will review the BAL-001-0, Real Power Balancing Control Performance Standard's reference documents, training documents, operating guidelines, NERC Glossary of Terms, etc. The task force will:

- Evaluate all “shall” statements.
- Incorporate all requirements into the appropriate standard(s) via a standards authorization request.
- Change nonrequirement statements to “should” or “may” language.

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- Identify and summarize all operating guidelines (including evaluation of “should” statements in reference documents).

## **Frequency Task Force — Chairman Raymond Vice**

### *Frequency Response and Automatic Generation Control Reference Document Review*

The Frequency Task Force will review the BAL-003-0, Frequency Response and Bias, and BAL-005-0, Automatic Generation Control standards’ reference documents, training documents, operational guidelines, NERC Glossary of Terms, etc. The task force will:

- Evaluate all “shall” statements.
- Incorporate requirements into the appropriate standard(s) via a standards authorization request.
- Change non-requirement statements to “should” or “may” language.
- Identify and summarize all operating guidelines (including evaluation of “should” statements in reference documents).

### *Balance Resources and Demand Implementation Plan Assistance*

The Resources Subcommittee will be the Balance Resources and Demand standards BAL-007 through BAL-012 custodian when the standards are approved. Supporting the Balance Resources and Demand Standards Drafting Team’s implementation plan is critical to the success of these standards.

The Frequency Task Force will interface with the Balance Resources and Demand Standards Drafting Team to ensure the subcommittee assists the drafting team in implementing the standards’ requirements and measures. Actions may include:

- Training recommendations for the reliability coordinators and balancing authorities.
- Assist with installing and testing the Balance Resources and Demand required EMS algorithms.
- General assistance to the reliability coordinators and balancing authorities regarding all aspects of the Balance Resources and Demand standards.
- Support and assist the Balance Resources and Demand Standards Drafting Team’s implementation plan and timeline.

### *Balance Resources and Demand Field Trial Frequency Analysis*

The Balance Resources and Demand Standards Drafting Team recommends the subcommittee determine how the Balance Resources and Demand field test has impacted the frequency performance of the Eastern Interconnection. Average frequency, standard deviation, and number of significant outliers need to be evaluated. The Balance Resources and Demand Standards Drafting Team expects the new standard will cause more small, short frequency excursions (around the frequency trigger limits but for less than  $T_v$ ); but decrease the duration of large, long frequency excursions.

The Frequency Task Force will determine how the Balance Resources and Demand field test has impacted the frequency performance of the Eastern Interconnection.

## **Inadvertent Interchange Task Force — Chairman Don Badley**

### *Time Error Correction and Inadvertent Interchange Reference Document Review*

The Inadvertent Interchange Task Force will review the BAL-004-0, Time Error Correction, BAL-006-0, Inadvertent Interchange Standards reference documents, training documents, operational guidelines, NERC Glossary of Terms, etc. The task force will:

- Evaluate all “shall” statements.
- Incorporate requirements into the appropriate standard(s) via a standards authorization request.
- Change nonrequirement statements to “should” or “may” language.
- Identify and summarize all operating guidelines (including evaluation of “should” statements in reference documents).

## **Operating Reserves Task Force — Chairman Larry Akens**

### *Operating Reserves Requirements*

Operating Committee Chairman Sam Jones asked the Resources Subcommittee to look at the current reliability standards that address operating reserves to make sure those standards are enforceable and address the needs of the Interconnection.

Larry Akens and the Operating Reserves Task Force will review all “Operating Reserves” in the current reliability standards and all associated “Operating Reserves” definitions in the NERC Glossary of Terms, then forward its evaluation and recommendations to the subcommittee. Chairman Bilke will then report the subcommittee’s recommendations or give a status report to the Operating Committee in March 2006.

### *Disturbance Control Performance Reference Documents Review*

The Operating Reserves Task Force will review the BAL-002-0, Disturbance Control Performance standard’s reference documents, training documents, operational guidelines, NERC Glossary of Terms, etc. The task force will:

- Evaluate all “shall” statements.
- Incorporate requirements into the appropriate standard(s) via a standards authorization request
- Change nonrequirement statements to “should” or “may” language.
- Identify and summarize all operating guidelines (including evaluation of “should” statements in reference documents).

## **NERC Operating Standards Review**

### *BAL-004-0, Time Error Correction*

### *BAL-005-0, Automatic Generation Control*

### *BAL-006-0, Inadvertent Interchange*

The secretary reported that BAL-004-1, BAL-005-1, and BAL-006-1 proposed standard revisions and three individual Standard Authorization Requests (SARs) were submitted to the NERC Standard’s Process Manager on January 31, 2006. The draft standards and SARs are on

the Standards Authorization Committee's February 14, 2006 meeting agenda to begin the standards revision process.

### *Frequency Response SAR*

During the January 2006 Standards Authorization Committee meeting, the committee reviewed the progress of the Frequency Response SAR. The committee will solicit industry participants to form a SAR drafting team to draft the SAR in accordance with the NERC Standards Process Manual. The Standards Authorization Committee also instructed the SAR requester, Terry Bilke and the Resources Subcommittee Frequency Task Force to revise the responses to the initial SAR comments and to revise the SAR based on the relevant comments.

