

# WECC

## Misoperations Webinar Series

Session 2 – April 26, 2018

# Objective

Align understanding of how misoperations and operations are defined.

- Look at real-world scenarios to identify common issues
- Explain concepts and provide reference material
- Test concepts on new scenarios

# Follow up


- FAQ document posted
  - “living” document
  - Building scenarios from fully vetted content
- Compliance presence

# How this will work

## Pre-Webinar Survey

- Scenario
- Results
- Explanation
- Questions
  - Submit through chat
  - Unmute yourself to talk
  - Email

Callers will be muted on entry. To ask questions:


1. Chat:  
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2. Voice:  
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**Pro tip: You can use the chat feature to ask the moderator to unmute you so you can ask a question.**
3. Email:  
send to [jhanson@wecc.biz](mailto:jhanson@wecc.biz)  
emails will be addressed after today's session.

# How this will work

## Live Examples

- Scenario
- Live Poll
- Explanation
- Questions

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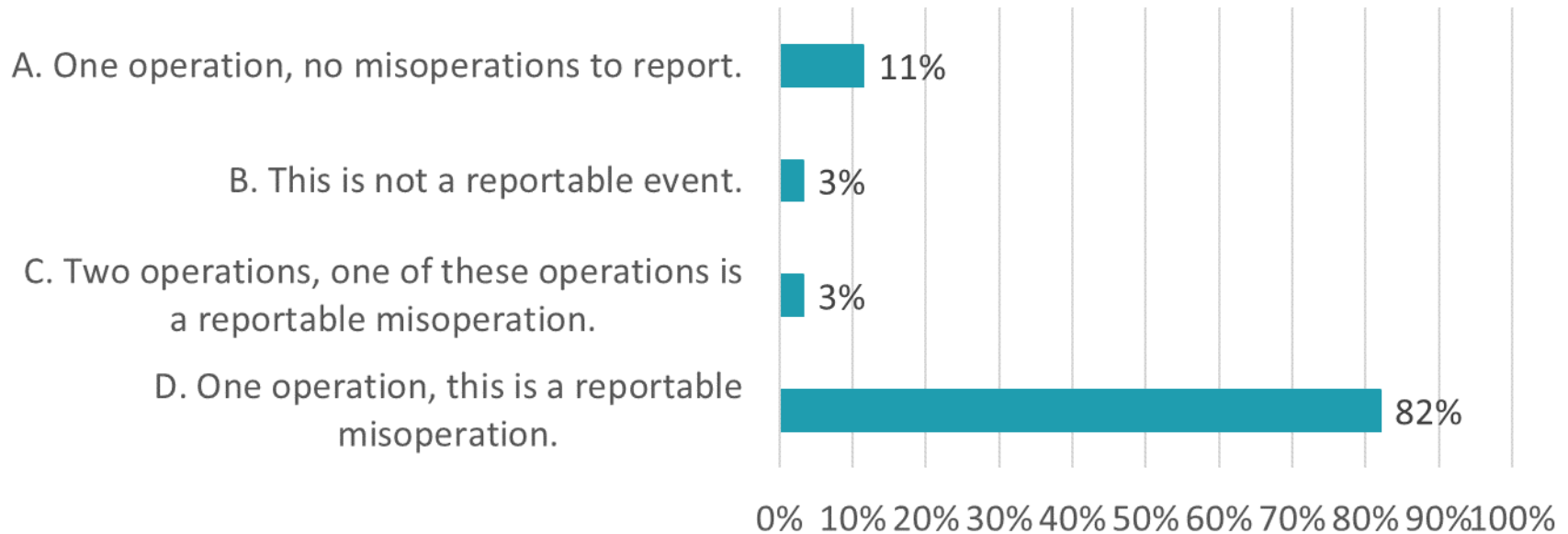
# Example 1.4 Question

Bauer Unit 1 is operating under normal load conditions. The unit is tripped due to a failed reverse power protection relay. How many operations and misoperations should be reported?

- A. One operation, no misoperations to report.
- B. This is not a reportable event.
- C. Two operations, one of these operations is a reportable misoperation.
- D. One operation, this is a reportable misoperation.

