Regulatory Docket File

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January 23, 1974

Mr. J. F. O'Leary, Director
Directorate of Licensing
Office of Regulation
U.S. Atomic Energy Commission
Washington, D.C. 20545

Subject: Dresden Station Unit 3 - Supplement H to Second Reload License Submittal, Proposed Change to Facility Operating License DPR-25, AEC Dkt 50-249

Dear Mr. O'Leary:

This supplement describes the limits resulting from analyses of potential densification in the Second Reload fuel, including the 8 x 8 fuel. These limits are based on analyses done in accordance with General Electric Company Report NEDO-20181, "Densification Effects on Loss-of-Coolant Accident Analysis." Since this analysis and the resulting limits are more current than those described in Supplement C to the Second Reload License Submittal, the proposed Technical Specification changes attached to Supplement C should be disregarded and your review of the reload should be completed based on this supplement.

Pursuant to Section 50.59 of 10 CFR 50 and Paragraph 3.B of Facility Operating License DPR-25, Commonwealth Edison Company submits the attached proposed change to Appendix A of DPR-25. The purpose of the proposed change is to incorporate 8 x 8 fuel densification limits in the Technical Specifications.

The basis for these limits is described in General Electric Company Report NEDO-20181. The proposed change is indicated on the attached revised Pages 81B, 81C, 85A and 85B.

Three signed originals and 37 copies of this proposed change are submitted for your use.

Very truly yours,

J. S. Abel
Nuclear Licensing Administrator
Boiling Water Reactors

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SUBSCRIBED and SWORN to before me this 23rd day of January, 1974.

Notary Public

3.5 LIMITING CONDITIONS FOR OPERATION	4.5 SURVEILLANCE REQUIREMENTS

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I. Average Planar LHGR

During steady state power operation, the average linear heat generation rate (LHGR) of all the rods in any fuel assembly, as a function of average planar exposure, at any axial location, shall not exceed the maximum average planar LHGR shown in Figure 3.5.1.

I. Average Planar LHGR

Daily during reactor power operation, the average planar LHGR shall be checked.

J. Local LHGR

During steady state power operation, the linear heat generation rate (LHGR) of any rod in any fuel assembly at any axial location shall not exceed the maximum allowable LHGR as calculated by the following equation:

$$\text{LHGR}_{max} \leq \text{LHGR}_d \left[1-\left(\frac{\Delta P}{P}\right)_{max}\left(\frac{L}{LT}\right)\right]$$

LHGR$_d$ = Design LHGR = 17.5 KW/ft, 7 x 7 fuel
= 13.4, 8 x 8 fuel

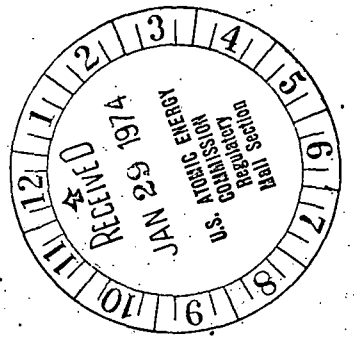
$\left(\frac{\Delta P}{P}\right)_{max}$ = Maximum power spiking penalty = 0.036 for 7 x 7 fuel and 0.026 for 8 x 8 fuel

LT = Total core length = 12 ft

L = Axial position above bottom of core

J. Local LHGR

Daily during reactor power operation, the local LHGR shall be checked.



