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October 31, 2023

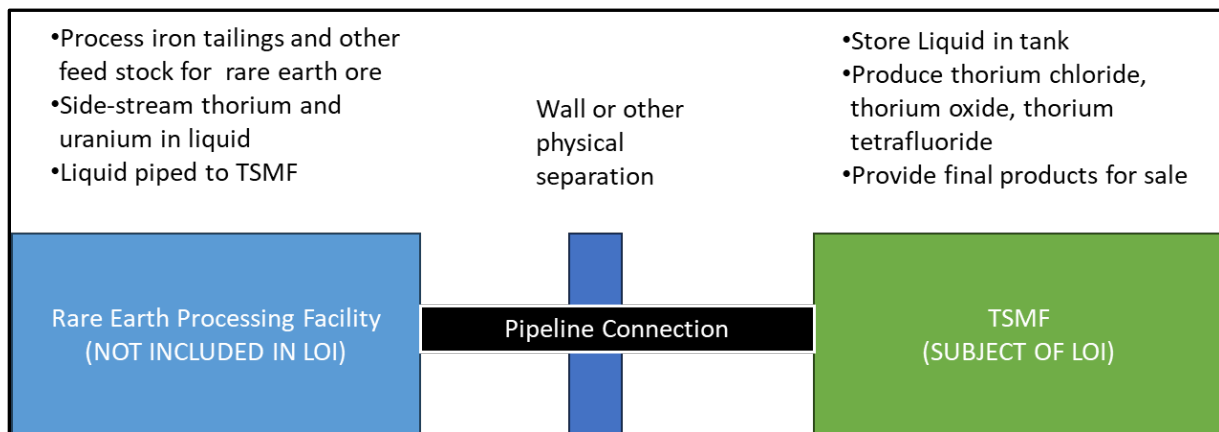
Ms. Jane E. Marshall
Director
Division of Decommissioning, Uranium Recovery, & Waste Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Letter of Intent to Submit a License Application for the Thorium Storage/Manufacturing Facility, Sullivan, Missouri

Dear Ms. Marshall:

Thorium Energy Alliance (TEA) is pleased to submit this Letter of Intent (LOI) to submit an application for a license to operate the Thorium Storage/Manufacturing Facility (TSMF) located in Sullivan, Missouri, to the U.S. Nuclear Regulatory Commission (NRC) staff. TEA will be the licensee for this project and the Thorium Storage/Manufacturing Facility will be the official name of the licensed location. As discussed with the NRC staff on October 20, 2023, TEA intends to license, construct, and operate a facility that stores thorium and manufactures products, such as: thorium chloride, thorium oxide, and thorium tetrachloride. Furthermore, the TSMF will be collocated with a rare earth production facility that will process iron mill tailings, and other rare earth/source material feed stocks (under a separate license and not part of this LOI). Figure 1 shows the licensing relationship.

