UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 26, 2016

MEMORANDUM TO: Bill Von Till, Chief
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

FROM: Ronald A. Burrows, Project Manager /***RA/***
Uranium Recovery Licensing Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
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SUBJECT: PUBLIC MEETING SUMMARY

On September 7, 2016, a public meeting was held at the U.S. Nuclear Regulatory Commission (NRC) Headquarters, at the request of the uranium recovery industry, to discuss various health physics issues. A summary of the meeting is enclosed.

Enclosure: Meeting Summary

CONTACT: R. Burrows, NMSS/DUWP
(301) 415-6443

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NAME	RBurrows	SAchten	RBurrows
DATE	9/26/16	9/26/16	9/26/16

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MEETING SUMMARY

DATE: September 7, 2016

TIME: 1:30 p.m. to 5:30 p.m.

PLACE: Teleconference

PURPOSE: This meeting was held at the request of the uranium recovery industry to address various health physics issues, with the specific issues to be determined by the uranium recovery industry.

ATTENDEES: See Attached Attendees List.

Introduction and Meeting Purpose

This meeting was a follow-up to presentations by representatives of the uranium recovery industry at the June 6-7, 2016, Nuclear Mining Association Uranium Recovery Workshop in Denver, Colorado. During those technical information exchanges, it was agreed that a public meeting on specific health physics topics would be beneficial to the uranium recovery industry, in support of ongoing and planned licensing actions.

The meeting began with a prepared statement by Mr. Ronald Burrows, Senior Health Physicist with the NRC's Uranium Recovery Licensing Branch, regarding meeting participation and issuance of the meeting summary. Following this introduction, Mr. Thomas of Cameco stated that this conference call is intended to promote further dialogue between the NRC staff and the uranium recovery industry on current licensing issues.

Operational Health Physics (efficiency calculations, sources) and Regulatory Guide 8.30

Kari Toews of Cameco led technical discussions on the first topic. Cameco expressed concern with the level of rigor being applied to uranium recovery licensing actions for the past several years. Specifically, Cameco stated that the level of NRC staff effort on uranium recovery licensing actions is not consistent with the level of risk at uranium recovery facilities.

The topic for most of the meeting was calibration of portable radiological survey instruments used at uranium mills for personnel and equipment monitoring. Topics discussed included the use of source efficiencies and instrument efficiencies in determining overall counting efficiencies, and consideration of mixtures of radionuclides, when determining the measurement of minimum detectable activity using radiation detection equipment. The representative from the Colorado mining Association noted that he did not support the application of an obscure International Standard Organization's (ISO's) standard no. 7503-1 (ISO 7503-1), as applied to the calibration of radiological survey instruments in the uranium recovery industry, instead of MARSAME [Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (NUREG-1575, Supplement 1)] or NUREG-1507 (Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Field Conditions). The NRC staff clarified that both MARSAME and NUREG-1507 incorporate the methodology described in ISO 7503-1.

Participants questioned the applicability of a theoretical surface efficiency published in ISO 7503-1, instead of applying the manufacturer supplied instrument efficiency the way uranium mills have been doing for thirty or forty years. Mr. Burrows referenced the uranium recovery standard review plan, NUREG-1569, [Acceptance Criterion 5.7.6.3(8)] for current guidance on survey instrument calibration. Mr. David Brown, Senior Health Physicist of the NRC's Uranium Recovery Licensing Branch, offered additional perspective on the application of ISO guidance for the Strata license application.

Cameco discussed deriving a standard alpha-to-beta/gamma ratio for one of the uranium mill sites that was reviewed by the NRC staff. According to Cameco, the radionuclide relationship was not accepted by the NRC staff, and noted that RG 8.30 references only alpha measurements for regulatory compliance. Mr. Burrows provided insights as to the applicability of NRC Policy and Guidance Directive FC 83-23 [Termination of Byproduct, Source and Special Nuclear Material Licenses] in license conditions at all uranium mills. The NRC staff provided historical information on regulatory limits for alpha emitters of 1,000 dpm/100 cm^2 and an implied control for beta emitters, with the assumptions of equilibrium of alpha and beta emitters in the material. Also, the NRC staff suggested that the industry contact other uranium mills in Agreement States that have incorporated the ISO 7503-1 process (e.g., the Cotter Corporation's Canon City milling facility) and review NUREG-1757, Vol 2, Appendix O (Section O.3.3.5) for measuring alpha and beta emitting radionuclides in the presence of high background gamma levels at uranium mills. It was agreed that these documents should be reviewed by the uranium recovery industry, and further dialogue on the selection of default or site-specific values for surface efficiencies would be useful to the uranium recovery industry.

During this discussion, questions arose about the applicability of radiological limits for materials released from a restricted area versus a controlled area. Mr. Burrows stated that radiological surveys are required for personnel and equipment released from a restricted area to a controlled area or unrestricted area, which differs from U.S. Department of Energy regulatory requirements. As part of this discussion, Kari Toews offered that it could be useful to canvas the uranium mining industry to determine the amount and types of solid materials that are candidate for free release.

Meeting participants agreed that further dialogue on alpha and beta surveys for demonstrating compliance with NRC release limits is warranted. The NRC staff provided additional guidance on FC 83-23 for alpha surveys that decay products, which will be shared with meeting participants.

