

April 17, 2017

MEMORANDUM TO: Brian E. Thomas, Director
Division of Engineering
Office of Nuclear Regulatory Research

FROM: Craig G. Erlanger, Director **/RA/**
Division of Fuel Cycle Safety, Safeguards,
and Environmental Review
Office of Nuclear Material Safety
and Safeguards

Michael C. Layton, Director **/RA/**
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

John R. Tappert, Director **/RA/**
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

SUBJECT: RESULTS OF PERIODIC REVIEW OF REGULATORY GUIDES

This is in response to your March 2, 2017, memorandum requesting the Office of Nuclear Material Safety and Safeguards (NMSS) staff to perform a periodic review of selected Regulatory Guides (RGs) that support NMSS regulatory programs, as shown in Enclosure 1, "Regulatory Guides That Are Due Now for Their Periodic Review," of your memorandum.

As directed in Management Directive 6.6, "Regulatory Guides," the NMSS staff conducted a review of RGs that were due for their 10-year periodic review. Enclosed are the summary results of the NMSS staff's review for each of the RGs for your consideration and appropriate action.

With regard to RG 1.191, "Fire Protection Program for Nuclear Power Plants During Decommissioning and Permanent Shutdown," the staff from the Office of Nuclear Reactor Regulation (NRR) and the NMSS Division of Decommissioning, Uranium Recovery and Waste Programs (DUWP), will coordinate directly with Office of Nuclear Regulatory Research (RES) staff to complete this review. For this reason, a summary report on the periodic review of

CONTACT: Osiris Siurano-Perez, NMSS/FCSE
(301) 415-7827

this RG is not included in the enclosure to this memorandum. It is expected that the NRR and NMSS/DUWP review of RG 1.191 be completed by the end of the 3rd quarter of calendar year 2017.

With regard to Enclosure 3 of your March 2, 2017, memorandum, NMSS plans to develop a Policy and Procedure (P&P) guidance document for performing periodic reviews of RGs. The guidance will include barriers (triggers) as reminders for performing such reviews whenever it's necessary. Based on the current NMSS assignment priorities, the development of the P&P would be initiated by the end of the 3rd quarter of CY 2017. This effort will be coordinated with the RES staff.

Enclosure:
NMSS Results of Periodic Review
of Regulatory Guides

RESULTS OF PERIODIC REVIEW OF REGULATORY GUIDES

DATED: APRIL 17, 2017

DISTRIBUTION:

FCSE r/f	ECB r/f	MBartlett, NMSS	MBayssie, RES	TBoyce, RES
RBurrows, NMSS		JIreland, NMSS	JJessie, NMSS	PYadav, NMSS
HKaragiannis, RES		DMarcano, NMSS	PSaverot, NMSS	LDesotell, NMSS
DTiktinsky, NMSS				

ADAMS Accession Number: ML17097A185

(* - via e-mail)

OFC	FCSE/ECB	FCSE/ERB	FCSE/ECB	FCSE/FMB	DUWP/LLW	DUWP/URLB
NAME	OSiurano	*DMiller	MDiaz	*RJohnson	*GSuber	BVonTill (*SCrane for)
DATE	4/7/17	4/12/17	4/11/17	4/10/17	4/10/17	4/7/17
OFC	DSFM/CSTB	DSFM/SFLB	DSFM	DUWP	FCSE	
NAME	*YDiaz	*JMcKirgan	MLayton	JTappert	CErlanger	
DATE	4/12/17	4/11/17	4/17/17	4/17/17	4/17/17	

OFFICIAL RECORD COPY

Regulatory Guide Number: 3.5, Revision 1

Title: Standard Format and Content of License Applications for Uranium Mills (for Comment)

Office/division/branch: NMSS/DUWP/URLB

Technical Lead: Ronald A. Burrows

Staff Action Decided: Reviewed with issues identified for future consideration

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 3.5 was issued in 1977 for public comment to provide specific guidance on the format and content of an application for a U.S. Nuclear Regulatory Commission (NRC) source material license authorizing uranium milling activities. Based on the NRC staff's licensing experience over the last nine years, RG 3.5 does not provide sufficient detail information necessary for an applicant to submit a complete application. This RG was never finalized and the latest version available to the public states that the guide is for public comment. The RG is also listing the use of NRC Form 2 for an application for a uranium milling license. This Form has been replaced by NRC Form 313, "Application for Materials License," as specified in 10 CFR Part 40.43, "Renewal of license," and 10 CFR Part 40.44, "Amendment of licenses at request of licensee."

