MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. General Electric-Hitachi Global Laser Enrichment LLC	3. License Number: SNM-2019
2. 3901 Castle Hayne Road	4. Expiration Date: September 25, 2052
P.O. Box 780	5. Docket No. 70-7016
Wilmington, North Carolina 28402	

6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time
A. Uranium (natural and depleted) and daughter products	Physical: Solid, Liquid, and Gas Chemical: UF_6, UF_4, UO_2F_2, oxides and other compounds	140,000,000 kg (308,000,000 lbs)
B. Uranium enriched in isotope 235U up to 8 percent by weight and uranium daughter products	Physical: Solid, Liquid, and Gas Chemical: UF_6, UF_4, UO_2F_2, oxides and other compounds	2,600,000 kg (5,720,000 lbs)
C. Tc-99, transuranic isotopes and other contamination	Any	Amount that exists as contamination as a consequence of the historical feed of recycled uranium at other facilities

9. Authorized place of use: General Electric-Hitachi Global Laser Enrichment Commercial Facility, located 6 miles north of Wilmington, North Carolina on Highway 133, Castle Hayne Road, in New Hanover County, North Carolina.

10. The licensee shall conduct authorized activities at the General Electric-Hitachi Global Laser Enrichment Commercial Facility in accordance with the statements, representations, and conditions, or as revised in accordance with 10 CFR 40.35(f), 10 CFR 51.22, 10 CFR 70.32, 10 CFR 70.72, or 10 CFR 95.19 in:

a. "GE-Hitachi Global Laser Enrichment LLC Commercial Facility License Application," dated June 26, 2009; March 23, 2010; June 25, 2010; December 16, 2010; March 29, 2011; August 1, 2011; August 12, 2011; October 14, 2011; November 11, 2011; and August 20, 2012;
b. "Fundamental Nuclear Material Control Plan for the GE-Hitachi Global Laser Enrichment LLC Commercial Facility," dated June 26, 2009; March 24, 2010; and June 25, 2010;
c. "Radiological Contingency and Emergency Plan (RC&EP) for Global Nuclear Fuel – Americas, LLC and GE-Hitachi Global Laser Enrichment, LLC at Wilmington, NC," dated June 26, 2009; March 24, 2010; June 25, 2010; December 16, 2010; and January 17, 2011;
d. "Standard Practice Procedures Plan (SPPP) for the Protection of Classified Matter for the GE-Hitachi Global Laser Enrichment LLC Commercial Facility," SPPP-03; dated September 4, 2009; and March 24, 2010;
e. "Standard Practice Procedures Plan for the Protection of Classified Matter Global Laser Enrichment Wilmington, NC Facility," GLEP-0009-R; dated June 24, 2009; August 6, 2009; November 16, 2009; November 24, 2009; April 1, 2010; April 29, 2010; July 29, 2010; December 20, 2010; August 29, 2011; October 5, 2011; October 10, 2011; and November 4, 2011;
f. "Quality Assurance Program Description for the GE-Hitachi Global Laser Enrichment LLC Commercial Facility," dated June 26, 2009; March 23, 2010; January 6, 2011; February 8, 2011; April 8, 2011; August 12, 2011; and September 21, 2011;
g. "GEMER Monte Carlo Code Validation Report," dated September 4, 2009; and January 13, 2010;
h. "Physical Security Plan (PSP) for the GE-Hitachi Global Laser Enrichment LLC Commercial Facility," dated June 26, 2009; and March 24, 2010;
i. "Decommissioning Funding Plan for the GE-Hitachi Global Laser Enrichment LLC Commercial Facility," dated June 26, 2009; March 23, 2010; March 24, 2010; June 25, 2010; and December 16, 2010;
j. "Nuclear Material Transportation Security Plan (NMTSP) for the GE-Hitachi Global Laser Enrichment LLC Commercial Facility," June 26, 2009; and March 24, 2010;
k. "Human Factors Engineering Program Plan," March 24, 2010; and February 8, 2011;
l. "Program Cyber Security Plan for the MSF/OREF," dated June 20, 2011;
m. "Program Cyber Security Plan - GLE Engineering and Industrial Controls," dated December 6, 2011;
n. "Classified Distribution Information Network (CDIN) Plan for Global Laser Enrichment Facility Wilmington, North Carolina," dated December 1, 2011; as revised on August 2, 2012.
o. "Classified Distribution Information Network (CDIN) Plan for GE-Hitachi Global Laser Enrichment LLC Oak Ridge Engineering Facility (OREF) and Manufacturing Support Facility (MSF)," dated September 21, 2011; as revised on August 2, 2012.

