



April 20, 2011

NG-11-0135
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-120):
Application for Technical Specification Change Regarding Risk-Informed Justification
for the Relocation of Specific Surveillance Frequency Requirements to a Licensee
Controlled Program (TSTF-425, Rev. 3)

Reference: License Amendment Request (TSCR-120): Application for Technical
Specification Change Regarding Risk-Informed Justification for the
Relocation of Specific Surveillance Frequency Requirements to a
Licensee Controlled Program (TSTF-425, Rev. 3), NG-11-0037, dated
February 23, 2011

In the referenced letter, NextEra Energy Duane Arnold, LLC (hereafter NextEra Energy Duane Arnold) requested a revision to the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC) pursuant to 10 CFR 50.90. Attachment 2 of that application contained a description of the Probabilistic Risk Assessment (PRA) model of the DAEC. The purpose of that description was to demonstrate the adequacy of the PRA model that will support the implementation of this TS change upon approval by the Nuclear Regulatory Commission (NRC).

In a conference call on March 29, 2011, the NRC Staff requested that we clarify certain information in that attachment regarding the PRA model currently under development. The attachment to this letter contains the requested clarifications.

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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 April 20, 2011

A handwritten signature in black ink that reads "Christopher R. Costanzo". The signature is written in a cursive style with a large initial "C".

Christopher R. Costanzo
Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

Attachment: Clarification of DAEC PRA Model Description

cc: M. Rasmusson (State of Iowa)

Request for Clarifying Information – NextEra Energy Duane Arnold
Probabilistic Risk Assessment Model for Use in Implementing TSTF-425, Rev. 1

During a teleconference held on March 29, 2011 between the NRC Staff and NextEra Energy Duane Arnold personnel, the Staff requested that information contained in Attachment 2 of the referenced application (Documentation of PRA Technical Adequacy) be clarified to assist the Staff in evaluating the Duane Arnold Energy Center (DAEC) Probabilistic Risk Assessment (PRA) model. Specifically, the following information was requested:

- 1) The application states that Revision 6 of the DAEC PRA, currently under development, will be the model used to implement this Technical Specification (TS) change upon approval. When is it expected to be finalized and issued for use?

Response:

As stated in the application, Revision 6 is intended to also support the conversion of the DAEC Fire Plan to the NFPA-805 standard. As the license amendment request for the Fire Plan conversion is currently scheduled for submission by June 29, 2011, Revision 6 of the DAEC PRA will be implemented no later than that date.

- 2) The application discusses the results of the Peer Review conducted on the DAEC PRA model, Revision 5C. That review resulted in the identification of 83 potential gaps to meeting Capability Category II in the Supporting Requirements of the ASME Standard. However, the Tables provided in Attachment 2 of the submittal only discuss 30 of those items. Please provide a discussion of the disposition of all 83 identified items and the expected status of any open items when Revision 6 of the model is issued.

Response:

The intent of the Attachment 2 Tables was to discuss only those items that remained in an “open” status at the time of the application and to bin them into separate Tables by significance. Therefore, any item which had already been dispositioned and closed in the Revision 6 model was not reported in the Tables because they no longer represented gaps to Capability Category II. Because Peer Reviews often result in findings that may represent potential gaps in more than one Supporting Requirement in the ASME Standard, there was overlap between the line items found in the 3 Tables in the application which makes a simple tallying of them back to the original 83 items difficult.

Subsequent to the original application, NextEra Energy performed a follow-up Focused Peer Review to validate the closure of those previously identified 83 items from the 2007 Peer Review. In addition, that review utilized the current version of the ASME Standard (RA-Sb-2009).

The Focused Peer Review team found that NextEra Energy had appropriately incorporated most of the 83 previously identified items into Revision 6. However, not all of the closures were found to fully meet Capability Category II requirements, which resulted in new open items, in addition to those items that remained open at the time of the Focused Peer Review. The final result was a total of 12 items that were assessed as not meeting Capability Category II per the current ASME Standard. Of these 12 items, five will be addressed and incorporated into Revision 6 of the DAEC model upon issuance prior to June 29, 2011. The remaining seven items are judged to have either no, or only minor, impact on the model's ability to support this application. The following Table describes those seven open items.

In order to not repeat the confusion created by binning them into "gaps," "findings," and "suggestions," as was done in the original Attachment 2 Tables, we have simplified the presentation of the current open items on the pending Revision 6 of the DAEC PRA model into a single Table.