Mr. Bilke will review the initial comments again and revise the comment responses and the SAR. He will then forward the comment responses and revised SAR to the subcommittee for additional review. The subcommittee needs to complete this work in a timely manner to include the comment responses and SAR on the March 2006 SAC meeting agenda.

### *BAL-002-0, Disturbance Control Performance Typographical Errors*

Two typographical errors were identified in the BAL-002-0, Disturbance Control Performance standard. The secretary will inform the NERC Standards Process Manager of the errors and determine the process to make the necessary corrections. The two errors are not significant and will not require urgent action.

## **Resources Subcommittee-Operating Reliability Subcommittee Frequency Discussion**

The Resources Subcommittee and the Operating Reliability Subcommittee discussed the Interconnection's frequency profiles, recent frequency excursions, frequency fluctuations, causes of the frequency fluctuations, the reliability implications of the frequency fluctuations, and potential methodologies to identify the balancing authorities and causes of each significant frequency event.

Terry Bilke presented historical data that showed the number of large frequency excursions is decreasing, but the number of small frequency fluctuations is increasing.

The subcommittee will document in a technical paper the recent and historical frequency trends, the root causes behind significant frequency excursions, the reliability implications behind the frequency events, the state of the Interconnections' frequency profiles, and make recommendations to capture, identify the cause, and record the magnitude of each significant frequency excursions.

## **Projects**

Carlos Martinez, Consortium for Electricity Reliability Technology Solutions (CERTS), reported that the Resources Subcommittee has consistently given input during the development phases of the projects listed below. However, the tools that are in production, or will be in production in the near future, need the subcommittee's attention to improve or implement the project applications. The subcommittee reviewed the NERC-CERTS reliability monitoring projects and identified concerns, affixed as **Exhibit G**.

A small subcommittee group will be formed for each project to review the parameters and address concerns. The goal is to recommend project expectations, priorities, uses,

methodologies, specifications, timelines, and anticipated results. The subcommittee volunteers are listed below each project.

*ACE-Frequency Application, Project 2000-03*

Project Review Team: Leader — Terry Bilke, Raymond Vice, Sydney Niemeyer, Robert Rhodes, Bill Herbsleb, John Tolo, Bart McManus, Tom Vandervort

*Develop ACE-Frequency Application Training Project*

Project Review Team: Leader — Terry Bilke, Robert Rhodes, Tom Vandervort

*AIE Monitoring Application, Project 2000-04*

Project Review Team: Leader — Don Badley, Raymond Vice, Bart McManus, John Tolo, Terry Bilke, Don McInnis, Mike Potishnak, Tom Vandervort, Brian Nolan

*CPS1 & BAAL Monitoring Application, Project 2001-38*

Project Review Team: Leader — Raymond Vice, Doug Hils, Mark Henry, Sydney Niemeyer, John Tolo, Bart McManus, Don Badley, Tom Vandervort

*Frequency-Phasor Monitoring Application, Project 2005-X*

Project Review Team: Leader — Raymond Vice, Resources Subcommittee Frequency Task Force, Tom Vandervort

*Eastern Interconnection Phasor Project*

Project Review Team: Leader — Raymond Vice, Resources Subcommittee Frequency Task Force, Tom Vandervort

*Inadvertent Interchange Application (SPP Inadvertent Tool Migration), Project 2001-37*

Project Review Team: Leader — Don Badley, Inadvertent Interchange Task Force, a representative from Southwest Power Pool (Robert Rhodes will be the point of contact to identify this person), Tom Vandervort

## **Performance Monitoring**

### *CPS1 Review*

The Resources Subcommittee reviewed the monthly and 12-month rolling average CPS1 data for trends and violations. There were no CPS1 violations in October, one violation in November, and one in December 2005. The secretary informed the subcommittee that the NERC compliance department is working closely with the balancing authority that was in CPS1 violation for November and December. There are balancing authorities that have October, November, or December monthly values that are below 100%, but they are not in violation of the 12-month rolling CPS1 average.

### *CPS2 Review*

The Resources Subcommittee reviewed and discussed the October, November, and December 2005 CPS2 reports.

### *Time Error Corrections*

The following Interconnection time error corrections from January 1 through December 31, 2005 were reported:

2005	Fast TEC	Slow TEC	Total TEC
Eastern Interconnection	213	0	213
Western Interconnection	35	37	72
ERCOT	41	16	57

### **Pacific Northwest National Laboratory Testing Facility**

Yuri Makarov introduced the Pacific Northwest National Laboratory (PNNL) facilities, staff, research and testing capabilities and its desire to work with NERC and DOE on standard development and proof-of-concept testing.

Don Badley moved that the subcommittee endorse the work that the Pacific Northwest National Laboratory is doing in support of reliability of the North American bulk electric system and encourages the NERC community to work with PNNL in the future. The motion was approved.

