

License Amendment Request (LAR), Proposed Changes to Implementation of NFPA 805 (2001 Edition) at Fort Calhoun Station

February 2, 2016



Introductions

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Agenda

- NFPA 805 Requirements
- FCS License Condition
- Applicable Recommendations
- Licensing Approach
- LAR Scope
- PRA Model and Results
- Conclusions
- Schedule

NFPA 805 Requirements

- Deterministic Compliance on a Fire Area by Fire Area basis
- Performance Based Compliance for Fire Areas not meeting Deterministic Compliance (i.e., Variance From Deterministic Requirements, VFDR)
- Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) associated with all modeled fire events across all Fire Areas

FCS License Condition

- Transition License Condition 3.D.(3)(b) states:
The licensee shall implement the modifications to its facility, as described in Enclosure 1, Attachment S, Table S-2, "Plant Modifications Committed," of OPPD letter LIC-14-0042 dated April 10, 2014, to complete the transition to full compliance with 10 CFR 50.48(c) by the end of the second refueling outage following issuance of the license amendment. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.

Applicable RECs

- REC-111, High Energy Arc Fault Shields above 4160V and 480V Switchgear
- REC-137, Alternate Water Supply from the Main Condenser to Auxiliary Feedwater (AFW) Pump FW-54
- REC-119 and REC-120, Addition of Isolation Fuses Between Battery No.1 (2) and Associated DC Bus

REC-111

- License Condition permits OPPD to make changes to REC-111 with formal notification of the changes provided to the NRC
- For REC-111, OPPD will remain within the Regulatory Guide (RG) 1.174 numerical acceptance guidelines applicable to NFPA 805 transition (i.e., those guidelines used for the NFPA 805 LAR and subsequent RAI responses) after implementing the proposed changes to REC-111

REC-137

- License Condition permits OPPD to make changes to REC-137 with formal notification of the changes provided to the NRC
- For REC-137 to satisfy the deterministic requirements of NFPA-805, analysis has been performed to demonstrate that the Condensate Storage Tank has adequate volume to support 24 hours of safe and stable conditions following a fire event

REC-119 and REC-120

- REC-119 and REC-120 proposed electrical isolation between the station batteries and the associated DC buses. The need for the modification has been eliminated by revising the deterministic compliance to credit the unaffected train of DC power for safe and stable operation, therefore OPPD is requesting elimination of REC-119 and REC-120 through an LAR.

Licensing Approach

- REC-111 and REC-137 will be addressed with a formal letter notifying the NRC of changes from the original submittal. That letter will not require NRC approval.
- Changes to REC-119 and REC-120 will require NRC approval by an LAR proposing to remove REC-119 and REC-120 from Table S-2
- The LAR will document the changes to all four RECs by including an update of Table S-2
- Cumulative effect of risk from these changes will be included in the LAR

LAR Scope RECs 119 and 120

- For the applicable Fire Areas (Battery Rooms), compliance strategy has been revised to demonstrate areas are deterministically compliant without the need for either a modification or a VFDR
- Compliance demonstrated by crediting the unaffected DC bus for Safe and Stable conditions
- The NFPA 805 NSCA incorporated (conceptually) the risk related modifications to reflect post implementation. However, in support of the original NFPA 805 LAR submittal, (EA10-036) verified that the battery rooms would remain deterministically compliant even without the impact of the modifications.

PRA Model Supporting this LAR/ Notification Letter

- Started with “SE Model”
 - Integrated final resolution of RAIs regarding fire PRA method acceptability for the transition and for the self-approval process
- Updated fire PRA model to use Rev. 13 of Internal Events PRA (original LAR used Rev. 11)
- Incorporated plant design changes

PRA Results

- Only battery room fire scenarios are affected by REC-119 and REC-120
- No VFDRs associated with the battery room fires
- Risk from changes associated with REC-111 will be included in total CDF and LERF to demonstrate compliance to RG 1.174 guidelines
- REC-137 does not have a calculated risk impact as it is not credited or otherwise modeled by the Fire PRA
- Total CDF and LERF across all modeled hazards will remain within RG 1.174 guidelines ($<1.0E-04$ /yr CDF and $<1.0E-05$ /yr LERF)

PRA Results (cont.)

- Preliminary results:

	SE Fire PRA (ML14098A092)	REC-111/119/120 Changes
Net VFDR Δ CDF for NFPA 805 Transition (/yr)	4.93E-06	<1.00E-05
Net VFDR Δ LERF for NFPA 805 Transition (/yr)	6.27E-07	<1.00E-06
Total CDF (internal, flood, fire, seismic) (/yr)	9.21E-05	<1.00E-04
Total LERF (internal, flood, fire) (/yr)	5.34E-06	<1.00E-05

PRA Results (cont.)

- SE fire PRA conservatively assumed a battery room fire would cause Loss of Offsite Power (LOOP) due to de-energizing instrument busses and subsequent Offsite Power Low Signal (OPLS) generation
- The model used for this LAR credits the automatic transfer of the instrument bus power supplies to their bypass power supplies, precluding an OPLS and LOOP
- This improved modeling significantly reduced the risk benefit of REC-119/120

Conclusions

- Deterministic
 - The Fire Areas associated with RECs 119 and 120 are deterministically compliant without crediting the modification or VFDR
- Risk
 - With the modifications originally associated with RECs 119 and 120 removed from the model, the total CDF and LERF across all modeled hazards will remain within RG 1.174 guidelines. This will include the effects associated with the changes to REC-111.

Schedule

- Submittal of Notification Letter in mid-February 2016
- Submittal of LAR in mid-March 2016
- Request NRC approval by October 1, 2016