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Pressurized Water Reactor Control Rod Ejection and Boiling Water Reactor Control Rod Drop Accidents; Correction

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Comment of on FR Doc # 2019-20133

Submitter Information

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General Comment

Please see attached letter M190172, Kent Halac (GNF) to Jennifer Borges (NRC), "Comments on Draft Regulatory Guide DG-1327, Pressurized Water Reactor Control Rod Ejection and Boiling Water Reactor Control Rod Drop Accidents," October 14, 2019.

Attachments

M190172

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M190172
October 14, 2019

Via Electronic Submission
Docket: NRC-2016-0233
10 CFR Parts 50 and 52

Jennifer Borges
Office of Administration
Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Comments on Draft Regulatory Guide DG-1327, "Pressurized Water Reactor Control Rod Ejection and Boiling Water Reactor Control Rod Drop Accidents"

Global Nuclear Fuel (GNF) representatives appreciate the opportunity to comment on the subject draft regulatory guide. Specific comments are provided in Enclosure 1.

If you have any questions, please contact me at 910-819-5307.

Sincerely,

Kent Halac
Senior Engineer, Regulatory Affairs
Global Nuclear Fuel – Americas, LLC

Enclosure:

1. GNF Comments on Draft Regulatory Guide DG-1327, “Pressurized Water Reactor Control Rod Ejection and Boiling Water Reactor Control Rod Drop Accidents”

cc: P. Clifford (NRC)
N. Otto (NRC)
E. O’Donnell (NRC)
B.R. Moore (GNF)
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PLM Spec. 005N4903 R0

ENCLOSURE 1

M190172

GEH Comments on Draft Regulatory Guide DG-1327, “Pressurized Water Reactor Control Rod Ejection and Boiling Water Reactor Control Rod Drop Accidents”

Non-Proprietary Information

GNF Comments on DG-1327

Comment 1: Section 2.2.2.3

This section declares that analyses should consider "*the potential for wider operating conditions as the result of xenon oscillations or plant maneuvering*." The phrase "*xenon oscillations*" is applicable only to PWRs as BWRs do not experience spatial xenon oscillations. This phrase should be removed, or the DG should state that this is applicable only to PWRs.

Comment 2:Section 2.2.2.4

This section states "*Credit for additional control blade banking within the bank position withdrawal sequence (BPWS) may be used to reduce the control blade reactivity worth during the event. The licensee's reload analysis should fully reflect any additional control blade banking beyond the minimum required in the BPWS.*"

The cladding failure criteria in the DG are more limiting than those behind BPWS and some sequence variations are allowed beyond those specifically analyzed in the BPWS LTR. Therefore, the DG should be more generic on this topic.

"*Credit for additional control blade banking****, such as from*** *within the bank****ed*** *position withdrawal sequence (BPWS)* ***or another similar banking scheme*** *may be used to reduce the control blade reactivity worth during the event. The licensee's reload analysis should fully reflect* **the required bank positions that were assumed in the CRDA analysis** *any additional control blade banking beyond the minimum required in the BPWS.*"

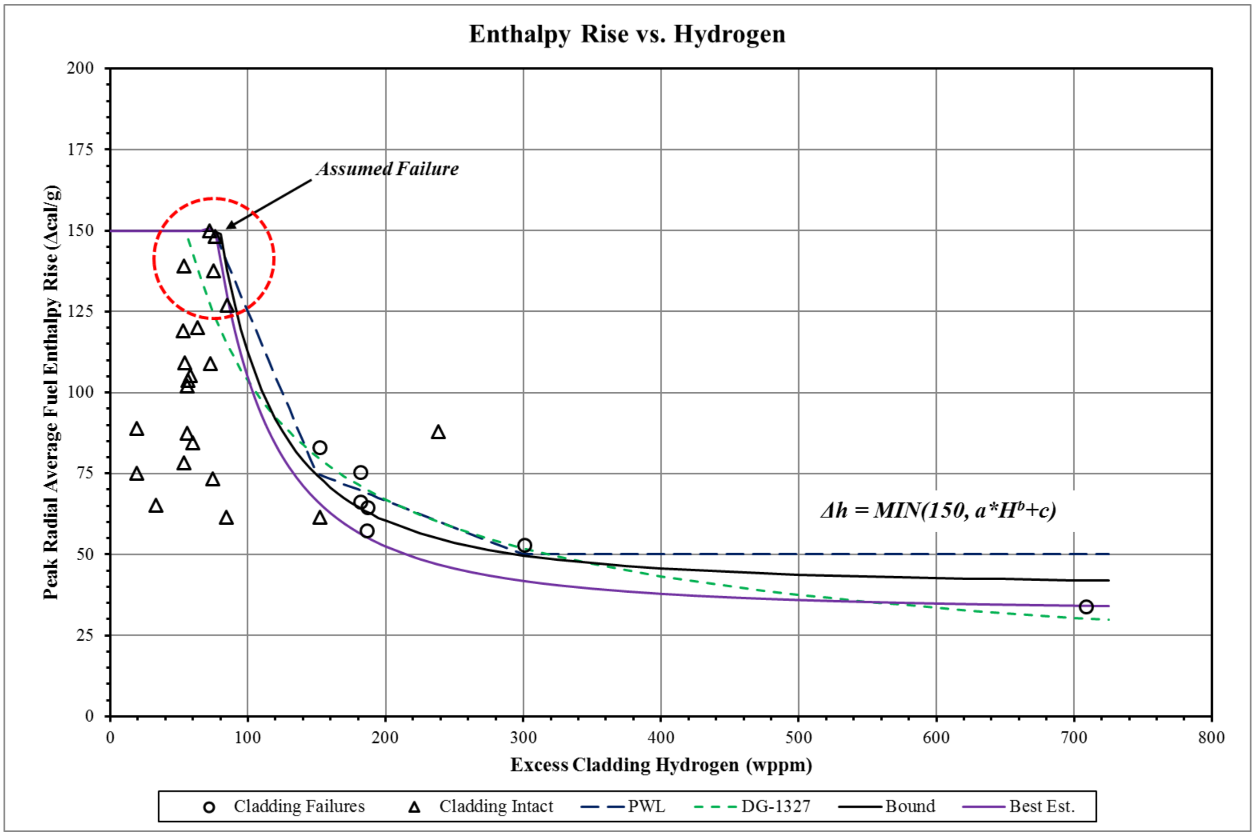
Comment 3: Section 3.2

Regarding Figure 4, the staff elected to replace the previous piecewise linear (PWL) relationship with a curve fit through the data. To facilitate the curve fitting process, it was necessary to treat the highest non-failure enthalpy/hydrogen content point (72 wppm, 150 cal/g) as a presumed failure point. This presumed failure point should serve as an anchor point for the curve fit. The current curve instead omits three other non-failure points.

The primary response from a CRDA is often from the fresh fuel (i.e. lower exposure) with highly exposed fuel reacting less energetically. Thus, the purposed failure threshold is less accurate in the area of interest particularly between 55-to-100 wppm. The figure below illustrates both a best-fit and a lower bound alternative using an exponential function.

$\Delta h = MIN(150, a * H^b + c)$

Where Δh is the enthalpy change and H is the excess hydrogen. In these examples, the best fit coefficients are: a = 3.31E+5, b = -1.83, and c = 32. While the lower bound coefficients are: a = 3.31E+5, b = -1.83, and c = 40.



Please redraw the curve to encompass more of the actual non-failure data points. While this comment directly pertains to Figure 4, the same concept applies to the other fitted curves.