

October 17, 2016

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

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

SUBJECT: PERIODIC REVIEW OF REGULATORY GUIDES

This memorandum provides the response to the August 29, 2016, Office of Nuclear Regulatory Research (RES), request for the staff from the Office of Nuclear Material Safety and Safeguards (NMSS) to perform the 5-year periodic review of selected Regulatory Guides (RGs), as directed in Management Directive 6.6, "Regulatory Guides" (Agencywide Documents Access and Management System (ADAMS) Accession Number ML16083A122).

Staff from the Division of Fuel Cycle Safety, Safeguards, and Environmental Review (FCSE) conducted a 5-year periodic review of 16 RGs supporting the Material Control and Accounting (MC&A) programs (see list in the enclosure to this memorandum). Staff's review of these RGs was previously provided to RES and can be found under ADAMS Accession Number ML16243A427.

Staff from the Division of Decommissioning, Uranium Recovery, and Waste Programs (DUWP) conducted a review of RG 4.18, "*Standard Format and Content of Environmental Reports for Near-Surface Disposal of Radioactive Waste*," and RG 4.19, "*Guidance for Selecting Sites for Near-Surface*

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

Disposal of Low-Level Radioactive Waste", and concluded that no changes to RGs 4.18 and 4.19 are warranted at this time. However, since the ongoing Title 10 of the *Code of Federal Regulations* Part 61 rulemaking effort may impact portions of the regulations for which RGs 4.18 and 4.19 provide guidance, following final action on this rulemaking effort these RGs should be reviewed again to ensure that they still provide useful guidance for stakeholders. Any future revisions of these RGs should be made within the context of the recommendation to update and consolidate guidance that resulted from the Programmatic Assessment of the low-level radioactive waste regulatory program, which is currently in the final stages of concurrence as a Commission paper.

With regard to RG 3.5, "*Standard Format and Content of License Applications for Uranium Mills*," RG 8.30, "*Health Physics Surveys in Uranium Recovery Facilities*," RG 3.63, "*Onsite Meteorological Measurement Program for Uranium Recovery Facilities Data Acquisition and Reporting*," and RG 3.64, "*Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers*," the NRC staff has determined that, due to the age of these RGs, they need to be revised and updated. However, due to staff being fully engaged with the oversight of six facilities and eight major licensing reviews, DUWP is delaying the review of these RGs until after the State of Wyoming becomes an Agreement State in FY18 and assumes responsibility for the oversight of uranium recovery sites. These RGs are sufficient until that time. Additionally, revisions to the four RGs mentioned above, as well as the revision of RG 1.191, "*Fire Protection Program for Nuclear Power Plants During Decommissioning and Permanent Shutdown*," were not included in the Decommissioning/Low Level waste budget for FY17 and FY18. As such, the NRC staff plans to begin this effort in late FY19.

Enclosed please find the list of RGs supporting the NMSS/FCSE MC&A regulatory programs that the FCSE staff has previously revised and reported to RES, and the DUWP staff's report of its 5-yr periodic review of RGs 4.18 and 4.19.

Enclosure:
NMSS Results of Periodic Review
of Regulatory Guides

Disposal of Low-Level Radioactive Waste”, and concluded that no changes to RGs 4.18 and 4.19 are warranted at this time. However, since the ongoing Title 10 of the *Code of Federal Regulations* Part 61 rulemaking effort may impact portions of the regulations for which RGs 4.18 and 4.19 provide guidance, following final action on this rulemaking effort these RGs should be reviewed again to ensure that they still provide useful guidance for stakeholders. Any future revisions of these RGs should be made within the context of the recommendation to update and consolidate guidance that resulted from the Programmatic Assessment of the low-level radioactive waste regulatory program, which is currently in the final stages of concurrence as a Commission paper.