### **Dates and Locations of Future Meetings**

1. May 3–5, 2006                      Baltimore, MD
2. September 20–22, 2006          Québec City, QU
3. November 15–17, 2006          Fort Lauderdale, FL

Respectfully submitted,

*Tom Vandervort*

Thomas J. Vandervort  
Resources Subcommittee Secretary

## Exhibit A

**From:** Sandy Cominski  
**Sent:** Friday, December 23, 2005 9:18 AM  
**To:** 'rs\_plus@nerc.com'  
**Subject:** Resources Subcommittee -- February 8-10, 2006 Meeting Announcement  
**TO: Resources Subcommittee**

Ladies and Gentlemen:

I have listed the February 8–10, 2006 Resources Subcommittee meeting logistics and registration link in the table below. The meeting will be held at the Phoenix Marriott Mesa, 200 Centennial Way, Mesa, AZ, 85201. (Phone: 480-898-8300, Fax: 480-964-9279)

**EVERYONE must register online by clicking below or at the following Web site:** <http://www.nerc.net/meetings/>

<i>Date &amp; Time</i>	<i>Group</i>	<i>Staff</i>	<i>City</i>	<i>Registration Link</i>	<i>Details</i>
<b>2/8/2006: 8:00 AM - 5:00 PM</b>					
<b>2/9/2006: 8:00 AM - 5:00 PM</b>	<b>RS</b>	<b>Tom</b>	<b>Mesa</b>	<a href="#">Register</a>	<a href="#">Details</a>
<b>2/10/2006: 8:00 AM - 12:00 PM</b>		<b>Vandervort</b>			

Meeting logistics:

- Room block name: NERC-RS
- Room rate: \$169 single/double occupancy, \$127 govt.
- Room block: Nights of February 7-9, 2006
- Check-in: 4 p.m., Check-out: noon
- Hotel cut off date: January 16, 2006
- NOTE: After the cut off date the hotel will release this block of rooms and only accept reservations on a space-available basis.
- Phoenix Sky Harbor International Airport name (PHX): Approximate driving time is 20 minutes and distance is 12 miles.
- Taxis are \$26-\$35
- Dress code: Business casual

When making your hotel reservation, please be sure to mention the "*NERC/North American Electric Reliability Council's RS*" meeting to get the preferred rate and to ensure your reservation is credited to the NERC room block. The hotel may charge NERC a penalty if the total rooms blocked for this event are not picked up. Also, if you use a travel agency for your travel plans, please make sure the agency mentions *NERC-RS*.

Please let me know if you have any questions regarding the registration process.

Sincerely,

*Rocio Wong* (<mailto:rocio.wong@nerc.net>) (via Sandy Cominski)

*Meeting Coordinator*

*North American Electric Reliability Council (NERC)*

*116-390 Village Blvd.*

*Princeton, NJ 08540*

*Phone: 609-452-8060*

*Fax: 609-452-9550*



## NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

Princeton Forrestal Village, 116-390 Village Boulevard, Princeton, New Jersey 08540-5731

### Resources Subcommittee Meeting

Wednesday, February 8, 2006 — 8 a.m.–5 p.m.

Thursday, February 9, 2006 — 8 a.m.–5 p.m.

Friday, February 10, 2006 — 8 a.m.–noon

Phoenix Marriott Mesa

200 Centennial Way

Mesa, Arizona 85201

Phone: 480-898-8300 ☎ Fax: 480-964-9279

Remote Participation

Phone: 732-694-2061 ☎ Access Code: 1123020806#

### Agenda

#### 1. Administrative

- a. Membership and Guests — Chair
- b. Introductions — Chair
- c. Organization, Roster, and Survey Contacts List — Secretary
- d. Arrangements — Secretary
- e. Approval of October 26–28, 2005 Meeting Minutes — Chair
- f. Approval of Agenda — Chair
- g. Procedures
  - i) Parliamentary Procedures — Chair
  - ii) Antitrust Compliance Guidelines — Chair
- h. Resources Subcommittee Scope — Chair
- i. Resources Subcommittee Action Items List — Chair

#### 2. Task Force Reports

- a. Control Criteria Task Force — Alan Oneal
- b. Frequency Task Force — Raymond Vice
- c. Inadvertent Interchange Task Force — Don Badley
- d. Operating Reserves Task Force — Larry Akens

#### 3. Compliance

- a. Compliance and Certification Managers Committee Liaisons — Bill Herbsleb, John Tolo

#### 4. NERC Reliability Standards

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- a. Standard BAL-004-0, Time Error Correction — Don Badley
- b. Standard BAL-005-0, Automatic Generation Control — Raymond Vice
- c. Standard BAL-006-0, Inadvertent Interchange — Don Badley
- d. Reference Document — Performance Standards Reference Document — Alan Oneal
  - i) Training Document — Area Interchange Error Survey Training Document — Don Badley
  - ii) Training Document — Frequency Response Characteristic Survey — Raymond Vice
  - iii) Training Document — Inadvertent Interchange Accounting Training Document — Don Badley
  - iv) Interconnection Operating Services White Paper — Terry Bilke
- e. Balance Resources and Demand Draft Standard Update — Raymond Vice
- f. Frequency Response SAR — Terry Bilke

**5. NERC Active Resources Subcommittee Projects — Status**

- a. ACE-Frequency Application Project (Project 2000–03) — Carlos Martinez
- b. AIE Monitoring Application Project (Project 2000–04) — Carlos Martinez
- c. CPS1 & BAAL Monitoring Application Project (Project 2001–38) — Carlos Martinez
- d. Frequency-Phasor Monitoring Application Project (Project 2005–6) — Terry Bilke, Carlos Martinez
- e. DOE Eastern Interconnection Phasor Project (EIPP) — Terry Bilke, Carlos Martinez
- f. Inadvertent Interchange Application Project (SPP inadvertent interchange tool migration) (Project 2001–37) — Carlos Martinez
- g. Data Quality — Carlos Martinez
- h. Real Time Monitoring of Frequency Events — Yuri Makarov, Terry Bilke

