Questions and Answers about Consistent Protection System Misoperation Reporting
February 5, 2013

Questions and Answers on Total Number of Operations (Form 1)

1. Should entities include operations associated with maintenance and testing (i.e., intentionally operating the relay for maintenance and testing)?
   This would not be counted as an operation. This example goes along with the general philosophy that if an operation would not count as a misoperation, it should not be included as an operation. This philosophy supports use of the Protection System\(^1\) operation data in reliability metric ALR4-1 by assuring that the numerator (number of misoperations) and denominator (number of operations) are reported on the same basis.

2. Should entities only include operations of protective systems that are included as part of their PRC-005 program? For example, if a relay receives an electrical quantity but trips a pump - would that be an operation?
   Operations of Protection Systems included in PRC-005 would generally be included as operations. However, the basis for including an operation is the general philosophy that if an operation would not count as a misoperation, it should not be included as an operation. In the example given, it is not clear that the Protection System that trips a pump would be within the scope of PRC-005. Although the trip of the pump may ultimately result in the tripping of the unit, the Protection System that trips the pump would usually not directly trip the unit.

3. If an operation occurs in a situation that excludes it from being a misoperation per regional criteria (i.e., an operation while the unit is being brought on/off line resulting in no loss of generation), does that operation need to be included in the new reporting requirements for operations by voltage class, even though it would not be considered a misoperation?
   This would not be counted as an operation in the case that the only equipment that is tripped is the unit. This example goes along with the general philosophy referenced: if an operation would not count as a misoperation, it should not be included as an operation.

4. Series capacitor bank operations:
   a. Do normal bypass breaker operations (bypass breaker closes during the line fault and reopens as expected) on transmission line series capacitor banks count as a correct

\(^1\) The term Protection System is capitalized to emphasize this document uses the term consistent with the NERC Glossary of Terms.
operation, or are these types of operations considered “control system” operations and not counted at all?

This would not be counted as an operation if it operated as a ‘control function’ as noted in this example.

b. **What about a correct bypass breaker close operation during a line fault but the bypass breaker does not reopen as expected?** Is this a misoperation or is it not counted because it is a “control system”? This is sort of similar to a correct trip of a breaker and fail to reclose (which is not a misoperation).

This would not be counted as a misoperation if it failed to operate as a ‘control function’ as noted in this example.

c. **What about a bypass breaker close operation caused by a bad fiber optic CT sensor card during no fault conditions?** Is this a misoperation or is it not counted because it’s a “control system”?

This would not be counted as a misoperation if it misoperated as a ‘control function’ as noted in this example.

5. **Generator operations:**

a. **Consider a customer generation facility that experiences a generator step-up transformer (GSU) low-side ground fault on unit 1 for which the customer protection trips two 230 kV breakers, owned by the Transmission Owner, that feed unit 1 and 2 GSUs. The 230 kV breaker operations were correct. Should the Transmission Owner count this as a correct operation because its breakers had operations, even though it was the customer’s equipment that faulted and Protection System that operated?**

Ideally this operation would be counted as an operation by the Generator Owner. In the case of a customer generation facility that may not be a registered Generator Owner, it should be reported by the Transmission Owner. Note: It is recognized that some cases like this may be reported by both entities; however, these cases are rare and multiple reporting will have negligible impact on overall analysis.

b. **If a generating unit trips for a boiler problem and the unit trip results in tripping the 230 kV generating unit breakers (correct operations of the breakers) owned by the Transmission Owner, is this counted by the Transmission Owner as a correct operation?**

In this example, the boiler trip would not appear to be from a Protection System. Therefore, such an operation would not be counted as an operation or a misoperation. In a case where the operation is by a generator Protection System, ideally this operation would be counted as an operation by the Generator Owner. Note: Although the intent is for a given operation to only be reported once, it is recognized, that some cases like this may be reported by both entities. However, these cases are rare and multiple reporting will have negligible impact on overall analysis.
c. Should entities include operations associated with reverse power relays? Is there a difference between a normal unit shutdown (control) versus a unit tripping for a reverse power condition (protection)?

This would not be counted as an operation if it operated as a ‘control function’ as part of unit shutdown. In the case that a reverse power relay operates to protect the generator it would be counted as an operation and potentially as a misoperation.

6. How should entities count a correct operation on an interconnected line/facility between two registered entities?

The intent is for a given line operation to only be reported once; therefore, the entities should agree on who will report the operation. It is recognized, that some cases like this may be reported by both entities; however, these cases are rare and multiple reporting will have negligible impact on overall analysis.

7. If a misoperation occurs again within 1 minute (tie to TADS reporting criteria) it counts as another misoperation. The criteria for reporting Protection System operations seem to indicate it would only be counted once.

