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Attachment 1 contains proprietary information. Withhold from public disclosure under 10 CFR 2.390. When separated from Attachment 1, this cover letter is decontrolled.

RS-14-112

March 27, 2014

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Reports Associated with Results of Post-Irradiation Examination (PIE) of Global Nuclear Fuel (GNF) GE14i Isotope Test Assembly (ITA)

Reference: Letter from C. S. Goodwin (U. S. NRC) to C. G. Pardee (Exelon Generation Company, LLC), "Clinton Power Station, Unit No.1 -Issuance of Amendment Re: Request to Modify Facility Operating License in Support of the Use of Isotope Test Assemblies (TAC NO. ME1643)," dated January 15, 2010

The purpose of this letter is to report the results of portions of the PIE of a GNF GE14i ITA bundle performed by GNF for Facility Operating License No. NPF-62 for Clinton Power Station (CPS). The reporting of this information is specified by Condition 11 of the Conditions and Limitations section of the referenced letter.

This letter provides GNF Report NEDC-33845P, "Clinton EOC14 GE14i (ITA) Fuel Examination October 2013," Revision 0, dated January 2014, which GNF considers to contain proprietary information. The proprietary information is identified by bracketed text. GNF requests that the proprietary information in Attachment 1 be withheld from public disclosure, in accordance with the requirements of 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," paragraph (a)(4). A signed affidavit supporting this request is provided in Attachment 2 to this letter. Attachment 3 to this letter provides a non-proprietary version of the GNF Report (i.e., NEDO-33845).

Attachment 1 contains proprietary information. Withhold from public disclosure under 10 CFR 2.390. When separated from Attachment 1, this cover letter is decontrolled.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mr. Timothy A. Byam at (630) 657-2818.

Respectfully,

Patrick R. Simpson
Manager – Licensing

Attachments:

1. NEDC-33845P, "Clinton EOC14 GE14i (ITA) Fuel Examination October 2013," Revision 0, dated January 2014 (Proprietary)
2. Global Nuclear Fuel – Americas Affidavit
3. NEDO-33845, "Clinton EOC14 GE14i (ITA) Fuel Examination October 2013," Revision 0, dated January 2014 (Non-Proprietary)

Attachment 1 contains proprietary information. Withhold from public disclosure under 10 CFR 2.390. When separated from Attachment 1, this cover letter is decontrolled.

ATTACHMENT 2

Global Nuclear Fuel – Americas
Affidavit

Global Nuclear Fuel – Americas

AFFIDAVIT

I, Russell E. Stachowski, state as follows:

(1) I am Chief Consulting Engineer, Nuclear Physics, Global Nuclear Fuel – Americas, LLC (GNF-A), and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

(2) The information sought to be withheld is contained in GNF-A proprietary report, NEDC-33845P, *Clinton EOC14 GE14i (ITA) Fuel Examination October 2013*, Revision 0, January 2014. GNF-A proprietary information in NEDC-33845P, *Clinton EOC14 GE14i (ITA) Fuel Examination October 2013*, Revision 0, January 2014 is identified by a dotted underline inside double square brackets. [[This sentence is an example.{3}]] Figures and large equation objects containing GNF proprietary information are identified with double square brackets before and after the object. In all cases, the superscript notation {3} refers to Paragraph (3) of this affidavit, which provides the basis for the proprietary determination.

(3) In making this application for withholding of proprietary information of which it is the owner or licensee, GNF-A relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for "trade secrets" (Exemption 4). The material for which exemption from disclosure is here sought also qualify under the narrower definition of "trade secret", within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975 F2d 871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F2d 1280 (DC Cir. 1983).

(4) Some examples of categories of information which fit into the definition of proprietary information are:

a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GNF-A's competitors without license from GNF-A constitutes a competitive economic advantage over other companies;

b. Information which, if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;

c. Information which reveals aspects of past, present, or future GNF-A customer-funded development plans and programs, resulting in potential products to GNF-A;

d. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. above.

(5) To address 10 CFR 2.390 (b) (4), the information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GNF-A, and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GNF-A, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs (6) and (7) following.

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to GNF-A. Access to such documents within GNF-A is limited on a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GNF-A are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.

(8) The information identified in paragraph (2), above, is classified as proprietary because it contains details of GNF-A's fuel design and licensing methodology. The development of this methodology, along with the testing, development and approval, was achieved at a significant cost to GNF-A.

