

July 27, 2007

MEMORANDUM TO: Sunil D. Weerakkody, Chief
Fire Protection Branch
Division of Risk Assessment
Office of Nuclear Reactor Regulation

FROM: Paul W. Lain, Senior Fire Protection Engineer */RA/*
Fire Protection Branch
Division of Risk Assessment
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SUBJECT: SUMMARY OF MAY 21, 2007, CLARIFICATION TELEPHONE CALL
REGARDING PILOT PLANT (SHEARON HARRIS) TRANSITION TO
NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805

On May 21, 2007, the U.S. Nuclear Regulatory Commission (NRC) staff from Headquarters participated in a telephone call with Progress Energy to discuss Shearon Harris Nuclear Power Plant transition to the National Fire Protection Association Standard NFPA 805. The subjects of the discussion were the analyses, procedures, and methodology for performing fire safe shutdown analyses, circuit analysis, non-power operational modes analysis, and NFPA 805 Chapter 4 Fire Area Transitions.

Progress Energy recorded the NRC comments, answered some of them, and retained the remaining ones for subsequent disposition. All of the comments will be discussed at the next observation visit and will be documented in the associated trip report.

Enclosed are a list of the teleconference participants (Enclosure 1) and the NRC staff clarification questions (Enclosure 2). The publically available documents discussed during the telephone call are available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML071650197.

Enclosures:
As stated

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301-415-2346

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RGallucci JSHyslop HBarrett SWeerakkody
JCircle SWilliams CPayne WRogers

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NAME	PLain	SWeerakoddy
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**CLARIFICATION TELEPHONE CALL REGARDING
PILOT PLANT (SHEARON HARRIS) TRANSITION
TO NATIONAL FIRE PROTECTION ASSOCIATION
STANDARD 805**

List of Participants

U.S. Nuclear Regulatory Commission Staff

E. McCann

P. Lain

R. Gallucci

T. Dinh

H. Barrett

JS. Hyslop

Pacific Northwest National Laboratory

T. Blackburn*

Progress Energy

R. Rishel*

T. Maness*

R. Rhodes*

S. Hardy*

J. Ertman*

*participated via telephone

NRC Questions for the May 21st Clarification Conference Call

FPIP-0126 (Non-Power Operational Modes Transition Review)

General question: Assuming OMP-003 is the governing procedure for Outage Risk Management during Shutdown at Harris, how is this modified to include the effects of fire? Should this be discussed in detail in FPIP-0126, assuming it is not done so specifically in OMP-003? If this is done specifically in OMP-003, we would need to review. (RG)

3.6: Consider using definitions from ASME RA-Sb-2005 (RG)

9.6.1: Why is the "pinch point" search limited only to areas that might damage ALL credited paths? Should not damage to ANY credited path be identified as well, since outage management "risk" usually considers various degrees of redundancy loss, not just total loss? (RG)

9.6.6: Related to the above, this seems to indicate that compliance strategies will only be instituted when ALL redundancy is lost, not just partial loss. Plant conditions can be >Green with only partial loss, and do not these usually require some sort of compensatory measures? (RG)

How is "increased potential for fire" addressed in OMP-003? (RG)

Based on the above, we need to review OMP-003, at least the outage management "risk" evaluation portion. (RG)

9.7.3 Document outage activities which may lead to failure of KSF, including length of time condition in effect, type of outage activity, amount of combustibles added (if appropriate), etc. For example, bringing in a load of combustibles for some outage maintenance activity would include documentation on the amount of combustibles, length of time they were there, type of combustible, etc. (JSH)

FPIP-0106 (Validate Fire Area SSD Strategies)

3.1: Consider using definitions from ASME RA-Sb-2005 (RG)

3.13: Recovery action definition: This definition identifies a recovery action as an action taken away from the primary control station, where the primary control station is not necessarily in the control room. If this primary control station is outside the control room due to fire damage, why shouldn't an action at this primary control station be considered a recovery action? (JSH)

9.1.7: Independent events: An earthquake inducing a fire is accounted for in fire PRA (i.e. the Standard) as well as licensing basis (i.e. SSD earthquake hose stations). Don't see why it should be excluded here. (JSH)

