

NRR-PMDAPEm Resource

From: Green, Daniel [dgreen@tva.gov]
Sent: Thursday, July 21, 2011 3:16 PM
To: Lingam, Siva
Subject: RE: Sequoyah 1 & 2 - LAR Regarding AREVA Advanced W17 HTP Fuel (ME6538/6539)
Attachments: ANP-2986NP-Draft 003.pdf

Siva,

Per our discussion.

Dan Green.

From: Lingam, Siva [<mailto:Siva.Lingam@nrc.gov>]
Sent: Thursday, July 21, 2011 10:16 AM
To: Green, Daniel
Cc: Blumberg, Mark
Subject: Sequoyah 1 & 2 - LAR Regarding AREVA Advanced W17 HTP Fuel (ME6538/6539)

Regarding the subject LAR, ANP-2986 (P), Revision 2, Section 5.2.2.27.3 states the environmental consequences (assumed to be compliance with 10 CFR 50.67 or 10 CFR Part 100 because of text in Section 5.2.2.27) are provided in Section 5.3. We are unable to locate any assessment of the LOCA consequences (doses) in Section 5.3. Please provide us the page of this assessment as early as possible.

Thank you.

Siva P. Lingam
U.S. Nuclear Regulatory Commission
Project Manager (NRR/DORL/LPL2-2)
Sequoyah Nuclear Plant
Crystal River Nuclear plant (EPU)
Location: O8-D5; Mail Stop: O8-G9a
Telephone: 301-415-1564; Fax: 301-415-1222
E-mail address: siva.lingam@nrc.gov

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Section 5.2 indicates that the implementation of Adv. W17 HTP fuel assemblies will not adversely affect the predicted results of a non-LOCA accident analyzed in the Sequoyah licensing basis. That is, all acceptance criteria for non-LOCA Condition II, III, and IV events continue to be met and the inputs regarding failed fuel fraction to the dose consequence analyses remain unchanged.

Many of the inputs used in dose consequence analyses - fractional fuel failure, primary to secondary leakage, iodine partitioning - are prescribed by the relevant regulatory guidelines and are independent of fuel type.

Plant-specific inputs such as containment parameters - volume, surface area, atmospheric leakage rates - and engineered safeguard feature - containment spray, ice condensers, fans - capabilities in the reduction and/or removal of radionuclides are unaffected by the Adv. W17 HTP fuel.

Atmospheric dispersion factors used in environmental consequence analysis is estimated specifically for the plant, is based on local weather information, and is not affected by Adv. W17 HTP fuel.

All of these arguments, taken together, justify the implementation of Adv. W17 HTP Fuel at Sequoyah with respect to existing licensing basis environmental consequence analyses. Continued compliance with the acceptance criteria for the dose events - 10CFR100 offsite dose limits and 10CFR50 General Design Criteria 19 control room habitability requirements are assured.

5.2.2.27.1 Environmental Consequences of a Postulated Loss of A.C. Power to the Plant Auxiliaries (UFSAR 15.5.1)

The fuel cladding damage is not expected following a loss of A.C. power to the plant auxiliaries. The postulated accidents involving release of steam from the secondary system will not result in a release of radioactivity unless there is leakage from the RCS to the secondary system in the steam generator. The primary-to-secondary leak rate primary coolant activity, iodine activity in the secondary side liquid, and iodine partition factor are set by Technical Specification limits and are not affected by fuel design. Also, the steam release to cool the plant is not affected by the fuel design. Since all parameters affecting this event for environmental consequences are not adversely affected by the Adv. W17 HTP fuel, the results of the existing analysis are applicable to the Adv. W17 HTP fuel.

5.2.2.27.2 Environmental Consequences of a Postulated Waste Gas Decay Tank Rupture (UFSAR 15.5.2)

The analysis of this event is performed based on Regulatory Guide 1.24, 1972. The parameters used for the analysis are not affected by the fuel design. The tank activity assumed at the event initiation is conservatively determined based on the reactor coolant system volume. The RCS volume is unaffected by the Adv. W17 HTP fuel, and the assumed tank activity remains bounding. Therefore, an environmental consequences analysis of a postulated waste gas decay tank rupture is not required for the Adv. W17 HTP fuel.

