UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Paul S. Ryerson, Chairman
Dr. James F. Jackson
Dr. Michael O. Garcia

In the Matter of	)	Docket No. 70-7016-ML
GE-HITACHI GLOBAL LASER ENRICHMENT LLC	)	ASLB No. 10-901-03-ML-BD01
(GLE Commercial Facility)	)	July 27, 2012

GE-HITACHI GLOBAL LASER ENRICHMENT'S FOLLOW-UP RESPONSES TO BOARD INQUIRIES

During the July 12, 2012 afternoon session of the hearings in the above-captioned proceeding, GE-Hitachi Global Laser Enrichment, LLC (GLE) agreed to provide additional information in response to certain inquiries from the Atomic Safety and Licensing Board (Board) relating to Board Topic 6 on Environmental Monitoring. Provided in the Attachment to this submittal are those responses. GLE appreciates the opportunity to supplement the record of the proceeding with the attached information.

Respectfully submitted,

/ signed (electronically) by /
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COUNSEL FOR GLE

ATTACHMENT

A. Follow-Up Information on the Air Quality Component of the GLE Environmental Monitoring Program

During the July 12, 2012, afternoon session of the GLE hearings, testimony was presented on Board topic 6, Environmental Monitoring. Additional information is provided below on behalf of GLE in response to Board questions posed to Mr. Andrew D. Stahl (RTI International).

1. Judge Garcia posed a series of questions to Mr. Stahl regarding the suitability of the radiological monitoring locations shown on Figure 6-2 of GLE's pre-filed testimony.

   Additional Information and Clarification:

   1(a). GLE would like to reiterate that a primary component of the radiological monitoring program is continuous monitoring of the main GLE process building air emission control system exhaust gases at the elevated point of release into the atmosphere from the building's single vent stack (*i.e.*, the red-dot monitoring location shown on Figure 6-2). It is also important to emphasize that accident scenarios involving the release of radioactive materials from the main GLE process building were performed on a system-by-system basis. GLE used conservative assumptions for the gaseous release calculations. These included modeling the release as if the system was *open to the atmosphere* (that is, the building and exhaust system were not credited). Items Relied on For Safety (IROFS) were then applied to the system to prevent or mitigate the accident. These upstream IROFS (one set in process gas systems to reduce a release to the room to a slow diffusive release, and one set in the Monitored Central Exhaust System to detect an abnormal release in progress at the room boundary and elicit response actions) are credited to reduce the risk to the public. A "Sense and Flee" IROFS reduces the risk to the worker.

1(b). In addition to the monitoring performed at the main GLE process building vent stack described in paragraph 1(a) above, GLE also will perform radiological monitoring at the expected location of highest potential GLE impact at the property line (*i.e.*, the green-dot monitoring location shown on Figure 6-2). This monitoring location was identified using the XOQDOQ air dispersion model, which is an industry standard model developed for the NRC by Battelle Pacific Northwest Labs. This program is used by the NRC Staff for the meteorological evaluation of routine or anticipated, intermittent releases of radionuclides at commercial nuclear power stations.

1(c). Separate from the objective of the two radiological air emissions monitoring locations described above (*i.e.*, the main GLE process building vent stack and the ground-level location of highest potential GLE impact at the property line), the series of nine monitoring locations positioned around the GLE controlled access area (CAA) fenceline (*i.e.*, the purple- and blue-dot monitoring locations shown on Figure 6-2) will allow GLE to monitor for potential unanticipated radiological releases to the ambient air from ground-level operations at the Proposed GLE Facility as well as from the operations conducted within the main GLE process building.

2. Judge Garcia asked to be provided with air modeling documentation that supports the monitoring locations shown on Figure 6-2 of GLE's pre-filed testimony. Mr. Stahl stated that documentation of the latest modeling was submitted to the NRC Staff in response to a Request for Additional Information (RAI).

Additional Information and Clarification:

2(a). On November 24, 2009, GLE provided the NRC with "Submittal of Air Quality Responses from October 7, 2009, Request for Additional Information" (Accession No.

ML100210039). This RAI response presented a revision of the air modeling performed using AERMOD air dispersion modeling software. This modeling was performed to assess potential *non*-radiological air quality impacts resulting from Proposed GLE Facility construction and routine operations.

