Westinghouse Electric Corporation Energy Systems

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NSD-NRC-97-4984
DCP/NRC0739
Docket No.: STN-52-003

February 13, 1997

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

TO: T. R. QUAY

SUBJECT: RESPONSE TO NRC QUESTION ON AP600 TECHNICAL SPECIFICATIONS LCO 3.0.3

REFERENCE: 1. Letter from NRC to Westinghouse (Huffman to Liparulo), Initial Comments on the AP600 Revised Technical Specifications (TS), dated 12/24/96.

2. Letter from NRC to Westinghouse (Martin to Liparulo), List of Key Licensing Issues on the AP600 Design, dated 12/6/96.

3. NSD-NRC-97-4972, Response to RAIs 630.11 through 630.14, dated 2/6/97.

Please find attached for your review the response to AP600 Technical Specifications (TS) Question 1 of Reference 1. The subject of this question is "Safe Shutdown End State, LCO 3.0.3". The attached response completes the Westinghouse action for Open Item Tracking System (OITS) item 4182, (Key Licensing Issue 19 of Reference 2). The Westinghouse status for open item 4182 has been changed to Closed.

Also attached is an OITS Report for Westinghouse action items related to resolution of NRC TS review comments. (Note that Reference 3 completed Westinghouse action for OITS items 4224 through 4227.) NRC should confirm the completeness of the attached list and advise Westinghouse of the NRC status for each of these items. Please contact Robin K. Nydes at (412)374-4125 with any further questions or comments regarding the AP600 TS.

Brian A. McIntyre, Manager
Advanced Plant Safety and Licensing

/jml
Attachments

260042

E004 1/1

cc: Bill Huffman, NRC (w/attachments)
Angela Chu, NRC (w/attachments)
Chris Grimes, NRC (w/attachments)

AP600 Open Item Tracking System Database: Executive Summary

Selection: [w st code]='Action W' And [resp eng] like 'TECHSPEC*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
169	NRR/SPLB	5.2.5	MTG-OI		TECHSPEC/Suggs, C	Action W	Action W	
				M5.2.5-26 (REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE) TS 3.4.8 bases section "Applicable Safety Analyses" refers to reference 4 instead of reference 3.				
				appropriate reference will be referenced. rkn 3/29 Closed - With issuance of the Tech Specs in SSAR Rev. 9. Action W - We need to explicitly tell NRC where in TechSpec we cover ISLOCA, especially in light of earlier TechSpec RCS pressure boundary valve isolation 3.8.4 per Chapter 5 telecon with NRC on 12/2/96.				
4189			KEY ISSUE		TECHSPEC	Action W	Action W	
				Key Issue Number: 26. Technical Specifications Review (OTSB) Because issue preclusion for technical specifications is not provided by the design certification process, the staff must decide the extent of the review that it will perform on Westinghouse's proposed Technical Specifications.				
4196		16	TEL-OI		TECHSPEC/Suggs	Action W	Action W	
				First item from NRC letter of 11/26/96, the TechSpec requirements on N13/F18 detection are inconsistent with Modes 3 and 4.				
4197		16	TEL-OI		TECHSPEC/Suggs	Action W	Action W	
				Second item from 11/26/96 NRC letter, using containment sump for leak detectin is inconsistent with PRHR operation.				
4970	NRR/TSB	16.1	RAI-OI		TECHSPEC/Suggs	Action W	Action W	
				Respond to Questions 2 through 51 of NRC letter "Initial Comments on the AP600 Revised Technical Specifications (TS)", dated 12/24/96. Question 1 is being tracked separately as Key Issue 19, see item 4182.				
4971	NRR/TSB	16.1	RAI-OI		TECHSPEC/Suggs	Action W	Action W	
				Respond to 8 questions from Emergency Preparedness and Radiation Protection Branch per 1/29/97 letter.				
4972	NRR/TSB	16.1	RAI-OI		TECHSPEC/Suggs	Action W	Action W	
				Respond to 5 questions from NRC Electrical Engineering Branch per letter dated 1/29/97.				

