Simulated ITAAC Closure and Verification Demonstration Project

AP1000 DRAP ITAAC Closure

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AP1000 DRAP ITAAC

- Design Commitment:
  - The D-RAP ensures that the design of SSCs within the scope of the reliability assurance program (Table 3.7-1) is consistent with the risk insights and key assumptions (e.g., SSC design, reliability, and availability)
- Inspections, Tests, Analysis:
  - An analysis will confirm that the design of RAP SSCs identified in Table 3.7-1 has been completed in accordance with applicable D-RAP activities.
- Acceptance Criteria:
  - An analysis report documents that safety-related SSCs identified in Table 3.7-1 have been designed in accordance with a 10 CFR 50 Appendix B quality program.
  - An analysis report documents that non-safety-related SSCs identified in Table 3.7-1 have been designed in accordance with a program that satisfies quality assurance requirements for SSCs important to investment protection.

Scope and Objective of D-RAP

- Scope: The Design Reliability Assurance Program (D-RAP) includes a design evaluation of the AP1000 and identifies the aspects of plant operation, maintenance, and performance monitoring pertinent to risk-significant SSCs. In addition to the PRA, deterministic tools, industry sources, and expert opinion are used to identify and prioritize those risk-significant SSCs.

- Objective: The objective of the D-RAP is to design reliability into the plant and to maintain the AP1000 reliability consistent with the certified design. The AP1000 D-RAP is implemented as an integral part of the AP1000 design process to provide confidence that reliability is designed into the plant and that the important reliability assumptions made as part of the AP1000 PRA will remain valid throughout plant life.

How the ITAAC will be met

- The ITAAC will be met by ensuring that the components that are safety-related components are designed in accordance with 10 CFR 50 Appendix B compliant quality program.
- The other components that are non-safety-related will be verified to be designed in accordance with the requirements as set forth in APP-GW-GAM-200.
- This will be accomplished by creating an engineering analysis report that proves that the design is complete.

Mechanical Components from Table 3.7-1

- The report will list the design specification for each system and the system P&IDs. This is being done to identify the risk important flow paths.
- The supporting equipment of relevance in the flowpath will then be identified in the report.
- A line list and equipment list will be created from the flowpath.
  - From the line list we will identify all the Isometrics and pipe hanger drawings.
  - From the equipment list we will identify the design specifications for the components. We will verify that the isometrics and pipe hanger drawings are issued as certified for construction (CFC) documents.
- The proof that the design is complete will come with a cross reference of CFC documents to show that the design is complete up to the point of construction.

Electrical Components from Table 3.7-1

- In the report for each system the electrical design will be evaluated from the equipment to the load center or the motor control center.
- For each component there is the specification for the electrical component and “pull” tags (CFC documentation for wiring and electrical connections). Pull tags will have the detail of what to pull and where to pull wiring and connections from a QA controlled program.
- The check of the pull tags will verify that the electrical function of the components has been designed to ensure that component will perform its intended function.

Conclusion

- It is assumed that to close this ITAAC the NRC will need to perform an inspection at possibly both the licensee facility and the vendor facility
- The inspection would be done to verify the analysis report and review some of the documents that have been verified.

Questions/Comments