**6. Frequency Performance**

- a. Western Interconnection Frequency Trends
- b. Eastern Interconnection Frequency Trends
- c. ERCOT Frequency Trends
- d. CPS1 and CPS2 Data Trends
- e. DCS Data Trends
- f. Inadvertent Interchange Balances — Joe Emde, Don Badley, Terry Bilke
- g. High Frequency Issue — Terry Bilke, Raymond Vice
  - i) Decline of the Eastern Interconnection Frequency Response — Raymond Vice
  - ii) Causes of the Eastern Interconnection Frequency Excursions — Terry Bilke

**7. Time Error**

- a. Eastern Interconnection — Bill Herbsleb
- b. Western Interconnection — Don Badley
- c. ERCOT Interconnection — Sydney Niemeyer

**8. Operating Guidelines**

**9. Future Meetings**

- a. May 3–5, 2006 — Baltimore, MD
- b. September 20–22, 2006 — Québec City, QU
- c. November 15–17, 2006 — Ft. Lauderdale, FL

**Resources Subcommittee Meeting**  
**February 8–10, 2006**  
**Scottsdale, Arizona**

<b>RS Meeting Attendance Sheet</b>	
<b>Resources Subcommittee Member/Guest</b>	<b>Organization</b>
Terry Bilke (Chairman)	MISO
Don Badley (Vice Chairman)	NWPP
Larry Akens	TVA/SERC
Gerry Beckerle	Ameren
Bill Herbsleb	PJM
Don McInnis	FPL
Bart McManus	BPA
Sydney Niemeyer	Texas Genco, LP
Alan Oneal	MidAmerican Energy
Mike Potishnak	ISO-NE
Robert Rhodes (for Carl Monroe)	SPP
John Swez	Cinergy
John Tolo	Tucson Electric Power
Raymond Vice	Southern Company
Tom Vandervort	NERC
Carlos Martinez	CERTS
Yuri Makarov	PNNL