AP600 Open Item Tracking System Database: Executive Summary

Selection: [item no] between 4182 And 4182 Sorted by Item #

Item No	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / .	Date
4182			KEY ISSUE		TECHSPEC	Closed	Action W	NTD-NRC-97-4984	

Key Issue Number:
19. Westinghouse's Proposed LCO 3.0.3 (OTSB)

In accordance with the staff's position in SECY-96-128, Westinghouse has proposed that, for unanticipated configurations, the safe shutdown end state for the AP600 should be defined as MODE 5 (cold shutdown). In addition, Westinghouse has agreed to include the use of the normal residual heat removal system (NRHR) in technical specification (TS) 3.0.3, in response to the staff's position for a "cold shutdown" default state. However, TS 3.0.3 specifically (by design) excludes any statement about the availability or operability of the NRHR system or any of its necessary support systems (i.e., ac power, cooling water, etc.). Although the staff concludes this is unacceptable, guidelines regarding the type of regulatory controls that should be applied to these RTNSS-identified systems need to be established. (See Item 2, RTNSS)

Response to NRC Q1 of 12/24/96 letter in Mgt Review 2/13 am. rkn
Response provided 2/13 pm by NSD-NRC-97-4984. rkn

1) Safe Shutdown End State, LCO 3.0.3:

LCO 3.0.3 specifies that when an LCO is not met and the associated Actions are not met, the plant shall be placed in MODE 5 within 48 hours. However, both LCOs 3.0.2 and 3.0.3 add a statement that "when plant conditions or configuration prevent the unit from being brought to the required MODE within the time limits specified using normal plant procedures, expedited actions shall be taken to establish and maintain the required plant conditions..." LCO 3.0.2 further states that "entry into LCO 3.0.3 is not required in this situation" (Underline added). This essentially amounts to a waiver for LCO 3.0.3 when the mode reduction cannot be accomplished within the required completion time as long as "expedited actions" are taken.

The situation arises because the MODE reduction completion times specified in LCO 3.0.3, when an LCO is not met, are based on the availability of non-safety, active systems, such as startup feedwater system (SFW) and normal residual heat removal system (RNS). If these active systems are not available, the AP600 passive systems alone cannot achieve MODE reduction within the specified times. Therefore, if the active heat removal systems needed for cool-down are not available, LCO 3.0.2 and 3.0.3 would not only permit longer MODE reduction times, but also exempt the MODE reduction requirement altogether as long as expedited actions are taken to accomplish unit shutdown as soon as practical. There are no further specifications regarding the "expedited actions" as well as the extended completion time.

While the SFW and RNS are necessary systems for MODE reduction within the specified completion times, they are not included in the TS because, Westinghouse contends, they do not meet any of the criteria for inclusion in the TS. Therefore, there is no TS requirement to control the reliability and availability of an important non-safety active system that is needed to complete the MODE reduction mission; and, when an LCO is not met, the compliance for LCO 3.0.3 MODE reduction is waived when this active system is unavailable. Without any control over the reliability/availability of the important RNS, there will be no control to minimize the exemption of MODE reduction requirement when an LCO is not met, and LCO 3.0.3 becomes meaningless because it is exempt when the RNS is unavailable.

Therefore, the proposed LCOs 3.0.2 and 3.0.3, as well as their BASES, are not acceptable. The TS should be revised by either deleting the statement of compliance exemption (due to non-safety system unavailability) from LCOs 3.0.2 and 3.0.3, or adding the reliability/availability requirements of important non-safety systems that are needed for completion of MODE reduction within the specified times. In SECY-94-084, Item A, Regulatory Treatment of Non-safety Systems, the Commission indicated its acceptance of "simple technical specifications" as an availability control mechanism for the important non-safety systems. If Westinghouse proposes to include in LCOs 3.0.2 and 3.0.3 the statement allowing compliance exemption, it should also propose a proper TS LCO to assure availability of those active systems which are relied upon to complete the mode reduction requirements.

1) Safe Shutdown End State, LCO 3.0.3:

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Therefore, the proposed LCOs 3.0.2 and 3.0.3, as well as their BASES, are not acceptable. The TS should be revised by either deleting the statement of compliance exemption (due to non-safety system unavailability) from LCOs 3.0.2 and 3.0.3, or adding the reliability/availability requirements of important non-safety systems that are needed for completion of MODE reduction within the specified times. In SECY-94-084, Item A, Regulatory Treatment of Non-safety Systems, the Commission indicated its acceptance of "simple technical specifications" as an availability control mechanism for the important non-safety systems. If Westinghouse proposes to include in LCOs 3.0.2 and 3.0.3 the statement allowing compliance exemption, it should also propose a proper TS LCO to assure availability of those active systems which are relied upon to complete the mode reduction requirements.

Westinghouse Response

AP600 Technical Specification LCO 3.0.3 was originally written in 1992 to be consistent with the capabilities of the passive systems to bring the plant to a safe shutdown condition. LCO 3.0.3 Completion Times were longer than for operating plants and the final shutdown mode was MODE 4, consistent with the capabilities of the passive systems. In conjunction with this approach, MODE 4 was defined as 200 to 420°F rather than the standard 200 to 350°F, since passive systems can not cool the plant down to much less than 400°F in a reasonable period of time. The use of nonsafety-related systems was not discussed in LCO 3.0.3. It was expected that the plant would use the systems normally used to perform plant shutdowns, including main feedwater, offsite power, etc.