“When reclosing is applied (automatic or manual), a sequence of reclosing and tripping associated with isolating a faulted system element is counted as a single operation. Multiple unintended operations of an element due to this sequence of reclosing and tripping would also be counted as a single operation.”

Do the criteria for reporting Protection System operations change the 1-minute criteria for misoperations?

From a TADS perspective, elements must remain back in service for 1 minute prior to a second event being counted as a second event. As such there is not a conflict between the two since in the criteria for reporting operations, the element has not been returned to service during the reclosing sequence and therefore would not be counted multiple times.

8. In a situation of a BES ring bus or breaker and a half scheme where a section of this bus is dedicated to supplying a 138-12 kV non-BES distribution transformer, does the operation or Misoperation of the transformer protection count as an operation and (if applicable) a Misoperation on the form?

At present, the applicable requirement in PRC-004 is for reporting transmission Protection System misoperations. Therefore it would depend on whether the 138/12-kV transformer is considered a BES element, and whether the transformer protection zone includes the 138kV terminal. Whether the transformer is considered a BES element may vary between Regions until the revised definition of BES is effective.

9. Should the form include counts of non-BES Protection Systems that trip a breaker for a BES Element?
This would not be counted as an operation. This example goes along with the general philosophy that if an operation would not count as a misoperation, it should not be included as an operation. This philosophy supports use of the Protection System operation data in reliability metric ALR4-1 by assuring that the numerator (number of misoperations) and denominator (number of operations) are reported on the same basis.

10. **If a Special Protection System (SPS) correctly operates (as designed) to close a 138 kV breaker when a separately owned generating unit either tripped or was taken out of service, should this be excluded since the SPS performs a control function and is based off of circuit breaker auxiliary contacts?**

The collection of Protection System operations is limited to Protection Systems and does not include Special Protection Systems (SPS).

11. **The fifth criterion in the definition of a Protection System operation, “5. Any failure of a Protection System to operate for its intended function such as clearing a fault within the zone it is designed to protect,” is counter-intuitive as the first four criteria address operations and the fifth criterion addresses a failure to operate. Please clarify the intent of this fifth criterion.**

The metric for Protection System performance will be calculated as the number of Protection System misoperations divided by the sum of operations and misoperations. The Protection System operation count being collected is intended to be used as the denominator in this metric, and therefore includes both operations and failures to operate.

12. **Is the number of Protection System operations related to the number of protective relays or circuit breakers that operate to clear a fault or remove an abnormal operating condition?**

Protection system operations are counted based on operation of the composite Protection System. For example, if a fault occurs on a three-terminal line and the Protection System operates correctly to clear the fault from all three line terminals this is counted as one Protection System operation, regardless of the number of protective relays or circuit breakers that operated at each line terminal. Additionally, if only one breaker on a three terminal line operated due to a misoperation, that is also counted as one operation.

13. **If a Protection System operates as backup protection to clear a fault in an adjacent zone, does this fall under criterion 3 of the definition of Protection System operation:**

   “3. The unintended operation of Protection Systems for a fault outside the zone it is designed to protect?”

If the Protection System providing backup protection operates when it is not required to operate, i.e., the Protection System on the faulted element operates correctly and the backup protection overtrips, this would be an example of criterion 3. If the Protection System on the faulted element fails to operate or operates slower than designed (which would be counted as an operation that was
incorrect), the backup protection operation would be an example of criterion 1, a correct operation associated with isolating a faulted system element.

Questions and Answers on Misoperation Reporting (Form 2)

1. **Are the Misoperation Categories consistent with the NERC Glossary?**
   Yes, the categories are consistent with the definitions in the NERC Glossary of Terms. Additional guidance is given in the Definitions sheet of the template file to determine if the operation is reportable based on its affect on the reliability of the BES. The clarifications on reportable/non-reportable Misoperations described in the February 10 webinar are also available under the same Definitions sheet.

2. **What potential conflicts exist between the NERC Glossary and the Misoperation reporting template?**
   The Misoperation reporting template was carefully developed considering the NERC Glossary of Terms and approved NERC Reliability Standards to ensure that there would be no conflicts. The template provides uniform guidance to the Regions as to which Misoperations must be reported per NERC Reliability Standards PRC-004 and PRC-016.

3. **Doesn’t the reporting guidance in this template conflict with the requirements in PRC-004 and PRC-016?**
   The requirements within the applicable standards to analyze Misoperations and develop and track the Corrective Action Plans (CAPs) have not been revised by these new reporting guidelines. The new guidelines simply clarify what needs to be reported to (NERC through) the Regions. The distinction that the guidelines make is whether a failure is reportable to the Region and in this case eventually to NERC, not whether it is a Misoperation that the entity is obligated to analyze and address with a CAP. The reporting applies only to the subset of all transmission and generation Protection System Misoperations that affect the reliability of the Bulk Electric System (BES).

