



Public Meeting

Low Enriched Uranium Plus (LEU+) Project

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- Urenco USA
 - Steve Cowne, Chief Nuclear Officer
 - Rick Kohrt, LEU+ Technical Lead
 - Wyatt Padgett, Licensing and Performance Assessment Manager
 - Andy Thomas, LEU+ Project Manager
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- Introductions
- Meeting Objectives
- Background information regarding LEU+ Project
- Urenco USA Technological Capabilities for LEU+
- Regulatory Interactions
- Proposed Schedule
- Questions

- 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

- 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

- 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

- 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

- 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 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)
 - Implements 10 CFR 50 Appendix B, “Quality Assurance Criteria for Nuclear Power plants and Fuel Reprocessing Plants”
 - 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 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 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 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 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

- 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

- 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?