

## Meeting Notes Generator Verification SDT — Project 2007-09

January 19–20, 2008

### 1. Applicability of Generator Verification Standards

With respect to revising applicability of GV standards to generation connected at 60kV and above: NERC staff agrees that additional conditions may be applied to Compliance Registry criteria for the purpose of standard applicability, e.g., generators connected at 60kV and above. The GV SDT needs to reach consensus with respect to which standard (PRC-024, MOD-024, MOD-026, MOD-027, and others?) This condition should be added.

- a. Not all smaller generators (20 MVA+) have under frequency trip relays installed.
- b. Also should consider whether there exists comparable load connected at the same voltage level.
- c. In any case, technical justification must be offered to support applicability to sub-100kV generators.
  - i. 4% of total capacity in RFC (and WECC?) is connected at sub-100kV level.
  - ii. 4% is significant because UFLS programs are structured in increments as small as 5% of total load.
  - iii. The timing of generation loss is critical to effective UFLS programs.
- d. Opposing views include:
  - i. Not all are connected between 60kV and 100kV.
  - ii. NOT Significant! There is not solely a single 5% load shed increment but rather there are 5 blocks.
  - iii. Need to have more information with respect to what generators have under frequency tripping relays.

### 2. MOD-024-2 Mapping Document

With respect to the MOD-024-2 mapping document, the SDT reviewed all changes and have the following clean-up items for the sub team to perform:

- a. Remove the 60kV criterion in the applicability section for the initial posting.
- b. Do not hold up posting until “formal data” justification is received.

### **3. Next Steps for the Four Posting Documents**

With respect to all four initial posting documents (the revised MOD-024-2 standard, mapping document, comment form, and the Implementation plan) the following global decisions are to be implemented by the sub team:

- a. Remove the 60kV criterion in the applicability section for the initial posting.
- b. Footnote the definition of “sister unit” in the standard MOD-024-2.
- c. Explain choice of GOP versus GO in the comment form.

### **4. Document Posting Status**

The sub team will complete its work to ensure consistency between the four initial posting documents by Friday, July 11, 2008. The GV SDT will comment as needed by July 18, 2008. The sub team will address comments (if any) and will forward to NERC Technical Review Panel by July 23, 2008.

### **5. With Respect to PRC-024-2 the Following Issues were Discussed:**

- a. How should the standard handle existing generators that may be unable to comply with these new requirements? The prevailing sentiment is to allow them to be exempt from the requirements subject to notification and submittal of documentation explaining the technical limitation to the RE and TP.
- b. How should the standard handle in-progress purchases and installations of generators as of the regulatory approval date? The prevailing sentiment is to use verbiage from FERC document (see Brendan’s email dated June 19, 2008).
- c. What type of documentation shall a GO provide to demonstrate compliance with R2? Some examples considered are:
  - i. “setting sheets”,
  - ii. “calibration sheets”,
  - iii. voltage-time curves,
  - iv. coordination plots, and
  - v. dynamic simulation studies.
- d. The discussion of M2 raised another question related to other generator protective relays with voltage inputs and whether they ought to be subject to this standard. Discussion during dinner ensued.

- e. The sub team suggests that PRC-024-2 concern itself only with the over and under voltage relays and not other voltage sensitive relays (such as “21N”, loss of excitation, out of step, etc.). Then rely on PRC-001 to ensure coordination of these relays. SDT discussion outcome is...
- f. Add a question to the comment form with respect to purpose of PRC-024-2, i.e., shall the purpose include ensuring that a generator, as a whole, remain connected during frequency and voltage excursions?
- g. The interpretation of the VRTC and FRTC is varied and reflect a differing intent than the authors. The PRC-024 sub team shall rework the curves and associated explanatory text. Suggest considering a voltage duration curve as an alternate depiction of the intent.
- h. Compliance triggers for existing exempted generators:
  - i. Any change, upgrade, modification that affects or impacts the technical limitation referenced in RX.X shall require the GO to re-evaluate the basis for its exemption. In view of these changes the GO shall implement necessary/additional? Upgrades or modifications? To come into compliance.
- i. For the comment form, the PRC-024 sub team will ask stakeholders to consider inclusion of requirements that specify ride through of auxiliary plant systems during frequency and voltage excursions provided that existing generators are exempt.
- j. Consider frequency excursion impacts on CT flame stability and blowout. Refer to FRCC report:  
<https://www.frcc.com/Reliability/Shared%20Documents/FEAT%20Interim%20Report.pdf>.

## **6. GO vs GOP Consistency?**

### **7. With Respect to MOD-025-2:**

- a. Hamid indicates that the MVA threshold of 20MVA may be too low since the MVA capability of such a small generator is not material to BPS. Suggest 80 to 100 MVA for the low end.
- b. The title removes Gross and Net to be consistent with MOD-024.
- c. Facility section is revised to raise the connection voltage from 60kV to 100kV.
- d. Baj is concerned about the value of testing generators on the low end of the size range and the information to be discerned from such testing.
- e. Lee asks for consideration of a valid percent e.g., “D” curve.
- f. Tom B supports testing of 20 MVA size units due to their importance during high loading periods.
- g. Sub team to draft question on applicability in comment form.

- h. Baj asks why 95 percent in R2.2. The use of 90 percent provides flexibility.
- i. R2.3 — no issues.
- j. R2.4 — If using performance tracking such as PI system to comply, temperature data will be needed (Lee). Some team members expressed concern that the test conditions are not clearly described and that the expectations by the MOD-025 sub team is unclear. Baj maintains that use of PI data (performance tracking) validity is judged differently than on site test data. Need to define the conditions under which PI system data is acceptable for compliance (should not be more restrictive than on site testing).
- k. Limited by system conditions and supplemented by engineering — Bob
- l. Sub team to write the standard to balance on the one hand, the existence of some generating units that have not ever reached the “D” curve due to terminal voltage limit, with preventing lax testing practices on the part of some GOPs on the other — Bob