Eastern Interconnection Reliability Assessment Group

Final Minutes
ERAG Management Committee Meeting
SERC Office, Charlotte, NC

February 26, 2008 (8:00 a.m. - 5:00 p.m.) - Joint Meeting with MMWG
February 27, 2008 (8:00 a.m. – noon)

Agenda – February 26 and 27

1. Introductions and logistics

ERAG Management Committee

Jay Caspary (Vice-Chair SPP)
Carter Edge (SERC)
Mike Falvo (NPCC)
Bill Harm (RFC-2/26)
Jeff Mitchell (Chair-RFC)
John Odom (FRCC)
Vince Ordax (FRCC)
Paul Roman (NPCC)
Russ Schussler (SERC)
John Seidel (MRO)

MMWG (on 2/26)

Eric Allen (NERC)
Salva Andiappan (MAPPCOR-MRO)
Robert Bottoms (TVA-SERC)
Adam Flink (MRO)
Gaurav Karandikar (Ameren-SERC)
Mark Kuras (PJM-RFC)
Kerry Marinan (American Transmission Company-MRO)
Fred McNeill (FRCC)
Bob Pierce (Duke-SERC)
Brett Rollow (SPP)
Harvey Scribner (Chair-SPP)
Rao Somayajula (RFC)

Additional Attendees

Herb Schrayshuen (SERC on 2/26)

2. Approve minutes for:
a. October 29-30, 2007 meeting

The minutes from the October 29-30, 2007 meeting were approved as final and will be issued and posted on the ERAG web site.

b. November 1, 2007 conference call

The conference call notes were approval as final by e-mail prior to the meeting and will be issued and posted on the ERAG web site.

3. Review Administrative Items

A quorum was confirmed with all 12 votes available through attendance, or proxy. Jay Caspary had the proxy for the other SPP representative Mak Nagle, who was not in attendance.

ERAG MC agreed that the cost of the MMWG and ERAG MC can be shared equally among the 6 regions. The host will bill each of the other regions one-sixth of the total. 

Jeff Mitchell will change that item in the ERAG handbook.

a. Rosters

Discussion deferred to April meeting.

b. Web site

Jeff Mitchell announced that the ERAG web site has been established but not yet populated. The work to add files and additional pages is underway.

c. Other issues—Dynamics case Representation Problems.

Addressed in 3A below.

3A. Overall MMWG Power Flow and Dynamics Case Accuracy Issues

General Perception of Cases

Bob Cummings joined the meeting by telephone and indicated that NERC will be issuing an Industry Alert to the registered Reliability Coordinators, Transmission Operators (TOPs) and Transmission Owners (TOs). It will indicate that TOPs and RCs should review their base cases used to determine operating limits, especially stability limits, to ensure that they are up to date with all system conditions, including retirements and all other changes to system topology. This conclusion by NERC is based on errors found while reviewing the Midwest ISO base case that was used in conducting the investigation of the September 18, 2007 system disturbance that affected the Dakotas, Manitoba and
Saskatchewan and resulted in islanding of Saskatchewan and loss of about 900 MW of load. The ERAG MC was concerned with this advisory, as it calls into question the accuracy of all MMWG base cases. ERAG MC will get to review the advisory before it is issued by NERC and will provide comments.

David Till, the Chair of the NERC Transmission Issues Subcommittee had sent an e-mail calling for better enforcement of rules now in place to improve the quality of base cases that are provided to industry participants.

MMWG members indicated that there has been a steady improvement in the quality of MMWG base cases over the last few years. They mentioned that the Midwest ISO base case accessed for the September 18 disturbance investigation was quite stale (2004 MMWG series case) and more updated and detailed cases should really be obtained from the area where the disturbance occurred to use in the analysis. However, MMWG acknowledged the need for continual improvement in the data input and screening in the MMWG case development process.

**Discussion of Possible Errors and Discrepancies**

Eric Allen discussed specific errors and discrepancies that he has identified in base cases. This included the instances where power flow and dynamics representations for the same equipment did not match. The presence of these and their impacts were discussed.

