



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON NUCLEAR WASTE AND MATERIALS  
WASHINGTON, D.C. 20555-0001

ACNWMR-0275

November 30, 2007

The Honorable Dale E. Klein  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: REGULATORY GUIDE REVISION

Dear Chairman Klein:

At its 182<sup>nd</sup> meeting, the NRC staff presented the Advisory Committee on Nuclear Waste and Materials (the Committee) with the staff's activities and plans for updating regulatory guides (RGs) in all 10 of the divisions into which RGs are organized. The Committee learned about the staff's four-phase approach and schedule for updating all RGs. Updates, as needed, will include modifications to the RGs and their technical basis documents. The staff plans a two-step evaluation. The first step involves assessing individual guides to determine if they are up to date. The second step involves assessing RGs in a cross-cutting fashion to identify where a change in one guide would necessitate a change in another.

The staff informed the Committee that about 500 RGs needed review to identify the appropriate action. The first phase, already completed in March 2007, covered the high-priority guides necessary to support new reactor licensing. The second phase, which includes RGs that extend beyond new reactor licensing, will be completed by December 2008. The third phase, scheduled for completion by December 2009, includes RGs that are either not considered high priority or require more extensive technical development. The fourth phase will evaluate the remaining RGs not updated in the previous phases. These RGs will require additional technical development and input from program offices or consensus standards organizations. The staff will complete the fourth phase by 2010.

The staff indicated that RGs can be carried over from phase to phase, based upon a number of factors, such as how much time is required to complete the technical basis development needed to revise or enhance the RGs.

The Committee has coordinated the review of the RGs with the Advisory Committee on Reactor Safeguards and has completed a review for technical accuracy and currency of approximately 50 RGs relating to nuclear waste and materials.

## OBSERVATIONS

The Committee noted that many RGs issued or updated in the last several years are current and well done. The Committee commends the staff for developing a comprehensive review plan for RGs and recognizes the challenges associated with updating nearly 500 RGs. The following observations are not intended as criticism of the efforts to date but rather as information that will hopefully help the staff's work.

The Committee noted several deficiencies common to many of the RGs. The more significant deficiencies were the following:

- outdated references to industry standards (e.g., American National Standards Institute, American Society of Civil Engineers standards)
- references to superseded Title 10, Part 20, "Standards for Protection Against Radiation," of the *Code of Federal Regulations* (10 CFR Part 20)
- outdated models and computer codes, (e.g., the Gaseous and Liquid Effluent [GALE] Code) as noted by the Committee's letter dated January 4, 2007
- out-of-date dosimetry methodologies (i.e., International Commission on Radiological Protection [ICRP]-2)
- out-of-date measurement technologies

Most importantly, many of the RGs that the Committee reviewed are not risk informed or performance based.

The Committee has attached a table from its preliminary analyses of each RG division for consideration by the staff.

## **RECOMMENDATIONS**

The Committee recommends that the staff use the following five principles in updating all RGs:

- (1) Where consensus, industry, or recommending body standards exist, the NRC should consider endorsing such standards and focus the technical content of the RG on implementation of the consensus standard. RGs should be consistent with industry standards.
- (2) All codes and standards referenced in RGs should be evaluated to ensure that the technical foundation in the codes and standards is current and appropriate for revising the RGs.
- (3) For all RG divisions, the staff should consider interim staff guidance memoranda, which should provide meaningful technical information for updating RGs.
- (4) All RGs that incorporate dosimetric requirements and methods should be evaluated to determine whether the underlying methods are from old publications such as ICRP-2, ICRP-26, and ICRP-30, or later ICRP guidance such as ICRP-64, ICRP-68, and others. The staff should update dosimetric methods appropriately or give specific justification for why an update is not required.
- (5) The Advisory Committee on the Medical Uses of Isotopes should review relevant RGs in Division 8 (Occupational Health).

The Committee looks forward to future updates from the staff as the process of updating RGs continues.

Sincerely,

*/RA/*

Michael T. Ryan  
Chairman

Enclosure:

Table, ACNW&M Comments on Regulatory Guides

References:

1. ICRP Publication 2, "Permissible Dose for Internal Radiation," Pergamon Press, Oxford, England (1959).
2. ICRP Publication 26, "Recommendations of the International Commission on Radiological Protection," Pergamon Press, Oxford, England (1977).
3. ICRP Publication 30, "Limits for Intakes of Radionuclides by Workers," Pergamon Press, Oxford, England (1979).
4. ICRP Publication 64, "Protection from Potential Exposure: A Conceptual Framework," Pergamon Press, Oxford, England (1993).
5. ICRP Publication 68, "Dose Coefficients for Intakes of Radionuclides by Workers," Pergamon Press, Oxford, England (1994).