During the May 1996 Senior Management Meeting, the NRC provided guidance that shutdown to only MODE 4 in LCO 3.0.3 was unacceptable and that if shutdown to MODE 5 were specified assuming the availability of nonsafety-related systems, Technical Specification requirements on the nonsafety-related systems would not be necessary. Consistent with that NRC guidance, LCO 3.0.3 was revised (SSAR Rev. 9) to include shutdown to MODE 5 and shorter completion times. Additionally, LCO 3.0.2 and 3.0.3 were revised to clearly state that the nonsafety-related shutdown systems were not governed by Technical Specifications so that no violations would apply if non-technical specification shutdown systems were unavailable.

The importance of AP600 nonsafety-related systems has been systematically evaluated and an appropriate level of reliability and availability requirements has been identified. These evaluations include the Reliability Assurance Program (RAP), RTNSS evaluation (WCAP-13856), and Technical Specification selection evaluation. The AP600 RAP (SSAR table 16.2-1) provides for long term reliability of AP600 features. This table includes both safety-related and nonsafety-related defense-in-depth features, such as the SFW and the RNS.

The RTNSS evaluation, performed in accordance with the process in SECY-94-084, did not capture SFW and only captured RNS because it is an important factor in the initiating event frequency of loss of normal cooling during cold shutdown operation with reduced inventory. The RNS was not RTNSS important during other modes of plant operation. WCAP-13856 contains recommendations for regulatory oversight that will provide short term availability control of the RNS and its necessary support systems during its RTNSS important mission (cold shutdown with reduced inventory).

The Technical Specification selection criteria in 10CFR50.36, which does not recognize the RTNSS process, was applied to AP600. The selection criteria did not capture the SFW, the RNS or any other nonsafety-related systems. It should be noted that operating plants which have implemented NUREG-1431 have eliminated LCOs from the Standard Technical Specifications using the 10CFR50.36 selection criteria; many of these eliminated LCOs are similar in safety importance to the LCOs suggested by the NRC for the RNS and SFW. LCOs that were eliminated from the Technical Specifications were relocated in other procedures or programs such as the Technical Requirements Manual (TRM). These programs provide an appropriate level of regulatory oversight / availability control for these less important features.

If the nonsafety-related systems used to cool the plant to MODE 5 conditions are unavailable when the plant enters LCO 3.0.3, the operators still have to place the plant in a safe shutdown condition.

AP600 LCO 3.0.2 and 3.0.3 requirements are similar to the precedent provided by NUREG-1431 requirements which are applicable when the means to cool the plant are not available. For example, the Standard Technical Specifications (STS) LCO 3.7.5 requirements recognize that if the AFW pumps are inoperable, the safest action is to maintain the plant in the current MODE and repair one AFW train. Additionally, the Action D.1 Note suspends compliance with LCO 3.0.3 or other Required Actions which require MODE changes:

LCO 3.7.5 Condition D.

"D. [Three] AFW trains inoperable in MODE 1, 2, or 3.

D.1 ----------NOTE----------

LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status.

Initiate action to restore one AFW train to OPERABLE status.

Immediately"

STS BASES 3.7.5 explanation:

"D.1

If all [three] AFW trains are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with nonsafety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status.

Required Action D.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition".

The AP600 situation follows the precedent set in STS LCO 3.7.5. When the principle means of plant cooldown are unavailable, cooldown should not be attempted; rather the cooldown system(s) should be restored. The AP600 additions to LCOs 3.0.2 and 3.0.3 should be retained to avoid forcing the plant into a less safe condition.

In summary, Westinghouse modified LCO 3.0.3 at the request of the NRC in a Senior Management Meeting based on a agreement that this action would not lead to Technical Specifications on the nonsafety-related systems, which are needed to achieve MODE 5 but which are not needed to achieve the AP600 safe stable long term shutdown condition in MODE 4.

The NRC question recommends two possible resolutions to their concerns:

1) to add technical specification requirements for SFW and RNS or

2) to eliminate the LCO 3.0.2 and 3.0.3 compliance exception

Westinghouse concludes that technical specification requirements for SFW and RNS are not necessary in accordance with the 10CFR50.36 criteria as well as past agreements with the NRC.

Westinghouse concludes that the LCO 3.0.2 and 3.0.3 compliance exceptions are necessary to provide for coherent requirements consistent with the precedent provided in the STS.

Therefore, LCOs 3.0.2 and 3.0.3 should maintain the approach currently specified.