



**Combined License Application
Review
FERMI 3**

Safety Panel 2

February 4, 2015

Panelists

- **Adrian Muñiz – Lead Project Manager**
- **Angelo Stubbs – Senior Reactor Systems Engineer**
- **Raul Hernandez – Reactor Systems Engineer**
- **Dan Barss – Emergency Preparedness Team Leader**

Recommendation 4.2 – Framework

- **SECY-12-0025 contains proposed orders and requests for information in response to lessons learned from Fukushima Dai-ichi – Discussed approach for new reactors**
- **Order EA-12-049 specifies requirements for mitigation strategies for beyond-design-basis external events**
- **JLD-ISG-2012-01 provides guidance for meeting Order EA-12-049**

Recommendation 4.2 – Approach

- **Initial phase mitigation for the first 72 hours will use the ESBWR passive safety systems**
- **Final phase mitigation to cover indefinite time beyond the initial 72 hours**
 - **Will use same passive safety systems, supported by offsite resources**

Recommendation 4.2 – Safety Review

- **Core cooling via the isolation condenser system**
 - **Safety-related passive closed-loop cooling system**
 - **Natural circulation, no reliance on ac power**
 - **Transfers decay heat to atmosphere**

Recommendation 4.2 – Safety Review

- **Containment cooling via the passive containment cooling system**
 - **Transfers decay heat via heat exchangers to the atmosphere with no reliance on ac power**
- **Spent fuel cooling uses pool water inventory**

Recommendation 4.2 – Safety Review

- **Initial phase mitigation (72 hours) provided by existing ESBWR passive safety systems**
- **No transition phase mitigation required as adequate time is available to bring in offsite resources, if needed**

Recommendation 4.2 – Safety Review

- **Final phase mitigation continues to use passive safety systems with periodic replenishment of water inventories using offsite equipment or other available resources**

Recommendation 4.2 – Conclusions

- **Fermi 3 mitigation strategies provide core cooling, containment, and spent fuel pool cooling capabilities, as discussed in Order EA-12-049**
- **License condition requires completion of the overall integrated plan, as described in Nuclear Energy Institute (NEI) 12-06, and full implementation of the guidance and strategies prior to fuel load**

Recommendation 7.1 – Framework

- **SECY-12-0025 discussed approach for new reactors**
- **Order EA-12-051 specifies requirements for reliable spent fuel pool instrumentation**
- **JLD-ISG-2012-03 provides guidance for meeting Order EA-12-051**

Recommendation 7.1 – Approach

- **Use level instruments provided in the ESBWR certified design**
- **Expanded the ESBWR level instrument description to include independent power source connectivity and instrument design accuracy**

Recommendation 7.1 – Safety Review/Conclusions

- **Fermi 3 fully addressed all design features identified in JLD-ISG-2012-03**
- **License condition requires a training program on establishing alternate power connections to level instruments**

Recommendation 9.3 – Framework

- **To conform to the direction in SECY-12-0025, applicants should perform an assessment of**
 - **Communications systems and equipment needed during prolonged station blackout condition**
 - **Onsite and augmented staffing capability to respond to a multi-unit event**

Recommendation 9.3 – Approach

- **Applicant committed to follow NRC endorsed guidance**
 - **NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” Revision 0**

Recommendation 9.3 – Safety Review

- **Staff modified the license condition**
 - **Reference schedules required by 10 CFR 52.99(a) and 10 CFR 52.103(a) for completion of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) and fuel load**
 - **Changed license condition timing from two years before initial fuel load to 18 months before last date scheduled for completing ITAAC**

Recommendation 9.3 – Conclusion

- **Revised license condition is acceptable because**
 - **Responsive to SECY-12-0025**
 - **Requires use of endorsed guidance in NEI 12-01**