9.1.10: Why the single spurious restriction? Is not the purpose of transitioning to NFPA 805 the establishment of a new licensing basis that includes multiple spurious? [Since this

"deficiency" is rectified in Section 9.6, consider mentioning that here.] (RG)

9.1.12: Statement made that "consideration should also be given to the possibility that total failure of the electrical component may not be the worst case failure." Does this mean that the failure mode of spurious operation will be taken for the analysis, if it is the worst case failure? (JSH)

9.2: According to 9.2, a manual action is a sufficient strategy for being the sole mitigation means for safe shutdown. 9.2.9 says that "Recent NRC positions on manual actions shall be considered when evaluating....." Shouldn't it say that "Recent NRC positions on manual actions shall be **followed** when evaluating....." (JSH)

9.2: Saw no discussion about red box vs. blue box. Section 9.2 should go into the colored box that represents the licensing basis. (JSH)

9.2.9: The NRC references for manual actions need to be updated to include NUREG-1852. In addition, manual action feasibility AND RELIABILITY must be addressed. Likewise, referenced EGR-NGGC-0102 may need updating to the latest NRC guidance on manual actions. (RG)

9.3: Again, multiple and potentially concurrent spurious, not just single and only sequential, should be considered. [Since this "deficiency" is rectified in Section 9.6, consider mentioning that here.] (RG)

9.6: Is intercable multiple spurious restricted to two components while intracable has no such restriction? What is the basis - RIS 2004-003, Rev. 1? Presumably, this restriction does NOT carry over into the Fire PSA. (RG)

EGR-NGGC-0102 (SSD/FP Review)

9.2.1, Note: The appropriate reference for manual actions taken as compensatory is RIS 2006-10. (RG)

Attachment 3: This needs to be updated to the latest NRC guidance, including NUREG-1852 (draft for review in August 2006, final to be issued soon) and RIS 2006-10. Also, both feasibility AND RELIABILITY need to be considered. (RG)

Att. 3, 2.1: Historically, manual actions have never been part of III.G.1 compliance (ADAMS # ML050140123, *below*). Change this statement. (RG)

It was stated that in fire areas for which alternative safe shutdown has not been provided, an exemption for Section III.G.2. of Appendix R is required if the separation features of Section III.G.2 are not provided. This statement was challenged with the line of reasoning that if Section III.G.1.a. of Appendix' R is satisfied, Section III.G.2 need not be satisfied. ELD [now OGC] provided the following resolution to this question: Interpretation Three of Appendix R (which defines the term "free of fire damage" in Section III.G.1.a) was provided to clarify Section III.G.1(a), during the exemption process, for licensees attempting to Justify the lack of I11.G.2. separation features for redundant trains within a single fire area. It was never intended that "other methods proposed by licensees" would be reviewed and approved at the Appendix R validation inspection.

Att. 3, 4.2: Brigade members may NOT be credited later in the timeline unless all Brigade duties have been completed and the Brigade members have replacements on the Brigade, thereby freeing them for only manual action operations in case of subsequent fire (i.e., they would no longer be considered Brigade members at that time - no collateral duties). (RG)

Att. 3, Table 4-1: References to "within/after the first hour or before/after the fire is extinguished" should include the caveat "whichever is later." (RG)

Att. 3, 4.7: This should also include intermittent communication, or communication after an action is completed to verify its completion. The communication need not be "continuous" only. (RG)

Att. 3, Table 5-1: While it is true that the likelihood of two spurious FOR THE SAME CABLE TYPE AND FIRE SIZE is less than that for one, the likelihood for multiples is not necessarily "low." The distinction between priority Medium and Low with regard to spurious should be based on the likelihoods of the specific types of spurious, not just the number. E.g., one spurious in a conduited cable may be less likely than two in a non-conduited cable (0.15 vs. 0.36, without CPT, as per NUREG/CR-6850, Table 10-2 or 10-4, M/C Intracable). (RG)

Att. 3, 5.3: Why are multiple spurious "not expected to occur concurrently unless...?" Since each circuit tends to affect a different component, would not fire-induced failures in "circuits" (plural) normally be expected to affect multiple components? (RG)

