3.6 DESIGN RELIABILITY ASSURANCE PROGRAM

Design Description

The GEH ESBWR Design Reliability Assurance Program (D-RAP) is used during detailed design and specific equipment selection phases to assure that the important ESBWR reliability assumptions of the probabilistic risk assessment (PRA) will be considered throughout the plant life. The PRA is used to evaluate plant responses to abnormal event initiations and the corresponding plant mitigation functions, to ensure potential plant damage scenarios pose a very low probability of risk to the public.

The objectives of the D-RAP are to provide reasonable assurance that risk significant SSCs are designed such that: (1) Assumptions from the risk analysis are utilized; (2) SSCs when challenged, function in accordance with the assumed reliability; (3) SSCs whose failure results in a reactor trip, function in accordance with the assumed reliability; and (4) Maintenance actions to achieve the assumed reliability are identified.

The scope of the ESBWR D-RAP includes risk-significant SSCs, both safety-related and nonsafety-related, that provide defense-in-depth or result in significant improvement in the PRA evaluations.

(1) The D-RAP provides reasonable assurance that the ESBWR plant is designed and constructed in a manner that is consistent with the key assumptions (including reliability and availability assumptions in the PRA, when applicable) and the risk insights for the risk-significant SSCs in the D-RAP.~~design of risk-significant SSCs is consistent with their risk analysis assumptions.~~

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.6-1 specifies the inspections, tests, analyses, and associated acceptance criteria for the D-RAP.

Table 3.6-1

ITAAC For Design Reliability Assurance Program

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The D-RAP provides reasonable assurance that the ESBWR plant is designed and constructed in a manner that is consistent with the key assumptions (including reliability and availability assumptions in the PRA, when applicable) and the risk insights for the risk-significant SSCs in the D-RAP.~~design of risk-significant SSCs is consistent with their risk analysis assumptions.~~	An inspection will be performed to verify that a report exists, which includes identification of site-specific risk-significant SSCs and the evaluation methodology, and a description of the aspects of reliability assurance activities that were accomplished prior to initial fuel load (i.e., procurement, fabrication, construction or preoperational testing phase) for the risk-significant SSCs, which provides reasonable assurance that the ESBWR plant is designed and constructed in a manner that is consistent with the key assumptions (including reliability and availability in the PRA, when applicable) and risk insights for the risk-significant SSCs.~~Inspection will be performed for the existence of a report which establishes the estimated reliability of as-built risk - significant SSCs.~~	A report exists that includes the following: Identification of site-specific risk-significant SSCs and the evaluation methodology, and a description of the aspects of reliability assurance activities that were accomplished prior to initial fuel load (i.e., procurement, fabrication, construction or preoperational testing phase) for the risk-significant SSCs, which provides reasonable assurance that the ESBWR plant is designed and constructed in a manner that is consistent with the key assumptions (including reliability and availability in the PRA, when applicable) and risk insights for the risk-significant SSCs.~~Reports and/or specifications exist that contain the list of risk-significant SSCs and conclude that the estimated reliability of each as-built risk-significant SSC is consistent with the assumed reliability (e.g. the reliability assumed in the ESBWR PRA) and that industry experience including operations, maintenance, and monitoring activities were assessed in estimating the reliability of these SSCs.~~