- Retired generation represented as on-line and operating at full load—these clearly are not correct and the data checking must screen these.
- New generation not modeled—Eric had sent to MMWG a list of base case generators that had no associated dynamics models. The MMWG Procedural Manual requires that all generators larger than 20 MVA have dynamics models. The concern with this was that for many smaller units (up to 100 MVA) there are sometimes no models supplied by the manufacturer. The apparent way to comply with this would be to add “typical data” models for many of these. Also, in many instances in the power flow cases, many smaller units are lumped together in the corresponding steady state model.
- Out-of-date ratings—This is usually screened by the entity conducting transfer capability studies.
- Power flow modeling errors (e.g. Pgen > Pmax, Qmax < Qmin) — These errors can prevent initialization of the dynamics models. In the case of the higher Pmax, that sometimes occurs for nuclear units that have had a P increase but are limited by a licensed Pmax value. A solution is to boost the Pmax to the maximum achievable P value, regardless of the licensed value. Similarly, the Qmax and Qmin values could be changed. These changes would need to be confirmed by the MMWG Regional Coordinators.
- Maintenance and forced outages not fully represented—MMWG members indicated that even the seasonal base cases are still truly “planning environment” and not “real-time operating environment” cases. The user of the cases should
always adjust for the most recent maintenance and forced outages or should obtain a case used for short term operating studies.

- Redispatching generators from power flow to dynamics in order to make dynamics ready and able to initialize. Such changes indicate that the power flow dispatch and limits may not be valid.

MMWG has 6 case quality checks for steady state models used for compliance determinations. These are listed in the MMWG Procedure manual--Appendix VI (see excerpt from manual below).

The following data screening checks will be used to check case quality:

- Interchange and tie line data not matching the raw data will not be accepted until either the interchange data or the raw data are corrected. *
- All CNTB errors shall be corrected. (Exceptions will be documented.)
- All instances of mode=1 switched shunts with VHI – VLO < .005 per unit shall be corrected.
- Any regulation by any regulating device of a bus more than one bus away, except where there is a three-winding transformer in which case no more than two buses away, shall be corrected.
- All instances of TCUL transformers with more than 50 tap steps shall be corrected.
- All instances of voltage controlling bandwidth less than twice the transformer tap step size shall be corrected.

Dynamics cases go through a similar list of checks.

MMWG members reviewed the process used for developing the dynamics cases. Dynamics cases are developed for more than half of the steady state models. Each case goes through data checking to get it ready to initialize. Some regions split lumped generation at a bus to model the individual generators.

**Impact of Errors or Discrepancies on Results**

ERAG MC acknowledged some of the errors/discrepancies indicated could impact results. These include: retired units modeled, large units without dynamics representation. Others would be considered nuisance errors and may hamper initialization but would not cause incorrect results.

Another concern was the interchange tolerances used to obtain solutions of the base cases. ERAG MC and MMWG discussed interchange tolerance and the dispatch of generators. MMWG wants a larger tolerance for area interchanges (e.g. 5 MW). The slack generators should be dispatched so that the larger tolerances can be handled by the slack generators without exceeding limits.
Some MMWG members will meet with NERC Staff to discuss and possibly add items to the MMWG compliance data error checklist for steady state and dynamics models.

The Regional Coordinators will need to stress to the Reliability Coordinators, Transmission Operators and Transmission Owners who submit case data that they need to more thoroughly review case data before it is submitted.

**MMWG Data Accuracy Improvement Plan**

The ERAG MC and MMWG agreed that enhancements will be made to improve the data checking process so it works better for the 2008 series of MMWG cases.

The proposed approach will include the following steps:

- For Data Set 1 release cases as preliminary (label “not dynamics ready”).
- Fine tune the case and conduct tests to ensure the case initializes for dynamics.
- Reactive limits need to be coordinated between the steady state and dynamics representations before declaring a case “dynamics ready”. This will require a check by the Dynamics Coordinator to confirm that base case models are within limits for all dynamics models in the case (e.g. excitation systems, etc.).
- The Data Set 1 cases will then be labeled “dynamics ready” when they are published as Dynamics Models.
- The Dynamics Coordinator should compile an errata sheet to identify changes made to get the case “dynamics ready”.
- IDEVs for changes should be made available to further document the differences (changes to power flow model to make them dynamics ready).
- Contingency screening tests will be conducted on the final Dynamics ready models.

The Dynamics Coordinator will need to be informed about the changes to the process.

One additional dynamics case will be developed in 2008. There will be a total of 12 steady state models and 7 dynamics ready models. The cost will be higher than for 2007.