In November 2014, the NRC staff issued NUREG-2126, "Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, Draft Report for Comment." The purpose of this standard review plan (SRP) is to provide guidance to the NRC staff for safety reviews of licensee applications to develop and operate conventional uranium mills or heap leach facilities. The SRP provides more recent and detailed information related to the licensing of conventional mills or heap leach facilities than the information found in RG 3.5.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

RG 3.5 has no impact on licensing and inspection activities since the NRC staff is not expecting any new applications for conventional mills in the next several years.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

An estimate of the effort needed to correct the identified issues is between 1 and 2 FTE.

4. **Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Reviewed with issues identified for future consideration.

5. **Provide a conceptual plan and timeframe to address the issues identified during the review.**

The NRC staff will consider the identified issues as part of the next periodic review while also considering whether the NRC is anticipating applications.

Regulatory Guide Number: 3.39, Revision 2

Title: Standard Format and Content Guide of License Applications for Mixed Oxide Fuel Fabrication Facilities

Office/division/branch: NMSS/FSCE/FMB

Technical Lead: David Tiktinsky

Staff Action Decided: Reviewed with no issues identified

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 3.39 was issued in 2011 to establish the standard format and content for license applications and integrated safety analysis summaries described in the current version of NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility." This is a method that the NRC staff finds acceptable for meeting the regulatory requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 70, "Domestic Licensing of Special Nuclear Material," for MOX fuel fabrication facilities.

No technical or regulatory issues were identified as a result of this review. The guidance remains applicable as written.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

None.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent and contractor resources?

Not applicable.

4. Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with no issues identified.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

Not applicable.

Regulatory Guide Number: 3.63, Revision 0

Title: Onsite Meteorological Measurement Program for Uranium Recovery Facilities -- Data Acquisition and Reporting

Office/division/branch: NMSS/DUWP/URLB

Technical Lead: Ronald A. Burrows

Staff Action Decided: Reviewed with issues identified for future consideration

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 3.63 was issued in 1988 to provide guidance acceptable to the U.S. Nuclear Regulatory Commission (NRC) staff regarding meteorological parameters that should be measured, the siting of meteorological instruments, system accuracies, instrument maintenance and servicing schedules, and the recovery, reduction, and compilation of data.

There are no technical or regulatory issues with the current version of this RG that need to be updated. During the next review of this RG the staff may update the reference section of the guide. If the staff is expecting new or renewal applications it may be beneficial to provide additional information in the staff guidance listed in section C.1 of the guide regarding the use of short-term wind data to make a determination of the long-term representativeness of meteorological conditions in the facility's site. With respect to this determination, other NRC documents include more up-to-date guidance. Such documents include: 1) NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities," issued in 2000, 2) NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 2.3.2, Local Meteorology, Revision 3, and Section 2.3.3, Onsite Meteorological Measurements Program, Revision 3, 2007, and 4) RG 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," Revision 1, 2007.

These documents list industry standards to address the representativeness of short-term meteorological records such as: 1) the American National Standards Institute/American Nuclear Society (ANSI/ANS)-2.15-2013, "Criteria for Modeling and Calculating Atmospheric Dispersion of Routine Radiological Releases From Nuclear Facilities," and 2) ANSI/ANS-3.11-2015, "Determining Meteorological Information at Nuclear Facilities," using a minimum period of record instead of a statistical analysis of the meteorological data."

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

RG 3.63 has no impact on licensing and inspection activities since the NRC staff is not expecting any new or renewal applications in the next several years.

- 3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?**

An estimate of the effort needed to correct the identified issues is between 1-and2 FTE.

- 4. Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Reviewed with issues identified for future consideration.

- 5. Provide a conceptual plan and timeframe to address the issues identified during the review.**

The NRC staff will consider the identified issues as part of the next periodic review.

Regulatory Guide Number: 3.64, Revision 0

Title: Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers

Office/division/branch: NMSS/DUWP/URLB

Technical Lead: Ronald A. Burrows

Staff Action Decided: Reviewed with issues identified for future consideration

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 3.64 was issued in 1989 to describe methods acceptable to the NRC staff for calculating radon fluxes through earthen covers and for calculating the resulting minimum cover thickness needed to meet NRC and the Environmental Protection Agency (EPA) standards. The technical content of RG 3.64 is satisfactory. However, Appendix B, "The Radon Program," to RG 3.64 describes the radon computer program which is outdated and not available to the NRC staff and the public.

The guide also lists an outdated standard by the American Society for Testing and Materials, (ASTM)-D-698-78, 1978 "Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb (2.49 kg) Rammer and 12 in. (305 mm) Drop." The most recent version of the standards is ASTM D698, 2012 (active) "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³))." The staff has not compared these two standards to determine if there are significant updates.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

There is no impact on licensing and inspection activities since the NRC staff is not expecting any new or renewal applications for conventional mills in the next several years.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

The NRC staff anticipates using a contractor to deliver a Windows-based computer program to replace the radon program in Appendix B to RG 3.64. An estimate of the staff effort needed to update the RG is approximately 1 FTE.

4. Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with issues identified for future consideration.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

The NRC staff will consider the identified issues as part of the next periodic while also considering whether the NRC is anticipating applications.

Regulatory Guide Number: 3.74, Revision 1
Title: Guidance for Fuel Cycle Facility Change Process
Office/division/branch: NMSS/FSCE/FMB
Technical Lead: Robert Johnson
Staff Action Decided: Reviewed with no issues identified

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 3.74 was issued in 2012 to describe the types of changes for which licensees are to seek prior approval from the NRC before their implementation and how licensees can evaluate potential changes to determine whether NRC approval is required. It also identifies an acceptable level of information to be provided by licensees when documenting and reporting changes made without prior NRC approval pursuant to 10 CFR 70.72, "Facility changes and change process."

No technical or regulatory issues were identified in the document as a result of the current review. The guidance remains applicable as written.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

Since no issues were identified, there is no impact on licensing and inspection activities.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent and contractor resources?

Not applicable.

4. Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with no issues identified.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

Not applicable.

Regulatory Guide Number: 4.20, Revision 1

Title: Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees Other Than Power Reactors

Office/division/branch: NMSS/FCSE/ECB

Technical Lead: Matthew Bartlett

Staff Action Decided: Reviewed with no issues identified

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

There are no known technical or regulatory issues with Revision 1 of RG 4.20, published in April 2012. This RG describes methods that the NRC staff considers acceptable for meeting the constraint on airborne emissions of radioactive materials to the environment as described in Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1101 (d) .

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

As no technical or regulatory issues were identified, there is no impact to internal or external stakeholders resulting from these activities.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

Not applicable.

4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with no issues identified.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

Not applicable.

Regulatory Guide Number: 7.4, Revision 1

Title: Leakage Tests on Packages for Shipment of Radioactive Material

Office/division/branch: NMSS/DSFM/CSTB
Technical Lead: JoAnn Ireland

NRC Staff Action Decided: Revise

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 7.4 was issued in 2012 to describe an approach that the NRC staff considers acceptable for meeting the containment criteria for Type B packages per Title 10 of the *Code of Federal Regulations* (10 CFR) Section 71.51, "Additional requirements for Type B packages." The NRC staff developed and published this guidance to help applicants and licensees to meet these objectives, ensure package integrity, and minimize the distribution of contamination to the environment.

This RG endorses the methods and procedures developed by the Accredited Standards Committee on Packaging and Transportation of Radioactive and Non-Nuclear Hazardous Materials, N14, Subcommittee of the American National Standards Institute (ANSI) in ANSI N14.5-1997, "Radioactive Materials - Leakage Tests on Packages for Shipment," issued in 1997 and reaffirmed in 2008, as a process that the NRC staff considers acceptable for meeting the regulatory requirements.

Since the last review of RG 7.4, ANSI N14.5-1997 was revised in 2014 and issued as ANSI N14.5-2014. The ANSI N14.5-2014 standard contains new information and clarifications. Holders of, or applicants for, a Type B transportation package certificate of compliance (CoC), a spent fuel storage cask CoC, or a general or site-specific Independent Spent Fuel Storage Installation (ISFSI) licensee using ANSI N14.5-1997, should be aware of the Information Notice (IN) 2016-04, "ANSI N14.5-2014 Revision and Leakage Rate Testing Considerations," which discussed ANSI N14.5-2014.

In addition, two international references in RG 7.4 have been updated. These references are: 1) International Atomic Energy Agency (IAEA) Regulation TS-R-1 (ST-1) revised in 1996, "Regulations for the Safe Transport of Radioactive Material," dated June 2000, and 2) IAEA Safety Guide TS-G-1.1 (ST-2), "Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material," dated June 2002) will need to be updated to: IAEA TS-R-1, "Regulations for the Safe Transport of Radioactive Material," dated May 2009 and IAEA SSG-26, "Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material," dated October 2012.

- 2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?**

The NRC staff anticipates receiving approximately 50-70 licensing activities per year for transportation packages, and 20-25 licensing actions for storage. A number of these actions may involve the use of the guidance provided in RG 7.4 Rev. 1.

- 3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?**

An estimate of the effort needed to correct the identified issues is between 0.1 FTE and 0.2 FTE.

- 4. Based on the answers to the questions above, what is the NRC staff action for this guide?**

Revise.

- 5. Provide a conceptual plan and timeframe to address the issues identified during the review.**

The NRC staff plans to develop a draft RG in the near future and issue it for public comment.

