



**ENERGY
NORTHWEST**

License Amendment Request for One-Time
7 Day Extension of Completion Time for
TS 3.5.1.A, 3.6.1.5.A, and 3.6.2.3.A

Energy Northwest

September 22, 2016

Presentation Outline

- ✦ Proposed Change
- ✦ Reason for Request
- ✦ Precedent
- ✦ RHR System Modes of Operation
- ✦ LAR Approach
- ✦ Technical Evaluation
- ✦ Conclusion

Proposed Change

- ✦ Revise the completion time specified in Columbia Generating Station (Columbia) Technical Specification (TS) 3.5.1.A, 3.6.1.5.A, and 3.6.2.3.A, by adding a footnote for restoring residual heat removal (RHR) Train A to each of the required actions to allow a one-time 7 day extension (14 day completion time).
- ✦ The proposed change also deletes a footnote associated with TS 3.5.1.A, 3.6.1.5.A, and 3.6.2.3.A which expired at 05:00 PST on February 9, 2015.

Proposed Footnote

“The Completion Time that one subsystem of RHR (RHR-A) can be inoperable as specified by Required Action A.1 may be extended beyond the 7 day completion time up to 7 days to support restoration of RHR-A following the modification activity governed by EC 14635. Upon successful restoration of RHR-A, this footnote is no longer applicable.”

Reason for Request

- ✦ This amendment request will support preventive maintenance to replace the RHR Train A pump and motor.
- ✦ Previous experience from replacing just the RHR Train B pump resulted in approximately 6 days out of the 7 day completion time (CT). It is expected that the work needed to replace the RHR Train A pump and motor may not be able to be completed in the current 7 day CT and would necessitate a plant shutdown.

