

19.10 Assumptions and Insights Related to Systems Outside of ABWR Design Certification

The systems for which credit was taken which are outside of the ABWR design certification are discussed below.

19.10.1 Not Used

19.10.2 Not Used

19.10.3 Power Cycle Heat Sink Assumptions

These assumptions are noted in References 19.10-1 and 19.10-2. They relate to the ability to recover the heat sink given that it has been lost.

19.10.4 Power Cycle Heat Sink Insights

The circulating water pumps are tripped in the event of a turbine building flood. This trip is expected to be sufficiently reliable to assure a negligibly small addition to the inadvertent plant trip frequency. Beyond this observation, no special attention to the power cycle heat sink is needed from a PRA perspective.

19.10.5 Offsite Power Assumptions

These assumptions are noted in Subsection 19D.3.1.2.4. Credit is also taken for offsite power recovery and diesel generator recovery, based on operating experience. Most of these assumptions are more reflective of the offsite power grid than equipment at the plant. However, Subsection 8.2.3 (4) is an interface requirement to analyze the site specific incoming power line configuration relative to the PRA assumption. Switchyard equipment inspections are included in the PRA input to the reliability assurance program (Appendix 19K).

19.10.6 Offsite Power Insights

The ABWR has three separate safety-grade divisions of ECCS including one division with an RCIC which does not require AC power. The ABWR also has a combustion turbine generator that can supply AC power to the ECC systems in the event of a loss of offsite power and failure of all three diesel generators. Finally, the AC-independent water addition system can be used to maintain core cooling. Therefore, the results of the internal event and seismic event evaluations are not particularly sensitive to assumptions about offsite power.

19.10.7 Fire Truck Assumption

The fire truck provides a backup water source for the AC-independent water addition system. As noted in Subsection 19D.5.11.3.5.4, an overall high reliability for fire water injection was taken for transients.

19.10.8 Fire Truck Insights

The AC-independent water addition system was added to the original ABWR design to provide a diverse and seismically qualified means of adding water to the reactor vessel and spraying the drywell. Because of its importance, it is included in the PRA input to the reliability assurance program (Appendix 19K), and its use should be included in the applicants training program. The later is included as an action item in Subsection 19.9.7.

19.10.9 References

- 19.10-1 “GESSAR II, 238 Nuclear Island, BWR/6 Standard Plant Probabilistic Risk Assessment”, General Electric Company, March 1982.
- 19.10-2 “ABWR Risk-significant Human Actions,” Toshiba UTLR-0015