# Example 1.4 Results

## Example 1.4



# Example 1.4 Answer & Explanation

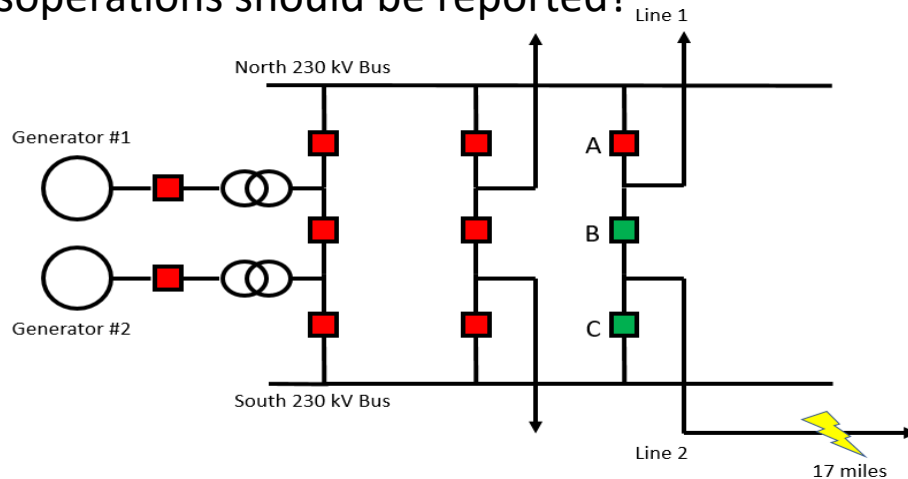
Answer: D. One operation, this is a reportable misoperation.

Explanation: Failure of a relay resulting in an operation is an example of a Unnecessary Trip - Other than Fault misoperation (PRC-004-5(i), page 22). Reverse power protection relays respond to electrical quantities, and operations/misoperations involving these relays are to be included in quarterly reporting into the MIDAS Portal.