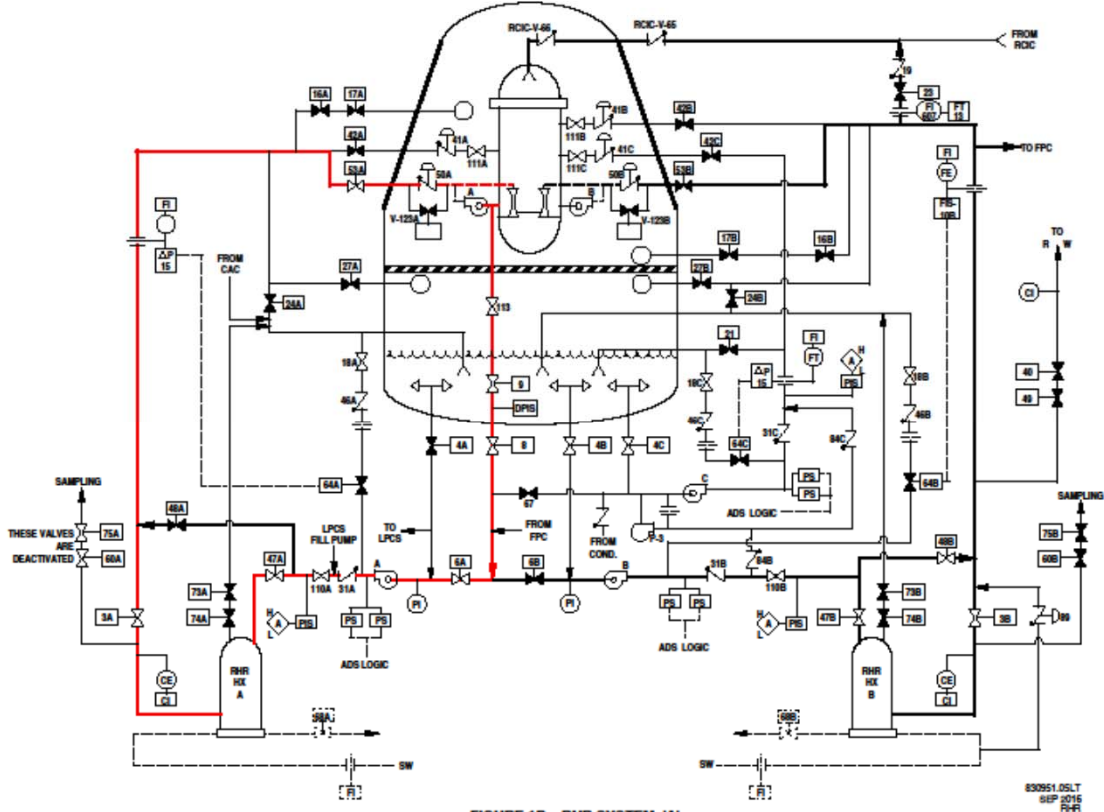
Precedent

- ✦ A one-time 7 day extension to Columbia TS actions 3.5.1.A, 3.6.1.5.A, and 3.6.2.3.A completion times (ML15031A002) was approved for use at Columbia under license amendment number 230 (ML15030A501) in February 2015.
 - When the station is on-line, more emergency core cooling system (ECCS) systems and/or subsystems are available to mitigate a design basis accident such as high pressure core spray (HPCS), low pressure core spray (LPCS), low pressure coolant injection mode (LPCI) of RHR and the automatic depressurization system (ADS).
 - A mode transition from operating to shutdown brings inherent risk
 - Only one RHR train would be available for shutdown cooling
 - Risk exposure is reduced by staying online

Residual Heat Removal (RHR) system

- ✦ The RHR system is comprised of three independent loops. Each loop contains its own motor-driven pump, piping, valves, instrumentation, and controls. In addition, Loops A and B have heat exchangers which are cooled by standby service water (SW).
- ✦ The RHR system has the following Modes of Operation
 - Low-pressure coolant injection (LPCI) mode
 - Suppression pool cooling (SPC) mode
 - Containment spray cooling (CSC) mode
 - Shutdown cooling mode

RHR Shutdown Cooling Mode of Operation



LAR Approach

- ✦ This LAR is a risk-informed submittal compatible with current Standard Review Plan (SRP) 5.4.7, 6.2.1.1.C, 6.3, and 16.1
 - SRP review areas and acceptance criteria will be addressed
 - Regulatory Guide (RG) 1.177 and RG 1.174 will be used to develop the LAR

SRP Considerations

✦ SRP 5.4.7

- There are no changes in the design of the RHR system associated with this LAR

✦ SRP 6.2.1.1.C

- There are no changes in the design of the Containment associated with this LAR

✦ SRP 6.3

- There are no changes to the ECCS systems associated with this LAR

✦ SRP 16.1

- The proposed change used the risk-informed approach of RG 1.177 and RG 1.174

Technical Evaluation

- Defense in Depth for Heat Removal
 - Redundant RHR Train B
 - Venting
- Comp Measures to Protect
 - RHR Trains B and C and support systems
 - Diverse ECCS systems HPCS and LPCS and support systems
 - Reactor Core Isolation Cooling
 - Startup Transformer
 - Division 2 & 3 Diesels and Service Water Systems

Technical Evaluation

Preliminary Risk Results

14-DAY ALLOWED OUTAGE TIME (AOT) PREVENTIVE MAINTENANCE

Average Maintenance Model without Protected Trains

Risk Metric	Acceptance Guideline	Risk Assessment Results
ICCDP	< 1.0E-6	8.32E-7
ICLERP	< 1.0E-7	1.23E-9

14-DAY AOT PREVENTIVE MAINTENANCE

Average Maintenance Model with Protected Trains & Compensatory Measures

Risk Metric	Acceptance Guideline	Risk Assessment Results
ICCDP	< 1.0E-6	3.95E-7
ICLERP	< 1.0E-7	6.90E-10

Technical Evaluation

Columbia PRA Technical Adequacy

- Columbia Internal Events (with internal flooding) PRA satisfies RG 1.200
 - NRC SAMA Review Documented in ML12096A334
 - PSA currently under additional review for Energy Northwest's LAR to adopt TSTF-425 ML15093A178
 - Responses to Requests for Additional Information (RAIs) related to Columbia's PSA model ML15260A570, ML15302A492, ML160984A387 and ML16174A432
- Fire and seismic PRA do not meet RG 1.200
 - PRAs have been updated to use the current internal events PRA
 - Insights into dominant risk contributors are applicable

Conclusion

- ✦ The proposed one time 7 day extension of completion time for TS 3.5.1.A, 3.6.1.5.A, and 3.6.2.3.A meets the five key RG 1.177 principles for risk-informed TS changes as follows:
 - meets the current regulations,
 - is consistent with the defense-in-depth philosophy,
 - maintains sufficient safety margins,
 - quantitative results for ICCDP and ICLERP application are less than the guidance thresholds and are consistent with the intent of the Commission's Safety Goal Policy Statement, and
 - impact will be monitored using performance measurement strategies associated with the Mitigating Systems Performance Index and Columbia's Maintenance Rule a(4) program.