



UUSA 10 CFR 71 Subpart H Quality Assurance Program

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- Urenco USA (UUSA) attendees
 - Wyatt Padgett, P.E. – Head of Compliance
 - Kevin Slavings – Quality Assurance Manager
 - Olimpio Torres – Principal Quality Assurance Specialist
 - Chris Schwarz – Licensing and Performance Assessment Manager
 - Jim Freels – Licensing Consultant

- UUSA agenda
 - Background information
 - Overview of the UUSA 10 CFR 71 Subpart H Quality Assurance Program
 - UUSA proposed solution
 - Discussion of proposed solution

- Convention used at UUSA and in this presentation
 - 10 CFR 70 Quality Assurance Program Description (UUSA Licensing Basis Document) is known as the:
 - Quality Assurance Program Description (QAPD)
 - UUSA document title and number:
 - Quality Assurance Program Description, no document number
 - 10 CFR 71 Subpart H Quality Assurance Program is known as the:
 - Quality Assurance Manual (QAM)
 - UUSA document title and number:
 - 10 CFR 71 Subpart H Quality Assurance Manual for Packaging and Transportation of Radioactive Materials for Urenco USA, QA-1-2000-01

- UUSA plans to increase enrichment at facility to less than 10 weight percent (wt%) U-235
- UUSA is looking ahead for transportation requirements using DN30 transportation package
 - Previous studies by Oak Ridge National Laboratories support this approach^{1,2}
- UUSA intends to submit an exemption/deviations to regulatory framework regarding maximum enrichment that can be domestically transported (e.g., 10 CFR 71.55(g)(4), various DN30 Certificate of Compliance conditions)
- Special Permit Authorization will also be required from Department of Transportation

¹ R. Hall, B. J. Marshall, W. A. Wieselquist, *Assessment of Existing Transportation Packages for Use with HALEU*, ORNL/TM-2020-1725, Oak Ridge, TN, September 2020 (ML21040A518)

² E. Saylor, A. Lang, B.J Marshall, R. Hall, *Analysis of the 30B UF₆ Container for Use with Increased Enrichment*, ORNL/TM-2021/2043, Oak Ridge, TN, May 2021

- No physical modifications to transportation package, only change will be increased enrichment
- UUSA will evaluate transportation package to confirm safety and regulatory margins remain due to increased enrichment
- Areas of confirmatory evaluation include criticality safety and radiation shielding calculations
- To perform these confirmatory calculations
 - UUSA will have to revise its 10 CFR 70 Quality Assurance Program Description (QAPD)
 - UUSA will have to revise its 10 CFR 71 Subpart H Quality Assurance Manual (QAM)

UUSA 10 CFR 71 Subpart H QA Program Limitations



- NRC-approved 10 CFR 71 Subpart H QA Program
 - Docket number: 71-0940
 - Submittal date: 2 January 2009
 - NRC Approval Form for QA Program Approval: 12 January 2009 (ML090140082)
 - NRC Revised Approval Form for QA Program Approval: 28 August 2015 (ML15247A244)

- Conditions (in part)
 - Authorizations
 - Procurement, maintenance, repair and use
 - All other activities (i.e., design, fabrication, assembly, testing and modification) to be satisfied by obtaining certifications from package suppliers that activities were conducted per their NRC-approved QA Program

UUSA 10 CFR 71 Subpart H QA Program Limitations



- UUSA Quality Assurance Program Description (QAPD) implements the authorizations provided in the NRC Quality Assurance Program Approval (ML15247A244)
- The UUSA QAM also implements the UUSA Quality Assurance Program Description (QAPD) requirements for radioactive packaging and provides a description of the requirements applicable to 10 CFR 71, Subpart H work contained in the QAPD
- The QAM Section 3, Design Control, identifies UUSA as a USER ONLY of transportation packagings and that UUSA does not design or fabricate packagings

- UUSA maintains and uses 10 CFR Part 70 QAPD-compliant procedures for calculations
 - EG-3-4200-03, Preparation and Control of Engineering Calculations
 - Applies to engineering calculations prepared to support UUSA-approved design
 - Applies to design analyses and calculations which are covered by the Configuration Management policy in Safety Analysis Report
 - EG-3-3200-02, Nuclear Criticality Safety Analysis/Evaluation
 - Applies to activities involving or affecting uranium on-site
 - CR-3-1000-05, Preparation and Control of Non-Design Calculations
 - Establishes requirements for preparation, review, approval and revisions of calculations performed outside Design Engineering
 - Does not apply to calculations done per EG-3-4200-03 or EG-3-3200-02
 - Implements rigorous, formal framework for calculations

- Solution activities
 - UUSA defines calculations for increased enrichment as confirmatory calculations of existing design to support increase while maintaining margins of criticality safety and radiation limits
 - These are not design calculations per existing procedures
 - UUSA to use CR-3-1000-05, Preparation and Control of Non-Design Calculations, as QAPD-compliant procedure for non-design calculations for criticality and radiation shielding evaluations for domestic DN30 transportation package use with LEU+
 - UUSA will revise QAPD and QAM to
 - provide authority to perform and use confirmatory non-design transportation package content calculations and use the results of those calculations in accordance with the UUSA program including any applicable regulatory reviews and approvals
 - establish a “bridge” between the two controlling QA-related documents in Section 3, Design Control
 - make other conforming changes, as necessary

- Solution activities (con't)
 - Draft changes to QAPD have been screened and evaluated in accordance with 10 CFR 71.106 and the UUSA implementing procedure QA-3-2000-06, Quality Assurance Program Description Change(s)
 - Draft QAPD changes have been found to not require NRC approval prior to implementation
 - When changes are implemented in the QAPD, UUSA will submit the change to the NRC within the 30 day window for NRC notification