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.:	**130-8065**
SRP Section:	**16 - Technical Specifications**
Application Section:	**16.1.1 Use and Application - Definitions**
Date of RAI Issued:	**08/06/2015**

Question No. 16-27

10 CFR 50.36 requires that each operating license issued by the Commission contain technical specifications (TS) that set forth the limits, operating conditions, and other requirements imposed upon facility operation for the protection of public health and safety. 10 CFR 52.47(a)(11) provides that a design certification (DC) applicant is to propose TS prepared in accordance with 10 CFR 50.36 and 50.36a.

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.

On July 22, 1993, the NRC issued its Final Policy Statement (58 FR 39132) on Technical Specifications improvements, expressing the view that satisfying the guidance in the policy statement also satisfies Section 182a of the Atomic Energy Act and 10 CFR 50.36. In the final policy statement, the NRC stated its “intent that the wording and Bases of the improved STS be used in the Technical Specification related submittal to the extent practicable.” Encouraging and maintaining standardization of TS requirements, such as contained in the STS, is therefore the policy of the NRC. In the final policy statement, the NRC encouraged “all licensees who submit Technical Specification related submittals based on this Policy Statement to emphasize human factors principles.”

Format, content, and punctuation of the generic TS Section 1.1 definition of LEAKAGE do not conform to the STS Section 1.1 definition. In keeping with NRC policy to maintain standardization of TS requirements, the applicant is requested to change the proposed definition so it is identical to the STS definition.

Response

The definition of LEAKAGE will be changed so that it is identical to the STS definition in format, content and punctuation.

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

The TS Section 1.1 definition of LEAKAGE will be modified as indicated in the Attachment.

Impact on Technical/Topical/Environmental Reports

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

1.1 Definitions

LCO SELECTION CRITERIA (continued)

CRITERION 1

Installed instrument that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

CRITERION 2

A process variable, design feature or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

CRITERION 3

A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

CRITERION 4

A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

Add underline

1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and ~~transported to a collection system~~ or a sump or collecting tank

conducted to collection systems

,

2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of ~~LEAKAGE~~ detection systems or not to be pressure boundary LEAKAGE

leakage

, or

Secondary System (primary to secondary LEAKAGE),

1.1 Definitions

LEAKAGE (continued)

Coolant System

3. Reactor ~~coolant system~~ (RCS) LEAKAGE through a steam generator (SG) to the ~~secondary system.~~

LEAKAGE

Add underline

b. Unidentified LEAKAGE

that

primary to secondary

All ~~leakage~~ (except RCP seal water injection or leakoff) ~~which~~ is not identified LEAKAGE

, and

c. Pressure Boundary LEAKAGE

nonisolable

LEAKAGE (except ~~SG~~ LEAKAGE) through a ~~non-isolable~~ fault in an RCS component body, pipe wall, or vessel wall.

MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a)	MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a) shall be 0.1 % of containment air volume, per day at the calculated peak containment pressure (P_a).
MID-LOOP	MID-LOOP is defined as the plant condition with the fuel in the reactor vessel and the reactor coolant level below the top of the hot legs at their junction with the reactor vessel.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, reactor coolant cold leg temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in reactor vessel.
OPERABLE - OPERABILITY	A system, subsystem, division, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, train, component, or device to perform its specified function(s) are also capable of performing their related support function(s).

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Application Section:	**16.1.1 Use and Application – Definitions**
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Question No. 16-28

10 CFR 50.36 requires that each operating license issued by the Commission contain technical specifications (TS) that set forth the limits, operating conditions, and other requirements imposed upon facility operation for the protection of public health and safety. 10 CFR 52.47(a)(11) provides that a design certification (DC) applicant is to propose TS prepared in accordance with 10 CFR 50.36 and 50.36a.

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.

On July 22, 1993, the NRC issued its Final Policy Statement (58 FR 39132) on Technical Specifications improvements, expressing the view that satisfying the guidance in the policy statement also satisfies Section 182a of the Atomic Energy Act and 10 CFR 50.36. In the final policy statement, the NRC stated its “intent that the wording and Bases of the improved STS be used in the Technical Specification related submittal to the extent practicable.” Encouraging and maintaining standardization of TS requirements, such as contained in the STS, is therefore the policy of the NRC. In the final policy statement, the NRC encouraged “all licensees who submit Technical Specification related submittals based on this Policy Statement to emphasize human factors principles.”

The applicant proposes a definition in generic TS Section 1.1 for MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a). This defined term is not included in NUREG-1432, Rev. 4, and is not needed. L_a is defined in Specification 5.5.16.c, and is also fully described in the “Applicable Safety Analyses” section of the Bases for Specifications 3.6.1 and 3.6.2. In addition these Bases also fully describe “calculated peak containment pressure (P_a)” which is used in the definition of L_a. In keeping with NRC policy to maintain standardization of TS requirements, the

applicant is requested to remove the proposed defined term from generic TS Section 1.1 and from where ever else the term (in all caps) appears in the generic TS and Bases.

Response

The term “MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a)” will be deleted from the definitions listed in TS Section 1.1

Impact on DCD

Same as changes described in impact on Technical Specification section.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

TS Section 1.1 will be modified as indicated in the attached markup.

Impact on Technical/Topical/Environmental Reports

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

1.1 Definitions

LEAKAGE (continued)

3. Reactor coolant system (RCS) LEAKAGE through a steam generator (SG) to the secondary system.

b. Unidentified LEAKAGE

All leakage (except RCP seal water injection or leakoff) which is not identified LEAKAGE.

c. Pressure Boundary LEAKAGE

LEAKAGE (except SG LEAKAGE) through a non-isolable fault in an RCS component body, pipe wall, or vessel wall.

~~MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a)~~

~~MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a) shall be 0.1 % of containment air volume, per day at the calculated peak containment pressure (P_a).~~

MID-LOOP

MID-LOOP is defined as the plant condition with the fuel in the reactor vessel and the reactor coolant level below the top of the hot legs at their junction with the reactor vessel.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, reactor coolant cold leg temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in reactor vessel.

OPERABLE - OPERABILITY

A system, subsystem, division, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, train, component, or device to perform its specified function(s) are also capable of performing their related support function(s).

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Question No. 16-29

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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.

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In proposed generic TS Table 1.1-1 and in the definition of MODE, RCS cold leg temperature is used instead of RCS average temperature, which is used by the STS NUREGs and System 80+ generic TS. In keeping with NRC policy to maintain standardization of TS requirements, the applicant is requested to provide a technical justification for this difference.

Response

The APR1400 Technical Specifications use MODE definitions based on RCS cold leg temperature since RCS cold leg temperatures are utilized in the various safety analyses. Operator actions during shutdown modes typically use RCS cold leg temperature for maintaining the RCS within pressure and temperature (P/T) limits.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications

Impact on Technical/Topical/Environmental Reports

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