REVISED RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.:	**189-8057**
SRP Section:	**16 – Technical Specifications**
Application Section:	**16.3.1 Reactivity Control Systems**
Date of RAI Issue:	**09/01/2015**

Question No. 16-72

Address the following issues within the Surveillance Requirements (SR) section of the Bases for Technical Specification (TS) 3.1.5 Control Element Assembly (CEA) Alignment:

- In SR 3.1.5.1 and 3.1.5.2, the text reads “The specified 12-hour Frequency…” There should not be a hyphen in between the “12” and “hour” (captured in another RAI) and the word “specified” is not needed. The inclusion of “specified” deviates from the STS.
- In SR 3.1.5.1, the abbreviation “MCR” is used without defining it prior to its use. The STS uses the phrase “control room” vice “MCR”. The abbreviation is used again in SR 3.1.5.2 and 3.1.5.3, therefore the definition is required.
- The text of SR 3.1.5.3 states “…are exercised every 92 days to provide…” The same sentence in the STS states “…are exercised to provide…” The phrase “every 92 days” is a restrictive phrase that is not needed and deviates from the STS. The 92 day Frequency is adequately discussed later in that paragraph.
- The APR1400 Bases for SR 3.1.5.4 omits text from the STS. The omitted text describes the following: what actions may be used to constitute a successful test of the required contact(s) of a channel relay and why it is successful and a sentence of the end of the paragraph that concludes the SR Frequency is acceptable from a reliability standpoint.

The addressing of the above stated issues are required to ensure the accuracy and completeness of the TS Bases and, where applicable, to align the text with the STS.

Response – (Rev.1)

The issues noted within the Surveillance Requirements (SR) section of the Bases for TS 3.1.5 CEA Alignment will be addressed as follows:

- The sentence, “The specified 12-hour Frequency…”, will be changed to “The 12 hour

Frequency…” in SR 3.1.5.1 and 3.1.5.2 as described in the STS.
- The definition of “MCR” will be added in SR 3.1.5.1.
- The phrase, “every 92 days”, will be deleted in SR 3.1.5.3.
- In order to reflect the NRC’s additional comments for SR 3.1.5.4, SR 3.1.5.4 will be modified as shown in the Attachment. Due to the renumbering of SR section, SR 3.1.5 for CEA Alignment has been changed to SR 3.1.4.

Impact on DCD

Same as the changes described in Impact on Technical Specifications.

Impact on PRA

There is no impact on PRA.

Impact on Technical Specifications

Though the original response indicates future incorporation of Technical Specifications changes, the changes that were proposed in the original response to this RAI have been incorporated into Revision 1 of the Technical Specifications; therefore, only the pages containing proposed changes as a result of Revision 1 of this response are included in the Attachment. B3.1.4-9 will be revised as indicated on the Attachment.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical, or Environment Report.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.1.4.4

Performance of a CHANNEL FUNCTIONAL TEST of each reed switch position transmitter (RSPT) channel ensures the channel is OPERABLE and capable of indicating CEA position over the entire ~~strength~~ length of the CEA's travel. Since this test must be performed when the reactor is shut down, an 18 month Frequency to be coincident with refueling outage was selected. Operating experience has shown that these components usually pass this Surveillance when performed at a Frequency of once every 18 months. ~~Furthermore, the Frequency takes into account other Surveillances being performed at shorter Frequencies, which determine the OPERABILITY of the CEA Reed Switch Indication System.~~ Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.1.4.5

Verific[illegible]s that the maximum CEA d[illegible]ned drop time used in the safety analysis (Ref. 3). Measuring drop times prior to reactor criticality, after reactor vessel head removal, ensures the reactor internals and CEDM will not interfere with CEA motion or drop time and that no degradation in these systems has occurred that would adversely affect CEA motion or drop time. Individual CEAs whose drop times are greater than safety analysis assumptions are not OPERABLE. This SR is performed prior to criticality due to the plant conditions needed to perform the SR and the potential for an unplanned plant transient if the Surveillance were performed with the reactor at power.

The 4 second CEA drop time is the maximum time allowed for a fully withdrawn individual full strength CEA to reach its 90% insertion position (Refs. 4 and 5) when electrical power is interrupted to the CEA drive mechanism with RCS $T_{cold} \geq$ [286.7°C (548°F)] and all reactor coolant pumps operating. The CEA drop time of full strength CEAs shall also be demonstrated through measurement prior to reactor criticality for specifically affected individual CEAs following any maintenance on or modification to the CEA Drive System which could affect the drop time of those specific CEAs.

REFERENCES

1. 10 CFR Part 50, Appendix A, GDC 10 and 26.
2. 10 CFR 50.46.
3. FSAR, Section 15.4.
4. FSAR, Section 4.2.
5. FSAR, Section 15.0