NEXTera ENERGY
DUANE ARNOLD

July 2, 2013

NG-13-0287
10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Duane Arnold Energy Center
Docket No. 50-331
Renewed Op. License No. DPR-49

Response to Request for Additional Information, License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants

References:
1) License Amendment Request (TSCR-128): Transition to 10 CFR 50.48(c) - NFPA 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants (2001 Edition), NG-11-0267, dated August 5, 2011 (ML11221A280)
2) Clarification of Information Contained in License Amendment Request (TSCR-128): Transition to 10 CFR 50.48(c) - NFPA 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants (2001 Edition), NG-11-0384, dated October 14, 2011
3) Letter, K. Feintuch (NRC) to R. Anderson (NextEra Energy), "Request for Additional Information for Review Regarding License Amendment Request to Adopt National Fire Protection Association Standard 805, dated June 27, 2013
4) Response to Request for Additional Information, License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants, NG-13-0240, dated May 29, 2013

In the Reference 1 letter, as clarified by Reference 2, NextEra Energy Duane Arnold, LLC (hereafter NextEra Energy Duane Arnold) submitted a License Amendment Request for the Duane Arnold Energy Center (DAEC) pursuant to

Security-Related Information – Withhold From Public Disclosure Under 10 CFR 2.390. Enclosures 2, 3, and 5 of this letter contain security-related information. Upon removal of Enclosures 2, 3, and 5 of this letter, this letter is uncontrolled.

ADD6
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10 CFR 50.90. Subsequently, the NRC Staff requested, via Reference 3, additional information regarding that application.

Enclosure 1 of this letter provides the information requested in Enclosure 1 of Reference 3, specifically, NextEra Energy Duane Arnold's response to Request for Additional Information (RAI) PRA 84.

During discussions with the Staff on June 11, 2013, NextEra Energy Duane Arnold agreed to provide an updated Attachment S of Reference 1. Additionally, during discussion with the Staff on June 18, 2013, and as discussed in Reference 3, NextEra Energy Duane Arnold agreed to add two implementation items to Table S-2 of Attachment S of Reference 1. An updated Attachment S, including the two additional implementation items, is included as Enclosure 2 of this letter.

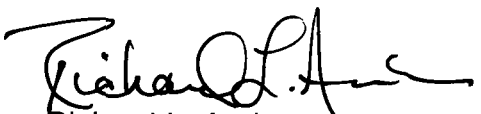
Enclosures 3, 4 and 5 contain annotated pages of Attachment C, Table 4-3, and page W-2, respectively, of Reference 1. These Enclosures reflect the pages affected by the removal of the commitment made in Attachment S, Table S-1, Item 2, of Reference 1. That commitment, to install an incipient detection modification, was withdrawn in the Reference 4 letter.

This additional information does not impact the 10 CFR 50.92 evaluation of "No Significant Hazards Consideration" previously provided in the referenced application.

This letter makes two new commitments identified as Items 23 and 24 of Table S-2 of Enclosure 2. Enclosure 2 also summarizes all remaining commitments made by NextEra Energy Duane Arnold since our original license amendment request submitted as Reference 1.

If you have any questions or require additional information, please contact J. Michael Davis at 319-851-7032.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on July 2, 2013



Richard L. Anderson
Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

Security-Related Information – Withhold From Public Disclosure Under 10 CFR 2.390. Enclosures 2, 3, and 5 of this letter contain security-related information. Upon removal of Enclosures 2, 3, and 5 of this letter, this letter is uncontrolled.

Enclosures:
1. Response to Request for Additional Information, License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants
2. Revised Attachment S, "Plant Modifications and Items to be Completed"
3. Annotated pages of Attachment C, "NEI 04-02 Table B-3 – Fire Area Transition"
4. Annotated page of Table 4-3, "NFPA 805 Ch 4 Required FP Systems/Features"
5. Annotated page W-2, "Fire PRA Insights"

cc: M. Rasmusson (State of Iowa)

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Enclosure 1 to NG-13-0287

Response to Request for Additional Information, License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants

24 pages follow

DAEC RAI PRA 84

1. *Table 1* of this enclosure summarizes modifications made to the PRA in response to several previous requests for additional information (RAIs) issued during the review of the LAR to transition to National Fire Protection Associations Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. Address each of the individual modifications as expressed in *Table 1* to confirm the completion of each.