Att. 3, 5.3.2, Event Timeline: Tsp can occur before Tal or may actually constitute Tal. Likewise, Tglst can occur before Tor. Are these, as well as other possible permutations considered? (RG)

Att. 3, 5.3.2: "The determination that the time to perform an operator action is acceptable will be based on successfully reaching Tgr prior to reaching Tun." This should be conditioned on inclusion of uncertainties, etc., in the timeline. such that acceptability includes an appropriate time margin between Tgr and Tun, not just that $Tgr < Tun$. (RG)

Attachment 4: This needs to address considerations beyond those of RIS 2004-03, Rev. 0 (and even beyond Rev. 1), since the RIS is only inspection guidance and not limiting. NUREG/CR-6850 would be a better governing document. It also needs updating to reflect caveated NRC endorsement of NEI 00-01. (RG)

Table B-2 (Nuclear Safety Capability Assessment)

Why is this Table keyed to NEI 00-01 instead of NEI 04-02, or some other National Fire Protection Association Standard 805(NFPA-805)-related guidance? (RG)

3.5.1.1: The risk-informed inspection process will focus NOT ONLY on failures with relatively high probabilities, BUT ALSO on failures with special consequences, even if low probability, such as ISLOCA via high/low-pressure interface spurious opening. (RG)

3.5.1.5[A]: The multiple spurious review should not be restricted to the guidelines of RIS 2004-03, but should include considerations from NUREG/CR-6850. (RG)

3.5.1.5[C]: Same comment as above [A]. (RG)

Table B-3 (Fire Zone 12-A-BAL)

Since it references CMEB 9.5-1, Section C.5.c as the pre-transition regulatory basis and NFPA 805 Section 4.2.3.2 as the post-transition regulatory basis, it appears that Fire Area 12-A-BAL is transitioning from an alternative shutdown area to the NFPA 805 equivalent of a III.G.1 area. Is this a correct interpretation? (PF)

It appears that the concept of the section on performance goals is to discuss specific systems being credited to accomplish a performance goal when there is a choice of systems that could be used. An example of this is using the normal charging path for RCS inventory control. The table does not mention equipment used to accomplish a function when there is only one way of accomplishing the function. For example, RCS pressure boundary isolation, which is a sub-goal of inventory control is not mentioned because there it is not a matter of choice of systems, but rather just a function that must be accomplished. From the other hand, RCP seal integrity is a sub-goal of inventory control, where there is a choice of methods to use, namely seal injection or thermal barrier cooling, but these are not mentioned. So please clarify the underlying principle which determines the level of detail needed for the B-3 table. In this example if one wanted to get this kind of detail where will it reside in the documentation? (PF)

NEI guidance document for the B-3 table has a column headed exemptions/deviations, but the example does not appear to have such a column. The exemption/deviation column appears to be desirable from the viewpoint of reviewing a transition submittal and as program record. Is the licensing action section intended to be a substitute for the exemptions column? (PF)

Performance Goal Section: It appears that there is very little equipment that can be damaged in fire area 12-A-BAL because virtually every function lists two trains in the method of accomplishment column. Is this a correct interpretation? When the table says CSIP A or CSIP B is the method does that mean that both trains are analyzed to be undamaged and the procedures give the operator a choice of which one to use? (PF)

The B-3 table does not discuss area wide automatic suppression or detection in terms of a requirement for the area. Does this information reside in another part of the documentation? (PF)

The B-3 table for fire area 12-A-CR, control room, does not list a post-transition regulatory basis. Is this just an oversight? (PF)

* The questions by Paul Fillion (PF) listed above pertain to the April 19, 2007, clarification telephone call (ADAMS Accession No. ML071590154). Table B-3 is withheld from public availability under 10 CFR 2.390(d)(1) as Sensitive Unclassified Non-Safeguards Information.