4. **Please clarify reporting for Failure to Trip Misoperations.**
   A Failure to Trip is a Misoperation and generally is a reportable Misoperation. Additional guidance is given in the Definitions sheet of the template file for exceptions. The additional guidance on reporting provided in the Definitions sheet is that, “If a fault or abnormal condition is cleared in the time normally expected with proper functioning of at least one Protection System, failure of a Protection System element is not a reportable Misoperation.” Also, please refer to the following examples (a, b) as well as the first example in question 6.

   a. **If REMOTE backup operates to clear a fault because the primary relay fails to operate for the faulted line, what Misoperation should be reported?**
      The failure of the Protection System (or primary relay) for the faulted circuit to operate for the fault is a “Failure to Trip” Misoperation that needs to be reported.
b. If a primary relay system fails; however, a backup relay system on the same equipment operates properly, is this reportable?

If the primary Protection System did not trip for a fault within its zone, then normally this would be reported as a Misoperation. However, if the fault clearing is consistent with the time normally expected with proper functioning of at least one Protection System, then the primary Protection System failure to operate is not required to be reported.

5. Please clarify reporting for Slow Trip Misoperations.

A Slow Trip is a Misoperation and generally is a reportable Misoperation. Additional guidance is given in the Definitions sheet of the template file for exceptions.

a. Is a Slow Trip only reportable if a communication-aided Protection System is necessary to meet performance requirements in NERC Reliability Standards?

Clarification is provided that when a high-speed Protection System is employed but is not essential for transmission system performance, the failure of the high-speed system is not required to be reported if fault clearing is consistent with correct operation of a backup Protection System with an intentional time delay. In many cases, a high-speed Protection System must be communication-aided but it is not always the case.

b. In regard to the Slow Trip category, sometimes an entity may deliberately accept some small-scale instances of miscoordination, in order to gain other advantages, such as faster clearing times. Would such a miscoordination operation, be reportable as a Misoperation?

Yes, even though coordination may be waived for specific circumstances or to achieve some other goal, an identified Slow Trip is still a reportable Misoperation unless the applicable exclusionary note in the Definitions sheet applies.

6. With communications failures, if there is a loss of fiber optic communications that doesn’t result in an operation of relaying (trip) is this considered a Misoperation?

A communication failure in and of itself is not a Misoperation if it does not result in Misoperation of the associated Protection System. A communication failure would be reported as the cause of Misoperation in the following scenarios:
a. If a communications-assisted (high-speed) Protection System did not trip for a fault within its zone due to a communication failure (e.g., loss of communications), then normally this would be reported as a Misoperation. However, there are two possible exclusions noted in the definitions. First, if the fault is cleared in the time normally expected with proper functioning of at least one Protection System, then the communication assisted Protection System failure to operate is not a reportable Misoperation. Second, if the fault clearing is consistent with correctly coordinated backup Protection System operation and if the high-speed Protection System employed is not essential for transmission system performance, then the communication-assisted Protection System failure to operate is not required to be reported.

b. If a communication-assisted Protection System tripped during a fault or abnormal condition on an adjacent transmission line (e.g., due to a failure to transmit a blocking signal in a directional comparison scheme.)

7. **Please explain lack of targeting.**
This means that the relay targets reported were insufficient to prove conclusively whether a relay element operated properly. One example is when a high-speed pilot system is beat out by a high-speed zone relay and no targets are dropped by the pilot relays. There would be no reason to report a Misoperation in this example as the lack of relay targets on the pilot system is not conclusive evidence that the pilot system failed.

8. **Would you consider a directional distance (21) device operation during power swings a Misoperation?**
Whether this would be classified as a Misoperation depends on the conditions for which the relay operated. Per the definition of Misoperation, if the operation was not intended for the abnormal condition that occurred, this would be a Misoperation. Regardless, the power swing event should be analyzed to determine proper and improper performance and opportunities to make the grid more stable for these events. The application of power swing tripping or blocking can provide stability of the grid during stressed situations and in some applications the utility may utilize the impedance relay to provide protection during power swings. There are no particular NERC Standards related to the application of power swing relaying, and Regional Standards associated with this application are not consistent across the industry.

9. **Is a quarterly report still needed if an entity does not have a reportable Misoperation?**
Misoperation reports will be first collected by the Regional Entities who will then pass the relevant data to NERC. Each Region has its own reporting procedures and some do require notification or completion of a form to indicate that the entity has no Misoperation to report.

