Public Meeting
Low Enriched Uranium Plus (LEU+) Project

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Introductions

• **Urenco USA**
  • Steve Cowne, Chief Nuclear Officer
  • Rick Kohrt, LEU+ Technical Lead
  • Wyatt Padgett, Licensing and Performance Assessment Manager
  • Andy Thomas, LEU+ Project Manager
  • Jim Freels, LEU+ Licensing Consultant
Agenda

- Introductions
- Meeting Objectives
- Background information regarding LEU+ Project
- Urenco USA Technological Capabilities for LEU+
- Regulatory Interactions
- Proposed Schedule
- Questions
Meeting Objectives

- Communication with Stakeholders regarding LEU+ Project
- Demonstrate continuous focus on Nuclear Safety, Security and any Environmental Impact for Project
- Identify actions taken to date for Project implementation
- Provide general timeline for Project implementation
- Address non-proprietary Project-related questions
Background Information for LEU+ Project

• Nuclear industry is interested in pursuing fuels with higher enrichments for reactors (e.g., Accident Tolerant Fuel (ATF) and Extended Fuel Cycle fuel)
  • Higher enrichment fuels can:
    • have better performance in design basis and severe accident conditions
    • widen existing safety margin for nuclear plants
    • extend operating cycles between refueling outages
    • allow for longer-lived fuel with increased enrichment (less replacement fuel during outages)
    • reduce nuclear plant operational and maintenance costs
Background Information for LEU+ Project

- Urenco USA can contribute by providing needed fuel enrichment services
  - Nuclear industry higher enrichment fuels such as ATF fuel or Extended Fuel Cycle fuel may be less than 10% U235
  - Current maximum enrichment level is 5.5% U235
Background Information for LEU+ Project

• Potential Impacts of Increasing Enrichment
  • Security/Safeguards Arrangements
    • Increasing enrichment levels to less than 10% will not change NRC Category for special nuclear material at the Urenco USA facility.
    • Classification of fuel facility will remain at Category III
    • No additional physical site protection requirements needed
    • No changes to the Material Control and Accounting (MC&A) processes or programs are needed

• Environmental Impact Statement
  • Preliminary review of impacts to environment of increasing enrichment levels to less than 10% identify no significant environmental impacts
  • No amendment to the Environmental Report is anticipated based on scope of proposed changes
Background Information for LEU+ Project

• Regulatory Framework for ATF Licensing
  • NRC position\(^{(1)}\):
    • “10 CFR Part 70, “Domestic Licensing of Special Nuclear Materials” is performance based; therefore, the staff does not anticipate identification of gaps or deficiencies in these regulations for the licensing of enrichment facilities to produce increased enrichment material…”

  • The current rigorous regulatory framework prescribes the processes for facility changes. Urenco USA will follow the established requirements during the LEU+ Project

\(^{(1)}\) Project Plan to Prepare the U.S. Regulatory Commission for Efficient and Effective Licensing of Accident Tolerant Fuels, Version 1.1, ML19301B66, page A-2, October 2019, U.S. Nuclear Regulatory Commission
Urenco USA Technological Capabilities for LEU+

- Urenco USA Project Plan (non-proprietary)
  - Use the applicable sections from 10 CFR 70:
    - 70.34: Amendment of licenses
    - 70.61: Performance requirements
    - 70.62: Safety program and integrated safety analysis
    - 70.72: Facility changes and change process
  - Reviews and processes are governed by Urenco USA Quality Assurance Program Description (QAPD)
  - Other QAPD Quality Level categories can apply:
    - QL-1 (IROFS)
    - QL-1 Graded (G)
    - QL-1 Fire Protection (F)
    - QL-2 Administrative Controls (AC)
    - QL-3 Commercial Grade
Urenco USA Technological Capabilities for LEU+

- **Urenco USA Project Plan (non-proprietary)**
  - Urenco has produced a Technical Feasibility Report assessing ability and capability to implement LEU+ Project
    - Report concludes that the LEU+ Project is technically feasible and safe to implement pending review and potential completion of identified modifications and administrative measures to ensure plant safety
    - Potential changes needed may relate to:
      - Documentation
      - Operational procedures
      - Physical changes to design of equipment or systems
    - Broad Areas reviewed in Report
      - Nuclear criticality safety
      - Plant performance
      - Logistics
Urenco USA Technological Capabilities for LEU+

- Urenco USA Project Plan (non-proprietary)
  - Nuclear criticality safety
    - Possible preliminary outcomes from review:
      - Existing design and control measures remain acceptable for LEU+
      - Existing design can be made safe with new, or changes to, the existing control measures
      - Existing design requires physical changes to ensure safe operation for LEU+
  - Plant performance
    - Reviews of:
      - Assays Units at Urenco USA
      - Cascade performance
Urenco USA Technological Capabilities for LEU+

- Urenco USA Project Plan (non-proprietary)
  - Plant performance (continued)
    - Reviews of:
      - Flow rates
      - Cylinder take-off performance
      - Steady state, transient and mode transition conditions
  - Logistics
    - Reviews of potential work flow bottlenecks:
      - Product cylinder options
      - Contingency options to minimize/eliminate potential bottlenecks
Urenco USA Technological Capabilities for LEU+

- Urenco USA Project Plan (non-proprietary)
  - Technical Feasibility Report Conclusions
    - Urenco USA can safely implement the LEU+ Program after validating the preliminary findings in the Technical Report for:
      - Nuclear Criticality Safety
      - Plant performance
      - Plant logistics
    - Any validated proposed changes, physical or administrative, will follow the rigorous regulatory processes previously identified for their evaluation, approval and implementation
    - Configuration management, as well as other management measures, will be followed for necessary document updates
Regulatory Interactions

• 1 April 2021- Submittal of Notice of Intent to Submit License Amendment Requests for License Condition 6B and Enrichment Limit
• Anticipated Meetings with NRC
  • Pre-submittal meeting to discuss overall approach
  • Pre-submittal meetings for each License Amendment Request
• Submittal of License Amendment Request(s)
  • Current Licensing Management Plan
    • Redundant Items Relied on for Safety (IROFS), submitted 20 August 2020
    • Anticipated Programmatic Changes to Safety Analysis Report
    • Increasing Enrichment Level for production
    • Raising Enrichment Level for Support Systems
  • Reviews may result in additional LARs or information included in planned LARs
Regulatory Interactions

• Requests for Additional Information (RAIs)
  • Anticipate questions from NRC technical review to be sent as RAIs
  • Responses will be submitted through normal correspondence procedure
  • Further discussions with NRC regarding RAI process will be held

• NRC Operational Readiness Review (ORR)
  • It is anticipated that NRC will conduct an ORR prior to authorization to start production of higher enriched uranium.
  • The schedule for the ORR will most likely be dependent on NRC review of LAR for raising enrichment level.
  • Urenco USA staff will be ready and fully support ORR when scheduled
Proposed Schedule (non-proprietary)

• Formal schedules are being developed for Project Work Breakdown Structure (WBS)
  • LARs are targeted for 2021 through 2024 and will be based on final reviews and approvals of necessary changes referenced in Technical Feasibility Report
  • Pre-submittal meetings with NRC will be targeted approximately one month prior to submittal
  • Close coordination and communications will be maintained through NRC Project Manager
Questions?