11. Introduction of UF_6 into any module of the General Electric-Hitachi Global Laser Enrichment Commercial Facility shall not occur until the Commission completes a construction inspection in accordance with 10 CFR 40.41(g) and 70.32(k) and an operational readiness and management measures verification review to verify that management measures that ensure compliance with the performance requirements of 10 CFR 70.61 have been implemented and confirms that the facility has been constructed and will be operated safely and in accordance with the requirements of the license. General Electric-Hitachi Global Laser Enrichment, LLC, shall provide the Commission

with 60 days advance notice of its plan to introduce UF_6 in any module of the General Electric-Hitachi Global Laser Enrichment Commercial Facility.

12. Construction of each 1 million Separative Work Unit phase shall not commence before funding for that increment is available or committed. Prior to initiation of such phase, the licensee shall make available for NRC inspection, documentation of the budgeted costs, the source of funds available or committed, and changes to actual costs or funding of previous phases.

13. The licensee shall provide proof of full liability insurance as required by 10 CFR 140.13b, at least 30 days prior to the planned date for obtaining licensed material. If the licensee is proposing to provide less than $200 million of liability insurance coverage, the licensee shall provide, to the NRC for review and approval, an evaluation supporting liability insurance coverage in amounts less than $200 million at least 120 days prior to the planned date for obtaining licensed material.

14. The licensee shall provide a minimum 60-day notice to NRC before initial customer product withdrawal of licensed material exceeding 5 weight percent ^{235}U enrichment. This notice shall identify the necessary equipment and operational changes to support customer product shipments for these assays.

15. The Licensee shall release materials, equipment, and facilities for unrestricted use in accordance with "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material."

16. The licensee shall not make changes to the License Application that decrease the effectiveness of safety commitments, without prior NRC approval. For those changes, the licensee shall submit to the NRC, for review and approval, an application to amend the license. Such changes shall not be implemented until approval is granted.

    Upon documentation of completion of a change for a facility or process, the licensee may make changes in the facility or process as presented in the License Application, or conduct tests or activities not presented in the License Application, without prior NRC approval, subject to the following conditions:

    a. There is no degradation in the safety commitments in the License Application; and

    b. The change, test, or activity does not conflict with any condition specifically stated in the License.

    Records of such changes shall be maintained, including technical justification and management approval, in dedicated records to enable NRC inspection upon request at the facility. A report containing a description of each such change, and appropriate revised sections to the License Application, shall be submitted to the NRC within three months of implementing the change.

17. The Licensee is granted an exemption to the requirements in 10 CFR Part 20, Appendix B, related to the use of dose coefficients for determining derived air concentrations and annual limit on intake values, and shall use, in accordance with approved procedures, the derived air concentration and annual limit on intake values based on dose coefficients published in International Commission of Radiological Protection Publication No. 68, "Dose Coefficients for Intakes of Radionuclides by Workers," in lieu of the values in Appendix B of 10 CFR Part 20.

18. The Licensee is granted an exemption to the labeling requirements in 10 CFR 20.1904, and shall instead post areas within Radiological Controlled Areas in which radioactive materials are processed, used, or stored with a sign stating, "Every container in this area may contain radioactive material."