With regard to compliance with 10 CFR 20.1204(g) (i.e. mixtures of radionuclides), Cameco requested additional information about the Annual Limit on Intake and Derived Air Concentration values listed in Appendix B to10 CFR Part 20. Mr. Burrows referenced previous information discussed between Cameco and NRC staff regarding uranium and daughters. Specifically, the preamble to Appendix B to10 CFR Part 20 clarifies that intakes that include both the parent daughter radionuclides should be treated by the general method appropriate for mixtures.

Radon Guidance

Meeting participants discussed differences in information contained in RG 3.59 and NUREG-1569 Appendix D for the calculations of radon source terms from operating mills, and its proper application to demonstrate compliance with regulatory requirements. Meeting participants requested additional clarification on the use of measurements of radon in air sampled from plant stacks using Lucas cells versus environmental measurements using track etch detectors at site boundaries. Ms. Toews asked about compliance using calculations and field measurements, and whether current practice will change in the near future. Mr. Brown stated most licensees are using air sample results from environmental monitoring stations to demonstrate compliance with public dose limits in 10 CFR Part 20 and that stack monitoring is meant to demonstrate compliance with a separate requirement in 10 CFR 40.65 to specify quantities of each principal radionuclides released to unrestricted areas.

Regulatory Consistency

Some industry representatives noted that technical expectations for license applications may have changed during recent years, and that it would useful if the “regulatory bar” was clearer for applicants. Kari Toews asked for increased regulatory consistency to move the uranium mill industry forward in a beneficial manner, and observed that individual Safety Evaluation Reports contain interpretations of regulatory guidance for site-specific situations that support license conditions. She considered a generic communication method, such as a Regulatory Issues Summary (RIS), an improvement in providing guidance to the uranium recovery industry. Currently, licensees review Requests for Additional Information (RAIs) from other applications to see what their site-specific applications should address. The NRC staff indicated that development of guidance could be time consuming and costly, but offered that a coordinated request would be helpful, especially if managed by an organization representing the uranium recovery industry. An example provided by the NRC staff was a draft Branch Technical Position on concentration averaging of low-level radioactive waste, which was reviewed by industry for implementation.

At the conclusion of the meeting, Mr. Burrows asked all stakeholders for additional comments. Mrs. Fields asked for the development of a complete list of NUREG report and other background documents that are used for uranium recovery licensing. Kari Toews stated that it could be helpful also.

Specific action items identified by the staff during this meeting are summarized in the table below.

Specific Action Items

Issue	Responsible Party	Response/Due Date
Several industry representatives requested that a January 13,1992, NRC letter interpreting acceptable surface contamination levels for short-lived beta-emitting daughters of natural uranium in secular equilibrium with a parent.	NRC	NRC staff has taken action to make the referenced letter publicly available in ADAMS. The ADAMS Accession No. is ML16265A249. This action item is completed.
Industry expressed the need for additional dialogue on detection efficiencies and other regulatory issues.	Industry	Industry will contact NRC when they have regulatory issues to discuss.

ATTACHMENTS:

1. Agenda
2. List of Attendees

PUBLIC MEETING AGENDA
Uranium Recovery Health Physics Topics
September 7, 2016, 1:30 PM to 5:30 PM
Teleconference

NRC Two White Flint North
11545 Rockville Pike
Rockville, MD

MEETING PURPOSE: To address various health physics issues, the specifics to be determined by the uranium recovery industry

The topics of discussion will include:

- Introduction and Meeting Purpose
- Operational Health Physics (efficiency calculations, sources)
- Reg. Guide 8.30 and 1.86 Assumptions
- ISR Regulations
- Regulatory Consistency

Attachment 1

MEETING ATTENDEES

Date: September 7, 2016

Topic: Discussion of uranium recovery industry issues

NAME	AFFILIATION	PHONE NUMBER	E-MAIL
Ronald A. Burrows	Nuclear Regulatory Commission	1-800-368-5642	
Andrea Kock	Nuclear Regulatory Commission	1-800-368-5642	
Dave Brown	Nuclear Regulatory Commission	1-800-368-5642	
Tony Huffert	Nuclear Regulatory Commission	1-800-368-5642	
Jim Webb	Nuclear Regulatory Commission	1-800-368-5642	
Tom Lancaster	Nuclear Regulatory Commission	1-800-368-5642	
Don Lowman	Nuclear Regulatory Commission	1-800-368-5642	
Rob Evans	Nuclear Regulatory Commission	1-800-368-5642	
Linda Gersey	Nuclear Regulatory Commission	1-800-368-5642	
Bernadette Baca	Nuclear Regulatory Commission	1-800-368-5642	
Elise Striz	Nuclear Regulatory Commission	1-800-368-5642	
Doug Mandeville	Nuclear Regulatory Commission	1-800-368-5642	
Mike Thomas	Cameco		
Ken Garoutte	Cameco		
Larry Teahon	Cameco		
Sabrina Fox	Cameco		
Tammy Dyer	Cameco		
Morgan Bradford	Cameco		
Kari Toews	Cameco		

MEETING ATTENDEES, Cont'd

Date: September 7, 2016

Topic: Discussion of uranium recovery industry issues

NAME	AFFILIATION	PHONE NUMBER	E-MAIL
Chris Pedersen	Ur-Energy		
Mike Gaither	Ur-Energy		
John Cash	Ur-Energy		
Nicholas Roche	Strata Energy		
Bob Meyer	AUC		
John Mays	Powertech		
Lisa Scheinost	Powertech		
John McCarthy	Uranerz		
Dawn Kolkman	Uranerz		
Katie Sweeney	National Mining Association		
Steve Brown	Colorado Mining Association		
Members of the public			
Sarah Fields	Uranium Watch		
Linsey McLean			