2(b). However, the purpose of the GLE CAA fenceline air monitoring network that was the subject of Judge Garcia's questioning is not to detect the air pollutants evaluated by the AERMOD model. Rather, the purpose of this fenceline network is to monitor for potential radioactive releases from the Proposed GLE Facility operations.

2(c). Radiological air modeling was performed in 2008 using NRC's XOQDOQ model. The modeling results are discussed in Section 4.6.2.2.2 of the GLE Environmental Report (ER), and the associated modeling documentation and detailed results are presented as Appendix S of the ER (see Accession No. ML090910546). The primary purpose of performing the XOQDOQ air dispersion modeling was to identify the location of highest potential impact.

2(d). Following from paragraph 2(c), the XOQDOQ radiological modeling was not performed specifically to identify locations for placement of the nine samplers positioned around the GLE CAA fenceline (*i.e.*, the purple- and blue-dot monitoring locations shown on Figure 6-2). However, the modeling results presented in GLE ER Appendix S nevertheless indicate that the nine CAA fenceline locations shown on Figure 6-2 should also detect radiological releases into the atmosphere from the main GLE process building vent stack. This is based on Table S-4 of Appendix S that shows decreasing unitized concentrations (Chi/Q) with distance from the GLE stack, with the closest modeled output being at radial distances of 0.25 miles from the emission source. Four of the nine

CAA fenceline monitors, as positioned on Figure 6-2, are approximately 0.25 miles from the shown location of the GLE stack. The other five CAA fenceline monitors are somewhat closer (approximately 0.12 to 0.18 miles). The actual positions of the GLE stack and CAA fenceline monitor positions will be adjusted, as necessary, considering the final GLE facility design. Radiological air dispersion modeling will be re-run as necessary to finalize the placement of the CAA fenceline monitors, as well as the placement of the monitor at the expected location of highest potential GLE impact at the property line.

3. Judge Garcia inquired whether the air modeling performed by GLE considered the presence of the planned taller segment of the main GLE building adjacent to the shorter segment upon which the GLE exhaust stack would be positioned. Judge Garcia granted Mr. Stahl's request to research the answer to this question prior to responding.

Additional Information and Clarification:

3(a). Judge Garcia's inquiry relates to the ability of some air dispersion models to include the effects on plume dispersion of aerodynamic building downwash, which can cause changes in air movement patterns around an elevated stack, due to the presence of large, tall building segments or nearby building structures.

3(b). The XOQDOQ model inputs that simulate plume dispersion effects due to aerodynamic building downwash were not used for the XOQDOQ radiological modeling (Appendix S of the GLE ER). The objective of the air modeling was not to evaluate conditions very close to the main GLE process building vent stack, but rather to identify the location of highest potential GLE impact to a potential member of the public. In general, including aerodynamic downwash in air dispersion models creates more plume dispersion together with moving the highest point of ground-level impact closer to an elevated stack (*i.e.*, a more dispersed plume first touches the ground sooner).

4. Judge Garcia asked to see where Global Nuclear Fuel-Americas (GNF-A) performs radiological soil monitoring for its Environmental Monitoring Program.

   Additional Information and Clarification:

   The GNF-A soil sampling locations are shown in the GNF-A Wilmington Environmental Report Supplement (March 30, 2007, Accession No. ML071000137). The locations are shown and described in that document on page 1 of 3 of Exhibit B-10.

Mr. Andrew D. Stahl (Senior Research Geologist, RTI International), Mr. Paul A. Peterson (Senior Research Environmental Engineer, RTI International), and Mr. Paul R. Andrews (Research Environmental Scientist, RTI International) hereby certify, under penalty of perjury, that the responses above are true and correct to the best of their knowledge, information and belief, support them as their own, and endorse their introduction in the record of this proceeding.

B. Follow-Up Information on the Groundwater Component of the GLE Environmental Monitoring Program

During the July 12, 2012, afternoon session of the GLE hearings, testimony was presented on Board topic 6, Environmental Monitoring. Additional information is provided below on behalf of GLE in response to the Board's questions and comments addressed by Mr. Joseph Alexander (RTI International). The Board specifically requested that additional information be provided on groundwater modeling that has been performed on the GE Wilmington, NC Site, in relationship to the groundwater monitoring planned at the Proposed GLE Facility. This response is organized in two sections:

1. A summary of the groundwater modeling efforts that have been performed to date at the Wilmington Site; and

2. An overview of how the groundwater model will be used, in conjunction with other information, before the groundwater monitoring well network design for the Proposed GLE Facility is finalized.