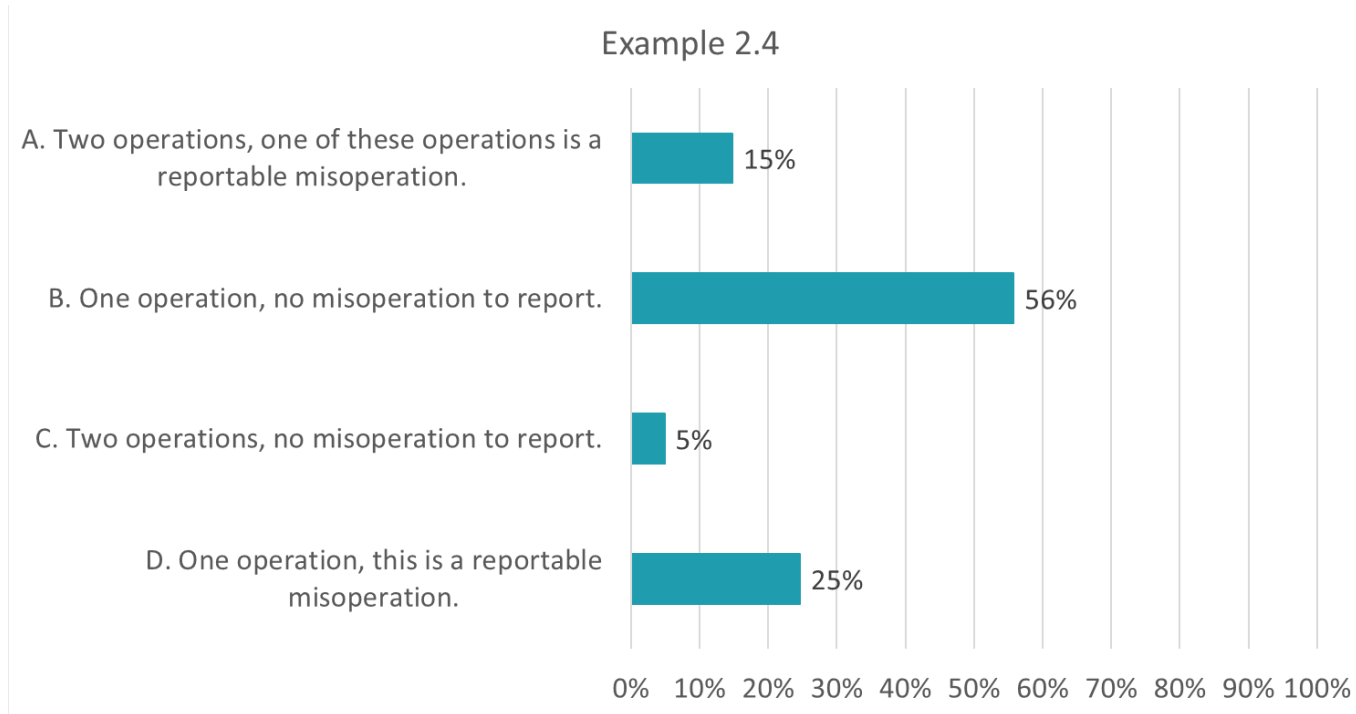
# Example 2.4 Question

The Composite Protection System for line 2 includes two independent high-speed pilot systems as well as step distance and time-overcurrent schemes. During a Fault on this line, the two pilot systems fail to operate and the time-overcurrent scheme clears the Fault with no generating units or other Elements tripping. How many operations and misoperations should be reported?



- Two operations, one of these operations is a reportable misoperation.
- One operation, no misoperation to report.
- Two operations, no misoperation to report.
- One operation, this is a reportable misoperation.

# Example 2.4 Results



# Example 2.4 Answer & Explanation

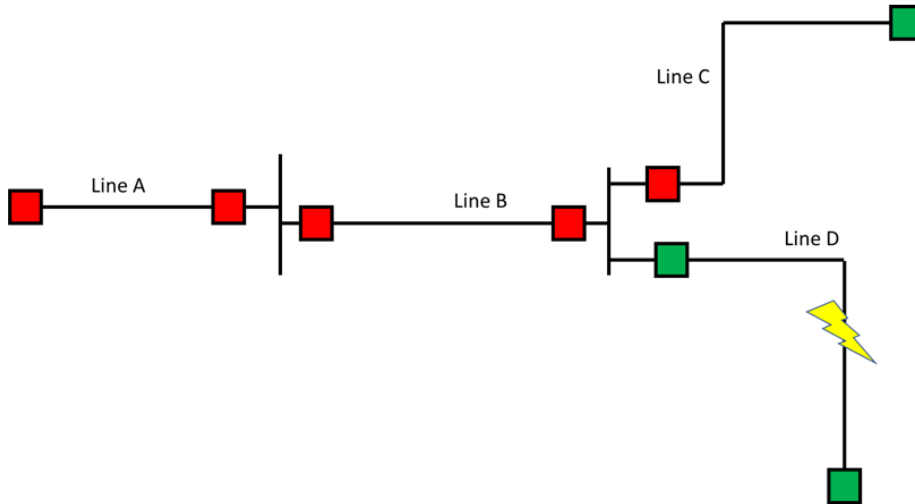
Answer: B. One operation, no misoperation to report.

Explanation: Even though the pilot systems failed to operate, other components of the Composite Protection System cleared the fault. No other Composite Protection System operated.

Note: While there are no misoperations to report, it is expected the pilots systems are examined to determine why they did not clear the fault.

