



NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

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July 7, 2010

TO: TRANSMISSION OWNERS  
INDUSTRY STAKEHOLDERS

**RE: Request for Public Comment on the Transmission Availability Data System (TADS)  
Proposed Revision to the TADS Event Type Data Collection**

**Ladies and Gentlemen:**

The North American Electric Reliability Corporation (NERC) requests public comment by **12:00 Noon EDT, August 23, 2010** on its proposed revision to the TADS *Event Type Number* data definitions and associated portions of the *TADS Data Instruction Manual*. This request only applies to Automatic Outages. Comments must be submitted in a Word document to [tadscomments@nerc.net](mailto:tadscomments@nerc.net).

In accordance with Section 1600 of the NERC Rules of Procedure,<sup>1</sup> NERC may request data or information that is deemed necessary to meet its obligations under Section 215 of the Federal Power Act, as authorized by Section 39.2(d) of the Federal Energy Regulatory Commission's (FERC) regulations. This is a proposal for such a request. Section 1600 requires NERC to provide the proposed data request to FERC's Office of Electric Reliability at least twenty-one days prior to posting the data request for public comment. NERC provided this proposed data request to FERC on June 15, 2010. Accordingly, NERC is hereby posting this proposed data request for public comment. After consideration of comments received, NERC will present this proposed data request to the NERC Board of Trustees for approval, as required by Section 1602 of the NERC Rules of Procedure. Upon NERC Board of Trustees' approval, this data request will become mandatory.

The TADS effort began with the establishment of the Transmission Availability Data System Task Force (TADSTF) under the NERC Planning Committee in October 2006. On October 27, 2007, the NERC Board of Trustees approved the collection of TADS Phase I data beginning in calendar year 2008. On October 29, 2008, the NERC Board of Trustees approved the collection of Non-Automatic Outage data beginning in calendar year 2010 (Phase II).<sup>2</sup>

<sup>1</sup> NERC's Rules of Procedure are available at: <http://www.nerc.com/page.php?cid=1|8|169>.

<sup>2</sup> Two reports, available at <http://www.nerc.com/page.php?cid=4|62>, describe the TADs Phase 1 and Phase 11 data collection efforts.

The proposed *Event Type Number* data definitions (Appendix 7 dated May 10, 2010, Section B.15 to B.22), which are part of the draft *TADS Data Instruction Manual* (dated May 10, 2010), were endorsed by NERC's Planning Committee on June 15, 2010. The associated changes are highlighted in yellow. See Appendix 7 – Section B from definition “15. Normal Clearing” to “22. Event Type Number” and Data Reporting Instruction Manual Section 5 (Form 5). These documents dated May 10, 2010 may be downloaded at <http://www.nerc.com/filez/tadswg.html> and comments are requested on both draft documents.

- During review of the TADS 2008 Automatic Outage statistics, TADSWG found the existing TADS five event types to be inadequate. The available TADS information for *Event Type Number* 50 – “Other” outages does not present a clear picture of event types within “Other”. Therefore the TADS Working Group voted to revise the *Event Type Number* categories to provide additional clarity.
- This proposal requests that beginning January 1, 2012 Transmission Owners (TOs) utilize the new TADS *Event Type Numbers* when coding Events in TADS based on the proposed definitions. This is a revised TADS data request, not a Reliability Standard, and therefore, this request for public comment is pursuant to Section 1600 – Requests for Data or Information of NERC's *Rules of Procedures*. The information required for a data request is defined in Section 1602.1.1 and is provided in Section A of this document.

### **Summary of TADS Statistics Regarding Event Types**

Both the 2008 NERC-wide statistical report called; *NERC – Updated 2008 Report* dated June 14, 2010 and the *NERC– 2009 Report* can be found at <http://www.nerc.com/filez/tadswg.html>. The event type statistics described below are based on Table NERC 2-3 which can be found in both of the above reports. This table summarizes the Events (Form 5 data), and associated Outages (Form 4.x data) which were reported for each *Event Type Number*.