With regard to RG 3.5, “*Standard Format and Content of License Applications for Uranium Mills*,” RG 8.30, “*Health Physics Surveys in Uranium Recovery Facilities*,” RG 3.63, “*Onsite Meteorological Measurement Program for Uranium Recovery Facilities Data Acquisition and Reporting*,” and RG 3.64, “*Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers*,” the NRC staff has determined that, due to the age of these RGs, they need to be revised and updated. However, due to staff being fully engaged with the oversight of six facilities and eight major licensing reviews, DUWP is delaying the review of these RGs until after the State of Wyoming becomes an Agreement State in FY18 and assumes responsibility for the oversight of uranium recovery sites. These RGs are sufficient until that time. Additionally, revisions to the four RGs mentioned above, as well as the revision of RG 1.191, “*Fire Protection Program for Nuclear Power Plants During Decommissioning and Permanent Shutdown*,” were not included in the Decommissioning/Low Level waste budget for FY17 and FY18. As such, the NRC staff plans to begin this effort in late FY19.

Enclosed please find the list of RGs supporting the NMSS/FCSE MC&A regulatory programs that the FCSE staff has previously revised and reported to RES, and the DUWP staff's report of its 5-yr periodic review of RGs 4.18 and 4.19.

Enclosure:
NMSS Results of Periodic Review
of Regulatory Guides

DISTRIBUTION:

FCSE r/f	SAni, NMSS	MBayssie, RES	TBoyce, RES
JCruz, NMSS	ZCruz, NMSS	DDitto, NMSS	JJessie, NMSS
TPham, NMSS	EReber, NMSS	GTuttle, NMSS	HKaragiannis, RES

ADAMS Accession No: ML16278A649

(*via e-mail)

OFC	FCSE/ECB	FCSE/ERB	DUWP/MDb	DUWP/URLB	DUWP/PAB
NAME	OSiurano	AWalker-Smith	*RChang	*BVonTill	CMcKenney (*KPinkston for)
DATE	10/05/16	10/05/16	10/07/16	10/06/16	10/11/16
OFC	DUWP/RDB	FCSE/MCAB	FCSE/ECB	FCSE	DUWP
NAME	*BWatson	JRubenstone (SAni for)	TGrice	*CErlanger	*JTappert
DATE	10/08/16	10/11/16	10/13/16	10/13/16	10/17/16

OFFICIAL RECORD COPY

DIVISION OF FUEL CYCLE SAFETY, SAFEGUARDS, AND ENVIRONMENTAL REVIEW
RESULTS OF PERIODIC REVIEW OF REGULATORY GUIDES

*(This review was conducted in July - August 2016, and reflects the staff's plans as of that date.
These plans are tentative and are subject to change)*

Below is a list of Regulatory Guides (RGs) supporting the Office of Nuclear Material Safety and Safeguards, Material Control and Accounting (MC&A) regulatory program for which the MC&A staff has completed its 5-year review (see reports under Agencywide Documents Access and Management System Accession Number ML16243A427):

1. RG 5.4, Standard Analytical Methods for the Measurement of Uranium Tetrafluoride (UF₄) and Uranium Hexafluoride (UF₆), Revision 0
2. RG 5.5, Standard Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Uranium Dioxide Powders and Pellets, Revision 0
3. RG 5.8, Design Considerations for Minimizing Residual Holdup of Special Nuclear Material in Drying and Fluidized Bed Operations, Revision 1
4. RG 5.9, Guidelines for Germanium Spectroscopy Systems for Measurement of Special Nuclear Material, Revision 2
5. RG 5.11, Nondestructive Assay of Special Nuclear Material Contained in Scrap and Waste, Revision 1
6. RG 5.21, Nondestructive Uranium-235 Enrichment Assay By Gamma Ray Spectrometry, Revision 1
7. RG 5.23, In Situ Assay of Plutonium Residual Holdup, Revision 2
8. RG 5.25, Design Considerations for Minimizing Residual Holdup of Special Nuclear Material in Equipment for Wet Process Operations, Revision 0
9. RG 5.34, Nondestructive Assay for Plutonium in Scrap Material by Spontaneous Fission Detection, Revision 1
10. RG 5.37, In Situ Assay of Enriched Uranium Residual Holdup, Revision 1
11. RG 5.38, Nondestructive Assay of High-Enrichment Uranium Fuel Plates by Gamma Ray Spectrometry, Revision 1
12. RG 5.39, General Methods for the Analysis of Uranyl Nitrate Solutions for Assay, Isotopic Distribution, and Impurity Determinations, Revision 0
13. RG 5.42, Design Considerations for Minimizing Residual Holdup of Special Nuclear Material in Equipment for Dry Process Operations, Revision 1
14. RG 5.48, Design Considerations Systems for Measuring the Mass of Liquids, Revision 0