The development of the fuel design and licensing methodology along with the interpretation and application of the analytical results is derived from the extensive experience database that constitutes a major GNF-A asset.

(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GNF-A's competitive position and foreclose or reduce the availability of profit-making opportunities. The information is part of GNF-A's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GNF-A.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GNF-A's competitive advantage will be lost if its competitors are able to use the results of the GNF-A experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GNF-A would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GNF-A of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed on this 9th day of January 2014.

Russell E. Stachowski
Chief Consulting Engineer, Nuclear Physics
Global Nuclear Fuel – Americas, LLC

ATTACHMENT 3

NEDO-33845
"Clinton EOC14 GE14i (ITA) Fuel Examination October 2013"
Revision 0, dated January 2014

(Non-Proprietary)

Global Nuclear Fuel

A Joint Venture of GE,Toshiba, & Hitachi

Global Nuclear Fuel

NEDO-33845
Revision 0
January 2014

Non-Proprietary Information - Class I (Public)

Fuel Exam Services
Field Test Report

Clinton EOC14 GE14i (ITA) Fuel Examination

October 2013

FUEL EXAM SERVICES
FIELD TEST REPORT
(Reference: PRI 21-01)

TITLE: **Clinton EOC14 GE14i (ITA) Fuel Examination**

DATE: *October 2013, Revision 0*

Prepared By:		***12/4/2013***
	James Kersey / Site Leader	***Date***
Reviewed By:		***12/18/13***
	Rob Schneider / Fuel Performance	***Date***
Approved By:		***12/18/13***
	Larry Harding / PLL, Fuel Services	***Date***

INFORMATION NOTICE

This is a non-proprietary version of the document NEDC-33845P, Revision 0, which has the proprietary information removed. Portions of the document that have been removed are indicated by an open and closed bracket as shown here [[ ]].

IMPORTANT NOTICE REGARDING CONTENTS OF THIS REPORT PLEASE READ CAREFULLY

The only undertakings of Global Nuclear Fuel - Americas, LLC (GNF-A) with respect to information in this document are contained in contracts between GNF-A and its customers, and nothing contained in this document shall be construed as changing those contracts. The use of this information by anyone other than those participating entities and for any purposes other than those for which it is intended is not authorized; and with respect to any unauthorized use, GNF-A makes no representation or warranty, and assumes no liability as to the completeness, accuracy, or usefulness of the information contained in this document.

This document records technical information status at the date of publication and may not represent final disposition or conclusion related to the reported study. Changes in test data, analytical models, and evaluations subsequent to publication of this document may supersede the reported work and verification of applicability should be made before results are used in final design work.

1.0 Introduction

In accordance with an agreement between Exelon and GNF, an irradiated fuel examination of one GE14i isotope (Co-60) test assembly (ITA) was performed during the end of cycle 14 (EOC14) refueling outage in October 2013 by GNF.

Clinton is a GE BWR/6 at which the GNF examination team has performed channel exams, measurements, and replacements during the last few outages. This was the second irradiated fuel examination on a GE14i assembly; the first examination occurred two years ago after one cycle of operation was completed. The visual exam will be used to evaluate the performance of one of the eight GE14i ITA bundles operated in Clinton for Cycles 14 and 13 and to evaluate acceptability for continued irradiation.

2.0 Work Scope and Summary

The work scope performed is identified in Table 1. Visual characteristics observed for the bundle are listed in Table 2.

The examination work scope included a bundle visual examination on all four sides of the assembly in the unbrushed condition. Also included was a post-brush two-sided visual examination. The bundle side identification convention reflects the GNF designations of Sides 3 and 4 adjacent to the control blade (CB) with Sides 1 and 2 away from the CB. Sides 1 through 4 advance in a clockwise direction looking down from the top of the bundle.

The following sections will provide detailed visual findings that are noteworthy relative to what is normal (from Table 2). In all cases, the findings are not significantly atypical for irradiated fuel. That is, some types of debris (crud flakes or clumps or fiber-like) are not harmful, some spacer movement is acceptable (minor raising or cocking) and some variance in rod-to-rod spacing is acceptable (provided rods are not close to touching). No rod gap variation of 50% or more closure was observed.