### **Existing TADS Event Types**

The existing five *Event Type Numbers* are summarized below;

- *Event Type Number* 10 is an Automatic Outage of an AC Circuit or Transformer with Normal Clearing.
- *Event Type Number* 20 is an Automatic Outage of a DC Circuit (single pole) with Normal Clearing.
- *Event Type Number* 30 is an Automatic Outage of two adjacent AC Circuits on common structures with Normal Clearing.
- *Event Type Number* 40 is an Automatic Outage of two adjacent DC Circuits (both poles) on common structures with Normal Clearing.
- *Event Type Number* 50 is “Other”. All other Events which do not qualify as *Event Type Number* 10 to 40 are reported as “Other”. *Event Type Number* 50 is a mixture of other Normal Clearing and abnormal clearing Events.

### *Event Type Number 50 Examples:*

1. Abnormal delayed clearing of a single circuit.
2. Normal Clearing of two or more Automatic Outages resulting from as designed substation circuit breaker topology; such as a 230kV bus outage or outage of a 500kV line and a 500/230kV transformer which is tapped on the 500kV line side of a substation circuit breaker.
3. Delayed clearing of one or more circuits due to a stuck circuit breaker.
4. Multiple Automatic Outages due to a major disturbance (blackout).

For example, in the *NERC – Updated 2008 Report* on page NERC-16, Table NERC 2-3, out of the 5,101 Outages of TADS reportable AC and DC elements 1,335 Outages (26%) were associated with *Event Type Number 50 - “Other”*. In other words, on a NERC-wide average basis, three out of four outages were associated with Normal Clearing *Event Type Numbers 10 to 40*. One out of four outages (26%) were associated with *Event Type Number 50 – “Other”*. In addition, on a statistical basis that 26% one year average varies among the NERC Regions from approximately 15% to 40%. Such variability reinforces the need to have a number of years of data before meaningful long term averages for NERC and each Region can be identified.

The available TADS information for event type “Other” outages does not present a clear picture of *Event Types* within “Other.” Therefore, the TADSWG has proposed a revision to the *Event Type Numbers* to provide additional clarity.

Attachment #1 to this document describes the proposed TADS *Event Type Numbers*. These TADS event types are compatible with the event categories described in the current TPL Standards Table 1 and TPL draft #4. However, the implementation of this data request does not depend upon approval of the TPL draft #4 Standard.

## **A. Proposed *Event Type Number* Data Request Information**

The italicized language is information that must accompany a data request.

1. *A description of the data or information to be requested, how the data or information will be used, and how the availability of the data or information is necessary for NERC to meet its obligations under applicable laws and agreements.*

Our response is provided in subparts. Capitalized terms are definitions that are contained in Appendix 7 of the TADS Data Instruction Manual.

- a. *A description of the data or information requested.*

Instead of the current five TADS *Event Type Numbers*, the ten proposed *Event Type Numbers* are shown on Attachment #1. These proposed *Event Type Numbers* are to be collected for Automatic Outage(s) for the transmission facilities listed below, beginning with data for the 2012 calendar year:

- AC Circuits  $\geq 200$  kV
- DC Circuits with  $\geq +/-200$  kV DC voltage
- Transformers with  $\geq 200$  kV low-side voltage
- AC/DC Back-to-Back Converters with  $\geq 200$  kV AC voltage, both sides

A detailed description and definitions of the *Event Type Number* data that is being requested is described in draft Section 5, Appendix 5 (Form 5), and Appendix 7 of the TADS Data Instruction Manual. The draft manual including a separate file for Appendix 7 TADS Definitions can be found at the link <http://www.nerc.com/filez/tadswg.html> and are dated May 10, 2010.

b. *How the data or information will be used.*

NERC will use the information to develop statistics regarding the TADS events which occur on the transmission system. The TADS Phase I report *Transmission Availability Data System Revised Final Report* dated September 26, 2007, which may be downloaded at <http://www.nerc.com/filez/tadstf.html>, discusses the intended uses of the data. A portion of Section 2.6 is provided below:

