Project 2007-09 - Generator Verification

Unofficial Comment Form

MOD-026-1

**Instructions**

Please **DO NOT** use this form for commenting.  Please use the [electronic comment form](https://www.nerc.net/nercsurvey/Survey.aspx?s=5415a98f8e954d58a6a2d8ecf267f01e) to submit comments on the proposed revisions to MOD-026-1.  Comments must be submitted by 8 p.m. ET **October 29, 2012**.  If you have questions please contact Stephen Crutchfield at [Stephen.crutchfield@nerc.net](mailto:Stephen.crutchfield@nerc.net) or by telephone at 609-651-9455.

### Background Information:

The GVSDT posted the draft standard, MOD-026-1, February 29 – March 29, 2012 for a formal comment period and successive. The GVSDT received valuable feedback from stakeholders regarding improvements to the standard. Many of the suggested edits were incorporated into the revised standard.

# The vast majority of the industry commenters agreed with the concept of specifying that validation is not required for an excitation control system or plant volt/var control that does not include an active closed loop voltage regulation function. The GVSDT received comments regarding other aspects of the standard. Several Industry commenters indicated that it was not clear if the table was associated with Attachment 1 or not. In response, the SDT has re-formatted Attachment 1 to make it clear that the table is a part of Attachment 1. Also, some commenters were concerned that Table 1 inferred that plants with complex reactive coordination controllers may be unduly exempted from being applicable. The SDT clarified that for plants that include devices that provide dynamic voltage regulation (such as a STATCOM, DVAR or SVC, commonly found in Renewable Plants), these devices should be included in the model and should be validated. The intent of this language was to exempt only those units or plants that did not contain any closed loop voltage regulation function. The SDT added some clarifying verbiage to the appropriate row in Table 1 that ultimately references Footnote 1 in the standard.

# Most of industry commented that they agreed with the guidance provided by the SDT on the periodicity aspects of Attachment 1. Many commenters did not correlate the guidance on the periodicity aspects of Attachment 1 to the examples “above” in the Background section of the Comment Form. Please see the Summary Consideration section for Question 5 as there were several comments regarding the periodicity examples.

# The majority of the industry commenters agreed with specifying the capacity factor calculation in Appendix F of the GADS Data Reporting Instructions. Also, many of the commenters pointed out that neither the net or gross calculation was specified in the standard and suggested the SDT use the “net” calculation. As such, the SDT has revised the draft standard to reference the net capacity factor calculation in Appendix F of the GADS Data Reporting Instructions. Finally, the SDT moved the details of the capacity factor exemption concept from a footnote in the Applicability section to a row (Row 7) in the Periodicity Table. The team thought that would be appropriate as the Periodicity Table already included the “equivalent” unit concept (Row 4).

# The following modifications to the draft standard were incorporated as a result of industry comments:

# A significant number of industry commenters opposed the use of the term “bulk power system” in the Applicability section. The SDT did not mean to convey a modification in the breadth of units which would be covered by the standard as “bulk power system” is a term used in the Compliance Registry. But based on the concerns expressed by industry, the SDT has replaced the term “bulk power system” with the NERC defined term “Bulk Electric System”.

# The SDT has refined verbiage and the format in the standard applicability and Part 2.1 to clarify the use of individual and aggregate models for plants.

# The SDT removed the footnote regarding standby units as industry comments suggested that it did not provide additional clarity to the Applicability.

# The SDT replaced “Planning Coordinator” with “Transmission Planner” in the standard. The Functional Model for the Transmission Planner is more in line with the task described in the standard.

# The SDT revised the Applicability section 4.2.4 to make it clear that it applied to technically justified units that meet the NERC Registry criteria. It is emphasized that “technical justification” is defined by demonstrating that the simulated unit or plant response does not match the measured unit or plant response.

# Subpart 2.2 has been re-worded and merged into Subpart 2.1. The new verbiage makes it clear that the expert performing the model verification has flexibility regarding if the model should be represented by individual unit or plant aggregate models or any combination therein as dictated by the specific situation. This merger also results in appropriate mapping to the VSLs.

# The SDT has refined section 4.2.1, 4.2.2, and 4.2.3 of the standard applicability.

# The SDT has re-formatted the Periodicity Table (Attachment 1) to make it clearer that the table is included.

# Revised the Periodicity Table (Attachment 1) extensively for clarity, including removing specificity regarding when the voltage excursion used for model verification had to be captured. This resulted in a modification of the required times for re-verifying the model for exception (Requirements R3 and R4) type activities.

# The SDT made corrections to VSL verbiage (less than or equal to with respect to days late) and replaced Planning Coordinator with Transmission Planner.

# In Requirement R5, in describing checking the actual equipment to determine if updated model data could be obtained, the expression “walk down” was replaced by “on-site review” of the equipment.