Figure 1: Licensing Relationship



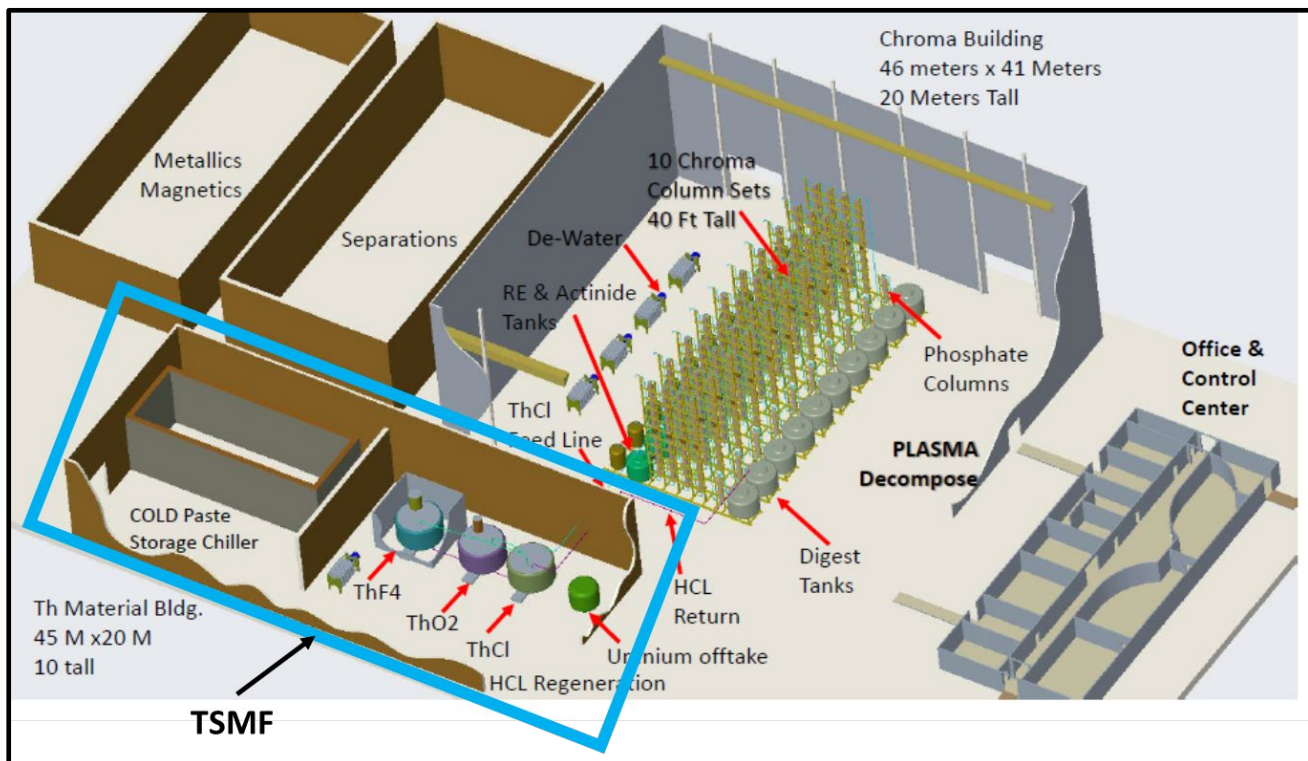
Storage and Manufacturing

As demonstrated in Figure 1, the TSMF will receive an aqueous solution of thorium and uranium from the rare earth facility via a pipeline. This solution will be stored in tanks located within the TSMF. Once received, the TSMF will manufacture three products using the following processes:

1. Thorium chloride. Acid will be added to the aqueous solution of thorium to precipitate thorium chloride. The purity of the thorium will be approximately 99%.
2. Thorium oxide. The aqueous thorium solution will be heated causing oxygen to replace chloride and precipitating thorium oxide.
3. Thorium tetrafluoride. In the presence of heat, hydrofluoric acid is added to the aqueous solution creating and precipitating thorium tetrafluoride.
4. Customers will pick up final thorium products at the TSMF; TEA will not be responsible for shipping final thorium products.

Figure 2 also shows a schematic of the facility and the collocated rare earth facility, which is not part of this LOI.

Figure 2: TSMF Schematic



End users of these products include industrial users that produce catalysts or use thorium for catalysts, thoriated welding rods, and other uses. Two companies that are creating thorium-operated power

reactors will also use the thorium from the TSMF. Prior to sale, thorium products will be stored in appropriately specified drums and labeled within the TSMF. An appropriate radiation and occupational safety program will be developed to preclude unnecessary radiation exposures and safety incidents.

Licensing Regime

TEA requests that the TSMF be licensed under 10 CFR Part 40, Source Materials Regulations. TEA expects to prepare an application using one or both of the following guidance documents:

- NUREG-1556, Volume 12, Revision 1, entitled: “Program-Specific Guidance about Possession Licenses for Manufacturing and Distribution.”
- NUREG-1520, Revision 2, entitled: “Standard Review Plan for Fuel Cycle Facilities License Applications.”

Based on the aforementioned guidance documents, TEA expects the table of contents for the application to be as follows:

1. INTRODUCTION
2. GENERAL INFORMATION
 - a. Facility and Process Overview
 - b. Institutional Information
 - c. Site Description
3. ORGANIZATION AND ADMINISTRATION
4. RADIATION PROTECTION
 - a. Commitment to Radiation-Protection Program Implementation
 - b. Commitment to an ALARA Program
 - c. Organization and Personnel Qualifications
 - d. Commitment to Written Procedures
 - e. Radiation Safety Training
 - f. Ventilation and Respiratory Protection Programs
 - g. Radiation Surveys and Monitoring Programs
 - h. Control of Radiological Risk Resulting from Accidents
 - i. Additional Program Commitments
5. CHEMICAL PROCESS SAFETY (including a Process Hazard Analysis)
6. FIRE SAFETY
7. EMERGENCY MANAGEMENT
8. ENVIRONMENTAL PROTECTION
 - a. Effluent and Environmental Controls and Monitoring
 - b. Environmental Protection Management Measures
9. DECOMMISSIONING
10. MANAGEMENT MEASURES
 - a. Configuration Management

- b. Maintenance
 - c. Training and Qualification
 - d. Procedures
 - e. Audits and Assessments
 - f. Incident Investigations
 - g. Records Management
 - h. Other Quality Assurance Elements
11. PHYSICAL PROTECTION

Furthermore, TEA understands that an environmental review by the NRC staff is not required because the proposed licensed activities are categorically excluded. The specific categorical exclusion is found in 10 CFR 51.22(c)(14)(xiii), which states the following:

Manufacturing or processing of source, byproduct, or special nuclear materials for distribution to other licensees, except processing of source material for extraction of rare earth and other metals.

Because TEA is not processing source material for the extraction of rare earths and other metals (that will occur under a different license), an environmental review is not required. Therefore, TEA is not required to prepare an environmental report.

Schedule

TEA expects to submit its application within five months of the NRC staff rendering its decision regarding the licensing regime.

Thank you for your consideration in this matter, and if you have any questions, please contact me.

Sincerely,



John Kutsch
Executive Director

cc: Bill von Till, NRC
Douglas Mandeville, NRC
Shana Helton, NRC
Stephen J. Cohen, ERG
Chuck Farr, ERG