“ . . . We believe that the greatest use of TADS data will be for outage cause analysis and outage Event analysis. Event analysis will aid in the determination of credible contingencies and will result in better understanding, and this understanding should be used to improve planning and operations. Ultimately, these improvements should result in improved transmission system performance. In addition, trending each Regional Entity’s performance against its own history will show how that region’s performance is changing over time. It will take a number of years of data collection (five years was suggested by several commenters) before the data can be useful for trend analysis. A through-time comparison is appropriate for evaluating a region’s performance. . . .”

c. *How the availability of the data or information is necessary for NERC to meet its obligations under applicable laws and agreements.*

As stated in TADS Phase I Report, Section 2.6, “Since becoming the Electric Reliability Organization, NERC has taken on the role of being an independent source of reliability performance information, thereby fulfilling one of the recommendations in the April 2004 U.S.-Canada Power System Outage Task Force Report on the August 14, 2003 blackout. . . .” Also, pursuant to Section 215 of the Federal Power Act, NERC develops Reliability Standards. Whether a new standard is needed or whether an existing standard needs to be modified, sound data is needed. While the vast majority of Automatic Outages will probably be categorized as *Event Type Number* 11 – “Single Automatic Outage resulting in a single Element outage”, other Events do occur, and approximately 25% of the Events are currently lumped into *Event Type Number* 50 – Other. A better understanding of actual event information could allow for improved system analysis by bridging gaps between the operating environment and planning assumptions and may, therefore, influence the development of future standards. For example, Transmission Planners could compare historical transmission outage Events to their own system performance expectations and assumptions.

Section 215(g) of the Federal Power Act, requires NERC to make periodic assessments on the reliability of the bulk power system in North America. We view TADS *Event Type Number* data as part of the information needed in meeting this obligation.

2. *A description of how the data or information will be collected and validated.*

The data collection and validation process is described in Section 5.2 of the TADS Phase I Report. The event type information will be collected following the same process as other TADS data collection and validation. Data will be entered by TOs into the TADS software system. After software checks for errors, data will be further validated by the Regional Entities and finally by NERC as described in Section 5.3.2 of the Phase I Report.

In addition, Section 5.1 of the Phase II Report permits NERC to review the data and conduct data validation reviews of *all* TADS data submissions with the submitting TOs. To the extent that a review indicates systematic data entry errors, data entries for previous years may need to be revised.

3. *A description of the entities that will be required to provide the data or information (“reporting entities”).*

The submission of Phase I TADS data is mandatory for all U.S. Transmission Owners who are on the NERC Compliance Registry. Non-U.S. Transmission Owners who are also NERC members are required to comply with NERC’s *Rules of Procedure*, and because the proposed Event type data is being requested in accordance with Section 1600, non-U.S. Transmission Owners as NERC members are to provide the revised TADS *Event Type Number* data.<sup>3</sup>

4. *The schedule or due date for the data or information.*

For calendar year 2012 Automatic Outages, the proposed revised *Event Type Number* data must be submitted by March 1, 2013. During the remainder of 2010 and 2011, Transmission Owner (TO) internal business system protocols will need to be revised to collect the revised *Event Type Number* data beginning January 1, 2012.

5. *A description of any restrictions on disseminating the data or information (e.g., “confidential,” “critical energy infrastructure information,” “aggregating” or “identity masking”).*

The treatment of confidential information for *Event Type Number* information is the same as Phase I TADS. NERC’s treatment of confidential information is governed by Section 1500 of NERC’s *Rules of Procedures*. TADS public reports will not inadvertently release confidential information by the display of regional or NERC information from which a Transmission Owner’s confidential information could be ascertained. For example, if the Transmission Owner in a region is the only owner of assets in a particular Voltage Class, the metrics on that data would not be released if the Transmission Owner’s name and its confidential information could be identified. Section 2.4.7 of the Phase I Report addresses data confidentiality, while Section 5.4 addresses data access policies.