5.2.2.27.3 Environmental Consequences of a Loss of Coolant Accident (UFSAR 15.5.3)

~~This event is evaluated in Section 5.3 of this document.~~

The analysis of this event is performed based on Regulatory Guide 1.4. The parameters used in the environmental consequence analysis are not affected by the Adv. W17 HTP fuel. The results of the existing analysis remain applicable.

5.2.2.27.4 Environmental Consequences of a Postulated Steam Line Break (UFSAR 15.5.4)

The fuel cladding damage is not expected following a steam line break. The postulated accidents involving release of steam from the secondary system will not result in a release of radioactivity unless there is leakage from the RCS to the secondary system in the steam generator. The primary-to-

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secondary leak rate primary coolant activity, iodine activity in the secondary side liquid, and iodine partition factor are set by Technical Specification limits and are not affected by fuel design. Also, the amount of steam released as a result of a steam line break is not affected by fuel design. The environmental consequences of a steam line break are not adversely affected by the Adv. W17 HTP fuel. The results of the existing analysis remain applicable.

5.2.2.27.5 Environmental Consequences of a Postulated Steam Generator Tube Rupture (UFSAR 15.5.5)

The fuel cladding damage is not expected following a steam generator tube rupture. The postulated accidents involving release of steam from the secondary system will not result in a release of radioactivity unless there is leakage from the RCS to the secondary system in the steam generator. A conservative analysis of the postulated steam generator tube rupture assumes the loss of offsite power and hence involves the release of steam from the secondary system. A conservative analysis of the potential offsite doses resulting from this accident assuming steam generator leakage prior to the postulated accident for a time sufficient to establish equilibrium specific activity levels in the secondary system. The primary-to-secondary leak rate primary coolant activity, iodine activity in the secondary side liquid, and iodine partition factor are set by Technical Specification limits and are not affected by fuel design. Also, the amount of steam released to cool the plant is not affected by fuel design. The environmental consequences of a steam generator tube rupture are not adversely affected by the Adv. W17 HTP fuel. The results of the existing analysis remain applicable.

5.2.2.27.6 Environmental Consequences of a Postulated Fuel Handling Accident (UFSAR 15.5.6)

All the parameters used in the environmental consequence analysis are not adversely affected by the Adv. W17 HTP fuel. The key parameters for this event are not impacted by the introduction of Adv. W17 HTP fuel. The fuel rod and fuel pellet materials and design are similar to the current Mark-BW fuel. The fuel burnup limits are also similar to the current Mark-BW fuel. The analyses of the consequences of the event in UFSAR Section 15.5.6 remain applicable. This event is evaluated each cycle as part of the reload licensing process to ensure that the analysis of record remains bounding.

5.2.2.27.7 Environmental Consequences of a Postulated Rod Ejection Accident (UFSAR 15.5.7)

The consequences of a postulated rod ejection accident are bounded by the results of the loss of coolant accident analysis evaluated in Section 5.3. 5.2.2.27.3

5.2.2.28 Event Disposition for Containment Response (UFSAR § 6.2.1.3.3, 6.2.1.3.4, 6.2.1.3.11)

5.2.2.28.1 Event Description

The Containment Structure encloses the primary and secondary plant and is the final barrier against the release of significant amounts of radioactive fission products in the event of an accident. The Containment Structure must be capable of withstanding the pressure and temperature conditions resulting from a postulated LOCA or MSLB accident. While other events, such as a feedwater line break also discharge mass and energy to Containment, the LOCA and MSLB have been confirmed to be the two most severe inside containment events with respect to maximizing the peak containment pressure and temperature.

5.2.2.28.2 Key Parameters

The key parameters for the containment response are those related to the LOCA and MSLB design basis events.