10. **For what transmission lines must Misoperations be reported?**
The Misoperation reporting is applicable to all lines and transformers in the BES.
11. What is the current status on requiring reporting of a Sudden Pressure Relay Misoperation? Are Misoperations of Fault or Sudden Pressure Relays used for transformer protection reportable?
At present, Misoperations of fault pressure and sudden pressure relays should still be reported per the Regional procedures. In addition to the pending change in the NERC glossary definition of protection system, there is also a pending interpretation of PRC-005-1 R1 (Project 2009-10) that indicates the existing definition of protection system excludes sudden pressure relays. The revised definition of protection system has been approved by the NERC Board of Trustees, but is not yet approved by FERC.

12. If a generator relay trips with no fault occurring during reactive power testing in accordance with MOD-025, is this a reportable Misoperation? If a relay operates during the generator testing, is it considered a Misoperation?
In general, a generator trip with no fault during MOD-025 reactive power capability verification testing would be reportable. The exceptions to this reporting requirement would be if the generator exceeded its limitations or experienced an abnormal condition such as a loss-of-field for which a generator relay is set to trip.

13. The "unknown" category may be selected for certain Misoperations. Is there any requirement for the reporters to make a determination after some period of time other than "unknown"?
It is not expected, based on past Regional data collections, for the “unknown” category to be overused. As noted in the reporting template, it “Requires extensive documentation of investigative actions if this cause code is utilized.”

14. Some Regions use 200KV and above as the bright line for reporting. Is this standardized across the Regions as well? There is always some confusion as to the voltage level to which these requirements apply. Is it 200kV and above or 100kV and above?
Several of the Regions currently collect data below 200 kV. The reporting template applies to the BES which is generally 100 kV and above. At this time, the BES is defined differently in each Region.

15. The ECAR Region maintained an alert database for those in the Region to be aware of manufacturer issues; is there any thought for this in the future? If the metrics identify a particular manufacturer/model as having numerous issues, will that be sent out as a NERC Alert?
No, there are no plans at this time to create and maintain an equipment alert database. A NERC Alert could possibly be issued if the data does reveal an issue.

16. Is NERC going to encourage ERCOT to adopt a consistent reporting template to match NERC’s? Why can’t this phase out the ERCOT reporting requirement, or at least make the reporting template exactly the same? Does an entity need to provide NERC with an additional Misoperation report in your new format? This reporting replaces the MRO
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17. Will CDAA reporting still be required? CDAA is the reporting portal for the NPCC Region. Misoperation reports are filed by NPCC entities via CDAA.

NPCC has an electronic Misoperation Report form tool for entities to report Misoperations and the status of analysis/corrective actions. NPCC will be drafting a procedure to explain and attaching the template in lieu of asking entities to fill out via CDAA.

18. Will this new Misoperation process be going through the NERC standard review and approval process? Are the Regions consistent in their definition of a Misoperation?

No, this change for consistency in Misoperation reporting will not be going through the standard review and approval process. Current PRC-003 requires Regional reporting procedures, and development of the common Misoperation reporting template is part of these procedures.

Regional definitions are based on the NERC definitions. Regional enhancements to a definition should supplement the definition and not create a subset of it.

19. If a Misoperation occurs which trips a breaker, for example, but does not interrupt any BES paths, is this reportable?

This is a reportable Misoperation. Report this misoperation with the equipment type "Breaker".

20. Sometimes the analysis takes longer and may not be able to be finished before the end of the quarter. Is there a specific time after a line trip has occurred in which the event must be reviewed to determine whether the operation of the relay system was proper? Can you clarify the meaning of the Resubmittal Check column in the Protection System Misoperation template?

It is recognized that the analysis of some events will not be completed before an established periodic reporting deadline. The Misoperation should still be reported per the Regional procedures and the Cause of Misoperation may need to be initially listed as "Unknown/unexplainable" and the Analysis and Corrective Action Status listed as “Analysis – In Progress.” The entity should continue their normal process of investigation and after a cause is determined a re-submittal of the Misoperation record can be made to update the information. This can be done at the next quarterly reporting period or per Regional Guidelines. This is the purpose of the “Resubmittal” column in the reporting form. It is used to identify that the record is an update or provides additional information to a
previously reported Misoperation. This will help correlate associated records and prevent double counting of a Misoperation.

21. Is a breaker trip coil failure reportable? Is a breaker mechanism malfunction a misoperation in all Regions?
A breaker trip coil failure is a reportable Misoperation. This reporting procedure does not include the malfunction of a breaker mechanism. Presently, some Regions track interrupting mechanism failures but most do not.

22. For what types of Special Protection Systems are Misoperations reportable?
All Special Protection Systems on the BES that Misoperate need to be reported.

