

REQUEST FOR ADDITIONAL INFORMATION
US-APWR Topical Report: Non-LOCA Methodology, MUAP-07010-P(R1)

4/08/11
Mitsubishi Heavy Industries
Docket No. 52-021
SRSB Branch

The following Requests for Additional Information (RAIs) are follow-up RAIs to the Rod Ejection Accident Analysis RAIs transmitted to MHI on December 6, 2010, and responded to by MHI on January 14, 2011. This RAI will be referenced as the eleventh set of RAIs for this Topical Report.

REA-9: This RAI is a follow-up to REA-1. Provide the source of the nuclear data (cross sections, diffusion coefficients, et cetera) used by MHI to perform the SPERT-III E-core simulation of Test No. 60.

REA-10: This RAI is a follow-up to REA-2. MHI states in the response to REA-2 that the time delay used between the time at which the high neutron flux reactor trip setpoint is reached and when rod motion begins is consistent with the design values provided in MUAP-09021. There is no apparent consideration of uncertainties in these design values. Provide the value of the uncertainty in each component (T_1 , T_2 , T_3 , T_4 ,) of the lag time and the impact on the rod ejection analysis if the trip lag time was increased to consider all uncertainties.

REA-11: This RAI is a follow-up to REA-5. MHI states in part (a) that the enthalpy rise within the mesh calculated by TWINKLE-M is conservatively increased using the rod-wise peak to average ratio inside the mesh using the VIPRE-01M hot spot results. By what factor(s) is/are the enthalpy rise increased, and what is/are their bases?

REA-12: This is a new RAI. The nominal value for the power range high neutron flux setpoint is 109% (as documented in Chapter 7 of the US-APWR DCD). The value for this protective system setpoint used in the safety analysis is 118%. Demonstrate that this additional 9% conservatism is sufficient to bound all rod ejection accident scenarios. As an example, consider the case where one excore detector is out of service, another excore detector fails to operate, and the ejected rod is located at the periphery of the core between the two failed detectors. See Figure REA-12.1 for an illustration.

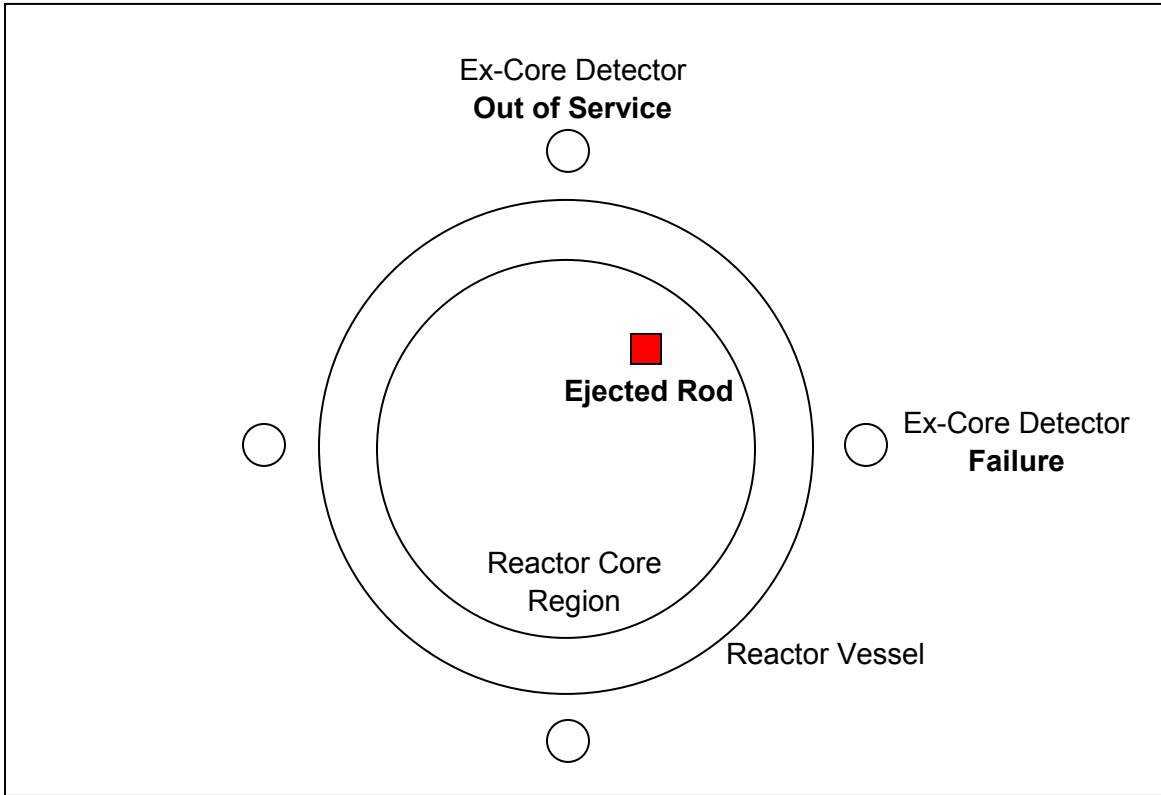


Figure REA-12.1: Potential Ex-Core Detector Failure Scenario