

Edwin I. Hatch Nuclear Plant
Unit 1 Cycle 27 Core Operating Limits Report Version 2
Unit 2 Cycle 23 Core Operating Limits Report Version 2
Unit 2 Cycle 24 Core Operating Limits Report Version 1
Information Letter of NSF Lead Test Assemblies

Enclosure 10

LTA Information Letter Eight NSF Channel Assemblies



Global Nuclear Fuel

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SUBJECT: Information on NSF LTAs for Hatch 2

REFERENCES:

1. NEDE-24011-P-A-20 & NEDE-24011-P-A-20-US, *General Electric Standard Application for Reactor Fuel & Supplement for United States*, (GESTAR II, Licensing Topical Report).
2. Letter from T.A. Ippolito (NRC) to R.E. Engel (GE), *Lead Test Assembly Licensing*, September 23, 1981

Southern Nuclear Operating Company (SNC) is required to provide an information letter to the Nuclear Regulatory Commission (NRC) describing the Lead Test Assembly (LTA) program per Section 1.2.1.b. of GESTAR (REF. 1-2). Specifically, the agreed content includes a description of the LTAs, a statement of applicability of GESTAR, a description of the objectives of the LTA program, and an outline of the kinds of measurements that will be made on the LTAs (REF. 2). This letter is intended to communicate the content required in the notification for SNC's use in preparing the information letter.

Description of Lead Test Assemblies

Eight LTAs will be loaded into the Hatch Unit 2 plant at the beginning of Cycle 24. The Global Nuclear Fuel (GNF) supplied assemblies contain standard GNF2 components and fuel with the exception of the channel. The channels will be manufactured with a distortion-resistant material known as NSF. The term NSF reflects the presence of Niobium (Nb), Tin (Sn) and Iron (Fe) as the primary alloying metals combined with Zirconium. Similar Zirconium-Niobium alloys are commonly used in PWR and Russian plants, but not commercially used in BWRs.

The NSF alloy is resistant to channel bowing and has a much lower sensitivity to cold-work compared to Zircaloy. The mechanical properties of NSF are similar to the standard Zircaloys, and are considered adequate for reactor service. Corrosion performance of NSF is adequate based on visual and hot-cell examinations after six years of operation.

The NSF channels to be inserted in Hatch Unit 2 Cycle 24 will have a pre-oxidized surface condition similar to the pre-oxidized surface condition that was standard on Zircaloy-4 channels prior to 1990. Previously, eight of these pre-oxidized NSF channels began operation in spring 2014 in Hatch-1 Cycle 27 on GE14 design fuel.

Applicability of GESTAR

GNF has reviewed the properties of the NSF channels relative to the properties of Zircaloy-2 and Zircaloy-4 in the context of required functions, including safety, of fuel channels as described in GESTAR and the relevant LTRs. GNF has concluded that the use of NSF as a channel material meets the approved criteria of GESTAR and NRC-approved methods are applicable. Therefore, NSF channels may be used in an LTA.

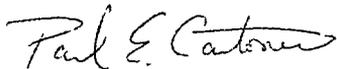
Objectives of LTA Program

The objectives of this program are to expand the experience base on Pre-Ox NSF channels and to confirm that the corrosion performance of the pre-oxidized surface condition is equivalent to the standard etched-surface condition. Inspection results of NSF channels currently in operation in other domestic BWRs are expected to be evaluated to confirm the expected lower irradiation growth characteristics of this material as well as validate adequate resistance to shadow corrosion-induced bow and bulge. Standard analyses will be performed to assure that the safety and licensing bases are maintained.

Outline of Measurements

Corrosion performance will be evaluated after discharge, if operating experience with other plants using pre-oxidized NSF channels indicates the need.

Please let me know if you have any questions.



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