Regulatory Guide Number: 7.7, Revision 1

Title: Administrative Guide for Verifying Compliance with Packaging Requirements for Shipping and Receiving of Radioactive Material

Office/division/branch: NMSS/DSFM/SFLB

Technical Lead: Pierre Saverot

Staff Action Decided: Reviewed with no issues identified

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 7.7 was issued in 1977 and revised in 2012 to provide licensees with a method considered acceptable by the NRC staff to meet administrative requirements for: 1) the transport of licensed material under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71, "Packaging and Transportation of Radioactive Material," either in a Type B or a Type AF package, and 2) the receipt and opening of the package under 10 CFR Part 20, "Standards for Protection Against Radiation."

No technical or regulatory issues were identified with Revision 1 to RG 7.7 during the current review.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

Since no issues were identified, there is no impact on licensing and inspection activities.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent and contractor resources?

Not applicable.

4. Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with no issues identified.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

Not applicable.

Regulatory Guide Number: 8.30, Revision 1

Title: Health Physics Surveys in Uranium Recovery Facilities

Office/division/branch: NMSS/DUWP/URLB

Technical Lead: Ronald A. Burrows

Staff Action Decided: Reviewed with issues identified for future consideration

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

RG 8.30 was issued in 1983 and revised in 2002 to describe health physics surveys that are acceptable to the NRC staff for the protection of workers at uranium recovery facilities (e.g., uranium mills, in-situ recovery (ISR) facilities, ion exchange recovery facilities, and heap leach facilities) from radiation and the chemical toxicity of uranium.

The guidance in RG 8.30, Revision 1, is not consistent with the regulatory changes incorporated in the 1991 revision of 10 CFR Part 20, "Standards for Protection Against Radiation."

For example, the discussion in Section C to RG 8.30, Regulatory Position 2.2, "Surveys for Airborne Yellowcake," still refer to the terms "soluble" and "insoluble" instead of the inhalation classes D, W, and Y (the classification of a compound as Class D, W, or Y, is discussed in Appendix B to 10 CFR Part 20, "Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage"). Also, Regulatory Position 2.2, does not address yellowcake processed at uranium ISR facilities. Specifically, it does not address how to evaluate a uranium compound (uranyl peroxide) if it is not listed in Appendix B to 10 CFR Part 20.

Section C, Regulatory Position 2.5, "Surveys for Surface Contamination in Restricted Area," is using older dosimetry models (it is based on requirements of 10 CFR Part 20 prior to the 1991 revision). As a result, certain terminology is not consistent with what is being used currently by the NRC staff and licensees (e.g., "inactive area" and "active area" vs. "restricted area" and "unrestricted area").

Section C, Regulatory Position 2.6, "Surveys for Contamination of Skin and Personal Clothing," and Regulatory Position 2.7, "Surveys of Equipment Prior to Release to Unrestricted Areas," do not address beta-gamma-emitting radionuclides found in contamination at uranium recovery facilities.

Section C, Regulatory Position 3, "Intake and Exposure Calculations," although it includes technically correct guidance, it should be expanded to discuss 10 CFR 20.1204(g), "Determination of internal exposures," to assist the uranium recovery industry on how to apply the regulatory requirement correctly at uranium ISRs.

Also, the guidance on how to assess the lower limit of detection contamination surveys (see Table 3 to RG 8.30, "Summary of Survey Frequencies") should be modified using the information provided in NUREG-1575, "Multi-Agency Survey and Site Investigation Manual," and other relevant guidance documents that include up-to-date information.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years

There is no impact on licensing since the NRC staff does not anticipate any new or renewal applications in the next several years.

There are approximately 9 - 10 inspection activities per year over the next several years. The NRC staff expects minimal impact on the inspection activities regarding the issues discussed in item 1 above. These issues have been addressed in individual licenses (e.g., addressed in specific license conditions). In addition, other available NRC guidance documents discuss these issues such as RG 8.22, "Bioassay at Uranium Mills," which provides guidance on "unlisted uranium materials." Also, NUREG-1736, "Consolidated Guidance: 10 CFR Part 20 - Standards for Radiation Protection Against Radiation," provides examples on how to comply with 10 CFR 20.1204(g). In addition, the "Supplemental Information on the Implementation of the Final Rule on Radiological Criteria for License Termination," for 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination," (63 FR 64132), requires licensees to monitor for beta-gamma-emitting radionuclides found in contamination at uranium recovery facilities.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

An estimate of the effort needed to correct the identified issues is between 1 and 2 FTE. No contractor support is anticipated.

4. Based on the answers to the questions above, what is the NRC staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with issues identified for future consideration.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

The NRC staff will consider the identified issues as part of the next periodic review while also considering whether the NRC is anticipating applications.

NOTE: This review was conducted in April 2017 and reflects the NRC staff plans as of that date. These plans are tentative and are subject to change.