NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Lessons Learned

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RELIABILITY | ACCOUNTABILITY

Objectives

- Review the NERC Lessons Learned Process
- Review “Attributes of a Quality Lessons Learned”
- Review the nine Lessons Learned published since the June Webinar

Key Points of the ERO Event Analysis Process

- Promoting Reliability
- Developing a Culture of Reliability Excellence
- Collaboration
- Being a Resource for Industry

Lessons Learned

Lessons Learned provide an excellent resource for someone who can benefit from another's experience.

- Identify problems
- Find what works
- Document it
- Share it

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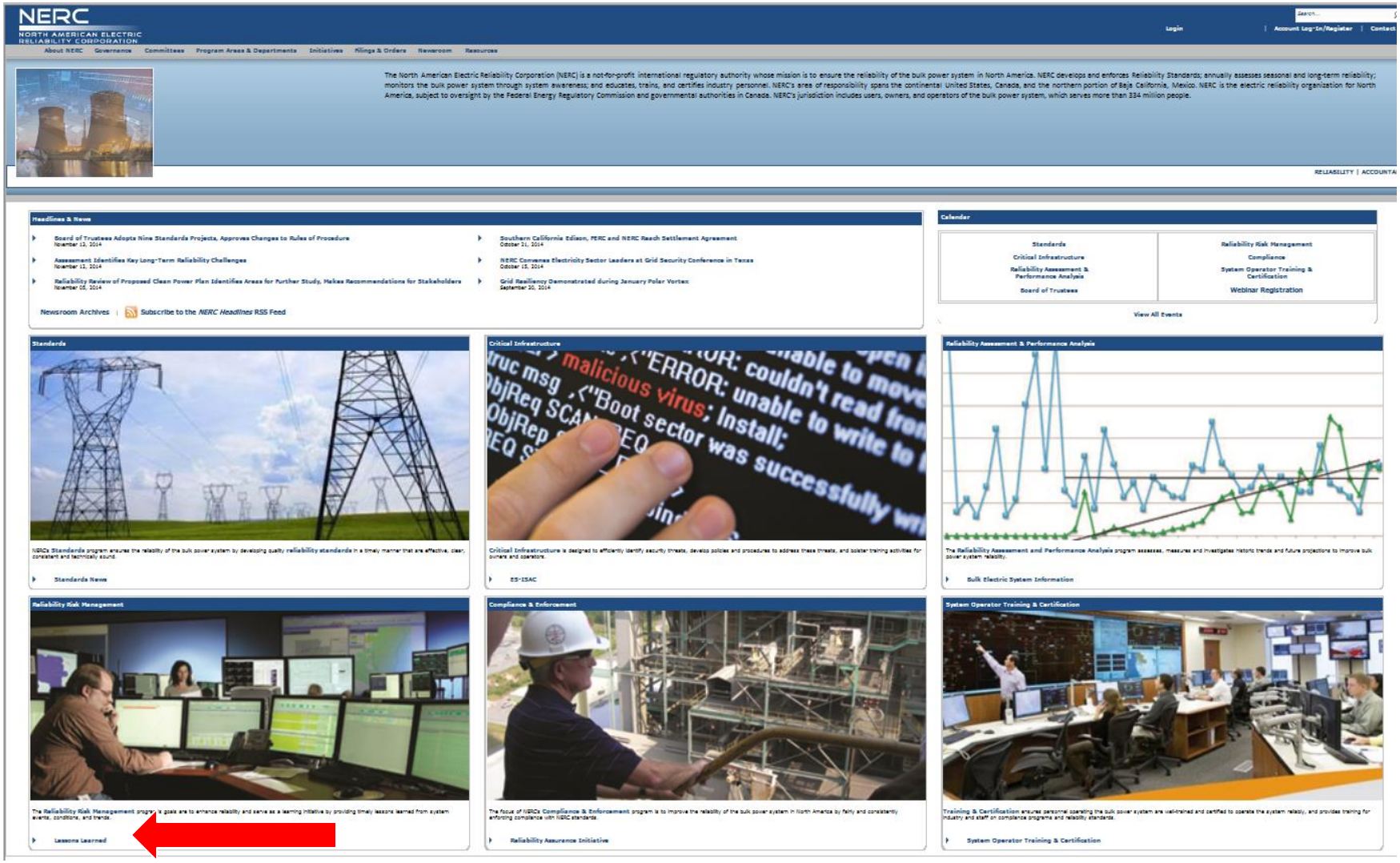
Link to Lessons Learned on NERC Website