Clarification questions by Edward McCann

Procedure	Section	Comment
EGR-NGGC-0102	General	Manual actions to be in accordance with NUREG 1852
	9.2.5.1	This section stated "These coordination studies analyzed the largest feeder protective device on each common power supply. Once coordination of this feeder with the upstream protective device(s) was established, it was assumed that all other feeder protective devices on the same common power supply were coordinated." How do you know that the other breaker coordination curves all have the same shape, coordination curves may not be similar and one would not know if one does not check it?
	General	The idea that III.G.1 compliance means "free of fire effects" is too simplistic and leads to misconceptions. For III.G.1 there are two alternative ways to be free of fire effects and that is either from the Control Room or at the Emergency Control Stations. Being free of fire effects at the emergency control station, which is a dedicated (shutdown panels) or alternate (manual actions) method to shutdown, III.G.3 and III.L apply since the provisions III.G.2 could not be satisfied. If III.G.2 could have been satisfied, one would be free of fire effects from the control room.
	Attachment 3 Section 3.0	Item 3: NRC will not revise Appendix R or NUREG 800 for manual actions.
	General	Will concurrent or in rapid succession multiple spurious operations be analyzed during the transition to NFPA 805?
	Attachment 4 Section 2.0	<ul style="list-style-type: none"> • Make definitions in accordance with RG 1.189 Rev 1. • Required safe shutdown circuits definition: RG 1.189 uses words like "required to operate" or "systems required to achieve and maintain post-fire safe-shutdown conditions" rather than credited. May want to change to: "circuits that support a component/system that is required to operate for safe shutdown after a fire" or something similar. • Ensure other procedures like FPIP-0104 and 0105 use similar definitions.
	Attachment 4 Section 3.3	Item 3 needs to be updated for NEI 00-01 NRC approval.
	Attachment 4 Section 3.3	Will thermostet intercable faults be analyzed during the transition to NFPA 805?

	Attachment 4 Section 5.3	<ul style="list-style-type: none"> • This criteria uses “unrecoverable plant condition” as a condition to follow to incorporate new FICF while Appendix R uses III.L requirements. Why is this discrepancy acceptable? • Will multiple concurrent spurious operations be analyzed during the transition to NFPA 805?
	Attachment 4 Table 1	<ul style="list-style-type: none"> • Item 1: Open circuits can cause spurious operations and these will in general not clear without an action. How are you capturing these spurious operations? • Item 4: Will three phase proper polarity faults for power cables to MOVs be analyzed during the transition to NFPA 805? • Item 5 and 8C: Multiple concurrent Intercable and intractable hot shorts will need to be considered for high risk scenarios for ungrounded DC circuits. This is a possible backfit issue for Appendix R/NUREG 800 plants but must be considered if high risk. Will concurrent intercable and intractable hot shorts for ungrounded DC circuits be analyzed during the transition to NFPA 805? • Item 6: Will multiple high impedance faults be analyzed during the transition to NFPA 805? • Item 7B and 8B: Will multiple concurrent spurious operations for these scenarios be analyzed during the transition to NFPA 805? • Item 9 and 10: Will multiple concurrent spurious operations for intercable faults between thermoset and thermoplastic cables be analyzed during the transition to NFPA 805?
Table B-2	General	Similar comments apply here as in EGR-NGGC-0102 above.
	3.5.1.1 Page 47	Will cable to cable (intercable) faults between thermoset and thermoplastic cables be analyzed during the transition to NFPA 805? Will you bring forward this Prior NRC Approval for cable for cable faults during the transition to NFPA 805?
	3.5.1.5 Page 51	RIS 2004-03 risk informed inspection guidance applies for your plants but it does constitute compliance. All cable failure modes need to be considered during the transition to NFPA 805 and these failure modes must not be limited by the RIS. Will you consider all failure modes during the transition to NFPA 805? What does not applicable mean for the applicability of RIS?
FPIP-0106	Attachment 3	Will you ensure that the IN 92-18 issue is addressed outside of the Control Room including inside the MCC and at the valve during the transition to NFPA 805?

Legend:

RG: Ray Gallucci

JSH: JS. Hyslop

PF: Paul Fillion

KSF: Key safety feature

SSD: Safe-shutdown

OGC: Office of the General Counsel

NEI: Nuclear Energy Institute

ISLOCA: Interfacing-systems loss-of-coolant accident

RIS: Regulatory Issue Summary

RCS: Reactor coolant system

RCP: Reactor coolant pump

CSIP: Containment safety initiatives program

MCC: Motor control center