

## **SUPPLEMENTAL 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.: 509-8591**  
**SRP Section: 16 – Technical Specifications**  
**Application Section: 16.0**  
**Date of RAI Issue: 08/01/2016**

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### **Question No. 16-210**

Paragraph (a)(11) of 10 CFR 52.47 states that a design certification (DC) applicant is to propose Technical Specifications (TS) prepared in accordance with 10 CFR 50.36 and 50.36a. NUREG-1432, "Standard Technical Specifications (STS)-Combustion Engineering Plants," Rev. 4, provides NRC guidance on format and content of technical specifications as one acceptable means to meet 10 CFR 50.36 requirements. Staff needs to evaluate all technical differences from standard TS (STS) NUREG-1432, STS Combustion Engineering Plants, Rev. 4, which is referenced by the DC applicant in DCD Tier 2 Section 16.1, and the docketed rationale for each difference because conformance to STS provisions is used in the safety review as the initial point of guidance for evaluating the adequacy of the generic TS to ensure adequate protection of public health and safety, and the completeness and accuracy of the generic TS Bases.

The Writer's Guide for Plant-Specific Improved Technical Specifications (TSTF-GG-05-01) also provides guidance for the format and content of the TS. There are format and content differences between the DCD and the Writer's Guide. These following corrections are necessary to ensure the completeness and accuracy of the TS and Bases.

Correct the wording in the Required Actions table for Technical Specification (TS) 3.5.2.

In response to RAI 8069, Question 16-18, the applicant divided Condition A into 2 Conditions and added a second Required Action. Because the Required Actions are separated by an OR Logical Connector and can be applied to either Condition, Condition A should be re-written to read "Restore train(s) to OPERABLE status."

This correction is required to ensure the accuracy and completeness of the TS.

**Response**

TS 3.5.2 Condition A will be divided into two separate conditions, Condition A and Condition B, to avoid ambiguous meaning of the original statement, Condition A, which connected two different events with the logical connector "OR". Condition A mentions the event of one SI train inoperable and Condition B states for the event that two SI trains are inoperable and diagonally oriented with respect to the reactor vessel. Required Action and Completion Time for the Condition B will also be added as indicated in the Attachment.

**Supplemental Response**

According to Ch.16 SER with Open Items (ML17047A660), Condition A, B, C, D and Bases for Required Action B.1 and B.2, C.1 and C.2, D.1 will be revised as indicated Attachment.

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**Impact on DCD**

Same as changes described in Impact on Technical Specifications section.

**Impact on PRA**

There is no impact on the PRA.

**Impact on Technical Specifications**

TS 3.5.2 in DCD Tier 2 will be revised as indicated in the Attachment.

**Impact on Technical/Topical/Environmental Reports**

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

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.2 Safety Injection System (SIS) – Operating

LCO 3.5.2 Four trains of SIS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One train inoperable.	A.1 Restore train(s) to OPERABLE status.  <u>OR</u> <del>A.2 Restore two trains diagonally oriented with respect to the reactor vessel to OPERABLE status.</del>	72 hours  <del>72 hours</del>
B. Two trains inoperable and diagonally oriented with respect to the reactor vessel.	B.1 Verify two trains diagonally oriented with respect to the reactor vessel are OPERABLE.  <u>AND</u> B.2 Restore trains to OPERABLE status.	1 hour  72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.  <u>AND</u> C.2 Be in MODE 4.	6 hours  12 hours
D. Two or more trains inoperable for reasons other than Condition A.	D.1 Enter LCO 3.0.3.	Immediately

of condition A or B

(Trains 1 and 3, or Trains 2 and 4)

B.

## BASES

## APPLICABILITY (continued)

The SIS functional requirements for MODES 4, 5, and 6 are described in LCO 3.5.3.

## ACTIONS

A.1

If one train is inoperable, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on an NRC study (Ref. 4) using a reliability evaluation and is a reasonable amount of time to effect many repairs.

An SIS train is inoperable if it is not capable of delivering the design flow to the RCS. The individual components are inoperable if they are not capable of performing their design function, or if supporting systems are not available (except as allowed by their respective LCOs).

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the SIS incapable of performing its function.

An event accompanied by a loss of offsite power and the failure of an emergency diesel generator can disable one SIS train until power is restored.

B.1 and B.2

S

S

If two trains are inoperable, it should be verified within 1 hour whether the inoperable trains are diagonally oriented with respect to the reactor vessel (Train 1 and 3, or Train 2 and 4; ~~trains associated with the same emergency diesel generator~~) or not.

If the inoperable trains are diagonally oriented, both trains must be returned to OPERABLE status within 72 hours, even if one train is restored before then.

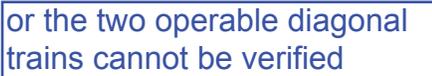
~~Full flow from two diagonally oriented SI pumps is credited for a break in an RCP discharge leg and flow is initially directed to the associated DVI and later a portion of the flow is directed to the hot leg via one of the available trains (Train 3 or 4). Hence, continued operation for 72 hours is justified.~~

Full flow from two diagonal SIS trains is credited because the safety analysis acceptance criteria can not be satisfied should a cold leg break occur with the only two operable DVI nozzles being adjacent to the faulted cold leg due to core bypass flow that could occur.

## BASES

## ACTIONS (continued)

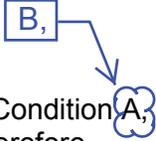
or the two operable diagonal  
trains cannot be verified


C.1 and C.2

If the inoperable train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours followed by placing the plant in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power in an orderly manner and without challenging unit systems.

D.1

If two or more trains are inoperable for reasons other than Condition A, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.


SURVEILLANCE  
REQUIREMENTSSR 3.5.2.1

Verification of proper valve position ensures the flow path from the SIS pumps to the RCS is maintained. Misalignment of these valves could render the associated SIS train inoperable. Securing these valves in position by locking after positioning them in the correct position ensures that the valves cannot be inadvertently misaligned or change position as the result of an improper operation (e.g., unauthorized, inadvertent). A 12 hour Frequency is considered reasonable in view of other administrative controls ensuring that a mispositioned valve is an unlikely possibility.