**Individual Statements  
Resources Subcommittee Meeting  
February 8–10, 2006**

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***None***

**Minority Opinions  
Resources Subcommittee Meeting  
February 8–10, 2006**

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**There were none.**

**Resources Subcommittee  
February 10, 2006 Meeting  
Open Action Item List**

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
Terry Bilke	Frequency Response SAR	<p>011006, The SAC moved that a solicitation be made for self-nominations for the Frequency Response SAR Drafting Team and that the requestor (Terry and the RS Frequency Task Force) revise the comment responses and then revise the SAR to reflect the significant comments. The motion passed.</p> <p>011006, Terry and FTF to revise the comment responses and to incorporate the significant comments into the Frequency Response SAR.</p> <p>020806, Terry will re-review the comments, revise the responses and SAR to reflect the significant and relevant comments, and then forward the comment responses and revised SAR to the subcommittee for additional review.</p> <p>Note: The goal is to have the enhanced comment responses and revised SAR on the March, 2006 SAC meeting agenda.</p>	030106	
Terry Bilke and Resources Subcommittee	Frequency Profile Technical Paper	<p>021006, The Resources Subcommittee will document in a technical paper:</p> <ul style="list-style-type: none"> <li>• The recent and historical frequency trends</li> <li>• The root causes behind significant frequency excursions and identifiable frequency fluctuations</li> <li>• The reliability implications behind the frequency events</li> <li>• The state of the interconnection's frequency profiles</li> <li>• Make recommendations to capture, identify, and record the magnitude of frequency excursions for each frequency event</li> </ul>	080106	
Resources Subcommittee	RS Reference Document Library	<p>020806, New Action Item - Create a library on the NERC RS web site to capture various frequency, balancing, generation, etc., documents (e.g. technical papers, research papers, training documents, reference documents, task force reports, etc.). RS members to e-mail reference document recommendations for inclusion to Tom Vandervort who will compile the documents for RS review.</p>	050106	
Raymond Vice and FTF	Analysis of how Balance Resources and Demand Field Test has impacted the Eastern Interconnection Frequency Profile	<p>021006, The Balance Resources and Demand standard drafting team recommends the Resources Subcommittee determine how the Balance Resources and Demand field test has impacted the frequency performance of the Eastern Interconnection. Average frequency, standard deviation and number of significant outliers needs to be evaluated. The BRD SDT expectation was that small, short frequency excursions (around the frequency trigger limits but for less than <math>T_v</math>) would increase but that the duration of large, long frequency excursions would decrease.</p>	033106	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		The Frequency Task Force will determine how the BRD field test has impacted the frequency performance of the Eastern Interconnection.		
Don Badley and Review Team	AIE Project	021006, Don Badley and AIE Project review team are to review the AIE project application and then forward comments and recommendations to Carlos Martinez. AIE Project review team members are:  Don Badley, Team Leader Raymond Vice Bart McManus John Tolo Terry Bilke Don McInnis Mike Potishnak Tom Vandervort Brian Nolan The review is to be completed by April 1, 2006.	040106	
Don Badley and IITF	Review BAL-004, BAL-006, Ref Docs, Training Docs, Operations Guidelines, NERC Glossary of Terms, etc.	120805, 1) The Operating Committee (OC) asked the subcommittees to review the use of words such as "shall" in reference documents that implies a requirement. 2) The OC asked the subcommittee to develop operating guidelines that complement the reliability standards for which they are custodians.  021006, Don Badley and Inadvertent Interchange Task Force are to review BAL-004 and BAL-006 reference documents (i.e. training documents, all reference documents, operational guidelines, NERC Glossary of Terms, etc.). Goals are: <ul style="list-style-type: none"><li>• Revise reference documents for accuracy, applicability, etc.</li><li>• Evaluate all "shall" statements. Requirements need to be incorporated into the appropriate standard(s); change non-requirements statements to "should" or "may" language.</li><li>• Identify and summarize all operational guidelines (including "should" statements in reference documents). Operational guidelines will be brought to the RS and then to the OC.</li><li>• Review NERC Glossary of Terms definitions of "BAL" terms for accuracy.</li></ul> Reference Documents: Training Document – Area Interchange Error Survey Training Document Training Document – Inadvertent Interchange Accounting Training Document Others: ?	050106	
Don Badley	Review Freq Monitoring Guide	072905, RS reviewed and revised the RS Frequency Monitoring and Response	080106	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
	(Triggers and Actions Guide)	<p>Process (Triggers and Action Guide) for the Eastern Interconnection.</p> <p>102705, Don presented it to WECC and it will be addressed by the WECC Performance Criteria WG.</p> <p>020806, In progress.</p>		
Don Badley and IITF; Terry Bilke	ATEC in the Eastern Interconnection – Recommendation to the OC	<p>120805, At its December, 2005 meeting, the OC discussed the merits of implementing automatic time error correction in the Eastern Interconnection, and asked the Resources Subcommittee to prepare a recommendation for the committee’s March, 2006 meeting. Note: Terry made a presentation to the OC at the Dec, 2005 meeting. This request is related to the BAL-004-1 standard revision and SAR to incorporate automatic time error correction in the Eastern Interconnection.</p> <p>020806, RS approved the following motion: The RS recommends to the OC that automatic inadvertent interchange payback, similar to the WECC ATEC, be implemented in the Eastern Interconnection after the AIE hourly tool is implemented.</p> <p>Terry will present this recommendation to the OC in March, 2006.</p>	031506	
Larry Akens and ORTF	Review BAL-002, Ref Docs, Training Docs, Operations Guidelines, NERC Glossary of Terms, etc.	<p>120805, 1) The Operating Committee (OC) asked the subcommittees to review the use of words such as “shall” in reference documents that implies a requirement. 2) The OC asked the subcommittee to develop operating guidelines that complement the reliability standards for which they are custodians.</p> <p>021006, Larry Akens and Operating Reserves Task Force are to review BAL-002 reference documents (i.e. training documents, all reference documents, operational guidelines, NERC Glossary of Terms, etc.). Goals are:</p> <ul style="list-style-type: none"> <li>• Revise reference documents for accuracy, applicability, etc.</li> <li>• Evaluate all “shall” statements. Requirements need to be incorporated into the appropriate standard(s); change non-requirements statements to “should” or “may” language.</li> <li>• Identify and summarize all operational guidelines (including “should” statements in reference documents). Operational guidelines will be brought to the RS and then to the OC.</li> <li>• Review NERC Glossary of Terms definitions of “BAL” terms for accuracy.</li> </ul> <p>Reference Documents: Performance Standard Reference Document (applicable sections) Others: ?</p>	050106	
Alan Oneal and CCTF	Review BAL-001, Ref Docs, Training Docs, Operations Guidelines, NERC Glossary of Terms,	<p>120805, 1) The Operating Committee (OC) asked the subcommittees to review the use of words such as “shall” in reference documents that implies a requirement. 2) The OC asked the subcommittee to develop operating guidelines that complement the reliability standards for which they are custodians.</p>	050106	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
	etc.	<p>021006, Alan Oneal and the Control Criteria Task Force are to review BAL-001 reference documents (i.e. training documents, all reference documents, operational guidelines, NERC Glossary of Terms, etc.). Goals are:</p> <ul style="list-style-type: none"> <li>• Revise reference documents for accuracy, applicability, etc.</li> <li>• Evaluate all “shall” statements. Requirements need to be incorporated into the appropriate standard(s); change non-requirements statements to “should” or “may” language.</li> <li>• Identify and summarize all operational guidelines (including “should” statements in reference documents). Operational guidelines will be brought to the RS and then to the OC.</li> <li>• Review NERC Glossary of Terms definitions of “BAL” terms for accuracy.</li> </ul> <p>Reference Documents: Performance Standard Reference Document Others: ?</p>		
Larry Akens and ORTF; and Don Badley	Operating Reserves Review	<p>120805, The Operating Committee Chairman Sam Jones asked the RS to look at our current reliability standards that address operating reserves to make sure those standards are enforceable and address the needs of the Interconnections.</p> <p>Note: This action item will require reviewing “BAL” and other reliability standards.</p> <p>020806, Larry and the ORTF will review all “Operating Reserves” current reliability standards and all associated “Operating Reserves” definitions in the NERC Glossary of Terms, then forward its evaluation and recommendations to the subcommittee. Chairman Bilke will then forward the subcommittee’s evaluation and recommendations or status report to the Operating Committee.</p>	050106	
Raymond Vice and Frequency TF	Review BAL-003, BAL-005, Ref Docs, Training Docs, Operations Guidelines, NERC Glossary of Terms, etc.	<p>120805, 1) The Operating Committee (OC) asked the subcommittees to review the use of words such as “shall” in reference documents that implies a requirement. 2) The OC asked the subcommittee to develop operating guidelines that complement the reliability standards for which they are custodians.</p> <p>021006, Raymond Vice and Frequency Task Force are to review BAL-003 and BAL-005 reference documents (i.e. training documents, all reference documents, operational guidelines, NERC Glossary of Terms, etc.). Goals are:</p> <ul style="list-style-type: none"> <li>• Revise reference documents for accuracy, applicability, etc.</li> <li>• Evaluate all “shall” statements. Requirements need to be incorporated into the appropriate standard(s); change non-requirements statements to “should” or “may” language.</li> <li>• Identify and summarize all operational guidelines (including “should” statements in reference documents). Operational guidelines will be brought</li> </ul>	050106	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		<p>to the RS and then to the OC.</p> <ul style="list-style-type: none"> <li>Review NERC Glossary of Terms definitions of “BAL” terms for accuracy.</li> </ul> <p>Reference Documents:</p> <p>Performance Standard Reference Document (applicable sections)</p> <p>Frequency Response Characteristics Survey Reference Document</p> <p>Others: ?</p>		
Raymond Vice and Freq TF	Combustion Turbine Governor Response	<p>050505, The Combustion Turbine Governor Response issue only occurs when gas turbines are operating at maximum output limited by blade temperature as indicated by exhaust gas temperature and only limits response to low frequency deviations. It is not clear what percentage of gas turbines operate in this mode at any given time. In addition, the mass flow of air through the compressor of a gas turbine varies geometrically with frequency (speed of the compressor). This may reduce the ability of the turbine to respond to frequency deviation. <b>The Frequency Task Force will continue to investigate these issues and determine if a NERC Reliability Standard requirement(s) is necessary.</b></p> <p>102705, TF proposes changes to the “BAL” standards for RS concurrence and then submittal of a SAR(s) to the NERC standards process manager. See meeting agenda. The problem is that most BA combustion turbine generators operate such that there are no reserves to allow for governor response. There simply is no room for a higher response.</p> <p>Raymond to resurrect his white paper and create combustion turbine bullet points in order to allow John Undrill to address the RS issues.</p> <p>020806, Raymond may contact Mr. Undrill to address the RS at the May, 2006 Baltimore RS meeting on combustion turbine governor response.</p>	020806	
Raymond Vice and Freq TF	Balance Resources and Demand Implementation Plan	<p>021006, The Frequency Task Force needs to interface with the Balance Resources and Demand standard drafting team to ensure the RS assists the drafting team in implementing the standards’ requirements and measures. Actions may include:</p> <ul style="list-style-type: none"> <li>Training recommendations for the reliability coordinators and balancing authorities.</li> <li>Assistance with installation of and testing of the Balance Resources and Demand required EMS algorithms.</li> <li>General assistance to the reliability coordinators and balancing authorities regarding all aspects of the Balance Resources and Demand standards.</li> <li>Support and Assist the Balance Resources and Demand standards drafting team’s implementation plan and timeline.</li> </ul>	As Necessary	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
Sydney Niemeyer	Review Freq Monitoring Guide (Triggers and Actions Guide)	072905, RS reviewed and revised the RS Frequency Monitoring and Response Process (Triggers and Action Guide) for the Eastern Interconnection. 102705, Sydney is working with ERCOT staff to address this item. 020805, In progress.	080106	
	<b>NERC-CERTS Project Review</b>			
Terry Bilke	ACE-Frequency Application Review Team	021006, ACE-Frequency Application (NERC Project 2000-03) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend expectations, priorities, uses, methodologies, specifications, timelines, and results. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, NERC IT, etc. to be initiated as necessary.  Project Review Team: Leader-Terry Bilke, Raymond Vice, Sydney Niemeyer, Robert Rhodes, Bill Herbsleb, John Tolo, Bart McManus, Tom Vandervort  Group recommendations are to be shared with RS, CERTS and NERC Projects.	050106	
Terry Bilke	Develop ACE-Frequency Application Training Documents	021006, ACE-Frequency Application (NERC Project 2000-03) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend training lessons content, on-line help application, user friendly training tools. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, etc. to be initiated as necessary.  Project Review Team: Leader-Terry Bilke, Robert Rhodes, Tom Vandervort  Group recommendations are to be shared with RS, CERTS, and NERC Projects.	050106	
Don Badley	AIE Monitoring Application Review	021006, AIE Monitoring Application (NERC Project 2000-04) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend expectations, priorities, uses, methodologies, specifications, timelines, and results. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, NERC IT, etc. to be initiated as necessary.  Project Review Team: Leader-Don Badley, Raymond Vice, Bart McManus, John Tolo, Terry Bilke, Don McInnis, Mike Potishnak, Tom Vandervort, Brian Nolan  Group recommendations are to be shared with RS, CERTS, and NERC Projects.	050106	
Don Badley	Inadvertent Interchange Application Review	021006, Inadvertent Interchange Application (NERC Project 2001-37) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend expectations, priorities, uses, methodologies, specifications, timelines, and results. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, NERC IT, etc. to be initiated as necessary.	050106	