1.0 Summary of Groundwater Modeling Efforts Performed to Date

A numerical groundwater flow model originally developed for the Wilmington Site in 2001 was used in 2008 to predict the degree of groundwater elevation lowering associated with the Proposed Action. The results of the groundwater flow model, along with the documentation of the model development, are provided in Appendix P of the ER (Numerical Modeling of Groundwater Flow and Contaminant Transport in the Principal Aquifer at the Wilmington Site). The potential groundwater impacts from the operations phase of the Proposed Action are described in Section 4.4.1.2.2 of the ER. As indicated, additional groundwater use associated with the Proposed Action would be provided by the existing Site groundwater supply system. The additional groundwater pumping would lower the groundwater levels to a small extent within the Peedee (or Principal) Aquifer in the Site vicinity and the general groundwater flow patterns would remain largely unchanged.

The numerical groundwater model for the Site includes a contaminant transport component that simulates the migration and removal of existing groundwater impacts over time from the current remedial groundwater containment, recovery, and treatment system as described in Section 4.4.1.2.2 of the ER. This transport model was used in 2008 during the development of the ER to evaluate potential impacts from the additional water demand associated with the

Proposed Action on the in-progress Site groundwater remedial measures (*e.g.*, anticipated clean-up duration of existing impacts). Based on the results, no significant changes are predicted in the capture zone or in the clean-up duration of current groundwater remedial measures as a result of the increased water demand from the Proposed Action. As described in the ER, and further elaborated in GLE's response to the Board's FEIS question Number 19, the referenced existing groundwater contamination does not extend under the main GLE Study Area.

The groundwater flow model for the GE Wilmington facility was originally developed in 2001 to increase the understanding of groundwater flow and contaminant transport and to support the management of chlorinated solvent contamination in the Principal Aquifer underlying and north of GE's industrial manufacturing facilities (southeast of the main GLE Study Area). The Principal Aquifer is the source for plant process water, with withdrawals ranging from 350,000 to 750,000 gallons per day over the last decade. The model has helped GE develop and implement an appropriate pumping strategy to contain groundwater contaminants on the GE Wilmington property and to decrease the overall time for the plumes of chlorinated solvents to be removed from the Principal Aquifer.

The 2001 numerical groundwater model was upgraded and recalibrated by RTI International in 2011 in order to continue to evaluate and manage the existing containment system as well as to design enhancements (*i.e.*, new process/recovery wells, modified pumping rates) that will ensure continued effective containment under alternative future scenarios. Specifically, the facility water demand has decreased in recent years and is expected to decrease further due to water-saving initiatives; well-system enhancements designed with the upgraded model will help ensure effective containment under reduced pumping scenarios. The upgraded model also provides the basis for future evaluations such as the optimization of groundwater monitoring programs.

2.0 Intended Use of the Groundwater Model for Refinement of the Groundwater Monitoring Network

The 21-well groundwater monitoring network illustrated in Figure 6-12 of the prefiled testimony will be refined relative to horizontal and vertical placement once the final plans are developed for the Proposed GLE Facility. The 2011 updated and recalibrated groundwater flow model will be used to provide detailed characterization of lateral and vertical flow patterns within the GLE area, including flow directions and velocities. Particle tracking simulations in the groundwater model will be used to predict the direction and travel times from hypothetical source areas associated with the Proposed GLE Facility. This information will be used as necessary to locate the monitoring wells, so as to maximize the likelihood of detecting any unanticipated, accidental releases to groundwater. In addition to modeling results, the monitoring well screen intervals of the 7 well clusters will be based on subsurface geologic information gained from the 2010 geotechnical or environmental investigations in the vicinity of the Proposed GLE Facility as well as any subsequent investigations.

Mr. Joseph Alexander (Senior Geologist and Project Director, RTI International), Mr. Michael I. Lowry (Research Geologist, RTI International), and Mr. Andrew D. Stahl (Senior Research Geologist, RTI International) hereby certify, under penalty of perjury, that the responses above are true and correct to the best of their knowledge, information and belief, support them as their own, and endorse their introduction in the record of this proceeding.

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CERTIFICATE OF SERVICE

I hereby certify that, on this date, a copy of "GE-Hitachi Global Laser Enrichment's Follow-up Responses to Board Inquiries" was filed via the Electronic Information Exchange (EIE) in the above-captioned proceeding on the following recipients.

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