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<sup>3</sup> Phase I was approved by the NERC Board of Trustees prior to the addition of Section 1600 to the *Rules of Procedure*. Because NERC’s Phase I TADS approval relied upon Section 39.2(d) of the Federal Energy Regulatory Commission’s regulations, 18 C.F.R. § 39.2(d), it is mandatory on all U.S. Transmission Owners. However, most non-U.S. Transmission Owners have indicated that they will voluntarily comply with Phase I.

6. *An estimate of the relative burden imposed on the reporting entities to accommodate the data or information request.*

Based on 2008 and 2009 NERC-wide historical data, it is anticipated that the vast majority of Automatic Outages (approximately 65-70%) will be a simple *Automatic Outage of a Single Element* with Normal Clearing. In addition, approximately 5% of the outages are multi-circuit structure Automatic Outages based on this recent history. The analysis burden for these *Event Type Numbers* will not change. These types of events have been analyzed and reported in 2008 and 2009. Therefore, no additional resources will be necessary to determine the *Event Type Numbers* for 70-75% of the outages.

The TADS Data Instruction Manual, Section B, contains guidelines on *Event Type Number* determination. This analysis guideline clarifies the step-by-step process to separate the TADS events into the ten proposed *Event Type Numbers*. The guideline contains a sample of logical questions and answers to quickly determine the appropriate *Event Type Number*. Several examples are included in this instruction manual. While not all possible situations could be covered, the examples are complete enough to illustrate *Event Type Number* determination. A pilot test of the proposed event types was conducted among the members of the TADSWG. In general, there was no difficulty in understanding the new codes and descriptions. After the pilot test, several clarifications were added to the instruction manual.

Therefore, the implementation of the ten *Event Type Numbers* (instead of the current five *Event Type Numbers*) should not add a significant reporting burden. However, it will require the TOs to collect sufficient internal TO information, so the Transmission Owner can separate the current five event types into the ten event types as specified in the TADS Data Instruction Manual.

## **B. Comment Questions**

While commenters are not restricted in the format of their comments, we would appreciate your answers to the following questions:

1. *If you are a Transmission Owner, do you currently collect event type transmission outage data similar to the proposed event type data? If “yes,” please explain.*
2. *Is the data being requested reasonable and obtainable? See Section 5, Appendix 5 (Form 5) and Appendix 7 Event Type Number definitions contained in the draft Data Instruction Manual. If “no,” please explain.*
3. *Are the proposed TADS Event Type Numbers appropriate? If “no,” please explain.*

4. *Is the implementation schedule for the proposed Event Type Number data for 2012 reasonable? If “no,” please explain.*
5. *Are there ambiguities in the draft Data Instruction Manual that need clarification? If “yes,” please explain.*

Comments are due on August 23, 2010 by 12 Noon EDT, and must be submitted in a Word document to [tadscomments@nerc.net](mailto:tadscomments@nerc.net). If you have any questions, please contact Jim Robinson at (610) 841-3362 or by e-mail at [Jim.Robinson@nerc.net](mailto:Jim.Robinson@nerc.net).

Sincerely,



Mark Lauby  
Director of Reliability Assessment & Performance Analysis

# ATTACHMENT #1 -- Proposed TADS Event Type Numbers

## Five Current Event Type Numbers

Event Type Number	Description
10	Automatic Outage of an AC Circuit or Transformer with Normal Clearing.
20	Automatic Outage of a DC Circuit with Normal Clearing.
30	Automatic Outage of two ADJACENT AC Circuits on common structures with Normal Clearing.
40	Automatic Outage of two ADJACENT DC Circuits on common structures with Normal Clearing.
50	Other

## Ten Proposed Event Type Numbers

<u>Events with Normal Clearing<sup>1</sup></u>	
Event Type Number	Description
05	Single bus section fault or failure (200kV or above) resulting in one or more Automatic Outages.
06	Single internal circuit breaker fault (200kV or above) resulting in one or more Automatic Outages <sup>2</sup> .
11	Automatic Outage of a single Element.
13	Automatic Outage of two or more Elements within one Normal Clearing Circuit Breaker Set (NCCBS).
31	Automatic Outages of two or more TADS adjacent AC Circuits or DC Circuits on common structures. To qualify as Event Type Number 31, the Automatic Outages must be the direct result of the circuits occupying common structures <sup>3</sup> .
49	Automatic Outage(s) with Normal Clearing not covered by Event Type Numbers 05 through 31 above <sup>4</sup> .