23. If a relay setting error is detected and corrected prior to any Misoperation, is any reporting required?
If the relay setting error did not cause a Misoperation, then there is no Misoperation to report.

24. Are the Regions sufficiently different that reporting guidelines have to be unique? It seems that a continent-wide guideline can be provided.
Misoperation reporting is required by NERC Standards PRC-004 and PRC-016. Each Region does not need to have unique reporting guidelines. However, all Regions have established reporting guidelines and processes. There is no single guideline that is clearly better than any of the others. Instead of establishing a single guideline, the NERC ERO-RAPA group chose to have the Regions modify their existing guidelines in order to support a consistent Misoperation data requirement.

25. When should the reporting for September 1, 2010 to December 31, 2010 be reported?
Prior to the quarterly reporting schedule, it would have been reported on May 1 (reporting was done every 6 months). What about data from 5/1/2010 - 12/31/2010? Is this not to be reported in the first quarter? If we have not reported prior events, as we did not interpret them to be Misoperations, should we report them based on the new interpretation? How far back would we go?
Misoperations in 2010 should be reported per the Region’s requirements.

26. Is a root cause analysis (RCA) required for the Misoperations and is there a preferred RCA methodology?
No, there is no specific type of analysis that is required to complete the Misoperation reporting.

27. Are underfrequencies Load shedding (UFLS) Misoperations covered in this process?
Yes, provisions have been made for reporting Under Frequency Load Shedding (UFLS) Misoperations. However, this reporting does not fulfill requirements in PRC-009.

28. Do we report an unnecessary trip of a de-energized line due to a wrong relay setting?
No, the unnecessary tripping of breakers associated with an already de-energized circuit is not required to be reported as the BES element already is out-of-service.

29. **Do we have to report environmental issues as causes of Misoperations such as vibration, excessive temperature, or water intrusion, and if so, under what cause code?**
An environmental or contamination issue that causes an unnecessary trip, failure to trip, or slow trip should be reported. As noted in the Definitions sheet, “damage due to water from a leaking roof” can be reported as a “Relay failures/malfunctions” cause code. Other cause codes could apply depending on what was damaged or affected. For example, if a CT secondary circuit was damaged, “AC system” would be the appropriate cause code to choose.

30. **Is the completed template the only auditable evidence required for compliance with PRC-004 and PRC-016?**
No, the template only provides requirements for consistent reporting across the Regions. Audit teams may review reporting forms submitted to the Region, correspondence, work orders, and any other evidence necessary to verify that entities are in compliance with the Requirements of these standards.

31. **It appears that the example in Row 10 in the Misoperation reporting template is a control issue rather than protection issue, should this be excluded?**
No, this is not a control system issue. Line 10 shows a failure to trip by the generator backup protection due to the failure of an auxiliary relay. The failed auxiliary relay is associated with the generator backup Protection System.

32. **It seems that the Regions have not provided any guidance on these changes. Is the reporting timeframe too aggressive?**
Some of the Regions already have provided some guidance prior to the webinar, but it is expected that Regions will provide additional guidance in the upcoming months prior to the required submittal of 2011 Misoperation reports.

33. **Is NERC going to follow up on action plan completion?**
Some action plans will require additional engineering analysis and remedy that will take longer than two months to complete. Temporary actions are taken in these cases, but permanent solutions take time. This causes the action item completion date field to be blank for some of the Misoperations that are reported in a given quarter.

No, the reporting provided to NERC will contain no information regarding the Corrective Action Plans (CAP). Each Region has a process for following up on incomplete Corrective Action Plans (CAP) to ensure and document completion. The Regions will continue to monitor the status of CAPs.
34. Where is the SPCS report which was referred to during the Webinar?
The SPCS report on the Misoperation reporting standards is on the NERC website under “About NERC—>Committees” on the menu bar. The SPCS is a subcommittee that reports to the Planning Committee. The May 2009 SPCS report provides recommendations regarding NERC Reliability Standards PRC-003-1, PRC-004-1, and PRC-016-1, and the NERC Glossary term Misoperation. Please note, however, that the approved NERC Reliability Standards and Glossary definitions are the basis for the Misoperation reporting template.

35. If an operation occurs near the end of a reporting period and an entity has not been able to obtain all events/targeting information to definitely say the relay performance was as expected, TADS will show the trip but the entity may not have a relay performance determination. What is expected - report the next period or have a code stating under analysis?
This is an area that requires some judgment. If the entity’s engineering staff believes that the operation was most likely a Misoperation, then it should be reported. If however, it is considered unlikely to be a Misoperation, then the entity can choose to wait to report it. Regions generally have an established policy on how long an entity has to report a Misoperation after a submittal deadline based on when the Misoperation was determined.

