

REQUEST FOR ADDITIONAL INFORMATION 418-3238 REVISION 1

7/6/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 15.00.03 - Design Basis Accidents Radiological Consequence Analyses for Advanced
Light Water Reactors
Application Section: 15.0.3

QUESTIONS for Component Integrity, Performance, and Testing Branch 1 (AP1000/EPR Projects)
(CIB1)

15.00.03-30

Background

It is required to demonstrate that during accident sequences, pH in containment sumps and pools remains above 7. As mentioned in SRP 6.5.2, such calculation must include possible additions of acids due to radiolysis of cable insulation and jacketing. The generation of acids from chlorine-based jacketing materials such as Hypalon has been measured experimentally and documented. However, newer materials that are fluorine-based, such as Tefzel, have not been evaluated, so the acid production from them is not known.

RAI 15.00.03-28 (Reference 1) requested that the applicant provide information on the amount of cable jacketing and radiation dose rates in containment airspace during severe accidents. The applicant responded (Reference 2) with a table for dose rates, and an estimate of 6,000 kg of cable in containment. The key quantity is the amount of cable insulation, not including the actual conductor itself. Also, the type of material comprising the insulation is important, since acid generation depends on the material being irradiated. Hence the staff is requesting clarification of the amount and type of materials used for cable insulation.

Requested Information

Provide estimates for the amount and type of material used for cable insulation and jacketing in containment:

- a. If total cable amount is given, provide estimates of what fraction comprises the jacketing and insulation, as opposed to the wire.
- b. Provide details of the type of materials to be used for cable jacketing, such as Hypalon or Tefzel. If a material other than Hypalon (or closely related compound) is to be used, provide data (or literature citation) on the radiolytic acid generation rate of this material under accident conditions.

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References

1. "Request for Additional Information No. 176-1987 Revision 1, SRP Section: 15.00.03 – Design Basis Accidents Radiological Consequence Analysis for Advanced Light Water Reactors, Application Section: Section 15.0.3" dated February 3, 2009. (ADAMS Accession No. ML0903603770)
2. Letter from Yoshiki Ogata, MHI, to NRC dated March 3, 2009; Docket No. 52-021 MHI Ref: UAP-HF-09068; Subject: MHI's Response to US-APWR DCD RAI No. 176-1987, Rev. 1 (ADAMS Accession No. ML0906802290)