ASME Category II SRs Not Met in DAEC Model, Rev. 6				
ASME SRs	Category II SR Details	Description of GAP	Impact on Quantification	Importance to Application
IE-B3-01A	<p>GROUP initiating events only when the following can be assured:</p> <p>(a) events can be considered similar in terms of plant response, success criteria, timing, and the effect on the operability and performance of operators and relevant mitigating systems; or</p> <p>(b) events can be subsumed into a group and bounded by the worst case impacts within the "new" group.</p> <p>AVOID subsuming events into a group unless:</p> <p>(i) the impacts are comparable to or less than those of the remaining events in that group,</p> <p style="text-align: center;">AND</p> <p>(ii) it is demonstrated that such grouping does not impact significant accident sequences.</p>	<p>Several findings and suggestions under HLR-A and HLR-B have been dispositioned/resolved, but the subsuming (IE-B3) and screening (IE-C4 (C6)) of initiating events does not meet the standard. The following provides example summarizes (IE Notebook, including Appendix H):</p> <ul style="list-style-type: none"> • RBCCW (fails CRD, which is credited for early injection) is subsumed by TT, but RBCCW is not failed given TT. • GSW (fails RBCCW, CRD, Feedwater, etc.) is subsumed by TC, but these systems are not failed given TC. • The impacts of Reference and Variable Leg Breaks are not adequately described and are subsumed by Loss of FW. Most likely would be a manual shutdown with complications verses a break, these should be modeled. Section 2.4.8 described the low risk from these, but this does not meet standard for screening. • 1A1/1A2 bus failures and partial loss of feedwater (one pump) are binned to TT, but this impact is not modeled given TT. • 1A3/1A4 bus failures are subsumed with TT. Impact on loss of chargers [TS 3.8.4.] etc. and possibility that failure is a problem could lead to an immediate shutdown. Notes 11 and 12 suggest that only normal power source is lost, but emergency power is also unavailable if bus fails. <p>RECOMMENDATION: Follow IE-B3 and C6 with regard to subsuming and screening or more importantly model the above initiating events.</p>	<p>Modeling these additional initiators will better define certain accident sequences and a more accurately determine associated SSC importance.</p> <p>Overall calculated risk slightly increase; significantly for specific functions associated with the initiating event. Some applications may see a slight decrease in risk margin.</p>	<p>Although the importance of affected components is not fully considered; their impact can be addressed for specific 5b applications using sensitivity analysis, qualitative analysis, bounding analysis or explicit modeling in accordance with the NEI 04-10 guidance.</p>
SY-A5-01A	<p>INCLUDE the effects of both normal and alternate system alignments, to the extent needed for CDF and LERF determination.</p>	<p>The SBO event tree does not take credit for containment venting using an alternate alignment when the pneumatic supply is lost. DAEC procedure SAMP 706 provides detailed direction for venting PC given an unavailable pneumatic supply. The Containment Vent notebook does not credit/discuss this procedure.</p> <p>RECOMMENDATION: Add containment venting to the event tree along with operator actions and component alignments needed to vent containment without the pneumatic supply system.</p>	<p>Crediting the B5b procedure that implements containment venting without a pneumatic supply will reduce overall calculated risk. Will have a more significant impact on SBO sequences.</p>	<p>Will improve results for 5b applications especially those functions associated with SBO.</p> <p>Without this change the model is conservative.</p>