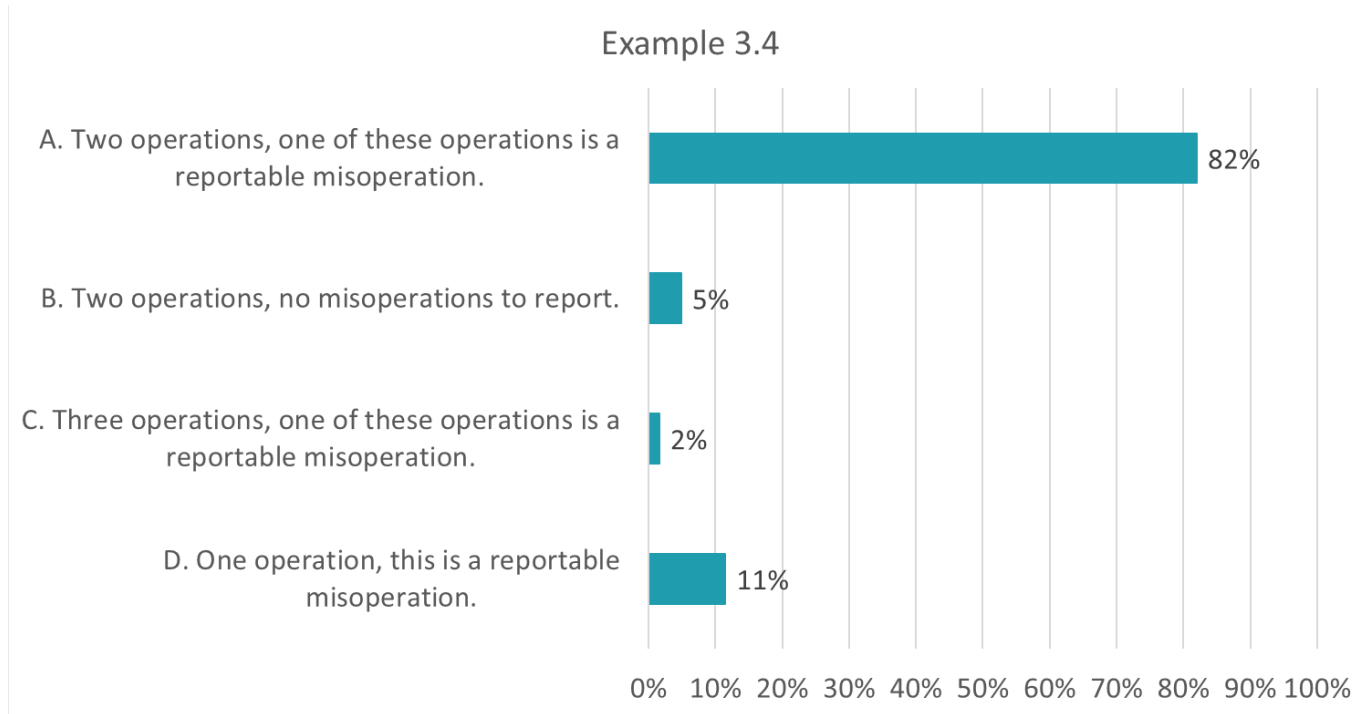
# Example 3.4 Question

A fault on Line D is cleared properly by its Composite Protection System. Line C has a carrier blocking signal that is not transmitted resulting in the remote end trip of this unfaulted line (e.g., carrier ON/OFF switch found in OFF position). How many operations and misoperations should be reported?



- A. Two operations, one of these operations is a reportable misoperation.
- B. Two operations, no misoperations to report.
- C. Three operations, one of these operations is a reportable misoperation.
- D. One operation, this is a reportable misoperation.

# Example 3.4 Results



# Example 3.4 Answer & Explanation

Answer: A. Two operations, one of these operations is a reportable misoperation.

Explanation: The operation of the Protection System for the non-faulted line is an Unnecessary Trip during a Fault.

