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Perry Nuclear Power Plant
Voluntary Comments on Draft NUREG-1560, "Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance, Summary Report"

Ladies and Gentlemen:

In a letter dated December 13, 1996, the Nuclear Regulatory Commission (NRC) indicated that a draft of NUREG-1560, "Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance, Summary Report," had been published. That letter requested licensee comments to be submitted by February 14, 1997; however, no response was required. In a Federal Register notification on January 29, 1997 (62 FR 4365), the NRC extended the deadline for comments to March 14, 1997. The Attachment to this letter provides voluntary comments on Draft NUREG-1560 for the Perry Nuclear Power Plant.

If you have questions or require additional information, please contact Mr. Henry L. Hegrat, Manager - Regulatory Affairs, at (216) 280-5606.

Very truly yours,

Lew W. Myers

KMN:sc

cc: Ms. Mary Drouin

(61FR 65248)

IEP-11 Guidance

NUREG

Comments on Draft NUREG-1560

"Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance"

Part	Chapter	Page	Section/Paragraph	Comment
1	Executive Summary	xix	first paragraph	NUREG-1560 states, "Many of the analyses relied heavily on either the use of the MAAP code or the use of a set of industry position papers, neither of which have a comprehensive treatment of severe accident phenomena." This statement is misleading because MAAP was developed for severe accident phenomena and relied heavily on empirical data from experiments. A more accurate statement is that MAAP has not undergone a rigorous review by the NRC.
1	2	2-14	third full paragraph	In the third full paragraph, the reference to "later" BWRs is misleading because it implies that "later" BWRs have an AC-independent HPCI system.
1	3	3-29	bullet for RCIC system failure modes	In most instances differences in the modeling of RCIC trips and loss of RCIC due to suppression pool temperature are based on procedures. At Perry, the operators are instructed to trip RCIC when the suppression pool temperature reaches 185°F. The variability in the PRAs comes less from analyst practices than from plant procedures and design.
1	3	3-31	bullet for Alternate Coolant Injection System	NUREG-1560 states, "Some licensees appear to pessimistically not credit the use of the CRD system, while others have plant design features (e.g., isolation signals) that affect its use." Even without isolation signals, etc., because of the low injection rate and the fact that there are other injection systems that provide more water more quickly to the reactor pressure vessel (RPV), it is likely that those not crediting CRD did not include it because doing so did not provide any reduction in CDF.
1	3	3-32	second paragraph from bottom	NUREG-1560 states, "Perry is considering a passive containment vent that the IPE submittal indicated will reduce the plant CDF by 15%." Perry considered such a vent and rejected implementation subsequent to submittal of IPE.

Comments on Draft NUREG-1560

"Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance"

Part	Chapter	Page	Section/Paragraph	Comment
1	3	3-33	second paragraph	NUREG-1560 states, "The highest ATWS CDF was calculated for the Perry IPE submittal, which did not credit the use of HPCS for coolant injection and also assumed that the operator will always be unable to maintain PCS availability during an ATWS." NUREG-1560 seems to imply that the IPE is driven as much by the analyst biases as by the plant design. Perry did not credit the use of automatic HPCS as a successful injection path because the Plant Emergency Instructions (PEIs) require the operators to terminate HPCS injection if HPCS initiates. The PEIs are based on the Emergency Procedure Guidelines (EPGs). Also, the Perry design includes a feedwater runback to zero flow upon an ATWS signal. This feedwater runback is unique among the BWR/6 plants. The operators cannot override the signal and must wait until the valves are fully closed to restore feedwater via the motor feed pump.
1	3	3-33	third paragraph	NUREG-1560 states, "Two licensees identified improvements aimed at reducing the potential for core damage during an ATWS event. The most significant is the installation of an automatic ADS inhibit during an ATWS, which is being evaluated at Perry. A sensitivity study reported in the IPE submittal indicated that this feature can reduce the plant CDF by 23%." When balancing the reduction in CDF against the cost and increased complexity of ADS, Perry decided against implementation. In addition, changes to the plant and operating procedures since submittal of the IPE have reduced the contribution of ATWS to the overall CDF and implementation would only have a marginal impact on CDF.
i	5	5-3	ATWS discussion	Instead of trying to describe separate human actions during ATWS and looking for dominant actions, the discussion should center around the fact that automatic functions are largely bypassed and operator actions globally become important in responding to an ATWS event. At Perry, it was determined that many of the human actions have dependencies upon each other and looking at single human actions may not be appropriate for ATWS.

