
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
Date of RAI Issue: 09/01/2015

Question No. 16-75

Justify the deviation from the STS in the Bases for Technical Specification (TS) 3.1.8 Part Strength Control Element Assembly Insertion Limits.

The final paragraph in the Applicable Safety Analysis section of the APR1400 Bases omits a statement that is contained in the STS. The STS includes a statement that reads “The part length CEAs are required due to the potential peaking factor violations that could occur if part length CEAs exceed insertion limits.” The statement further describes the need for part length CEAs (referred to as part strength CEAs in the APR1400 design).

The justification for this omission is required to ensure the completeness and accuracy of the TS Bases.

Response – (Rev. 1)

Based on [the context](#), the subsection 3.1.8 will be revised to [include](#) the statements [that](#) “The part strength CEAs are required due to the potential peaking factor violations that could occur if part strength CEAs exceed insertion limits.” [after impact of power distribution change statement](#).

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

Subsection B 3.1.8(Page B 3.1.8-3) of TS will be revised as shown in the following Attachment.

Impact on Technical/Topical/Environmental Reports

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

BASES

The part strength CEAs are required due to the potential peaking factor violations that could occur if part strength CEAs exceed insertion limits.

APPLICABLE SAFETY ANALYSES (continued)

Regulating CEA position, part strength CEA position, ASI, and T_q are process variables that characterize and control the three dimensional power distribution of the reactor core.

Fuel cladding damage does not occur when the core is operated outside these LCOs during normal operation. However, fuel cladding damage could result, should an accident occur with simultaneous violation of one or more of these LCOs. Changes in the power distribution can cause increased power peaking and corresponding increased local LHRs.

The part strength CEA insertion limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii). ~~The part strength CEAs are required due to the potential peaking factor violations that could occur if part strength CEAs exceed insertion limits.~~

LCO

The limits on part strength CEA insertion, as defined in the COLR, must be maintained because they serve the function of preserving power distribution.

APPLICABILITY

The part strength insertion limits shall be maintained with the reactor in MODE 1 > 20% RATED THERMAL POWER (RTP). These limits must be maintained since they preserve the assumed power distribution. Applicability in lower MODES is not required since the power distribution assumptions would not be exceeded in these MODES.

This LCO has been modified by a Note suspending the LCO requirement while exercising part strength CEAs. Exercising part strength CEAs could require moving them outside their insertion limits.

ACTIONS

A.1

If the part strength CEA groups are inserted between the long term (steady state) insertion limit and the transient limit for 7 or more effective full power days (EFPD) out of any 30 EFPD period, or for 14 EFPD or more out of any 365 EFPD period, flux patterns begin to develop that are outside the range assumed for long term fuel burnup. If allowed to continue beyond this limit, the peaking factors assumed as initial conditions in the accident analysis could be invalidated (Ref. 3).