36. From your experience and the statistics, where are the majority of the Misoperations occurring in the electrical power systems?
Some Regions have reported seeing the majority of Misoperations being caused by relay setting errors, communication failures and relay failures, not necessarily in that order. The fourth elevated area that falls behind these three is as-left personnel errors. Some Regions are basing this on over 2 years of collected data.

37. Are we headed to a NERC requirement for all primary relaying to be micro-processor-based for accuracy in assessing operations/Misoperations?
No, NERC does not provide requirements that specify the use of a particular technology of equipment such as microprocessor-based relays. Entities are required to analyze their transmission or generator Protection System Misoperations based on the applicable standards.

38. The template seems to be geared towards one Misoperation for an event. However an event may involve more than one Misoperation.
Each row in the template records one Misoperation. If an event has more than one Misoperation associated with it, there should be more than one row reported that pertains to the event. In a multi-Misoperation event, information from one Misoperation can be copied or repeated in another Misoperation associated with the same event. In this case, providing the TADS event code identifies that each Misoperation was associated with a single event.

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39. **Is the ALR4-1 metric tied to each individual relay device; do we need to keep track of it for each relay and do we "reset" the statistics/metrics when relay settings or firmware are updated? Is the index based on zones/circuits?**

No, the ALR4-1 metric is based on an aggregation of Misoperations and outages on the BES. It is not specific to each relay or circuit. It may be broken down by Region and voltage level.

40. **An entity could cover several Regions and we need consistent reporting procedures throughout all Regions. Multiple reporting forms required by different Regions, if based on different criterion, will make it difficult to consistently report reliability data without accidently failing to disclose the proper information. Inconsistent reporting processes make analyzing and documenting data for each event take longer and reduce the efficiency of analyzing and resolving Misoperations in a timely manner.**

The new template should foster more consistency in Misoperation reporting among the Regions.

41. **Is the plan not to change the template and reporting criteria until revised standards are approved?**

The template will be modified as needed to address any issues determined, but no major revisions are expected until standards or definitions are revised.

42. **Why is a failure to reclose not considered a Misoperation?**

Failure to reclose is not covered within the three parts of the definition of a Misoperation from the NERC Glossary of Terms. The Misoperation definition covers tripping type failures. Much of the industry also considers reclosing a control system function rather than a Protection System function. Some Regions may choose to collect reclosing failure data as a supplement to the Protection System Misoperation data indicated in the NERC reporting template.

43. **If a failure to reclose caused grid instability elsewhere wouldn't this constitute a possible Misoperation?**

It would constitute a Misoperation of the reclosing scheme, but it does not meet the NERC Glossary definition of Misoperation and would not be a reportable Misoperation for the purposes of this template or the ALR4-1 metric.

44. **What about the Special Protection System (SPS) cause codes? This form does not include the SPS cause codes required by NERC.**

The cause codes that you are referring to are not specifically for reporting of Misoperations to NERC. The cause codes that you are referring to may be for Regional requirements or other standards.

45. **Why is “breaker” included in the Equipment Type drop-down list (Column I)?**

A breaker is a major piece of equipment that can fault and have protection that could Misoperate. In order to have an inclusive list, breaker was added to the equipment type. An example would be an event where a fault occurred and the breaker failure protection for a breaker Misoperated. It could falsely operate when not required tripping all of the adjacent breakers (Undesired trip during a fault).
or it could fail to operate when required (Failure to Trip) leading to other backup Protection System operations.

46. What should be included in column K (Equipment Removed from Service as the result of the Misoperation)? What are the differences between column K and H (Equipment Name - protected by Protection System that Misoperated)?
Column K should include all equipment automatically removed from service (permanently or temporarily) by the event associated with the Misoperation. The information in this field along with the information in TADS should identify the outage footprint: the equipment that was required to be isolated and the equipment which was incorrectly removed from service. The equipment entered in column H includes only the facility protected by the Protection System that misoperated. The equipment entered in column H is a subset of the equipment entered in column K.

47. Should specific info on non-relay components (bad cable, CT, etc.) be included in column O (Protection Systems/ Components that Misoperated)?
Yes, we want information on non-relay components but this information does not need to be as detailed as the relay information when the Cause(s) of Misoperation is associated with a relay failure or setting. We would like at least some basic information on the non-relay component that caused the Misoperation such as “damaged CT secondary cable.” Details of the cause can be provided in the Event Description.