Action Figure	Subject	Action Item/Assignment	Due Date	Completion Date
		<p>Project Review Team: Leader-Don Badley, Inadvertent Task Force, someone from Southwest Power Pool (Robert Rhodes will be the point of contact to identify who this person will be), Tom Vandervort</p> <p>Group recommendations are to be shared with RS, CERTS, and NERC Projects.</p>		
Raymond Vice	CPS1 & BAAL Monitoring Application Review	<p>021006, CPS1 &amp; BAAL Monitoring Application (NERC Project 2001-38) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend expectations, priorities, uses, methodologies, specifications, timelines, and results. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, NERC IT, etc. to be initiated as necessary.</p> <p>Project Review Team: Leader-Raymond Vice, Doug Hils, Mark Henry, Sydney Niemeyer, Don Badley, John Tolo, Bart McManus, Tom Vandervort</p> <p>Group recommendations are to be shared with RS, CERTS, and NERC Projects.</p>	050108	
Raymond Vice	Frequency-Phasor Monitoring Application Review	<p>021006, Frequency-Phasor Monitoring Application (NERC Project 2005-06) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend expectations, priorities, uses, methodologies, specifications, timelines, and results. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, NERC IT, etc. to be initiated as necessary.</p> <p>Project Review Team: Leader-Raymond Vice, Frequency Task Force, Tom Vandervort</p> <p>Group recommendations are to be shared with RS, CERTS, and NERC Projects.</p>	050106	
Raymond Vice	Eastern Interconnection Phasor Project	<p>021006, ACE-Frequency Application (NERC Project 2000-03) – A small Resources Subcommittee team will review the issues and address the project parameters. The goal is to recommend expectations, priorities, uses, methodologies, specifications, timelines, and results. Collaboration with ORS, RCWG, NERC Projects, NERC Training Dept, NERC IT, etc. to be initiated as necessary.</p> <p>Project Review Team: Leader-Raymond Vice, Frequency Task Force, Tom Vandervort</p> <p>Group recommendations are to be shared with RS, CERTS, and NERC Projects.</p>	050106	