<u>Events with Abnormal Clearing<sup>5</sup></u>	
Event Type Number	Description
60	<b>Breaker Failure:</b> One or more Automatic Outages with Delayed Fault Clearing due to a 200kV and above circuit breaker being stuck, slow to open or failure to interrupt current.
61	<b>Dependability (failure to operate):</b> One or more Automatic Outages with Delayed Fault Clearing due to failure of a single Protection System (primary or secondary backup) under either of these conditions: failure to initiate the isolation of a faulted power system Element as designed, or within its designed operating time, or In the absence of a fault, failure to operate as intended within its designed operating time. (Item b is a very rare type of event.)
62	<b>Security (unintended operation):</b> One or more Automatic Outages caused by improper operation (e.g. overtrip) of a Protection System resulting in isolating one or more TADS Elements it is not intended to isolate, either during a fault or in the absence of a fault.
90	Automatic Outage(s) with Abnormal Clearing not covered by Event Type Numbers 60 through 62 above <sup>6</sup> .

Notes:

- 1) Event Type Numbers 05 to 49 are Events with Normal Clearing. These Event Type Numbers apply only when the Automatic Outages are the result of Protection Systems and controls disconnecting the elements that are expected to be automatically disconnected for a single event. Normal Clearing is defined in the NERC *Glossary of Terms Used in Reliability Standards*: “A protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems.”
- 2) TADS Event Type Number 06 corresponds to the TPL Standard (Table 1 Draft #4) event Category P2, item 3 & 4, footnote 8. Footnote 8 reads as follows; “An internal breaker fault means a breaker failing internally, thus creating a system fault which must be cleared by protection on both sides of the breaker.”
- 3) The TPL multi-circuit structure contingency (Table 1 Draft #4 category P7) excludes circuits that share common structures for one mile or less and applies only to application of the TPL Standard. That one mile exclusion does not apply to reporting events in TADS. As stated in the TADS definition of Multi-Circuit Structure Mile “. . . If a line section contains two or more Multi-Circuit Structures which form one or more multi-circuit spans, the total span length can be measured and the associated mileage should be reported in the ‘Multi-Circuit Structure Mile’ total inventory. If multiple circuits are connected to only one common structure, that structure should be ignored for outage and inventory mileage purposes.”
- 4) Event Type Number 49 also includes Automatic Outage(s) initiated by normal operation of a Special Protection System (SPS) or Remedial Action Scheme (RAS). SPS (a.k.a. RAS) are defined in the NERC Glossary of Terms. For convenience this SPS definition has also been added to TADS Appendix 7 Definitions, Section B item 19.
- 5) Event Type Numbers 60 to 90 are Events with Abnormal Clearing. These Event Type Numbers apply when Normal Clearing (see Note 1) does not occur for any one or more Automatic Outage associated with the Event.
- 6) Event Type Number 90 also includes Automatic Outage(s) initiated by abnormal operation of a Special Protection System (SPS) or Remedial Action Scheme (RAS).

**Event Type Mapping**

<b>Current Event Type Numbers</b>	<b>Proposed Event Type Numbers</b>
<b>10</b>	<b>11</b>
<b>20</b>	<b>11</b>
<b>30</b>	<b>31</b>
<b>40</b>	<b>31</b>
<b>50</b>	<b>Two separate categories: Normal Clearing – 05, 06, 13, and 49; Abnormal Clearing - 60, 61, 62 and 90</b>

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