

Status and Challenges Associated with an RTR License Renewal Review for MURR

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Research Reactor (MURR)**

Facility Overview

- Location: Just off the main campus of the University of Missouri, Columbia, Missouri
- Design: Pressurized, reflected, open pool-type, light-water moderated and cooled
- Purpose: Multi-disciplinary research and education facility also providing a broad range of analytical and irradiation services
- Staffing: Approximately 200 full and part-time staff

Facility Overview

- 1966: October 13, achieved initial criticality (originally licensed to operate at 5 MW)
- 1974: Power uprate to 10 MW
- 1977: Started \geq 150 hours/week operation
- 2000: December 27, submitted request to the NRC to extend license expiration date
- 2006: August 31, submitted application to the NRC license for license renewal

Relicensing Timeline

Request for Additional Information (RAI):

- July 2009: Decommissioning and Financial
 - ✓ 4 questions - 60 days to respond
 - ✓ Responded September 14, 2009
- December 2009: Reference Material
 - ✓ 1 question - 20 days to respond
 - ✓ Responded January 15, 2010

Relicensing Timeline

- December 2009: Environmental Report
 - ✓ 4 questions - 30 days to respond
 - ✓ Responded January 29, 2010
- April 2010: National Historic Preservation Act
 - ✓ 6 questions - 30 days to respond
 - ✓ Responded May 18, 2010

Relicensing Timeline

- May 2010: Technical – Complex
 - ✓ 19 questions - 120 days to respond
 - ✓ Responses complete June 28, 2012
- June 2010: Technical
 - ✓ 167 questions - 45 days to respond
 - ✓ Responses complete June 28, 2012

Note: In September 2011, the questions were combined into one classification.

Relicensing Timeline

- February 2013: Financial
 - ✓ 4 questions - 30 days to respond
 - ✓ Responded March 12, 2013
- January 2014: Technical Specifications
 - ✓ Submitted revised Technical Specifications incorporating changes requested by the NRC

Current Status

- All previous RAIs have been responded to
- December 3, 2014 - RAIs regarding facility modifications since original submittal
- Revised Physical Security Plan submitted October 2013
 - ✓ Incorporated recent Part 73 changes and post 9/11 compensatory measures
 - ✓ Currently under NRC review

Comments/Observations

- Very large number of questions (201), of varying complexity – limited resources to answer in time allotted
- Due to delay in starting the NRC review process, many questions dealt with updating previously submitted information

Comments/Observations

- Many questions (55) specifically referenced the Technical Specifications – perhaps could have stressed greater compliance with ANSI/ANS-15.1
- Some questions required significant amount of computer code work – very resource intense
- We felt some questions had already been answered, needed to direct reviewer to location in the Safety Analysis Report

Comments/Observations

- Increase in the number of site visits to discuss questions could be beneficial
 - ✓ 3 visits occurred
- For common design features among the reactors, a lesson learned database would be beneficial to the research reactor community

Comments/Observations

- Discrepancy found in Safety Limit Analysis while answering a relicensing question – required significant resources to be redirected on submitting an Amendment
- Need more realistic timelines to answer the RAIs
- Some questions were re-asked because information provided in response to previous RAIs had become outdated

Comments/Observations

- Very fortunate to have great support from Argonne National Laboratory – LEU Fuel Conversion Project
- Good support from our Senior Project Manager – constant contact
- NRC staff very understanding of our requests for additional time to respond to questions

**Thank you for your attention,
Questions?**