2. In licensee's letter dated February 12, 2013 (ADAMS Accession No. ML13046A031), in response to RAI 58.01, DAEC states that a full update of the NFPA 805 fire PRA application will be performed prior to transition.

   Propose a response that includes a regulatory process (e.g., a general license condition or implementation item) that provides assurance that all the proposed changes including those listed in *PRA RAI Table 1* will be made and all associated documentation will be finalized before the PRA is used to support future self-approval.

3. The response to RAI 82 provides the results of an integrated analysis in Table 5. The results include fire scenarios for the main control room (MCR).

   Please provide the MCR abandonment fire scenarios total CDF/LERF and delta CDF/LERF from this analysis. If there is a difference between the total and delta risk for these fire scenarios, explain the reason for the difference and justification for not including the entire MCR abandonment risk in the calculation of delta risk.

   Discuss how the delta risk is calculated for the MCR abandonment scenarios for the different conditional core damage probabilities (CCDPs), which are discussed in the response to RAI 64 (ML13015A350), and how the MCR abandonment recovery actions are included in the delta risk calculation for each CCDP. For example, It is not clear from the response to RAI 64 how the failure to recovery probability and the 0.1 probability of failure of success path equipment are used in the compliant case versus the variant case. Please include additional description of how the compliant versus variant CDF/LERF are estimated for the same scenario.

RESPONSE:

1. *Table 1* is updated to include confirmation of completed activities.

Table 1

RAI	Description of Modification and RAI	RAI Response
FM 01	In DAEC's letter dated October 15, 2013 (ADAMS Accession No. ML122910950), DAEC states that: The DAEC Fire PRA - NFPA 805 RAI Model Update Quantification Report has been updated to include the new self-ignited fire scenarios and the change in input for fire scenarios with thermoplastic cable targets. This change will be incorporated in the updated FPRA model in response to RAI FM 01. Please confirm that the PRA includes the new self-ignited fire scenarios and the change in input for fire scenarios with thermoplastic cable targets, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA includes the new self-ignited cable fire scenarios and the change in input for fire scenarios with thermoplastic cable targets. The evaluation for self-ignited cable fires and thermoplastic targets was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The evaluation has been documented in the NFPA 805 RAI Model Update Quantification Report. During the full update described in response to RAI PRA 58.01, the Fire Scenario Report will be revised to ensure that the documentation is consistent with the evaluation.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 05	DAEC's letter dated May 23, 2012 (ADAMS Accession No. ML12146A094) included a revised multi compartment analysis (MCA) in which barrier elements were summed. The revised MCA is included in the composite analysis. DAEC also states that they would: Revise Appendix C of the Fire Scenario Report to include barrier elements as discussed in RAI PRA 05. Confirm that the PRA includes a revised MCA in which barrier elements were summed, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA includes a revised MCA in which the barrier elements were summed. The revised MCA with barrier elements summed was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). Appendix C of the Fire Scenario Report has been revised to include the revised MCA with the barrier elements summed.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 07	DAEC's letter dated May 23, 2012 (ADAMS Accession No. ML12146A094) included a revised analysis without using a severity factor of 0.01 for the diesel generator rooms. The revised analysis is included in the composite analysis. DAEC also states that they would: Update Appendix C of the Fire Scenario Report to reflect changes in MCA scenarios as discussed in RAI PRA 07. Confirm that the PRA no longer uses a severity factor of 0.01 for the diesel generator rooms, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA no longer uses a severity factor of 0.01 for the diesel generator rooms. The revised MCA without the 0.01 severity factor applied for the diesel generator rooms was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). Appendix C of the Fire Scenario Report has been revised to include the revised MCA.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 08.01	By letter dated March 6, 2013, (ADAMS Accession No. ML13070A065), DAEC included a revised MCA to include NUREG/CR-6850 Step 5.c (Section 11.5.4.5) while determining whether combinations of MCA should be screened out. The letter also stated that the revised analysis is included in the composite analysis (ADAMS Accession No. ML13122A045), Table 4-3 of the License Amendment Request (ADAMS Accession No. ML11221A280) and will be updated to include the automatic suppression system required for risk. Confirm that the PRA screens combinations of MCAs based on NUREG/CR-6850, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA screens combinations of MCAs based on NUREG/CR-6850. The revised MCA with MCA combinations not screened based on NUREG/CR-6850 Step 5.c was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). During the full update described in response to RAI PRA 58.01, the Fire Scenario Report will be revised to ensure that the documentation is consistent with the evaluation. Additionally, Table 4-3 of the License Amendment Request will be updated to include the automatic suppression system required for risk.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 10	By letter dated April 23, 2012, (ADAMS Accession No. ML12117A052) DAEC responded that during transition to NFPA 805, the monitoring program will be enhanced to satisfy new requirements. Please confirm that the monitoring program will be enhanced to satisfy new requirements and, to the extent applicable, these new requirements will be reflected in the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	In response to RAI PRA 10 in the letter dated April 23, 2012 Duane Arnold committed to enhancing the existing monitoring program to satisfy the requirements of NFPA 805. NFPA 805 Section 2.6 states: "**Monitoring.** A monitoring program shall be established to ensure that the availability and reliability of the fire protection systems and features are maintained and to assess the performance of the fire protection program in meeting the performance criteria. Monitoring shall ensure that the assumptions in the engineering analysis remain valid." One of the purposes of the monitoring program is to ensure that inputs to the fire PRA remain valid including equipment availability/reliability. Therefore, the enhanced monitoring program meeting the requirements of NFPA 805 does not change the fire PRA and the fire PRA requires no updates due to the enhanced monitoring program. The LAR was revised in response to RAI Monitoring 1 and a revised LAR section 4.6.2 was provided in the letter NG-12-0255 dated May 23, 2012. This describes the enhanced monitoring program. Implementation of the monitoring program is in Attachment S Table S-2 Item 2.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 11.01	By letter dated March 6, 2013, (ADAMS Accession No. ML13070A065), DAEC included a revised analysis without manual suppression credit. The revised analysis is included in the composite analysis. (See letter dated April 23, 2012 ADAMS Accession No. ML12117A052 and ML13122A045). Confirm that the PRA does not include manual suppression credit, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA does not include manual suppression credit for catastrophic TG fire. The revised catastrophic TG fire does not credit manual suppression and was included in the composite results presented in Part A and Part B of the of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The Fire Scenario Report has been revised to include the revised catastrophic TG fire.
PRA 13	By letter dated April 23, 2012 (ADAMS Accession No. ML12117A052) DAEC states that they would revise Section 2 and Table 2.2-2 of the Plant Partitioning and Fire Ignition Frequency report to reflect the expanded justification provided in response to RAI PRA 13. Please confirm that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	Section 2 and Table 2.2-2 of the Plant Partitioning and Fire Ignition Frequency report has been updated to reflect the expanded justification provided in the response to RAI PRA 13. No other documentation is required to be updated for this item.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 14a	DAEC's letter dated May 23, 2012 (ADAMS Accession No. ML12146A094) included a revised cable spreading room (CSR) analysis that removed a hot work pre-initiator factor of 0.01. In the response to RAI PRA 82 dated May 1, 2013, (ADAMS Accession No. ML13122A045) it was stated that the revised analysis is included in the composite analysis. Confirm that the PRA no longer includes a hot work pre-initiator factor of 0.01, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA no longer includes a hot work pre-initiator factor of 0.01. The revised CSR analysis that removed the 0.01 hot work pre-initiator factor was included in the composite results presented in Part A and Part B of the of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The revised CSR analysis has been documented in the Cable Spreading Room Fire Scenario and Quantification Report.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 14b	DAEC's letter dated May 23, 2012 (ADAMS Accession No. ML12146A094) included a revised CSR analysis with the use of the "Very Low" ranking consistent Frequently Asked Question (FAQ) 12-0064, Hot Work/Transient Fire Frequency Influence Factors (ADAMS Accession No. ML12346A488). In the response to RAI PRA 82 dated May 1, 2013, (ADAMS Accession No. ML13122A045), it was stated that the revised analysis is included in the composite analysis. Confirm that the PRA's CSR analysis uses the "Very Low" ranking consistent with FAQ 12-0064, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA's CSR analysis uses the "Very Low" ranking consistent with FAQ 12-0064. The revised CSR analysis that used the "Very Low" ranking consistent with FAQ 12-0064 was included in the composite results presented in Part A and Part B of the of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The revised CSR analysis and use of the "Very Low" ranking has been documented in the Cable Spreading Room Fire Scenario and Quantification Report.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 14.01	DAEC's letter dated May 23, 2012 (ADAMS Accession No. ML12146A094) included a revised CSR analysis that assumes at least a plant trip for CSR fires, identifies the contribution from the loss of offsite power, assumes alternate shutdown capability (ASC) is not available, does not credit prompt suppression for general transient fires, and quantifies large early release frequency (LERF). In the response to RAI PRA 82 dated May 1, 2013, (ADAMS Accession No. ML13122A045), it was stated that the revised analysis is included in the composite analysis. Confirm that the PRA assumes at least a plant trip for CSR fires, identifies the contribution from the loss of offsite power, assumes ASC is not available, does not credit prompt suppression for general transient fires, and quantifies LERF, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA assumes at least a plant trip for CSR fires, identifies the contribution from the loss of offsite power, assumes ASC is not available, does not credit prompt suppression for general transient fires, and quantifies LERF. The revised CSR analysis that assumed at least a plant trip, assumed the ASC was not available, did not credit prompt suppression for general transient fires, and quantified LERF was included in the composite results presented in Part A and Part B of the of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The revised CSR analysis assumptions and input has been documented in the Cable Spreading Room Fire Scenario and Quantification Report.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 16	By letter dated April 23, 2012 (ADAMS Accession No. ML12117A052), DAEC stated that Table 3.3-1 of the Fire Model Development Report, the human reliability analysis (HRA), and the basic event probability will be updated to reflect the lack of a cue and that the operator action is not credited in the FPRA. In addition, the basic event probability will be applied in the updated FPRA model in response to RAI PRA 01. Confirm that the HRA in the PRA and any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	Table 3.3-1 of the Fire Model Development report and the HRA in the Fire Scenario report were revised to reflect that the operator action was not credited in the FPRA. A basic event probability of 1.0 was applied to the operator action and was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). No other documentation is required to be updated for this item.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 33	By letter dated April 23, 2012 (ADAMS Accession No. ML12117A052), DAEC stated that they would revise Section 6 of the Fire Model Development Report to include the details regarding the evaluation of long term operator actions on LERF provided in response to RAI PRA-33. Confirm that the missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	Section 6 of the Fire Model Development report has been updated to include the details regarding the evaluation of long term operator action on LERF provided in the response to RAI PRA 33. No other documentation is required to be updated for this item.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 35.01	DAEC's letter dated March 6, 2013, (ADAMS Accession No. ML13070A065) included justification for incipient detection credit and the results of a sensitivity study without incipient detection credit. In the response to RAI PRA 82 dated May 1, 2013 (ADAMS Accession No. ML13122A045), it was stated that the revised analysis included no credit for incipient detection is included in the composite analysis. Confirm the PRA includes no credit for incipient detection, and that conforming changes will be completed to all documentation during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA includes no credit for incipient detection. The revised analysis that did not include credit for incipient detection was included in the composite results presented in Part A and Part B of the of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). Table 4-3, Attachment C, and Attachment S have been updated to show the deletion of incipient detection. The changed pages of Table 4-3 and Attachment C are included as Enclosures 4 and 3, respectively, to this response. Attachment S has been completely revised and is included as Enclosure 2 to this response. The revised analysis has been documented in the NFPA 805 RAI Model Update Quantification Report. During the full update described in response to RAI PRA 58.01, the Fire Scenario Report will be revised to ensure that the documentation is consistent with the analysis.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 57	DAEC's letter dated April 23, 2012 (ADAMS Accession No. ML12117A052) included a response to RAI PRA 57 that included a table that listed each PRA level 2 basic event and identified the potential fire impact for each event. The letter also stated that DAEC would revise the Fire Model Development Report to include the table provided in response to RAI PRA 57. Confirm the documentation will be completed during the full update of the NFPA 805 fire PRA application committed to in response to RAI PRA 58.01 under cover letter dated February 12, 2013 (ADAMS Accession No. ML13046A031).	Section 6 of the Fire Model Development report has been updated to include the review of PRA Level 2 basic events for potential fire impacts provided in the response to RAI PRA 57 (ML12117A052 dated April 23, 2012). No other documentation is required to be updated for this item.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 69	In a letter dated March 6, 2013, (ADAMS Accession No. ML13070A065), it was stated by DAEC that the FPRA adequately evaluates electronics in the MCR as described in NUREG/CR-6850. In a letter dated May 1, 2013, (ADAMS Accession No. ML13122A045) in response to a follow on question related to RAI PRA 69 in RAI PRA 82, a summary was provided related to an evaluation of electronics outside of the MCR that included walkdowns and use of NUREG/CR-6850 damage temperatures. Confirm that the PRA includes the results of evaluation inside and outside of the MCR that are consistent with the methods as described in NUREG/CR-6850, and that documentation will incorporate the relevant discussion during the full update of the NFPA 805 fire PRA application committed to in response to RAI PRA 58.01 under cover letter dated February 12, 2013.	The PRA includes the results of the electronics evaluation inside and outside of the MCR consistent with the methods as described in NUREG/CR-6850. The evaluation of electronics inside and outside of the MCR consistent with the guidance in NUREG/CR-6850 was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The evaluation has been documented in the NFPA 805 RAI Model Update Quantification Report. *During the full update described in response to RAI* PRA 58.01, the Fire Scenario report will be revised to ensure that the documentation is consistent with the analysis.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 70	DAEC's letter dated February 12, 2013, (ADAMS Accession No. ML13046A031) identified that the credit given to sealed electrical cabinets to prevent fire spread was consistent with the treatment in FAQ 08-0042, Fire Propagation From Electrical Cabinets, (ADAMS Accession No. ML092110537). Confirm that the PRA evaluates sealed cabinets according to FAQ 08-0042, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA evaluates sealed cabinets according to FAQ 08-0042. In response to RAI PRA 70, the treatment of sealed electrical cabinets was confirmed to be consistent with FAQ 08-0042. The evaluation has been documented in the NFPA 805 RAI Model Update Quantification Report. During the full update described in response to RAI PRA 58.01, the Fire Scenario report will be revised to ensure that the documentation is consistent with the analysis.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 71	RAI PRA 71 questioned the use of a conditional probability of 0.1 for transient combustibles located near the MCR, and the response to RAI PRA 82 indicated that this probability had been removed. In the response to RAI PRA 82 dated May 1, 2013, (ADAMS Accession No. ML13122A045) it was stated stated (sic) that the revised analysis is included in the composite analysis. Confirm that the PRA no longer includes the conditional probability, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA no longer includes the MCR transient location conditional probability of 0.1. The use of a 0.1 conditional probability for MCR transient location was removed and was included in the composite results presented in Part A and Part B of the of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The evaluation has been documented in the NFPA 805 RAI Model Update Quantification Report. During the full update described in response to RAI PRA 58.01, the Fire Scenario report will be revised to ensure that the documentation is consistent with the analysis.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 72	DAEC's letter dated March 6, 2013, (ADAMS Accession No. ML13070A065) included a revised analysis that used a minimum non-suppression probability of 0.001. In the response to RAI PRA 82 dated May 1, 2013, (ADAMS Accession No. ML13122A045) it was stated that the revised analysis is included in the composite analysis. Confirm that the PRA uses a minimum non-suppression probability of 0.001, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA uses a minimum non-suppression probability of 0.001. The analysis was revised to include a minimum non-suppression probability of 0.001 and was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The Fire Scenario report has been revised to include the revised analysis with a minimum non-suppression probability of 0.001.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 83b	In response to the RAI PRA 83b dated May 1, 2013, (ADAMS Accession No. ML13122A045) it was clarified by DAEC that the heat release rate (HRR) used in the updated CSR analysis was based on NUREG/CR-6850 guidance. In the response to RAI PRA 82 dated May 1, 2013, (ADAMS Accession No. ML13122A045) it was stated that the revised analysis is included in the composite analysis. Confirm that the PRA uses an updated CSR analysis using a HRR based on NUREG/CR-6850 guidance, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031).	The PRA uses an updated CSR analysis using a HRR based on NUREG/CR-6850 guidance. The revised CSR analysis was included in the composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013). The transient HRR used for the revised CSR analysis has been documented in the Cable Spreading Room Fire Scenario and Quantification Report.

Table 1

RAI	Description of Modification and RAI	RAI Response
LAR Table V-3 F&O 4-22, 4-23, 4-25 dispositions	The disposition of these F&Os are that fire scenario 1OE-F45 sensitivity case refined the use of the electric panel factor approach to use of the Hughes Generic Fire Modeling results for critical separation distances based on HRR. Confirm that the PRA uses the Hughes Generic Fire Modeling results for critical separation distances based on HRR, and that any missing documentation will be completed during the full update of the NFPA 805 fire PRA application as stated in response to RAI PRA 58.01 (See letter dated February 12, 2013, ADAMS Accession No. ML13046A031). Also confirm that the electric panel factor approach had not been used in the results reported for RAI PRA 82.	The PRA uses the Hughes Generic Fire Modeling results for critical separation distances based on HRR. In response to RAI PRA 67 it was identified that the resolution to F&O 4-22, 4-23, and 4-25 included removal of the electric panel factor approach and use of the Hughes Generic Fire Modeling results for critical separation distance based on HRR. The composite results presented in Part A and Part B of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013) used the Hughes Generic Fire Modeling results and did not use the electric panel factor approach. The fire scenario report has been revised to be consistent with the analysis.

Table 1

RAI	Description of Modification and RAI	RAI Response
PRA 64	A detailed HRA was performed as a basis for justifying the MCR conditional core damage probability of 0.1 as bounding. This HRA is related to a recovery action in the LAR to start the emergency diesel generator SBDG1 to power the vital bus for ASC. The HRA evaluation was provided in response to RAI PRA 64 in a letter dated January 11, 2013 (ADAMS Accession No. ML13015A350). Confirm that the inputs to the detailed HRA have been evaluated in the LAR Attachment G, Step 4, "Evaluate the Feasibility of Recovery Actions," and Step 5, "Evaluate the Reliability of Recovery Actions".	In response to RAI PRA 64, the input into the detailed HRA for the recovery action to start the standby diesel generator 1G21 was based on procedure AOP-915. This recovery action is identified in Table G-1 of the LAR for component 1G21 and was evaluated in Attachment G, Step 4, "Evaluate the Feasibility of Recovery Actions." Additionally, the detailed HRA input was evaluated in Attachment G, Step 5, "Evaluate the Reliability of Recovery Actions".

2. A revised Attachment S is included as Enclosure 2 to this response. The revised Attachment S contains all the items from RAI PRA 84 Table 1 that are not yet complete and any other updates required due to the response to RAI PRA 58.01. The updates to the PRA and documentation will be completed as part of the transition period as stated in the License Amendment Request Section 5.4 except for Table S-2 Item 22 which will be completed after Table S-1 Item 1 is implemented and as-built. Table S-2 Item 19 will be completed in accordance with 50.71 (e) but does not impact the PRA and does not prevent self-approval. This schedule is stated in the revised Attachment S included as Attachment S to this response. The items in Table S-2 should be part of the implementation items in the transition license condition.

3. The MCR abandonment fire scenarios total CDF/LERF and delta CDF/LERF are:

Risk Metric	Total Risk (/yr)	Delta Risk (/yr)
CDF	4.07E-08 (1)	3.55E-08 (1)
LERF	4.05E-08 (1)	3.54E-08 (1)

Note to Table: (1) Based on the composite sensitivity results presented in Part A of the response to RAI PRA 82 (ML13122A045 dated May 1, 2013).

The total abandonment risk and delta risk are not equal, because some MCR panel fires that are postulated to result in abandonment do not result in fire induced failures of equipment relied upon when alternate shutdown capability (ASC) is established post abandonment. Therefore, the incremental risk is associated with the recovery actions and primary control station (PCS) actions to establish ASC. The HRA performed for these actions was described in the response to RAI PRA 64 (ML13015A350, dated January 11, 2013). A detailed HRA was performed for the recovery action to start the standby diesel generator 1G21, because this action bounded the other recovery actions and PCS actions. The HRA concluded the risk associated with establishing ASC is bounded by hardware failures of the credited equipment. That is, in these cases the CCDP for the abandonment variant case and compliant case are essentially equal, because the relied upon ASC shutdown success path is free from fire damage and hardware failures bound recovery actions and PCS actions to establish ASC.

The delta risk calculations are discussed in the response to RAI PRA 60.01 (ML13046A031, dated February 12, 2013). An appropriate variant case CCDP was applied to each MCR abandonment scenario based on the potential fire induced failures for the applicable ignition source. Recovery actions were credited for the variant case when postulated fire damage would not affect ASC. However, as

discussed above, the recovery actions were bound by the hardware failures of the credited equipment. If postulated fire damage could affect ASC, then the recovery actions were not credited.

A single compliant case CCDP was applied to each MCR abandonment scenario based on a representative CCDP for the risk associated with the ASC shutdown success path (i.e., shutdown from the PCS). Therefore, the compliant case does not include recovery actions. The compliant case risk was bound by credited equipment hardware failures versus the PCS actions.

The following table demonstrates a delta risk calculation for each CCDP and where recovery actions are credited.

Variant Case CCDP	Variant Case CCDP Description	Recovery Actions in Variant Case	Compliant Case CCDP	Recovery Actions in Compliant Case	Delta CCDP Calculation
0.1	A 0.1 CCDP is applied if a fire does not impact ASC equipment or the equipment is available upon transfer at a primary control station (PCS). The CCDP for a single success path without offsite power is used and is based on postulated essential switchgear room fires. Recovery actions are credited to establish ASC. However, hardware failures associated with a single success path bound the failure of recovery actions.	Yes	0.1	No	0.1 – 0.1 = 0.0 (1)
Spurious Probability (e.g., 0.66)	A spurious conditional spurious probability is applied if a fault impacts ASC equipment and is not recoverable at the PCS based on the current design and procedures. This value would be equal to the likelihood of occurrence using the hot short-induced spurious operation probabilities. Recovery actions are not	No	0.1	No	0.66 – 0.1 = 0.56

Variant Case CCDP	Variant Case CCDP Description	Recovery Actions in Variant Case	Compliant Case CCDP	Recovery Actions in Compliant Case	Delta CCDP Calculation
	credited because the postulated fire damage may not be recoverable.				
1.0	A 1.0 CCDP is applied if a single or multiple hot short-induced spurious operations (MSO) impacts ASC equipment and is considered not recoverable by ASC based on the current design and procedures. For instance, a MSO could result in an inventory loss greater than the assumed one spurious open relief valve used as the design criteria. Recovery actions are not credited because the postulated fire damage may not be recoverable.	No	0.1	No	1.0 – 0.1 = 0.9

Note to Table: (1) As discussed previously, the hardware failures bound the failure of recovery actions and PCS actions. Therefore, the variant case and compliant case CCDPs are essentially the same. The delta risk calculation is presented as 0.0, because the variant case and compliant case representative CCDPs are taken to be the same.