## NERC-CERTS RELIABILITY MONITORING PROJECTS - NERC RESOURCES SUBCOMMITTEE ISSUES – Revision: 02.06.06

NERC-CERTS Projects	Project Objective	Project Ownership, Drivers, End Users	Project Status and Target Dates	NERC Resources Subcommittee Issues
<p><b>Wide-Area ACE-Frequency Real Time Monitoring and Data Archiving</b></p>	<p>Real time Monitoring application that allows NERC Reliability Coordinators to immediately be alerted of electricity reliability threats originated by abnormal resource adequacy giving them time to work with out-of-compliance Balancing Authorities or other operational organizations to make course corrections, thereby reducing the chances of unplanned blackouts.</p> <p>It is also being used by NERC Subcommittees for reliability performance analysis and post assessment</p>	<ul style="list-style-type: none"> <li>• NERC Resources Subc.</li> <li>• NERC Reliability Coord.</li> <li>• NERC Standards Teams</li> <li>• NERC BAI Authorities</li> <li>• DOE (visibility up to RCs)</li> <li>• FERC (alarming)</li> </ul>	<p>Delivered on November, 2003. Release 3.5 will be delivered in March, 2006 with:</p> <ul style="list-style-type: none"> <li>• 2006 jurisdictional boundaries</li> <li>• New web service to improve users response time</li> <li>• Data quality historical reports</li> <li>• Graphics printing capability</li> <li>• Interactive panel relocation</li> <li>• Enhance functionality</li> <li>• Enhance online help</li> </ul>	<ul style="list-style-type: none"> <li>• Definition of interconnections frequency alarm thresholds</li> <li>• Support application deployment at ERCOT</li> <li>• Can intelligence passed to the EIPP?</li> <li>• Capture Unit Trips by scanning for frequency changes over 10 seconds and maintaining record. Also scan for ACE change that corresponds to the expected loss and calculate resource loss (or capture data)</li> <li>• Should scheduled frequency be displayed in CERTS Tools?</li> <li>• Report on data availability and estimated scan rate (goal is to get scan rate down to at least 10 seconds and 99.5% availability).</li> <li>• Change alert for one minute comparison. Scan at 36 mHz for East</li> <li>• Capture the control area that lost the resource and size of unit.</li> <li>• A sanity check on BA frequency response (and perhaps an automated tool to calculate BA response for the annual Bias calculation and the FRS).</li> <li>• Daily regression of one-minute ACE vs frequency deviation and keep this as an estimate of bias?</li> <li>• Establish Report Generation – On-demand and regular repetitive distribution; report data, to whom and when.</li> <li>• Review Release 3.5 new data quality reports and give feedback to NERC-CERTS</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>
<p><b>Wide-Area CPS-BAAL Monitoring and Data Archiving</b></p>	<p>Same project objective as ACE-Frequency above.</p> <p>It is being used by NERC BRSDST and participant BAs for BAAL Field Trial alarming and performance analysis</p>	<ul style="list-style-type: none"> <li>• NERC Resources Subc.</li> <li>• NERC Reliability Coord.</li> <li>• NERC Standards Teams</li> <li>• DOE (visibility up to RCs)</li> <li>• FERC (alarming)</li> </ul>	<p>Delivered on October, 2005. Release 3.5 will be delivered in March 2006 with:</p> <ul style="list-style-type: none"> <li>• Daily and monthly tracking</li> <li>• Data quality reports</li> </ul>	<ul style="list-style-type: none"> <li>• Feedback for CPS-BAAL weekly and monthly tracking functionality in Release 3.5</li> <li>• Establish Report Generation – On-demand and regular repetitive distribution; report data, to whom and when.</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>
<p><b>Wide-Area Inadvertent Monitoring</b></p>	<p>Migration of an online monitoring application to facilitate and help Balancing Authority schedulers to enter monthly scheduling data, monitor and resolve reliability issues originated by Inadvertent Interchange imbalances with their adjacent Balancing Authorities.</p>	<ul style="list-style-type: none"> <li>• NERC Resources Sub.</li> <li>• Regions Interchange Schedulers</li> </ul>	<ul style="list-style-type: none"> <li>• Software development completed on July, 2005</li> <li>• Currently setting Parallel Using SPP CSV input data and carry-forward files</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain from SPP the CSV input data-files for Parallel Run</li> <li>• Define Parallel Run participants</li> <li>• Define final delivery process and Timeline</li> <li>• Maintained dispute records until parties enter equal-opposite numbers.</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>
<p><b>Wide Area Interchange Error Monitoring (AIE)</b></p>	<p>Development of a Real time Monitoring application in response to frequency deterioration occurred in July 1999, NERC specified a real time monitor and collection tool to identify Balancing Authorities that cause large or long-term frequency deviations, and help to recommend alternatives.</p>	<ul style="list-style-type: none"> <li>• NERC Resources Sub.</li> <li>• NERC Reliability Coord.</li> <li>• RTOs</li> <li>• Regions Balancing Authority Operators</li> </ul>	<ul style="list-style-type: none"> <li>• Software development completed on March, 2005</li> <li>• Field Trial set up using local database in addition to servers</li> </ul>	<ul style="list-style-type: none"> <li>• Complete functional validation for current version of application</li> <li>• Request an entire Interconnection BAs volunteer to validate tool</li> <li>• Request BAs hourly input data for Application</li> <li>• Resolution process needed (priority) to come back and make joint/common changes</li> <li>• Calculate the NI adjustment for TEC</li> <li>• Ongoing comparison of CERTS ACE and AIE.</li> <li>• Notification on ongoing metering error and recommended adjustment</li> <li>• Establish Report Generation – On-demand and regular repetitive distribution; report data, to whom and when.</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>