ASME Category II SRs Not Met in DAEC Model, Rev. 6				
ASME SRs	Category II SR Details	Description of GAP	Impact on Quantification	Importance to Application
SY-C2-01A	DOCUMENT the system functions and boundary, the associated success criteria, the modeled components and failure modes including human actions, and a description of modeled dependencies including support system and common cause failures, including the inputs, methods, and results.	There is no Fire Water System (Alternate Injection) notebook or equivalent information in another notebook. The operator action to align fire water for injection is modeled but the components are based on the argument that the probability of the action subsumes the component failure rates. RECOMMENDATION: Develop new system notebook for use of fire water as an alternate injection source.	Documenting the use of the fire water system as an alternate injection source will facilitate a more thorough evaluation of this function. Crediting fire water injection (late in the event) will decrease overall risk, especially for SBO sequences.	Will improve results for 5b applications especially those functions associated with SBO. Without this change the model is conservative.
HR-A1-01A	For equipment modeled in the PRA, IDENTIFY, through a review of procedures and practices, those test and maintenance activities that require realignment of equipment outside its normal operational or standby status.	HRA Notebook (Appendix J, Table J-1) includes a systematic approach to identifying test and maintenance activities through a system by system review of potential misalignments. This meets the high level requirement to use a "systematic approach" and is judged to be adequate by the Peer Review team. However, the SR wording requires "a review of procedures and practices" which was not followed. As a result, the PR team must assess this SR as "not met." RECOMMENDATION: Reassess this SR when the Addendum B of the PRA Standard is released. The current proposed revision deletes the requirement for "a review of procedures and practices".	No impact. As noted by the review team a systematic approach was used to identify potentially significant misalignments. Based on this review, only the procedures that were associated with these alignments were reviewed further. DAEC noted that they did review all the procedures but did not document this review. The draft revision of addendum B to HR-A1 that is currently in review deletes the requirement for "a review of procedures and practices".	No impact since DAEC staff did review all procedures; however they did not document this review.
HR-A2-01A	IDENTIFY, through a review of procedures and practices, those calibration activities that if performed incorrectly can have an adverse impact on the automatic initiation of standby safety equipment.	HRA Notebook (Appendix J, Table J-1) includes a systematic approach to identifying calibration activities through a system by system review of potential miscalibrations. This meets the high level requirement to use a "systematic approach" and is judged to be adequate by the Peer Review team. However, the SR wording requires "through a review of procedures and practices" which was not followed. As a result, the PR team must assess this SR as "not met." RECOMMENDATION: Reassess this SR when the Addendum B of the PRA Standard is released. The current proposed revision deletes the requirement for "a review of procedures and practices".	No impact. As noted by the review team a systematic approach was used to identify potentially significant miscalibrations. Based on this review, only the procedures associated with these actions were reviewed further. DAEC noted that they did review all the procedures but did not document this review. The draft revision of addendum B to HR-A1 that is currently in review deletes the requirement for "a review of procedures and practices".	No impact since DAEC staff did review all procedures; however they did not document this review.

ASME Category II SRs Not Met in DAEC Model, Rev. 6				
ASME SRs	Category II SR Details	Description of GAP	Impact on Quantification	Importance to Application
HR-C1-01A	For each unscreened activity, DEFINE a human failure event (HFE) that represents the impact of the human failure at the appropriate level, i.e., function, system, train, or component affected.	<p>A number of pre-IE HFEs are identified for modeling in the PRA. Generally these HFEs are at the train or system level, as appropriate. However, a small set were identified at the system level without related train-level HFEs. It is possible that the train level HFE may be important to system unavailability. For example, miscalibration of DG fuel oil level transmitters is done at the system level, but not at the train level. At the train level, the HFE would be 8e-3, compared with independent failure of the level transmitter of 5e-4. In other cases, the HFE is at the train level, but no corresponding system level dependent HFE is included. For example, failure to restore RHR SW post TM is developed at the train level, but no common misalignment of both trains is considered.</p> <p>RECOMMENDATION: Review the differences between the modeling of system impact vs train.</p>	<p>Roughly 10 pre-initiators are affected. The probability for these pre-initiators is low. Therefore addressing this finding is expected to have a minor impact on overall risk.</p>	<p>May have a minor impact on some 5b applications.</p>
QU-D5a-01A	IDENTIFY significant contributors to CDF, such as initiating events, accident sequences, equipment failures, common cause failures, and operator errors [Cat I]. INCLUDE SSCs and operator actions that contribute to initiating event frequencies and event mitigation [Cat II].	<p>RECOMMENDATION: Fault trees are required for support system initiating events in order to satisfy this SR [Cat II].</p>	<p>Category I was met. Adding initiating event fault trees will not alter overall results if the fault tree results are in agreement with the original point estimates. However there will be an increase in risk importance associated with operator actions and SSCs that are included in the initiating event fault trees.</p>	<p>Although the importance of affected SSCs on an initiating event may not be fully considered; their impact can be addressed for specific 5b applications using sensitivity analysis, qualitative analysis, bounding analysis or explicit modeling in accordance with the NEI 04-10 guidance.</p>

These open items are contained in a controlled database that, by NextEra Energy procedure, must be reviewed prior to beginning any PRA application. Therefore, each open item will be reviewed as part of the Surveillance Test Interval change assessment. If an open item has a potential impact on the results, then additional assessments (sensitivities) will be performed in accordance with the guidance contained in NEI 04-10.

In summary, with the exception of the seven items listed in the above Table, all previously identified items that represent gaps to Capability Category II will be fully incorporated into Revision 6 of the DAEC PRA model upon formal issuance.