Required Actions for Placing a Channel in Trip or Isolating a Containment Isolation Valve

Background

The justification for TSTF-505-A, Revision 1, states:

> In order to be within the review performed for the South Texas Project lead plant submittal, the Traveler will only modify Required Actions that specify that a system be restored to Operable status, that require an instrument channel to be placed in trip, or that require isolating an inoperable isolation valve.

Revision 0 of TSTF-505 proposed adding Risk Informed Completion Times to a wider range of Required Actions. In a Request for Additional Information (RAI) dated July 27, 2010, the NRC questioned the calculation of a RICT for placing a channel in trip or bypass. The TSTF agreed to remove changes applying a RICT to placing a channel in bypass, and justified applying a RICT for placing a channel in trip. The TSTF's May 6, 2011 response stated:

> The TSTF believes that the TSTF-505 option to calculate a RICT for placing channels in trip should be retained. The NRC has reviewed and approved risk-based Topical Reports that change the Completion Time for placing a channel in trip, such as WCAP-14333, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," approved July 15, 1998. A licensee could choose to model these actions and calculate a RICT for placing a channel in trip.

At a September 8, 2010, public meeting between the NRC and the TSTF to discuss the traveler, the NRC raised concerns with including changes that were not in the South Texas Project (STP) lead plant submittal scope of applying a RICT to Required Actions that either 1) require restoring the inoperable system to operable status, 2) require placing an instrument channel in trip, or 3) require isolating a containment isolation valve. The TSTF agreed and Revision 1 of TSTF-505 removed changes that did not fall into these categories.

The NRC's November 28, 2011 Notice for Comment for TSTF-505 specifically discussed applying a RICT to I&C channels in Section 3.4, "Evaluation of Plant-Specific Changes":

> Under certain conditions specified in NEI 06-09 it is acceptable to operate for short periods of time with all trains of equipment, which are required by a TS LCO, inoperable, provided that one or more trains are considered to be PRA functional. The number and identity of instrumentation and control (I&C) channels (or functions) required to be PRA functional is highly dependent on the specific plant and associated equipment design. Since NEI 06-09 did not address the required actions related to I&C, licensees choosing to adopt these specific changes may need to provide plant-specific implementation guidance for NRC staff review. If these changes were included in the LAR, insert NRC staff technical evaluation here. Be sure to modify Regulatory Evaluation Section and Conclusions Section appropriately

The TSTF commented that providing plant-specific I&C implementation guidance for NRC staff review is unnecessary as it already exists for all proposed changes to the Technical Specifications, including those related to I&C, and the new requirement implies that I&C requirements are somehow unique and should be treated differently than other systems. This is not consistent with NEI 06-09.

In the resolution of comments (ADAMS Accession No. ML120200484), the NRC staff agreed the section could be misleading. The NRC staff removed the statements from the model Safety Evaluation and requested that the following be added to Enclosure 1 of the Model Application:

> This enclosure should provide a description of PRA functionality for each associated specified safety function that corresponds to each proposed Required Action that is applicable when all trains of equipment are inoperable as discussed in Section 2.3.1.10 of NEI 06-09. For example, the number and identity of instrumentation and control channels (or functions) required to be PRA functional is highly dependent on the specific plant and associated equipment design.

The requested information was added to the model application in a letter from the TSTF to the NRC dated January 12, 2012.

Current Question

The NRC's draft letter dated May 5, 2017 stated:

> NEI 06-09-0-A describes the applicability of the RICT to restorative Required Actions. There are a number of Required Actions included within the reduced scope of TSTF-505 that are not explicitly restorative actions. Examples include [putting] an instrument channel in trip or Required Actions in response to an inoperable containment airlock. These Required Actions should be clearly identified and a technical basis for their inclusion in the RICT program should be documented.
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> [T]he staff's safety evaluation for Topical Report NEI 06-07 (sic), which provides the technical basis for TSTF-505, stated that a RICT was applicable to restorative actions; the TSTF applied the RICT to some actions that were not restorative. In some cases, functionality can be restored by taking actions that are not explicitly required by the current STS (e.g., placing a channel or train in trip or isolating an isolation valve).

Technical Justification

One of the early uses of risk-assessment was to evaluate extensions of Completion Times for placing an instrument channel in trip. WCAP-14333, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," was approved by the NRC on July 15, 1998, and was added to the ISTS by TSTF-418-A, Revision 2, "RPS and ESFAS Test Times and Completion Times." This demonstrates that a licensee could model this condition and evaluate a RICT for placing a channel in trip.

Many licensees have modeled one or more instrument channels to support Surveillance frequency evaluations under the Surveillance Frequency Control Program. That experience can be used to evaluate the risk impact of extending Completion Times for placing instrument channels in trip.

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The NRC has approved risk-informed methodologies for extending the Completion Time for isolating an inoperable containment isolation valve for Babcock & Wilcox, Westinghouse, Combustion Engineering, and boiling water reactor plants:

- BAW-2463-A, "Risk-Informed Justification for Containment Isolation Valve Allowed Outage Time Change," was approved by the NRC on August 29, 2007.

- WCAP-15791-P-A, Rev. 2, "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times," was approved by the NRC on November 1, 2007.

- Combustion Engineering Owners Group (CEOG) Joint Applications Report (JAR) CE-NPSD-1168, "Joint Applications Report for Containment Isolation Valve AOT Extension," was approved by the NRC on June 26, 2000.

- NEDC-33046-A, "Technical Justification to Support Risk-Informed Primary Containment Isolation Valve AOT Extensions for BWR Plants," was approved by the NRC on October 8, 2004.

This demonstrates that a licensee can model this condition and evaluate a RICT for isolating a containment isolation valve.

Regarding containment air locks, TSTF-505 proposes a RICT for Required Action C.3 which requires restoring an inoperable containment air lock to operable status. This is a restorative action within the scope of TSTF-505.

Conclusion

Based on the regulatory history, the NRC staff explicitly considered and accepted the application of a RICT to placing an instrument channel in trip or isolating a containment isolation valve. The regulatory history also supports a conclusion that methodologies acceptable to the NRC exist and have been approved for evaluating a change in Completion Time for placing a channel in trip or isolating an inoperable containment isolation valve. Therefore, inclusion in these Required Actions in the near-term TSTF-505 applications is acceptable.