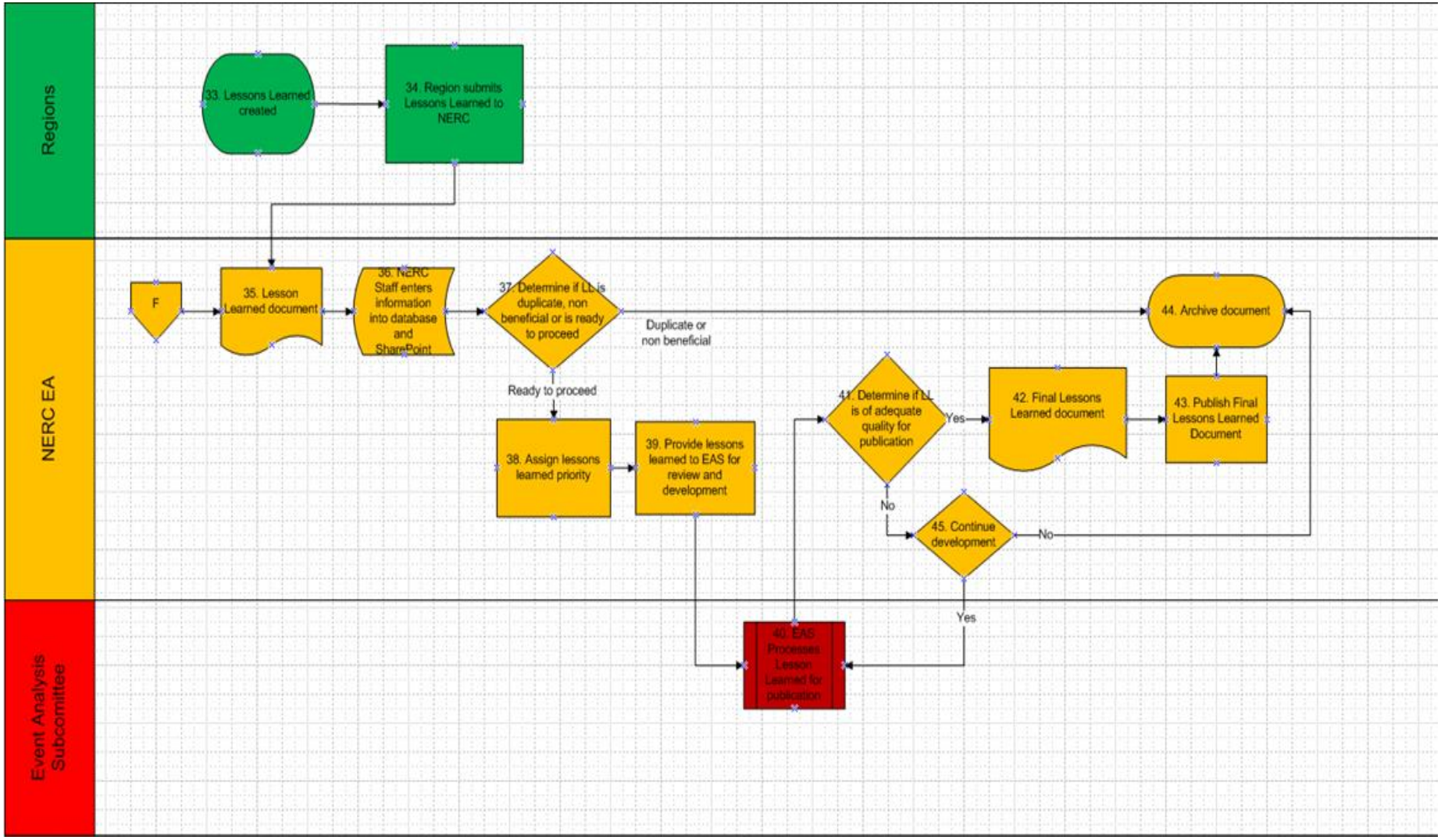


Lessons Learned Process

Lessons Learned are a collaborative effort between NERC, the Regions, and the registered entities.

- Open, honest, transparent communication is critical!

Lessons Learned Flow Chart



Lessons Learned Process cont'd.

Attributes of a quality Lessons Learned

- The lesson is clearly identified
- The lesson contains sufficient information to understand the issue(s).
- The lesson visibly identifies the difference between the actual outcome and the desired outcome.
- The inclusion of an accurate sequence of events should be considered when it provides clarity.

Lessons Learned Process cont'd.

Attributes of a quality Lessons Learned (Cont.)

- Redacted single line diagrams or other visual aids can be included.
- Where appropriate, specific terms, methods, or processes referenced should be defined or explained.
- Any referenced documents should either be attached or have a link provided.
- Any recommendations identified should be actionable.