4. **MMWG issues:**

Harvey Scribner announced that the MMWG data dictionary that translates the bus numbers has been compiled and will be published with the models.

a. **Review 2007 Series power flow and dynamics activities and any case quality issues and discuss reply to Eric Allen’s three emails from December**

    Addressed under item 3A above.
b. Approve base case and data release policy (power flow and dynamics)

Harvey Scribner reviewed the present MMWG Data Release process and policy:

Those requesting base cases must sign a non-disclosure agreement. There is no model handling fee for MMWG model(s) released to the ERAG MMWG Region Coordinators or MMWG Agents (Non-ERAG MMWG members, NERC, Consultants, etc.) who perform direct services for MMWG and MMWG Regions. Otherwise, models can be obtained through the MMWG Single Point of Contact (to be determined) for a handling fee. The MMWG model handling fee is $200 (US) for the first model and $100 for each additional model in the request. Chris Haley at SPP keeps track of any model release issues. If there is denial in providing a model then a record is kept of the request, denial and reason for denial. **This policy and the stated fees will need to be provided as part of the FERC-715 filings for each of the 6 Eastern Interconnection Regions.**

Several new issues were raised:

- The process refers to FERC 715 but this does not apply in Canada so how would release of cases in Canada be handled?
- How is the Canadian data in the representations handled?
- Data in the MMWG cases is considered to be Critical Energy Infrastructure Information (CEII) so it needs to be handled based on FERC CEII regulations.

c. Review RFP for power flow coordinator

Prior to the meeting Jeff Mitchell had e-mailed the draft contract with AEP to renew the MMWG power coordinator role. ERAG MC Members had a chance to review it and provide comments. Specific changes made were discussed:

- Shortening of terms for cancellation.
- Use quarterly billing

**SERC legal counsel is reviewing the contract and SERC will report back to the ERAG MC.**

Jeff will ask for a final e-mail approval once the legal review is completed.

d. Approve single point of contact for base case release to public

Addressed under item 4b, above.

e. Review budget for 2008 activities
For 2008 14 power flow models are being developed at an estimated cost of $7,250 per model (14 x $7,250 = $101,500). The total rounded power flow models development cost estimate = $110,000.

For 2008 7 dynamics case models are being developed at an estimated cost of $15,500 per model (7 x $15,500 = $108,500). The total dynamics models development cost estimate = $110,000.

Harvey Scribner indicated that MMWG wants to hold a Seminar in either 2008 or 2009. The workshop would address such steady state power flow and dynamics topics as: compliance issues, modeling issues, the database, lessons learned from the previous year’s case creation process, case release and data release policy, etc. The intention is to have user funding to offset some of the costs for the seminar. Once more plans are made ERAG MC will need to determine whether marketers would be able to attend.

f. Approve 2009 MMWG budget

For 2009 the budget would be very similar to 2008.

For 2009 14 power flow models are being developed at an estimated cost of $7,250 per model. 14 x $7,250 = $101,500 Power flow model cost estimate = $110,000.

For 2009 7 dynamics case models are being developed at an estimated cost of $15,500 per model. 7 x $15,500 = $108,500 dynamics case model cost estimate = $110,000.

g. Status report on database work with Powertech Labs

Mark Kuras provided a status report on the database development work:

- The platform for the database program will be SQL Server and will not use Microsoft Access. Users can download a free program from SQL to run the program locally. The database can be run without any outside databases.
- The database will have 17 categories. It will be able to read data from various power flow programs. It will use XML data transfer but will be able to use PSAT as a filter between two programs. Output will use XML but since it is a text format, the output files can be read directly into either simulation program.
- Some visualization is already part of the database program.
- It will be able to read existing tie line and interchange files presently used by MMWG so extra work to transfer existing data will not be required.
- Attributes related to each bus (kV, name etc.) needs to be unique.
- Input and output to the database using PSS/E and GE PSLF is allowed.