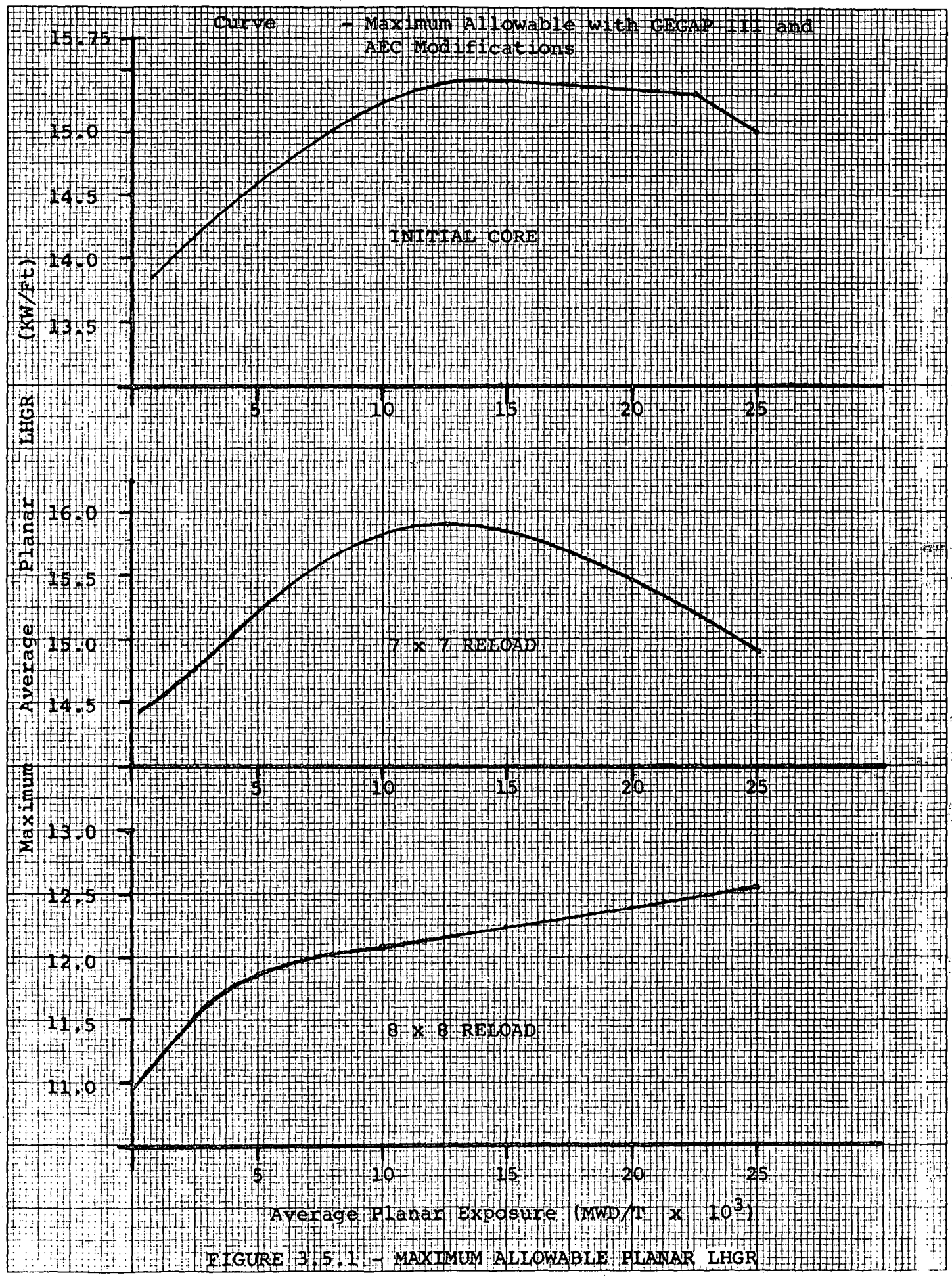


FIGURE 3.5.1 - MAXIMUM ALLOWABLE PLANAR LHGR

3.5.I Average Planar LHGR

This specification assures that the peak cladding temperature following the postulated design basis loss-of-coolant accident will not exceed the 2300°F limit specified in the Interim Acceptance Criteria (IAC) issued in June 1971 considering the postulated effects of fuel pellet densification.

The peak cladding temperature following a postulated loss-of-coolant accident is primarily a function of the average heat generation rate of all the rods of a fuel assembly at any axial location and is only dependent secondarily on the rod to rod power distribution within an assembly. Since expected local variations in power distribtuion within a fuel assembly affect the calculated peak clad temperature by less than ± 20°F relative to the peak temperature for a typical fuel design, the limit on the average linear heat generation rate is sufficient to assure that calculated temperatures are below the IAC limit.

The maximum average planar LHGR's shown in Figure 3.5.1 are based on calculations employing the models described in the General Electric Report NEDM-10735 as modified by General Electric Report NEDO-20181.

3.5.J Local LHGR

This specification assures that the linear heat generation rate in any rod is less than the design linear heat generation even if fuel pellet densification is postulated. The power spike penalty specified is based on the analysis presented in Section 3.2.1 of the GE Topical Report NEDM-10735 Supplement 6, and assumes a linearly increasing variation

in axial gaps between core bottom and top, and assures with a 95% confidence, that no more than one fuel rod exceeds the design linear heat generation rate due to power spiking. An irradiated growth factor of 0.25% was used as the basis for determining $\Delta P/P$ in accordance with General Electric Development and Planning Memorandum #45, "Length Growth of BWR Fuel Elements," R. A. Proebsthe, October 1, 1973 and U.S. Atomic Energy Commission report, "Supplement 1 to the Technical Report on Densification of General Electric Reactor Fuels," December 14, 1973.