15. RG 5.53, Revision Qualification, Calibration, and Error Estimation Methods for Nondestructive Assay
16. RG 5.58, Considerations for Establishing Traceability of Special Nuclear Material Accounting Measurements, Revision 1

REGULATORY GUIDE PERIODIC REVIEW

Regulatory Guide Number: **4.18**

Revision Number: **0**

Title: **Standard Format and Content of Environmental Reports for Near-Surface Disposal of Radioactive Waste**

Office/division/branch: **NMSS/DUWP/LLWB**

Technical Lead: **Jeffrey Cruz**

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 4.18, "Standard Format and Content of Environmental Reports for Near-Surface Disposal of Radioactive Waste," was published in June 1983 to provide specific and detailed guidance for the preparation of environmental reports for land disposal facilities. The guide identifies the information needed by the U.S. Nuclear Regulatory Commission (NRC) staff to assess the potential environmental effects of the proposed land disposal facility and establishes an acceptable format for presenting it. While the text is applicable to the current regulations in 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," certain text is out-of-date and certain references in the guide are outdated.

For example, RG 4.18 references Title 10 of the *Code of Federal Regulations* (10 CFR) 20.3(a)(14) regarding the definition of a "Restricted Area." Title 10 CFR Part 20, "Standards for Protection Against Radiation," has been revised and "Restricted Area" is now defined in 20.1003, "Definitions."

None of the following NUREGs referenced in the document appear on the lists of NRC's NUREGs found at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/>:

- NUREG-0902, "Site Suitability, Selection and Characterization"
- NUREG/CR-2700, "Parameters for Characterizing Sites for Disposal of Low-Level Radioactive Waste"
- NUREG/CR-3038, "Tests for Evaluating Sites for Disposal of Low-Level Radioactive Waste"

The lists of the NRC's NUREGs are not exhaustive, but the absence of these NUREGs from the lists indicates that the documents are not generally considered to be active regulatory documents. Furthermore, NUREG/CR-2700 and NUREG/CR-3038 are not available in Agencywide Documents Access and Management System.

As of September 2016, the NRC is evaluating whether to implement changes to the regulations on low-level waste disposal, including the regulations in 10 CFR 61.50, "Disposal site suitability requirements for land disposal," and Subpart C of Part 61, "Performance Objectives," for which RG 4.18 provides guidance. If these regulations are revised as a result of the ongoing rulemaking effort, the NRC staff may consider revision of RG 4.18 to address these changes.

The benefits to stakeholders of updating and consolidating all low-level waste guidance into one NUREG were identified during the Programmatic Assessment of the low-level radioactive waste regulatory program, which will be documented in a Commission paper that is in the final stages of concurrence. Activities within the programmatic assessment were prioritized as "high," "medium," or "low." This activity was ranked as "medium."

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 does not anticipate licensing a new near surface disposal facility under 10 CFR Part 61 within the next 5 years; therefore, not updating the RG to address the known issues would have essentially no impact on the NRC's internal and external stakeholders. Also, RG 4.18 does not provide guidance that impacts inspection 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?

An estimate of the effort needed to correct the identified issues is between 0.10 FTE and 0.20 FTE.

