

Lesson Learned

EMS/SCADA Systems — Training System versus Live EMS Screen

Primary Interest Groups

Balancing Authorities
Distribution Providers
Generator Operators
Reliability Coordinators
Transmission Operators

Problem Statement

An Energy Management System (EMS) engineer inadvertently opened a 500 kV disconnect under load and cleared a 500 kV line while developing a disturbance training scenario on an EMS console.

Details

An EMS engineer was developing a disturbance training scenario in the EMS simulator application and had both the live EMS and simulator applications activated on the same EMS work station. After referencing some data from the live EMS, the EMS engineer planned to open a 500 kV line disconnect switch on the simulator, but instead, erroneously opened the disconnect switch under load on the live EMS system, causing a flash over of the breaker disconnect switch and the clearing of a 500 kV line.

Corrective Actions

- Only approved staff will have access to production EMS accounts; training accounts were removed until other safety measures are in place.
- Individual EMS accounts were reviewed to ensure that staff outside the control room does not have the ability to open or close a device.
- Control menus, that are required to set device statuses of pseudo devices or manually change a measurement, will be changed for staff outside the control room. The control menu will not have “open” and “close” control menus. The control menus will be changed to “Set Close” and “Set Open”.
- The production-privileged EMS account will be available only in an emergency basis for maintenance staff, the password will be changed every 15 days and will be only known by several key staff
- For training purposes, a separate set of EMS one-line displays will be used with different background colors.

Lesson Learned

- Conducting training simulator activities with a live EMS screen in the same area can lead to a predictable human performance error. The risk of a human fallibility lapse by confusing the two screens and conducting activities on the live screen is a predictable scenario that should be addressed in procedural and physical barriers. Some examples of barriers to prevent this error:
 - Training and live EMS activities should be conducted on separate and independent EMS work stations in separate areas. This physical barrier will prevent the possibility of confusing adjoining EMS and simulator console screens.
 - Log in credentials should be implemented to prevent the simultaneous logging in of EMS activities and training applications which prevents unintended and inadvertent access to live EMS control applications.
 - Training or development systems should be visibly and distinctly different from the live EMS control screens. This can be accomplished through different color coding and blinking of titles on the screens when logged in.

For more information please contact:

Earl Shockley
Director of Events Analysis and Investigation
earl.shockley@nerc.net
404-446-2560 ext 270

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