

July 9, 2015

LICENSEE: University of Missouri Research Reactor Center

SUBJECT: SUMMARY OF APRIL 27, 2015, MEETING WITH UNIVERSITY
OF MISSOURI RESEARCH REACTOR CENTER

On April 27, 2015, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of University of Missouri Research Reactor Center (MURR), General Atomics (GA), and Nordion at NRC Headquarters, Three White Flint North, 11601 Landsdown Street, North Bethesda, Maryland. The purpose of this meeting was to discuss the licensing and technical aspects associated with a proposed molybdenum-99 (Mo-99) production project. A portion of this meeting was closed to the public to discuss proprietary information related to the specifics of design and operation of the proposed project. The meeting notice and agenda, dated April 15, 2015, are available in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML15105A365. A list of attendees at this meeting is provided in Enclosure 1 to this meeting summary.

The NRC staff opened the meeting by emphasizing the importance of communication between The University of Missouri Research Reactor (MURR) and the NRC to ensure the allocation and availability of resources to conduct efficient licensing reviews. The MURR Center began its presentation with a discussion of research and education activities at the MURR reactor, focusing on those endeavors related to isotope research and production. Key reactor design and operating parameters were also discussed, including recent updates to the MURR reactor. The introductory presentation concluded with a high-level discussion of the Mo-99 production project proposed by MURR, GA, and Nordion. This discussion covered target irradiation and processing, including an overview of the selective gas extraction process. The selective gas extraction process will remove Mo-99 from the target within the reactor for hot cell processing. Each target is expected to remain in the reflector region of the reactor for approximately one year. Further details on this discussion are included in the presentation slides in Enclosure 2 to this meeting summary.

During the closed portion of the meeting, GA went into proprietary-level detail related to the specific design and operation of its proposed Mo-99 production process. Topics at this meeting included the selective gas extraction process; top-level target and hot cell design; performance and safety requirements; and target cooling system. Discussions during this meeting focused on unique operating characteristics of the proposed target assembly and gas extraction process.

The concluding open session of the meeting focused on proposed licensing approaches for the target assembly and hot cells. The goals of this portion of the meeting were to identify the most appropriate licensing approach; understand NRC licensing requirements; emphasize communication among the NRC, MURR, GA, and Nordion; and understand the NRC's timelines for completing licensing reviews. Four licensing approaches were examined by MURR, including requests for: (1) a routine license amendment to MURR's current 104(c) utilization facility license, (2) a license amendment adding a production facility to the existing MURR

license, (3) relicensing MURR's utilization facility as a production facility, and (4) a stand-alone production facility license. Of these licensing pathways, MURR concluded that the first option was the most viable as the proposed project does not involve new construction, uses standard existing equipment at MURR, and does not involve an alteration or material alteration to the facility, as described in Title 10 of the *Code of Federal Regulations* (10 CFR) Sections 50.23, "Construction Permits," and 50.92, "Issuance of Amendment." While no licensing decisions were made at this meeting, the NRC staff informed MURR that special consideration would be given to the meanings of alteration and material alteration, as well as the 10 CFR Part 50 definitions of production and utilization facilities, when evaluating MURR's future licensing action request. Additional details on MURR's proposed licensing approach is available in the meeting slides provided as Enclosure 3 to this meeting summary.

Please direct any inquiries to Steve Lynch at 301-415-1524 or Steven.Lynch@nrc.gov.

/RA/

Steve Lynch, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-186

Enclosures:

1. List of Attendees
2. Overview Presentation
3. Licensing Presentation

cc: w/enclosures

Ralph A. Butler, Director
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Keith C. Shoolbred, Manager
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NRC-001 * via e-mail

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LIST OF ATTENDEES

APRIL 27, 2015, MEETING WITH

UNIVERSITY OF MISSOURI RESEARCH REACTOR CENTER

1:00 P.M – 4:30 P.M.

<u>Name</u>	<u>Organization</u>
Les Foyto	University of Missouri Research Reactor Center (MURR)
Kenneth Brooks	MURR
Ralph Butler	MURR
Chris Stone	MURR
John Saurwein	General Atomics (GA)
Robert Schleicher	GA
Hangbok Choi	GA
Chris Critch	Nordion
Ronald McGregor	Nordion
Tom Burnett	Nordion
Ira Goldman	Lantheus
Tom Poindexter	Morgan Lewis
Tom Ruth	Triumf
Ourania Kosti	National Academy of Sciences
Carolyn Haass	Northwest Medical Isotopes
Randy Howell	National Nuclear Security Administration (NNSA)
Crystal Trujillo	NNSA
Steve Lynch	U.S. Nuclear Regulatory Commission (NRC)
Michael Balazik	NRC
Kevin Folk	NRC
John Adams	NRC
Eben Allen	NRC
Mary Adams	NRC
Mitzi Young	NRC
Russell Chazell	NRC
Lisa London	NRC
Duane Hardesty	NRC
Alexander Adams, Jr.	NRC
Kara McCullough	NRC
Dan Barss	NRC
Rui Li	NRC
Mirela Gavrilas	NRC
Geoff Wertz	NRC
Ossy Font	NRC
Larry Harris	NRC
William Schuster	NRC
Patricia Pelke	NRC
Bob Lukes	NRC
Carl Weber	NRC
William Gloersen	NRC