Lessons Learned Process cont'd.

Attributes of a quality Lessons Learned (Cont.)

- Remove all indication of the entity involved in the event, CEII information and any other event details that are confidential.

Lessons Learned Process cont'd.

NERC staff will:

- Review LLs.
- Prioritize LLs and identify common themes.
- Consolidate common LLs into a single "Lessons Learned "document.
- Distribute draft LLs to selected technical groups (Event Analysis Subcommittee (EAS) or other groups as appropriate) for review and comment.

Lessons Learned Process cont'd.

- NERC and the Regional Entity will make revisions based on the technical group's input.
- The Regional Entity will send LLs to the applicable registered entity for review, if needed, based on any major changes made.
- NERC will publish LLs on the NERC website and send an announcement to industry.
- Once the LL document is published on the NERC website it will include a "survey Link" so the readers can provide feedback on the LL document which will help us improve the process.

2014 Lessons Learned

NERC has published 16 Lessons Learned to date in 2014. Nine of those Lessons Learned have been published since the last NERC webinar on June 5, 2014 and cover topics from the following categories:

- Communications (4)
- Relaying and Protection Systems (3)
- Bulk Power system operations (2)

Lessons Learned Published Since June 5, 2014

Communications Lessons Learned

- LL20140802 Communications Loss of EMS Monitoring and Control Functionality for More Than 30 Minutes
- LL20140604 Communications Loss of SCADA due to Memory Resources Being Fully Utilized
- LL20140902 Communications Loss of EMS/Dispatch Workstation Functionality due to NTP Time Synchronization Device Misconfiguration
- LL20140901 Communications Redundant Network Interface Cards on EMS Systems

Lessons Learned Published Since June 5, 2014

Relaying and Protection Systems Lessons Learned

- LL20140602 Relaying and Protection Systems Generation Relaying – Overexcitation
- LL20140601 Relaying and Protection Systems Generation Relaying – Under-frequency Protection Coordination
- LL20140903 Relaying and Protection Systems System Protection Review Prior to Disabling Protective Relays

New Lessons Learned since June 5, 2014

Bulk Power System Operations Lessons learned

- LL20140801 Bulk Power System Operations Load-Shedding Plans for Localized Events
- LL20140603 Bulk Power System Operations Verify that Actions Called for in Operating Guides Can Be Implemented Within Required Time Frames

Benefits of Lessons Learned

- NERC recently published its report on the Polar Vortex event that occurred in early January 2014. While overall the system performed well, there were some cases where the extreme weather caused some system problems. Entities will continually have to face the challenges caused by cold weather during the winter months.

Benefits of Lessons Learned

As an example of how the Lessons Learned can be helpful, NERC published 13 Lessons Learned related to cold weather issues. The titles are listed below

- Wind Farm Winter Storm Issues
- Transformer Oil Level Issues During Cold Weather
- Winter Storm Inlet Air Duct Icing
- Capacity Awareness During an Energy Emergency Event
- Gas and Electricity Interdependency
- Rotational Load Shed
- Plant Operator Training to Prepare for a Winter Weather Event
- Transmission Facilities and Winter Weather Operations

Benefits of Lessons Learned

- Plant Onsite Material and Personnel Needed for a Winter Weather Event
- Plant Instrument and Sensing Equipment Freezing due to Heat Trace and Insulation Failures
- Plant Fuel Switching and Cold Weather
- Adequate Maintenance and Inspection of Generator Freeze Protection
- Generating Unit Temperature Design Parameters and Extreme Weather Conditions

Lessons Learned Survey

- NERC has included a survey link on all Lessons Learned to gauge industry feedback on the value of the Lessons Learned
- There is also an email link to NERC and contact information on the Lesson Learned for the Regional representative.
- 78 Lessons Learned surveys have been received to date, most with positive feedback

Lessons Learned Feedback Questions and Response Information

- Question 1- Was the LL understandable and easy to read? 97% answered yes
- Question 2 - Did the Lesson Learned contain enough technical detail? 79% answered yes
- Question 3 - Did the Lesson Learned result in any actions or changes by your company? 28% answered yes
- Question 4 - How will you use this LL in your organization? 51 people provided a text response.
- Question 5 - What additional information would make this Lessons Learned more useful? 37 people provided a text response.
- Question 6 - If NERC Publishes another Lessons Learned Containing a survey like this would you be willing to take the survey again? 96% answered yes

NERC is interested in your feedback to continually improve our process. In order to help us do so, please take a few minutes to complete the short survey located at the following link:

- https://www.surveymonkey.com/s/BKZZP9V

Presenter contact information

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Questions and Answers