3.0 GE14i Isotope (Co-60) Test Assembly – JYK693 Results/Observations

The assembly was installed in the fuel prep machine (FPM) and the channel fastener and channel were removed. A bundle peripheral visual examination of the full length of all four sides was completed. Moderate to heavy crud was seen on the fuel rods; however, the crud deposition was much lighter, as expected, on the Co-60 rods. Two sides of the bundle were then brushed (mid-span between spacers) to remove loose, fluffy crud and enable better characterization of the underlying cladding corrosion condition. The brushed sides were re-examined, and showed no unusual corrosion or oxide spalling, and virtually no crud spalling. No unusual differential rod lengths or rod bow were observed. The visual examinations confirmed that the fuel bundle/rods and Co-60 rods are performing as designed with no atypical results. The customer was informed that this bundle was fully acceptable for reinsertion during the outage.

The channel and channel fastener were installed and proper torque applied; the assembly was confirmed acceptable for continued irradiation/operational use. The assembly was returned to the spent fuel racks and was returned to the core for continued operation.

Photographs summarizing the visual examination are attached including (elevation information in all photos is in inches from the bottom (lower tie plate (LTP) top surface) of the bundle):

- Figure 1: JYK693 Bundle Observations (Unbrushed)
- Figure 2: JYK693 Bundle Observations (Brushed Two Sides)

Noteworthy observations for JYK693:

- [[

]]

4.0 Conclusion

The GE14i ITA assembly JYK693 is suitable for continued operation. Overall fuel corrosion and crud condition and mechanical performance is excellent.

5.0 References

5.1 GNF Test Plan and Procedures, "Co-60 Isotope Bundle (GE14i) Fuel Examination & Channel Exchange," Clinton EOC 14, Revision 0, October 2013.

5.2 J. Kersey, Site Exit Report, "Clinton EOC 14 C0-60 Isotope (GE14i) Fuel Exam & Channel Exchange Site Exit Report," October 16, 2013.

Table 1 – Proposed Examination Plan

Bundle	Reload	GWd/MTU at EOC 14	Fuel Design	Examination Work Scope	Comments
JYK693	12	[[ ]]	GE14i ITA	Bundle Visual (pre- and post-brushing)	Brush two sides and re-visual after brushing

Table 2 – Visual Characteristics Observed

Bundle Periphery*

- Upper tie plate and LTP/component condition
- Expansion spring compression
- Upper and lower end plug weld and heat affected zone appearance
- Peripheral fuel rod and spacer band oxide coverage (if not covered by crud)
- Bar code region corrosion condition where present
- Spacer band weld integrity
- Spacer location
- Presence of obvious foreign material (debris)
- Crud deposition characteristics
- Visible rod-to-rod spacing on all assemblies
- Partial length rod (PLR) upper spacer contact points
- Any atypical conditions
- If applicable, debris filter LTP visual exam – for trapped debris and crud buildup

* The side identification convention on the photographs reflects the GE designations of Sides 3 and 4 adjacent to the CB with Sides 1 and 2 away from the CB. Sides 1 through 4 advance in a clockwise direction.

Figure 1 - JYK693, GE14i, 40.30 GWd/MTU, Bundle Observations (Unbrushed)

[[ ]]

Side 1, 161", UEPs, [[ ]] @ far right

[[ ]]

Side 2, 85", Mid-tier in unbrushed condition ([[ ]] @ far left)

[[ ]]

Side 4, 18", 1st spacer ([[ ]] @ far left [[ ]] @ far right; Segment hex connection just below Spacer 1)

[[ ]]

Side 3, 100", [[ ]] @ far left, [[ ]] @ far right

[[ ]]

Side 3, 45", Mid-tier between 2nd and 3rd spacers, [[ ]] @ far left, [[ ]] @ far right

[[ ]]

Side 4, 6", Transition area ([[ ]] @ far left [[ ]] @ far right)

Figure 2 - JYK693, GE14i, 40.30 GWd/MTU, Bundle Observations (Brushed)

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Side 2, 99", Mid-tier between 5th and 6th spacers ([[ ]] @ far left)

[[

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Side 2, 44", 80-100" oxide on fuel rods ([[ ]] @ far left)

[[

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Side 2, 23", ([[ ]], on left)

[[

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Side 4, 100", ([[ ]])

[[

]]

Side 4, 45", Mid-tier between 2nd and 3rd spacers ([[ ]])

[[

]]

Side 4, 25" less corrosion on [[ ]] @ far left, [[ ]] @ far right)