19. The Decommissioning Funding Plan shall be updated as follows:

    a. The Licensee shall provide to NRC for review an updated Decommissioning Funding Plan at least six months prior to the planned date for obtaining licensed material, and subsequently, after resolution of any NRC comments, final executed copies of the financial assurance instruments shall be provided to NRC at least 21 days prior to receipt of licensed material. The amount of the financial assurance instrument shall be updated to current year dollars and include any applicable change to the decommissioning cost estimate.

    b. In the first executed financial assurance instrument submitted prior to receipt of licensed material, the licensee shall provide full funding for decontamination and decommissioning of the full-size facility.

    c. In the first executed financial assurance instrument submitted prior to receipt of licensed material, the licensee shall provide funding for the disposition of depleted uranium tails in an amount needed to disposition the first year of depleted uranium tails generation. The cost estimate shall include an update to the DOE depleted uranium disposition cost estimate. The total amount funded for depleted uranium disposition shall be no less than the updated DOE cost estimate.

    d. Subsequent updated decommissioning funding estimates and revised funding instruments for facility decommissioning shall be provided for review, at a minimum, every three years. Any proposed reduction in the funding estimate based on operational changes shall be submitted six months prior to the change.

    e. Subsequent updated decommissioning cost estimates and revised funding instruments for depleted uranium disposition shall be provided for review annually on a forward-looking basis to reflect projections of depleted uranium byproduct generation. The cost estimate shall include an update to the DOE depleted uranium disposition cost estimate. The total amount funded for depleted uranium disposition shall be no less than the updated DOE cost estimate.

20. The Licensee is granted an exemption from the definitions of “basic component,” “commercial grade item,” “critical characteristics,” “dedication,” and “dedicating entity” in 10 CFR Part 21.3, as replaced by the following:

    Basic Component: A structure, system, or component (SSC), or part thereof, designated as an item relied on for safety (IROFS) identified as QL-1 or QL-2, that affects the IROFS function, that is directly procured by the licensee of a facility or activity subject to the regulations in 10 CFR 70 and in which a defect or failure to comply with any applicable regulation in 10 CFR 70, order, or license issued by the U.S. Nuclear Regulatory Commission could create a substantial safety hazard (i.e., exceed the performance requirements of 10 CFR 70.61). Basic Components include QL-1 and QL-2 identified IROFS-related design, analysis, inspection, testing, fabrication, replacement of parts, or consulting services that are associated with the component hardware, whether these services are performed by the component supplier or others.

    When applied to IROFS identified as QL-NFPA, a basic component is a SSC, or part thereof, that affects the safety function of the IROFS that is directly procured by the licensee or a facility or activity subject to the requirements of the National Fire Protection Association (NFPA) Code of Record, and in which a defect or failure to comply with requirements of the NFPA Code of Record could create a substantial safety hazard. Basic component includes QL-NFPA identified IROFS-related design, analysis, inspection, testing, fabrication, replacement of parts, or consulting services that are associated with the component hardware, whether these services are performed by the component supplier or others, to the extent required by the NFPA Code of Record.

Commercial-Grade Item: An SSC, or part thereof, that affects its QL-1 and/or QL-2 identified IROFS function, which is not designed and manufactured as a Basic Component. Commercial-grade items do not include items where the design and manufacturing processes require in-process inspections and verifications to ensure that defect or failures to comply are identified and corrected (i.e., one or more critical characteristics of the item cannot be verified).

When applied to items identified as QL-NFPA (being items in facilities and activities licensed pursuant to 10 CFR 70), commercial grade item means an item that is (1) not subject to design or specification requirements that are unique to facilities or activities; (2) used in applications other than those facilities and activities; and (3) to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacture[r]'s published product description.

Critical Characteristics: Those important to design, material, and performance characteristics of a commercial-grade item that, once verified, will provide reasonable assurance that the item will perform its intended QL-1 and/or QL-2 identified IROFS function.

When applied to items identified as QL-NFPA, critical characteristics are those important to design, material, and performance characteristics of a commercial grade item that will provide reasonable assurance that the item will perform its intended QL-NFPA identified IROFS function.

Dedication: An acceptance process undertaken to provide reasonable assurance that a commercial-grade item to be used as a Basic Component will perform its intended QL-1 and/or QL-2 IROFS function and, in this respect, is deemed equivalent to an item designed and manufactured under QL-1 or QL-2 requirements in accordance with the GLE QAPD. This assurance is achieved by identifying the critical characteristics of the item and verifying their acceptability by inspections, tests, or analyses performed by the purchaser or third-party dedicating entity after delivery, supplemented as necessary by one or more of the following: commercial grade surveys, product inspections or witness at holdpoints at the manufacturer's facility, and analysis of historical records for acceptable performance. In all cases, the dedication process must be conducted in accordance with the applicable provisions of the GLE QAPD. The process is considered complete when the item is designated for use as a basic component applicable to QL-1 and/or QL-2 IROFS.