The design document should be completed by the end of February. Development is presently on time and on budget.
Questions that need to be answered include: 1) who will be the keeper of the database—Power Tech Labs or the regions?, 2) what work will MMWG and the Power Flow Coordinator need to do to get the database implemented and running?, 3) will a power flow coordinator still be needed for MMWG base case development once the database is implemented and if the coordinator is needed what would be the role?

h. Review GE involvement in MMWG base case building process regarding case solution in PSLF

Harvey Scribner requested that a GE PSLF user volunteer to attempt solutions to all MMWG Trial 1 base cases. That user could go through a set of tests to check the data representation that may impede solution for GE PSLF. Trial 1 base cases tend to be difficult to solve, even using PSS/E, so that would be a good test to identify errors or suspect data. MMWG wants a single GE PSLF contact for this. **MMWG will seek a volunteer for this.**

i. Generator data collection

Jeff Mitchell discussed a concern seen within RFC with regard to compliance responsibility for submission of accurate generator data. Some Transmission Owners can be held responsible for reporting of generator data for generators connected to their system but supplied by the Generator Owners. The RFC solution has been to require the Generator Owners to certify that the generator data that they are submitting is correct. RFC will continue with this practice and other regions also agreed with this practice.

j. Discuss any other issues

h. Billing for MMWG

The regions are responsible for paying the bills for the MMWG contractor AEP; however, some bills from AEP had gone to NERC and NERC paid them. A reimbursement for this will need to be made to NERC by the regions. ERAG will do this on behalf of the regions.

5. ERAG/MMWG involvement in system disturbance analyses

ERAG MC discussed what role it should have in furnishing base cases for and participating in system disturbances analyses. Presently, the ERAG organization is not set up to provide base cases or participate in disturbance analyses and a much greater commitment would be needed from the regions to extend ERAG’s functions to include this work. This will be discussed at a future ERAG MC meeting. Carter Edge will provide the members with a copy of the SERC procedure on disturbance reviews.

6. Should ERAG evolve to support economic models/studies?
Jay Caspary reported on this item. DOE has been pushing the ISO/RTO Council Planning Committee (IRC PC) to lead the 2009 Congestion Study. SPP is now conducting a year 2018 assessment that involves economic modeling. WECC and ERCOT have committees that conduct very long term economic assessments using economic models. ISO-New England and NYISO have offered for use in conducting the assessment their methodology for long term economic forecasts based on market data and congestion information. This gives indications of how markets react to changed assumptions. ERAG MC agreed that all that the group can offer for this is the network topology to use in the economic studies.

7. Discuss any issues/concerns regarding change to the NERC reliability assessments, especially in transmission assessments

   a. Scenario analysis for Long Term reliability Assessment (LTRA)

   The present NERC RAS LTRA is requiring regions to select and conduct an analysis of a particular future scenario over 2008 and 2009. The scenario will not require system modeling and studies and could involve research and qualitative analysis. An outline must be developed in 2008 and the analysis must be completed in 2009.

   FRCC reported their scenario will involve renewable resources. An RFC-MRO-SERC joint study is being done for this.

   b. Coordination among regions with RTOs

   RFC-MRO and are SERC looking at coordinating system analyses/assessments. SPP may also provide input.

8. Coordination of next Underfrequency Load Shedding (UFLS) study for NERC standard

   The ERAG MC discussed whether the individual regional UFLS studies do not have sufficient coordination to satisfy the existing NERC standards related to UFLS. It was agreed by ERAG MC that the regional studies all coordinate with the neighboring regions and it is unnecessary for ERAG to conduct a UFLS study.

9. Discussion of Any Study Issues from the Forums:

   Jeff Mitchell indicated that some of the regions have filed the ERAG seasonal base case with the FERC-715 response. He believed most, if not all, have used this same base case in the filing and posed the question to the group on whether just one base case should be filed as part of this by ERAG for all the Eastern Interconnection regions. It was decided not to for 2008 but it will be reconsidered next year.

   a. Western (MRO-RFC-SERC west-SPP)
Discussion deferred to April meeting.

b. Northeastern (NPCC-RFC)

Discussion deferred to April meeting.

c. Southeastern (SERC east-RFC)

Discussion deferred to April meeting.

10. Review Future Conference Call and Meeting Schedule

a. April 23-24, 2008 (noon-noon); MRO office

   Specific information on the meeting location and lodging will be issued by MRO.

b. August 7-8, 2008 (noon to noon) – coincides with SERC pig roast

   The ERAG MC meeting will be held at the Renaissance Ross Bridge in Birmingham, Alabama. The meeting will begin at noon on Thursday, August 7 and end at noon on Friday, August 8. The pig roast will be at Oak Mountain State Park on Saturday.

c. October 21-22, 2008 (noon to noon) – Toronto, ON downtown

   Plans for this meeting will be made later in the year.

d. Schedule other meetings/calls, as needed

Prepared by:
Paul A. Roman

Draft for Approval minutes issued on April 15, 2008.
Final minutes issued on April 23, 2008