BWROG – Emergency Procedures and Severe Accident Guidelines (EPG/SAG) Revision 4 Highlights

Ken Klass (Talen Energy), Lesa Hill (Southern Nuclear) & Phillip Ellison (GEH)

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Topics

Introduction
Emergency Procedure Committee Overview
EPG/SAG Revision 4
TSG Skillset Workshops
Introduction

The BWROG maintains generic symptom based emergency and severe accident guidelines (EPG/SAGs) for its members.

These guidelines are being updated based on lessons learned from the Fukushima accidents and insights from BWROG Members.

The CN-251 paper provides an overview of some of the key changes associated with Revision 4 of the guidelines.

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The major improvements to Revision 4 include the following:

• ABWR
• Shutdown All Modes
• FLEX Implementation
• Severe Accident Water Addition & Management
• Technical Support Guidelines and Calculational Aids
EPG/SAG Revision 4 is expected to be released in December 2017.

Once formally issued U.S. utilities have 2 refueling outages or three years to implement.

U.S. utilities have made a voluntary commitment to maintain the SAGs.

The U.S. NRC has modified its reactor oversight program to include inspections of the SAGs.
• Facilitates a uniform understanding of EPG/SAGs and their technical bases among the members
• Provides a forum for information sharing
• Acts as an advisor group to the BWROG and Utilities on issues related to emergency response strategies
• Interfaces with numerous external agencies in the areas of emergency procedures and emergency response
BWROG - Emergency Procedures Committee (cont.)

Maintains EPG/SAG records - standing documents such as:

- Guidelines and associated appendices
- Issue files
- Conference reports
- Analyses
EPG/SAG Revision 4

EPG/SAG Revision 4 and supporting documents:
- Appendices
- TSGs
- Calculational Aids

June 2017 Status:
- Most open Revision 4 issues resolved
- Fukushima Lessons Learned Incorporated:
  - Extended Loss of AC Power (and use of FLEX)
  - SAWA /SAWM
  - Timing of RPV depressurization
June 2017 Status:

- ABWR Guidance Complete
- Shutdown Guidance:
  - Mode 4 (Cold Shutdown) - Complete
  - Mode 5 (Refueling) - draft expected late June 2017

Revision 4 Complete: Expected December 2017

- Rev 4 to be formally issued no later than March 2018
Revision 4 Format

EPGs/SAGs

Appendices

• **A – Writer’s Guide:**
  - Provides uniform understanding of format, elements and syntax of generic guides
  - Aids in converting generic guidance to plant specific guidance and procedures

• **B – Technical Basis:**
  - Provides the technical basis and rational for steps, limits and action levels
Appendices:

• C – Calculations:
  o Provides a worksheet and sample calculation where required for each plant-specific variable or curve for which the basis is not evident from the text of the guidelines
  o A recommended set of calculations, plants can perform plant-specific calculations
Appendices:

- Appendix D:
  - Changes from EPG Rev 4 (1987)
  - Used for licensing considerations for plant implementation in US
Rev 4 Supporting Items

• Overview Document

• Technical Support Guidelines (TSGs):
  o Includes calculational aids (Excel spreadsheet based)
  o Working with Sandia National Laboratory to convert calculational aids to an application

• Station Blackout (SBO) generic procedure flowchart
• Emergency Management Guideline (EMG) generic chart:
  o Provides a tool for prioritizing available resources and coordinating the response to large scale emergencies and beyond design basis events
• FLEX Guidance document
BWROG - TSG Skill Set Workshop

Improve the effectiveness of the Emergency Response Organization (ERO) in preventing and mitigating accidents:

• The workshop is based on lessons learned from the Fukushima accident, Operational Experience (O/E), and various governmental programs

• Improves the understanding of the installed equipment, portable FLEX equipment and plant features that can be used to mitigate an accident

• Provides hands on use of the EOPs, SAMGs and TSG calculational aids

June 6-9, 2017
Topics:

• Previous O/E and lessons learned from events that have shaped the industry
• Severe Accident Phenomenology and Severe Accident Guidance
• Fukushima instrumentation response
• Analytical tools for use by the ERO:
  o Excel spreadsheet based
  o Application being developed by Sandia National Laboratory
Topics:

- Actual use of EOPs, SAMGs, calculational aids and interface between the control room and ERO
- Current and long term status of the Fukushima units (TEPCO)
QUESTIONS