When applied to items identified as QL-NFPA (being items in facilities and activities licensed pursuant to 10 CFR 70), the dedication process is applied to commercial-grade items to be used as basic components to provide reasonable assurance that they will perform their intended QL-NFPA identified IROFS function and are deemed equivalent to an item designed and manufactured under QL-NFPA requirements in accordance with the QAPD. This assurance is achieved by confirming that the commercial-grade item is manufactured to established, acceptable national codes or standards that include one or more independent product endorsement based on qualification testing or periodic testing of selected characteristics of the item except in cases where such listing/approval is not required by codes and standards. In all cases, the applicable provisions of the GLE QAPD will be used to conduct the dedication process. The process is considered complete when the commercial-grade item is designated as a basic component.

Dedicating Entity: The organization that performs the dedication process for QL-1 and QL-2 identified IROFS. Dedication may be performed by the manufacturer of the item, a third-party dedicating entity, or the licensee itself. The dedicating entity, pursuant to 10 CFR 21.21(c), is responsible for identifying and evaluating deviations, reporting defects and failure to comply for the dedicated item, and maintaining auditable records of the dedication process. In cases where the Licensee applies the commercial-grade item procurement strategy and performs the dedication process, the licensee would assume full responsibility as the dedicating entity.

When applied to items identified as QL-NFPA (being items in facilities and activities licensed pursuant to 10 CFR 70), the dedicating entity is the licensee. The licensee, pursuant to 10 CFR 21.21(c), is responsible for reporting defects and failure[s] to comply for the dedicated item, maintaining auditable records of the dedication process, and assumes full responsibility as the dedicating entity.

21. The Licensee is granted an exemption to the requirements in 10 CFR 70.24, which require the Licensee to maintain a criticality accident alarm system, for the UF_6 Cylinder Storage Pads, the Trailer Storage Area, and the UF_6 Cylinder Staging Area.

22. The licensee is granted an exemption to the requirements in 10 CFR 70.65(b)(4) to require that the ISA Summary contain information that demonstrates compliance with the criticality monitoring and alarm requirements of 10 CFR 70.24. At least 90 days prior to obtaining licensed material, the licensee shall submit to the NRC for approval Criticality Accident Alarm System design information to demonstrate compliance with 10 CFR 70.65(b)(4) for all areas for which NRC has not granted an exemption to 10 CFR 70.24, and in which special nuclear material is handled, used, stored, or transported (including outdoor transport routes), and include this information in the ISA Summary.

23. The Licensee is granted an exemption to the requirements in 10 CFR 74.33(c)(5) to require that a licensee establish, document, and maintain a materials control and accounting detection program, independent of production. To meet the requirements of 10 CFR 74.33(c)(5) for establishing a detection program for unauthorized enrichment activities, the Licensee shall submit for review and approval 90 days prior to receipt of licensed material, a description of its detection program for unauthorized enrichment activities to include a detailed analysis of conceptual and credible diversion scenarios for unauthorized production of enriched uranium, and related management measures that provide high assurance of detecting unauthorized production of enriched uranium. NRC approval of the detection program, as required under 10 CFR 74.33(c)(5), is required prior to the Licensee's receipt of licensed material."

24. The licensee shall provide a minimum 60-day notice to NRC prior to initial customer product withdrawal of licensed material exceeding 5 weight percent ^{235}U enrichment. This notice shall identify the necessary equipment and operational changes to support customer product shipment for these assays and shall provide the facility documents demonstrating compliance with all criticality safety regulatory requirements. The licensee may not implement the changes in enrichment until NRC approves the changes.

25. The licensee shall not make changes to the validation report that decrease the effectiveness of commitments in Section 5.4.1.3 or 5.4.1.4 of the license application, or that degrade the approved margin of subcriticality for safety, without prior NRC approval. Prior NRC approval is required for changes that meet one or more of the following criteria: (1) result in an increase in the upper subcritical limit, (2) expand the area of applicability, (3) necessitate extrapolation beyond the area of applicability, (4) employ a statistical method less conservative than that described in Section 5.4.1.3.2 of the license application (including less conservative levels of confidence), or (5) use new codes or calculational methods, or (6) use any other non-conservative change to the validation method or results.