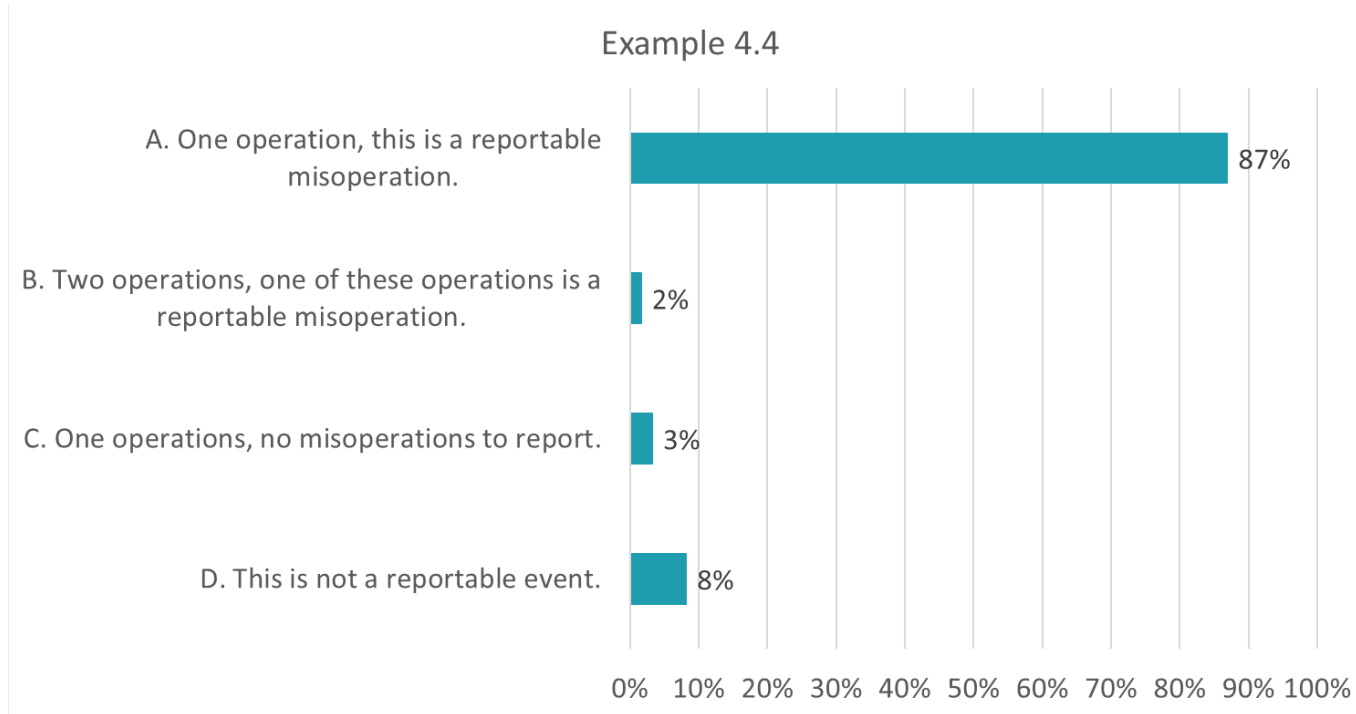
Reference PRC-004-5(i), page 21

# Example 4.4 Question

During an off-nominal frequency condition, Generator Alpha1 is tripped by the loss of field protection while the field is intact. Assuming the Composite Protection System was not intended to operate under this condition, how many operations and misoperations should be reported?

- A. One operation, this is a reportable misoperation.
- B. Two operations, one of these operations is a reportable misoperation.
- C. One operations, no misoperations to report.
- D. This is not a reportable event.

# Example 4.4 Results





# Example 4.4 Answer & Explanation

Answer: A. One operation, this is a reportable misoperation.

Explanation: This is based on Example 6B of PRC-004-005(i) (page 22) as an Unnecessary Trip – Other Than Fault misoperation.

# Example 5.4 Question

Entity A and Entity B jointly own Line WEST1.

An event on Line WEST1 results in two operations, one of which is a misoperation.

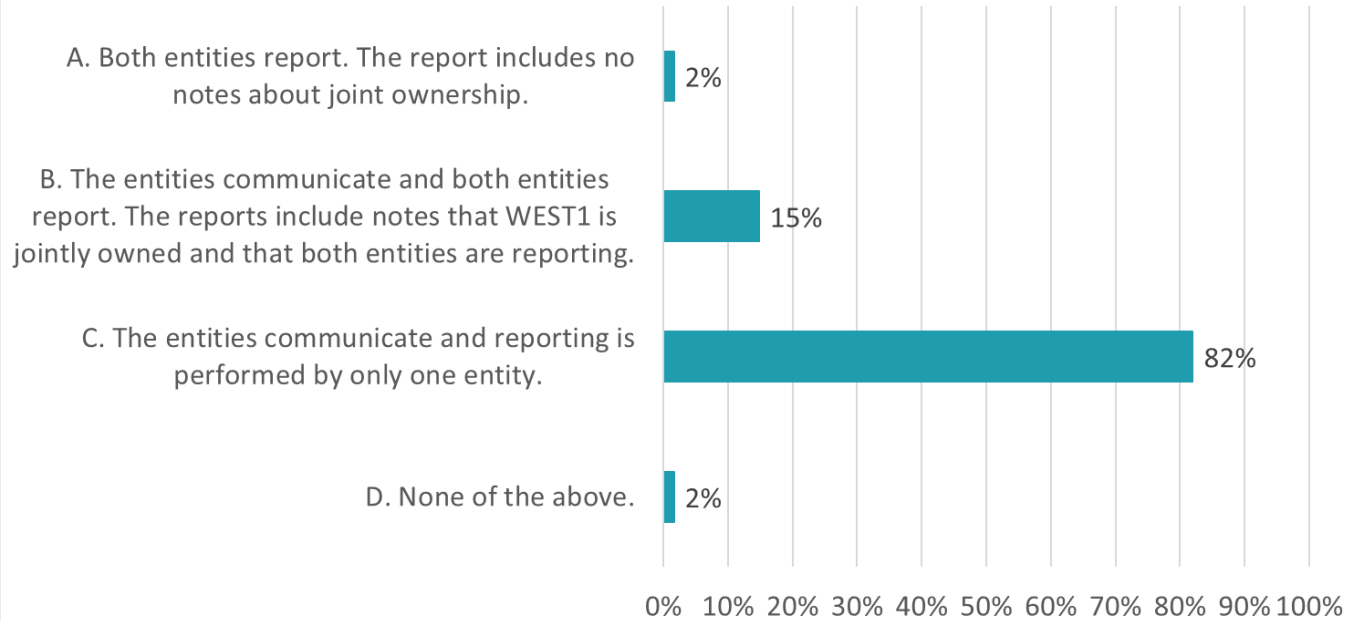
Which entity performs the reporting for this event?