48. Occasionally, there is a relay operation that is reported as a Misoperation for which the cause of Misoperation cannot be determined. For example: a small plane flies into a transmission line and a Protection System operates on an adjacent line due to unusual circumstances. Is this operation treated as a Misoperation?
Yes, the operation of the Protection System on the adjacent line is a reportable Misoperation. In this case it may be necessary to use the “Unknown/Unexplainable” code for Cause of Misoperation. This category includes Misoperations where no clear cause can be determined; however, use of this code requires extensive documentation of investigative actions.

49. Under Equipment Type (column I), is it possible to give an example for every equipment type?
14 examples are provided in the template for 7 different types of equipment, 4 different Misoperation Categories and 6 different Cause(s) of Misoperation. To have an exhaustive list would require more than 400 examples. We decided to provide a representative list that covers all the Misoperation Categories and all Cause(s) of Misoperation except for Unknown/unexplainable and several common types of equipment.
50. The Generator Owner may report a Misoperation, but have no access to TADS. Is there some reason to tie the Misoperation report to a corresponding TADS entry?
A Misoperation reported by a Generator Owner (GO) will normally not be associated with a TADS reported outage. In most cases, the GO will simply report “No” (in column Q) that the outage was not reported in TADS.

A Generator Owner does not have a way to know the TADS related transmission ‘Event ID’. The GO should leave the TADS ‘Event ID’ field blank. However, if a TADS reportable (>200kV) circuit outage occurs as part of the PRC reportable Misoperation, that transmission circuit outage must be reported by the TO/TOP as part of their PRC Misoperation reporting. Therefore the TO/TOP can establish their chosen ‘Event ID’ in webTADS and report the same ‘Event ID’ on their TO Misoperation PRC template.

51. In ALR 4-1, M is equal to the total number of outages. Is a trip and successful reclose considered an outage for ALR 4-1?
Yes, a trip and successful automatic reclose is considered an automatic outage. Even if the reclose is instantaneous, the outage is recorded in TADS.

52. Is the TADS column mandatory? Many of our entities report items below the 200 kV threshold? Can I tell them to ignore the column?
The TADS column is mandatory but at this time if the equipment is below 200 kV, the entity would simply report (in column Q) that the outage was not reported in TADS (i.e. enter ‘No’). If the outage was reported in TADS, then the entity should provide the corresponding TADS “Event IDs” (in column S).

53. If an entity has not reported to TADS (which is not due until the first quarter of the following year) at the time of this data request, how do they fill in the TADS event ID for this form?
For transmission circuit outages >200kV, the related ‘Event ID’ chosen by the TO/TOP should be reported quarterly on the PRC template. This TO/TOP chosen ‘Event ID’ should also be entered by the TO/TOP in webTADS quarterly (Form 5 only). Otherwise, year-end reconciliation of PRC reporting and TADS reported outages will be prone to error, either on the PRC form or webTADS database. The complete outage details (TADS Form 4) can be entered later. TADS Form 5 is used to define the ‘Event ID’ to be later used on TADS detailed outage Form 4.

54. How did TADs get connected to Misoperations? Can TADS cause codes be revised to be more PRC-004 friendly?
The main reason to include a TADS event ID in the PRC Misoperation template is to ensure the TADS outage data set is complete and accurate. During preparation of the TADS 2008-2009 Supplemental Report, several quality and inconsistency issues have been found when comparing TADS data, PRC reported Misoperations, and Event Analysis (EA) reported outages. Connecting the TADS information
in the new Misoperation template will ensure consistency between the TADS outage data related to PRC Misoperations and the data captured in the Misoperation reporting.

Yes, beside the ALR4-1 metric, for efficiency the Regional Entities will use the same template for the protection system Misoperation reporting required per Standards PRC-004 and PRC-016. Consistent reporting of Misoperations also will permit trending of Misoperation categories and cause codes.

55. Who at NERC is going to look at this data, is there enough staff to review this information, and what is going to be done with the data once reviewed?
NERC and Regional RAPA staff will review the metric data and publish the quarterly trends aggregated at NERC and Regional levels. The staff will also work with the System Protection and Control Subcommittee (SPCS) to conduct performance analysis, identify leading root causes and disseminate lessons learned.

56. To make this information valuable to the Transmission Owner (TO), would there be a possibility to post summaries of collected data on the NERC web site?
Yes, the metric trend will be aggregated at NERC and Regional levels. The quarterly update will be available at the NERC public website.

57. With new reporting specifications, can data from previous years still be used for trending?
No, data from previous years will not be used. The initial assessment will start in later part of 2011.

58. Equipment Type is reported in TADS for voltage levels 200 kV and above. If Misoperations are reported per PRC-004 for voltage levels 100 kV and above, how will this be addressed in developing the RMWG ALR4-1 metric calculation?
The ALR4-1 metric will only consider the Misoperations at 200 kV and above since this aligns with TADS data collection.