26. No changes shall be made, without prior NRC approval, to Section 5.4 of the License Application that would result in modifying the current values for criticality-based analysis in a less conservative direction, with regard to either validation or criticality evaluation of nuclear processes.

27. Currently, there are no IROFS that have been specified as using software, firmware, microcode, programmable logic controllers, or any digital device, including hardware devices which implement data communication protocols (such as fieldbus devices and Local Area Network controllers), etc. Should the design of any IROFS be changed to include any of the preceding features, the licensee shall obtain Commission approval prior to implementing the

change(s). In addition, the licensee's design change(s) shall comply with accepted best practices in software and hardware engineering, including software quality assurance controls as discussed in the Quality Assurance Program Description throughout the development process and the applicable guidance of the following industry standards and regulatory guides:

a. American Society of Mechanical Engineers (ASME) NQA-1-1994 Edition, “Quality Assurance Requirements for Nuclear Facility Applications,” Part II, Subpart 2.7, “Quality Assurance Requirements of Computer Software for Nuclear Facility Applications,” as revised by the NQA-1a-1995 Addenda of ASME NQA-1-1994 Edition, Part 1, Supplement 11S-2, “Supplementary Requirements for Computer Program Testing;”

b. Electric Power Research Institute (EPRI) NP-5652, “Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Grade Applications,” June 1988;

c. EPRI Topical Report (TR) -102323, “Guidelines for Electromagnetic Interference Testing in Power Plants,” Revision 1, December 1996;

d. EPRI TR-106439, “Guideline on Evaluation and Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Applications,” October 1996;

e. Regulatory Guide 1.152, "Criteria for Digital Computers in Safety Systems in Nuclear Power Plants,” Revision 3, July 2011;

f. Regulatory Guide 1.168, Revision 1, “Verification, Validation, Reviews, and Audits for Digital Software Used in Safety Systems of Nuclear Power Plants,” October, 2004;

g. Regulatory Guide 1.169, “Configuration Management Plans for Digital Computer Software Used in Safety Systems of Nuclear Power Plants,” September 1997;

h. Regulatory Guide 1.170, “Software Test Documentation for Digital Computer Software Used in Safety Systems of Nuclear Power Plants,” September 1997;

i. Regulatory Guide 1.172, “Software Requirements Specifications for Digital Computer Software Used in Safety Systems of Nuclear Power Plants,” September 1997; and

j. Regulatory Guide 1.173, “Developing Software Life Cycle Processes for Digital Computer Software Used in Safety Systems for Nuclear Power Plants,” September 1997.”

28. Before engaging in any Licensee developmental activity not previously assessed by the NRC in the “Final Environmental Impact Statement for the Proposed GE-Hitachi Global Laser Enrichment LLC Facility in Wilmington, North Carolina,” NUREG-1938, that would physically disrupt or disturb inventoried cultural site that have been designated eligible for the National Register of Historic Places pursuant to 36 CFR 60.4, the Licensee shall, in consultation with the North Carolina State Historic Preservation Officer, identify mitigation measures intended to preserve the integrity of these sites. The Licensee shall inform the NRC of such mitigation measures prior to engaging in any work at the identified site(s).

Any work that results in the discovery of previously unknown cultural artifacts shall cease in accordance with GLE Common Procedure CP-24-201, “Unexpected Discoveries of Artifacts or Human Remains.” The artifacts shall be inventoried and evaluated, and no disturbance of the areas shall occur in accordance with CP-24-201.

All activities that affect cultural resources on the Licensee's site will be included in the Licensee's annual environmental monitoring report.

Enforcement of this license condition is subject to the scope of NRC's regulatory authority.

29. The licensee shall comply with the conditions contained within the licensee's May 25, 2012, 401 Water Quality Certification with Additional Conditions required by the North Carolina Department of Environment and Natural Resources, Division of Water Quality (see ADAMS Accession No. ML12187A650).

FOR THE NUCLEAR REGULATORY COMMISSION

Date: September 25, 2012

By: **/RA/**
John D. Kinneman, Director
Division of Fuel Cycle Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001