<p><b>Frequency Data Collection and Analysis Using Phasor Measurements</b></p>	<p>Research, prototype and field test Interconnections frequency phasor data collection and functionality to allow stakeholders to quickly and with confidence identify the cause of disturbances and take preventive actions to remedy abnormalities using time synchronized high resolution data</p>	<ul style="list-style-type: none"> <li>• NERC Resources Subc.</li> <li>• NERC Reliability Coord.</li> <li>• NERC Standards Teams</li> </ul>	<ul style="list-style-type: none"> <li>• Functional and design specifications completed on September, 2005</li> <li>• Currently coordinating with TVA the phasor data interface</li> </ul>	<ul style="list-style-type: none"> <li>• Consider WECC, ERCOT, HQ participation in this project</li> <li>• Review and feedback for functional specification</li> <li>• Establish Report Generation – On-demand and regular repetitive distribution; report data, to whom and when.</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>
<p><b>New Reliability Performance Metrics</b></p>	<p>Research, prototype and field-trial tests to validate new performance metrics concepts and define performance thresholds for load-generation adequacy, transmission transfer limits and generation frequency response</p>	<ul style="list-style-type: none"> <li>• NERC Balance Resources and Demand Standard Drafting Team (BRSDT)</li> <li>• Other Drafting Teams</li> </ul>	<ul style="list-style-type: none"> <li>• Final report for research and validation of BRSDT assumptions, November, 2005</li> <li>• Support Field-Trial monthly performance reports</li> </ul>	<ul style="list-style-type: none"> <li>• Awaiting direction from Frequency Response Standard Drafting Team</li> <li>• Support deployment of CPS-BAAL performance application at ERCOT</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>
<p><b>Data Quality Project for Disturbances, Alarming, Response and Analysis (DARA)</b></p>	<p>Research, prototype and field test a generic integrated system for NERC real time monitoring disturbance identification and alarming, common for the ACE, CPS-BAAL, Inadvertent, AIE and Frequency Collection monitoring applications</p>	<ul style="list-style-type: none"> <li>• NERC Resources Sub.</li> <li>• NERC Standards Teams</li> <li>• NERC Staff</li> <li>• TVA</li> </ul>	<ul style="list-style-type: none"> <li>• Functional specification completed on December, 2005</li> <li>• Contract negotiation with external vendor for development.</li> </ul>	<ul style="list-style-type: none"> <li>• Review and feedback for NERC-CERTS data quality improvements roadmap document</li> <li>• Review and feedback for CERTS DARA functional specification</li> </ul> <p>Target Date: xxxxx, RS Leader: xxxxx, Test Support: xxxxx</p>