# The term “inertia” was modified to “total inertia” in Subpart 2.1.3 as some industry commenters expressed concern that reference to “inertia” only would lead to submittal of an inertia constant reflective only of the generator, as opposed to all of the mass attached to the shaft.

# In Subpart 2.1.1, the specific reference to point of interconnection has been removed. The location where the unit’s response is measured is left to the model verification expert.

# The second bullet in Requirement R1 has been modified to be the same style and sentence structure used in the first bullet of Requirement R1.

# The SDT has removed the term “generating plant / Facility” and replaced it with “individual generating plant consisting of multiple generation units that are directly connected at a common BES bus” only from various sections of the applicability section of the standard for clarity.

# The SDT modified the phrase "generator excitation control system and plant volt/var control functions” to “generator excitation control system or plant volt/var control functions” to recognize that the use of the phrase “or” is technically correct the vast majority of the time.

**Periodicity Table (Attachment 1) for MOD-026-1:**

Based on industry comments from the last posting, the GVSDT modified the Periodicity Table (Attachment 1) to make it to make it significantly simpler and concise. In an effort to re-enforce the resulting modifications detailed in the current draft of the Periodicity Table, the following examples are offered by the GVSDT to aid industry in understanding the proposed model verification periodicity:

Periodicity Example 1:

The following timeline depicts a model which is initially verified, and then is verified again after a 10-year period. It is assumed that a unit is part of the 30% of the Generator Owners applicable unit’s gross MVA per Interconnection four years after regulatory or NERC B.O.T. adoption used to meet the Effective Date requirements for Requirement R2. The requirements detailing activities by exception do not occur (Requirements R3 – R5) – which is expected to be the situation for the majority of the time. Note that the date of the collection of a recording of the actual equipment response to a voltage excursion is not needed to satisfy compliance. The recording of the actual equipment response simply has to occur in a timeframe which allows the GO time to finish verification and subsequently transmit the verified model including the verification documentation and model data by the required dates in the Periodicity Table. For this example, those required dates are Year four (first day of the first calendar quarter following regulatory or B.O.T. approval) – then 10 years after the submittal of the previous verification [Year 14] – then, again, 10 years after the submittal of the previous verification [Year 24]:



Periodicity Example 2:

The second example is much like Example 1. The only difference is that for the second verification, the Generator Owner finished model verification and submitted to its Transmission Planner the verified model including the model verification documentation and model data six months early. Regarding the third verification (which is not shown on the example below), the GO would be required to submit the verified model including the model verification documentation and model data on or before 10 years after the submittal of the previous verification (i.e., Year 23.5 or earlier).



Periodicity Example 3:

In the third example, it is assumed that a unit is part of the 50% of the Generator Owners applicable unit’s gross MVA per Interconnection six years after regulatory or NERC B.O.T. adoption used to meet the Effective Date requirements for Requirement R2. Following the initial verification, the third example details a scenario which the SDT anticipates would rarely occur. Specifically, the scenario assumes that at sometime after the initial verification, the Generator Owner receives written notification that there is evidence that the model does not accurately predict the actual response of the equipment. As detailed in Requirement R3, the Generator Owner has 90 days to respond to the notice. The Generator Owner may respond that the model is still appropriate, or submit model changes – or it may submit a plan to re-verify the model. The example below assumes that later – i.e., the Generator Owner submits a plan to re-verify the model on the 90th day.

From that point, per the Periodicity Table, the Generator Owner has 365 days to record and collect equipment response for a voltage excursion, perform model verification, and transmit the model and model verification documentation and data to the Transmission Planner. Regarding the third verification, the GO would be required to submit the verified model including the model verification documentation and model data on or before 10 years after the submittal of the previous verification (i.e., Year 23 plus 90 days or earlier).

Finally, regarding the fourth verification (which is not shown in its entirety on the example below), the GO would be required to submit the verified model including the model verification documentation and model data on or before 10 years after the submittal of the previous verification (i.e., Year 33 plus 90 days or earlier).



**You do not have to answer all questions. Enter All Comments in Simple Text Format.**

*Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.*

1. **The GVSDT has revised Attachment 1 based on stakeholder comments. Do you agree with this revision? If not, please explain in the comment area below.**

Yes

No

Comments:

1. **The GVSDT has revised the Applicability section 4.2.4 to make it clear that it applied to technically justified units that meet the NERC Registry criteria. It is emphasized that “technical justification” is defined by demonstrating that the simulated unit or plant response does not match the measured unit or plant response. Do you agree with these revisions? If not, please explain in the comment area below.**

Yes

No

Comments:

1. **Do you have any other comment, not expressed in questions above, for the GVSDT?**

Comments: