



October 14, 2011

NG-11-0384
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

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) (TSCR-128)

Reference: 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)
(TSCR-128), NG-11-0267, dated August 5, 2011

In the referenced letter, NextEra Energy Duane Arnold, LLC (hereafter NextEra Energy Duane Arnold) requested a revision to the Operating License for the Duane Arnold Energy Center (DAEC) pursuant to 10 CFR 50.90.

In a conference call on September 30, 2011 (ML11277A285), the NRC Staff requested that we clarify certain information in that submittal. The attachment to this letter contains the requested clarifications.

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

This letter makes no new commitments or changes to any existing commitments.

If you have any questions or require additional information, please contact Steve Catron at 319-851-7234.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 14, 2011

A handwritten signature in black ink, appearing to read "P. Wells", written in a cursive style.

Peter Wells

Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

Attachment: Request for Clarifying Information – Transition to 10 CFR 50.48(c)

cc: M. Rasmusson (State of Iowa)

Request for Clarifying Information – Transition to 10 CFR 50.48(c) - NFPA 805
Performance-Based Standard for Fire Protection for Light Water Reactor
Generating Plants (2001 Edition) (TSCR-128)

During a teleconference held on September 30, 2011 between the NRC Staff and NextEra Energy Duane Arnold personnel, the Staff requested that information contained in Transition Report of the referenced application be clarified to assist the Staff in completing the Duane Arnold Energy Center (DAEC) NFPA 805 LAR acceptance review. Specifically, the following information was requested:

- 1) Two incomplete or incompletely reported sensitivity analyses on “un-reviewed analysis methods”
 - a) Page V-3: A qualitative argument was used as the acceptability basis for use of a “hot work pre initiator factor” of 0.01. The LAR states that this was only applied in the Cable Spreading Room bounding fire scenario which has a relatively low contribution to fire risk of $9.85E-07/\text{yr}$.
 - b) Page V-3: A quantitative sensitivity estimate is used as the acceptability basis for the “transient heat release rate.” The LAR states transient fires contribute 1% to overall CDF and LERF and a “best estimate” sensitivity study showed that using the NUREG/CR-6850 heat release rate would increase CDF and LERF by no more than 1%.

Demonstration of a completed sensitivity study should include at least a brief description of the licensee’s model/method and the general model/method employed for the sensitivity study to which the licensee’s model was compared. The results of the sensitivity study in terms of maximal expected changes to the change-in-risk results should be provided.

Response:

Cable Spread Room (CSR) “hot work pre initiator factor” of 0.01

The value of $9.85E-7/\text{yr}$ represents the fire risk for the entire CB1 fire area, which includes the Control Room, the Control Building HVAC room and the Cable Spreading Room (CSR). This value assumes the modification, committed to in Item 2 of Attachment S of the referenced application, is complete.

The hot work pre initiator factor was only applied to the CSR fire scenario which has an estimated fire risk CDF of $5.7E-7/\text{yr}$. This scenario utilized a 0.01 factor

for hot work procedure noncompliance to reduce the generic fire initiating frequency. This approach is supported by the Unreviewed Analysis Method (UAM) recommended in the ERIN report, "Supplemental Fire PRA Methods." This factor was applied to the CSR since any maintenance activities performed in the CSR during power operations would receive extensive attention from the plant. The plant hot work fire frequency apportioning method and generic manual suppression factor are not considered representative for such a sensitive area. All other areas were analyzed utilizing the methods as described in NUREG/CR-6850 for hot work.

A sensitivity analysis was performed by applying current industry guidance in NUREG/CR-6850 and Supplement 1 to NUREG/CR-6850. Plant generic Fire Initiation Frequencies (FIFs) were apportioned to the plant considering the unique features of the CSR. The upper bound estimate from the sensitivity study was a fire risk CDF of $1.4E-6/\text{yr}$. The total plant fire risk CDF would change from $5.7E-5/\text{yr}$ to $5.8E-5/\text{yr}$ if the upper bound estimate from the sensitivity study was employed. Likewise, total LERF would change from $8.9E-6/\text{yr}$ to $9.2E-6/\text{yr}$. The CSR Fire PRA scenario is not associated with any VFDR conditions. Therefore, the delta CDF and delta LERF would not be affected.

Transient heat release rate sensitivity analysis

A sensitivity analysis was performed by revisiting all the transient scenarios and determining the impact on additional targets with an expanded zone of influence (ZOI). The expanded zone of influence was based on the heat release rate in NUREG/CR 6850 (i.e., 317 kW). The ZOI was increased from 4.3 feet vertical (5 feet used in the original analysis) to 7.6 feet vertically and from 2.7 feet horizontal (3 feet used in the original analysis) to 5.2 feet horizontal. This was done by reviewing plant drawings and original walkdown sheets.

The total CDF contribution from transient fire changed from $6.02E-7/\text{yr}$ to $7.82E-7/\text{yr}$ and the total LERF contribution changed from $3.80E-7/\text{yr}$ to $5.63E-7/\text{yr}$. In many cases there was no impact on delta CDF and delta LERF since the increased risk contribution influenced both the variant and compliant case. However, transient scenarios are included in several of the VFDR conditions evaluated in the NFPA 805 application Fire Risk Evaluation (FRE) process. The estimated increase in change of risk is limited to fire area RB3, as described in the referenced application. For RB3, the change in risk is estimated to increase from $8.6E-8/\text{yr}$ to $1.1E-7/\text{yr}$ for CDF and from $5.4E-8/\text{yr}$ to $7.5E-8/\text{yr}$ for LERF. Therefore, the change in risk meets the acceptance guidelines of RG 1.174.

- 2) Insufficient information to determine whether the discussion of the “focused-scope” peer review met the endorsed description of a focused scope review.

Page U-2: The LAR states, “This DAEC Focused PRA Peer Review assessed all previous 2007 full-scope peer review findings and suggestions, including the adequacy of their dispositions.” A brief description of the focused scope peer review and how that review was consistent with the definition of focused scope peer review in the ASME standard as endorsed by RG 1.200 is needed.

Response:

The primary purpose of the Duane Arnold Focused Peer Review conducted in March 2011 was to review the Internal Events PRA upgrades implemented since the 2007 Full Scope Peer Review consistent with the guidance in RG 1.200, Revision 2 and the endorsed ASME standard (ASME/ANS RA-Sa-2009). The scope of the 2011 Peer Review also included major updates and verification of appropriateness of the disposition of all closed 2007 Findings and Suggestions (F&Os).¹ These F&Os were either confirmed to be resolved or assessed to be new F&Os. Open F&Os were also reviewed to assess the extent of their impact on the PRA upgrades and updates. Overall, all technical elements were covered by the 2011 Focused Peer Review however the review focused on the Supporting Requirements (SRs) associated with upgrades,² updates, or previous F&Os. As such, not all the supporting requirements previously assessed as ‘MET’ during the 2007 Full Scope Peer Review were reassessed.

For example, the methodology upgrade for the Human Reliability Element was extensive and as such, in the opinion of the reviewers, needed a complete assessment of all the supporting requirements. The other upgrades were limited, therefore, a comprehensive review of all SRs within the respective element was not necessary as determined by the focused peer review team.³

The qualifications of the Focused Peer Review team were consistent with Section 1-6.2 of the ASME standard. The PRA Peer Review Team consisted of personnel with knowledge of plant and containment design, and of plant operation and whose collective qualifications included the ability to assess all the PRA Technical Requirements. Individually, each team member was familiar with the requirements of the standard for his or her area of review and experienced in performing activities related to the PRA Elements for which each was assigned. None of the team members performed nor directly supervised any work on the Duane Arnold PRA. One team member serves on the Joint Committee on

¹ ASME/ANS RA-Sa-2009, 1-5.4 PRA MAINTENANCE AND UPGRADES

² ASME/ANS RA-Sa-2009, 1-5.4 PRA MAINTENANCE AND UPGRADES

³ ASME/ANS RA-Sa-2009, 1-6.1.1 Frequency

Nuclear Risk Management main committee, which approves changes to the Standard, and the executive committee, which provides direction to the PRA Standards effort. Each of the team members participated in at least 2 previous peer reviews and each has nearly 20 or more years experience in the development and maintenance of nuclear plant PRAs.

In summary, the 2011 Focused Peer review was a comprehensive review of all PRA upgrades, updates and previous F&Os and complied with the requirements of RG 1.200, Revision 2 and ASME/ANS RA-Sa-2009, specifically, sections 1-5, "PRA Configuration Control;" Section 1-6, "Peer Review;" and non-mandatory Appendix 1-A, "PRA Maintenance, PRA Upgrade, And The Advisability Of Peer Review." This review is considered the Internal Events PRA Peer Review of record.⁴

- 3) Insufficient information to determine that the Monitoring Program is acceptable for review.

It appears, based on the description provided in section 4.6 of the LAR, the Duane Arnold NFPA 805 monitoring program will be separate and independent from the Maintenance Rule program. If this is so, more detailed information is needed to explain how monitoring will be accomplished for Nuclear Safety systems, structures and components.

Response:

NextEra Energy Duane Arnold's NFPA 805 monitoring program will not be separate and independent from the Duane Arnold Maintenance Rule program and will be developed in accordance with NRC FAQ 59, Revision 2.

⁴ ASME/ANS RA-Sa-2009, 1-6.1.1 Frequency

4) Completion status of the Fundamental Fire Protection Program review.

Attachment S, Table S-2, Implementation Items, item numbers 10 and 11 indicate that Code Compliance evaluations to NFPA 72 and NFPA 90A have not been completed. A discussion is needed regarding the extent of condition and the level of compliance of the DAEC fire protection program if these code compliance reviews are incomplete.

Response:

NextEra Energy Duane Arnold committed to performing Code Compliance evaluations for NFPA 72 and NFPA 90A in Attachment S of the referenced application, Item numbers 10 and 11 respectively.

In regard to fire alarms, NextEra Energy Duane Arnold's original licensing basis is in compliance with NFPA 72A and 72D which are derived from position E.1 from BTP-APCSB 9.5-1. Subsequent modifications to the plant referenced various versions of NFPA 72. Additionally, the four previously performed fire protection engineering evaluations, referenced in Attachment A section 3.8.2 of the referenced submittal, assessed the plant fire detection configuration against previous versions of NFPA 72. The intent of Item number 10 of Attachment S of the referenced application is to document, in a single evaluation, NextEra Energy Duane Arnold's compliance with NFPA 72.

In regard to fire dampers, NextEra Energy Duane Arnold's original licensing basis is derived from position D.1(j) from BTP-APCSB 9.5-1 which did not reference NFPA 90A for fire dampers. NextEra Energy Duane Arnold has performed individual barrier evaluations that demonstrate the "adequacy for the hazard" of each barrier, including dampers. The intent of Item number 11 of Attachment S of the referenced application is to document, in a single evaluation, NextEra Energy Duane Arnold's compliance with NFPA 90A.

5) Gap Assessment

Consistent with Regulatory Issue Summary (RIS) 2007-06, licensees are currently expected to address the standards and guidance documents endorsed by Regulatory Guide (RG) 1.200, Revision 2, commensurate with the associated risk-informed applications. The licensee describes the peer review of the fire PRA against this regulatory guide. However, the licensee does not address if this peer review, or another peer review or self-assessment, was also performed to this revision of RG 1.200 for the internal events PRA, on which the fire PRA is developed. Please describe how the Duane Arnold Internal Events PRA comports with RG 1.200, Revision 2.

Response:

The code edition reference on the first page of Attachment U of the referenced application contains a typographical error; the 2007 Peer Review was completed in accordance with ASME/ANS RA-Sb-2005 and not RA-Sa-2005. The 2011 focused peer review, discussed in Attachment U, assessed the previous findings from the 2007 peer review and assessed the PRA upgraded elements to Regulatory Guide 1.200 Revision 2 in order to provide the gaps in the form of findings to Reg. Guide 1.200 Rev. 2 capability category II. These findings were presented in Attachment U of the referenced submittal along with their impact on the referenced application.

6) SharePoint Portal

The staff requests the licensee provide a SharePoint Portal for site documents. The staff will provide a list of references they would like to review and a list of reviewers requiring a need-to-know. This portal will be beneficial to identify only the specific site information required to be submitted to the NRC for the staff to make the license amendment safety evaluation.

Response:

In response to NRC letter dated July 28, 2011, NextEra Energy agreed to provide an online reference portal for the NFPA 805 license amendment request. Details of the conditions placed on the portal are documented in a NextEra Energy letter to the NRC dated August 5, 2011 (ML11222A018).

7) Site Audit

The staff request the licensee schedule a site audit for December 12-16, 2011, at its Duane Arnold Energy Center Facility, located in Palo, IA, near Cedar Rapids, IA. This site audit will facilitate the license amendment review and may require a walkdown of the reactor facilities. The staff will provide an audit plan, outlining the specific needs of the audit.

Response:

A site audit scheduled for December 12-16, 2011 is acceptable to NextEra Energy Duane Arnold. To ensure we are able to accommodate the audit team's needs, please provide an audit plan by October 31, 2011. Specifically, please notify us of plant areas that the team will need to walk down. Some areas of the plant are not normally available for walkdown as part of our risk reduction program and prior notification is necessary to arrange for walkdowns in these areas.