Both entities report. The report includes no notes about joint ownership.

- A. The entities communicate and both entities report. The reports include notes that WEST1 is jointly owned and that both entities are reporting.
- B. The entities communicate and reporting is performed by only one entity.
- C. None of the above

# Example 5.4 Results

Example 5.2



# Example 5.4 Answer & Explanation

Answer: C. The entities communicate and reporting is performed by only one entity.


Explanation: If both entities report, the event will be double counted. In the Event Description field, include details such as the line is jointly owned, the other involved entity, communication took place between the two companies, etc.

Note: Submission to MIDAS should not be confused with documentation for compliance purposes.

# Questions



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<http://www.google.com/url?sa=i&ict=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=ZahUKEwjw90DvpcXaAhW014MKXg4AUoQjRx6BAGAEAU&url=http%3A%2F%2Ftheinvestorsapproach.com%2Fcategory%2Fbusiness%2F&psig=AOvVaw06kC6-odqZV0vubTIDrviE&ust=1524191425612839>

## Practice Session

# Example 6.4 Question

A short circuit in the field winding of Unit 2 at Beta Powerhouse results in a loss of field relay operation.

How many operations/misoperations should be reported to the MIDAS Portal?

- A. One operation. This operation is a reportable misoperation.
- B. One operation, no misoperations to report.
- C. This is a non-reportable event.
- D. None of the above.

# Example 6.4 Answer & Explanation

Answer: B. One operation, no misoperations to report.

Explanation: The relay operated as intended. Generator DC protective relays respond to electrical quantities, so reporting is required.



# Example 7.4 Question

A generator under voltage relay operates due to an incorrect setting, removing Beta Powerhouse Unit #1 from service.

How many operations/misoperations should be reported?

- A. One operation. This operation is a reportable misoperation.
- B. One operation, no misoperations to report.
- C. This is a non-reportable event.
- D. None of the above.

# Example 7.4 Answer and Explanation


Answer: A. One operation. This operation is a reportable misoperation.

Explanation: The relay misoperated due to incorrect settings. Relay responded to electrical quantities, so reporting is required.

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# Results

<b>Ex.</b>	<b>Topic</b>	<b>Review</b>	<b>Live</b>
1	Relay Failure (refresher)	82%	NA
2,3	Composite Protection System	56%, 82%	NA
4,6,7	Generator Protection	87%	
5	Joint Reporting (refresher)	82%	NA



# Coming Soon

<http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwjgg-KjqcXaAhXI44MKHTudD6YQJRx6B8AgAEAU&url=http%3A%2F%2Fplaxtolplayers.co.uk%2Fcoming-up%2F&psig=AOvVaw20t9TSBX50geH-WtatulUD&ust=152419236603976>

## Coming soon....

# Coming Soon....

- Slides and information from today's call
  - Email to misops info mailing list
    - To be added, email [support@wecc.biz](mailto:support@wecc.biz)
  - Posted on WECC website (Performance Analysis [page](#))
- WECC Misoperations Workshop June 5-6, 2018
  - Agenda posted. More information and registration [here](#).
- Misoperations Webinar Series call #3
  - Thursday, June 28, 2018 at 10-11:30 a.m. MT
  - Issue ideas/suggested scenarios, email [jhanson@wecc.biz](mailto:jhanson@wecc.biz)
    - (subject: Misops Webinar)