59. It is stated that Misoperations will be collected under NERC TADS. Are you creating a sub-data group under TADS or a separate database?
Transmission outage data including the cause of outage already is being collected by TADS. The Misoperation data will be collected into a separate database.

60. Is the TADS database available 24/7?
Yes, except for maintenance and upgrade, the webTADS portal is available 24/7. Additional TO user logon IDs will be approved by NERC on an individual TO/TOP owner case by case request. The OATI webTADS support desk is open (7am to 7pm Central time) every workday for software navigation related questions from the TO/TOPs who have TADS logon user IDs.

61. How does one determine one or more TADS "Event IDs" to be entered in column S if TADS reportable outages occurred?
The TO involved makes that TADS reporting decision based on outages which are related – the Outage Mode code: Dependant Mode or Common Mode plus other judgment and analysis by the TO. This is not a new issue for TOs who enter TADS data.

62. How can one enter TADS "Event IDs" in column S if TADS reportable outages occurred?

Step 1 – Log into webTADS, go to TADS Form 5 - Data Entry Screen:

Example entry is shown indicating that the TADS TO representative determines this information.

Step 2 – Under normal circumstances Step 2 will not be necessary. The “Event ID Code” defined in Step 1 can be used as the final TADS Event ID code. However, if deemed necessary, the normal TADS TO representative may assign a final TADS “Event ID Code” (by March 1st of the following year). See example below.
Step 2 will only be necessary if the TADS or TO business process (or computer system) requires a change to the TADS “Event ID Code”. In such a case the above “Description” field would remain the same and the original PRC Event ID Code would remain in the Description field.

63. **What is the reporting schedule?**

TOs, GOs, and Distribution Providers that own a transmission Protection System are requested to provide data starting April 1, 2011 according to revised Regional procedures and the following schedule:

<table>
<thead>
<tr>
<th>Misoperation Reports Due to Regional Entity</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 31, 2013</td>
<td>Submission of the 1st Quarter 2013 data</td>
</tr>
<tr>
<td>August 31, 2013</td>
<td>Submission of the 2nd Quarter 2013 data</td>
</tr>
<tr>
<td>November 30, 2013</td>
<td>Submission of the 3rd Quarter 2013 data</td>
</tr>
<tr>
<td>February 28, 2014</td>
<td>Submission of the 4th Quarter 2013 data</td>
</tr>
<tr>
<td>May 31, 2014</td>
<td>Submission of the 1st Quarter 2014 data</td>
</tr>
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<td>August 31, 2014</td>
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<td>February 28, 2015</td>
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</tr>
</tbody>
</table>

64. **Whom could I contact if I have questions on the reporting template?**

<table>
<thead>
<tr>
<th>Regional Entity</th>
<th>Contact</th>
<th>E-mail</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRCC</td>
<td>Hassan Hamdar</td>
<td><a href="mailto:hhamdar@frcc.com">hhamdar@frcc.com</a></td>
<td>(813) 207-7989</td>
</tr>
<tr>
<td>Regional Entity</td>
<td>Contact</td>
<td>E-mail</td>
<td>Phone</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>----------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>MRO</td>
<td>Rich Quest</td>
<td><a href="mailto:RP.Quest@MidwestReliability.org">RP.Quest@MidwestReliability.org</a></td>
<td>(651) 855-1704</td>
</tr>
<tr>
<td>NPCC</td>
<td>Quoc Le</td>
<td><a href="mailto:quoc@npcc.org">quoc@npcc.org</a></td>
<td>(212) 840-1070</td>
</tr>
<tr>
<td>RFC</td>
<td>Art Buanno</td>
<td><a href="mailto:Art.Buanno@rfirst.org">Art.Buanno@rfirst.org</a></td>
<td>(330) 247-3442</td>
</tr>
<tr>
<td>SERC</td>
<td>David Greene</td>
<td><a href="mailto:dgreene@serc1.org">dgreene@serc1.org</a></td>
<td>(704) 414-5238</td>
</tr>
<tr>
<td>SPP</td>
<td>Alan Wahlstrom</td>
<td><a href="mailto:awahlstrom@spp.org">awahlstrom@spp.org</a></td>
<td>(501) 688-1624</td>
</tr>
<tr>
<td>TRE</td>
<td></td>
<td><a href="mailto:information@texasre.org">information@texasre.org</a></td>
<td></td>
</tr>
<tr>
<td>WECC</td>
<td>Doug Tucker</td>
<td><a href="mailto:dtucker@wecc.biz">dtucker@wecc.biz</a></td>
<td>(801) 819-7606</td>
</tr>
</tbody>
</table>