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

Reviewed with issues identified for future consideration.

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

As discussed in Management Directive 6.6, "Regulatory Guides," the NRC staff reviews RGs approximately every 5 years to ensure that these guides continue to provide useful guidance. The staff will consider potential changes to 10 CFR Part 61 that may be brought about by the rulemaking effort during the next periodic review of the guide.

NOTE: This review was conducted in September 2016 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.

REGULATORY GUIDE PERIODIC REVIEW

Regulatory Guide Number: **4.19**

Revision Number: **0**

Title: **Guidance for Selecting Sites for Near-Surface Disposal of Low-Level Radioactive Waste**

Office/division/branch: **NMSS/DUWP/LLWB**

Technical Lead: **Eric H. Reber**

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 4.19, "Guidance for Selecting Sites for Near-Surface Disposal of Low-Level Radioactive Waste," was published in August 1988, to provide guidance on screening areas to identify a site or sites for near-surface disposal of low-level radioactive waste. While the text is applicable to the current regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," certain text is out-of-date and certain references to documents should be updated or removed.

For example, Appendix A, of 10 CFR Part 61, "Geographic Information Computer Mapping," is based on techniques and information technology that existed in 1988.

None of the following NUREGs referenced in the document appears on the lists of NRC's NUREGs found at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/>:

- NUREG-0902, "Site Suitability, Selection and Characterization"
- NUREG-1199, "Standard Format and Content of a License Application for a Low-Level Radioactive Waste Disposal Facility"
- NUREG/CR-2861, "Image Analysis for Facility Siting: A Comparison of Low- and High-Altitude Image Interpretability for Land Use/Land Cover Mapping"
- NUREG/CR-3247, "Site Characterization Information Using LANDSAT Satellite and Other Remote Sensing Data: Integration of Remote Sensing Data with Geographic Information Systems"
- NUREG/CR-3583, "Evaluation of Low-Altitude Remote Sensing Techniques for Obtaining Site Characteristic Information"

The lists of the U.S. Nuclear Regulatory Commission's (NRC's) NUREGs are not exhaustive, but the absence of these NUREGs from the lists indicates that the documents are not generally considered to be active regulatory documents. Furthermore, NUREG/CR-2861, NUREG/CR-3247, and NUREG/CR-3583 are not available in Agencywide Documents Access and Management System. Also, NUREG-1199 was revised after RG 4.19 was published.

As of September 2016, the NRC is evaluating whether to implement changes to the regulations on low-level waste disposal, including the regulations in 10 CFR 61.50, "Disposal site suitability requirements for land disposal," and Subpart C of Part 61, "Performance Objectives," for which RG 4.19 provides guidance. If these regulations are revised as a result of the ongoing rulemaking effort, the NRC staff may consider revision of RG 4.19 to address these changes.

The benefits to stakeholders of updating and consolidating all low-level waste guidance into one NUREG were identified during the programmatic assessment of the low-level radioactive waste regulatory program, which will be documented in a Commission paper that is in the final stages of concurrence. Activities within the Programmatic Assessment were prioritized as "high," "medium," or "low." This activity was ranked as "medium."

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 does not anticipate licensing a new near surface disposal facility under 10 CFR of Part 61 within the next five years; therefore, not updating the RG to address the known issues would have essentially no impact on the NRC's internal and external stakeholders. Also, RG 4.19 does not provide guidance that impacts inspection 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?

An estimate of the effort needed to correct the identified issues is between 0.10 FTE and 0.20 FTE.

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

Reviewed with issues identified for future consideration.

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

As discussed in Management Directive 6.6, "Regulatory Guides," the NRC staff reviews RGs approximately every 5 years to ensure that these guides continue to provide useful guidance. The staff will consider potential changes to 10 CFR Part 61 that may be brought about by the rulemaking effort during the next periodic review of the guide.

NOTE: This review was conducted in September 2016 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.