Comments on Draft NUREG-1560

"Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance"

Part	Chapter	Page	Section/Paragraph	Comment
1	5	5-6	Table 5.2	For Perry, clarification should be added to the statement "did not take credit for HPCS." At Perry, the procedures instruct operators to terminate HPCS injection during an ATWS.
2	9	9-24	Section 9.3.1.3	NUREG-1560 states, "The Perry 1 submittal indicates a cross-tie capability for the batteries has been implemented..." The description of implementing a cross-tie capability for batteries needs further clarification. The cross-tie capability existed prior to the IPE/PRA. The IPE/PRA simply included the capability as it existed in the plant design and procedures at the time the model was developed.
2	9	9-25	second paragraph	NUREG-1560 discusses a containment vent system which was being evaluated at Perry. This containment vent system was a passive system. Perry already has a mechanism for venting the containment via the fuel pool cooling and cleanup system or the containment spray headers.
2	9	9-25	third paragraph	NUREG-1560 states, "The licensee for Perry 1 estimates a reduction of approximately 1E-5/ry for ATWS changes if implemented." This should read, " ... approximately 1E-5/ry for..."
3	11	11-40	Section 11.2.3.2	The discussion of cross-tieing the HPCS diesel generator to either the Division 1 or 2 emergency buses is misleading. For Grand Gulf, the HPCS bus can be cross-tied to either the Division 1 bus or the Division 2 bus, and some pump loads can be supplied. For Perry, the HPCS bus can only be cross-tied by design only to the Division 2 bus. There are no procedures for operating Division 1 pumps via this cross-tie at Perry. The cross-tie was installed to provide power to the inboard containment isolation valves to assure containment isolation. This is another instance where plant design and not analyst biases drive the modeling differences in the IPEs.

Comments on Draft NUREG-1560

"Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance"

Part	Chapter	Page	Section/Paragraph	Comment
3	11	11-42	Section 11.2.3.3	Perry did not credit HPCS as a successful injection system for ATWS because the plant emergency instructions at the time called for the operators to terminate HPCS injection if HPCS initiated. Also, the feedwater runback at Perry is unique among the other BWR/6 plants. The Perry design runs back feedwater to zero flow into the RPV. The operators cannot override the signal and must wait until the valves are fully closed to restore feedwater. There is less dependency on analyst biases than there is on actual plant design differences to the assumptions used to construct the PRA models.
3	11	11-44	first paragraph	Perry did not credit HPCS as a successful injection system for ATWS because the plant emergency instructions at the time called for the operators to terminate HPCS injection if HPCS initiated. Also, the feedwater runback at Perry is unique among the other BWR/6 plants. The Perry design runs back feedwater to zero flow into the RPV. The operators cannot override the signal and must wait until the valves are fully closed to restore feedwater. There is less dependency on analyst biases than there is on actual plant design differences to the assumptions used to construct the PRA models.
3	11	11-45	second paragraph from bottom	It is misleading to simply say that Perry credits the use of firewater, condensate transfer, and suppression pool cooling for alternate injection. Perry only credits a single alternate injection source for any given sequence. For most sequences, this is condensate transfer because of its ease of alignment and quantity of water supplied. For loss of offsite power sequences, however, condensate transfer is not available and the availability of the fire protection system is modeled. This system can be manually aligned in approximately 20 to 30 minutes and can provide up to 2000 gpm into the RPV.

Comments on Draft NUREG-1560

"Individual Plant Examination Program: Perspectives on Reactor Safety and Plant Performance"

Part	Chapter	Page	Section/Paragraph	Comment
3	13	13-15	Table 13.2	For Perry, aligning the feed booster pump or suppression pool cleanup for alternate injection is listed as being associated with accident sequences (LOOP and loss of IA). These systems are lost following a LOOP. They are for loss of instrument air.