The Committee looks forward to future updates from the staff as the process of updating RGs continues.

Sincerely,

*/RA/*

Michael T. Ryan  
Chairman

Enclosure:

Table, ACNW&M Comments on Regulatory Guides

References:

6. ICRP Publication 2, "Permissible Dose for Internal Radiation," Pergamon Press, Oxford, England (1959).
7. ICRP Publication 26, "Recommendations of the International Commission on Radiological Protection," Pergamon Press, Oxford, England (1977).
8. ICRP Publication 30, "Limits for Intakes of Radionuclides by Workers," Pergamon Press, Oxford, England (1979).
9. ICRP Publication 64, "Protection from Potential Exposure: A Conceptual Framework," Pergamon Press, Oxford, England (1993).
10. ICRP Publication 68, "Dose Coefficients for Intakes of Radionuclides by Workers," Pergamon Press, Oxford, England (1994).

Distribution:

RidsSecyMailCenter	RidsEDOMailCenter	RidsNRROD	
RidsNMSSOD	RidsFSMEOD	RidsOCAMailCenter	
RidsNSIROD	RidsRESOD	RidsNROOD	
RidsOIGMailCenter	RidsOGCMailCenter	RidsASLBPMailCenter	
RidsOCAAMailCenter	RidsOPAMailCenter	RidsRGN1MailCenter	
RidsRGN2MailCenter	RidsRGN3MailCenter	RidsRGN4MailCenter	
BChamp ABates JPerry MLee DWidmayer	CLBrown NColeman YDiaz-Sanabria LHamdan VMurphy	JFlack CJaegers DPelton ADias SChey	SMcKelvin LMike PTressler SJones

ADAMS ML073190600

OFFICE	ACNW&M	SUNSI	ACNW&M	ACNW&M	ACNW&M
NAME	CLBrown	CLBrown	ADias /MLee Acting/	FPGillespie	MTR
DATE	11/30/07	11/30/07	11/30/07	11/30/07	11/30/07

OFFICIAL RECORD COPY

File Code\_RG

## ACNW&M Comments on Regulatory Guides

RG Number	Title	Last revision	Notes
1.112	Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Light-Water-Cooled Power Reactors Supports	Mar-07	GALE Code needs to be updated for PWR and BWR plants. Current version may not be applicable to new reactor designs.
3.3	Quality Assurance Program Requirements for Fuel Reprocessing Plants and for Plutonium Processing and Fuel Fabrication Plants	Mar-74	Refers to outdated consensus standard and its successor standard refers only to reactors.
3.5 (DG-3024)	Standard Format and Content of License Applications for Uranium Mills	Nov-77	The RG refers to 10 CFR 20.103 which does not exist. Also, DG 3024 is not available for review on the NRC web site. Note that reclamation objectives are not risk informed.
3.6	Content of Technical Specifications for Fuel Reprocessing Plants	Apr-73	Refers to ALAP not ALARA. RG refers to "defense-in-depth." RG calls for successive margins in operational, safety, and uncertainty. The RG is not risk informed.
3.7	Monitoring of Combustible Gases and Vapors in Plutonium Processing and Fuel Fabrication Plants	Mar-73	Cites Bureau of Mines publications on flammability that appear to be outdated.
3.10	Liquid Waste Treatment System Design Guide for Plutonium Processing and Fuel Fabrication Plants	Jun-73	Refers to ALAP not ALARA, requires applicant to justify process selection against unspecified alternatives and is not performance based.
3.11	Design, Construction, and Inspection of Embankment Retention Systems for Uranium Mills	Dec-77	Seems very detailed and somewhat prescriptive on how to do the analysis. Mentions old 10 CFR Part 20 sections. The methodologies and procedures for design, construction, and testing of dams and embankments have improved in the last 30 years; thus it is recommended that the procedures be updated with standards established by the U.S. Corps of Engineers and the ASCE. [Committee does not believe this RG is overly detailed considering the history of problems with UMT.]
3.11.1	Operational Inspection and Surveillance of Embankment Retention Systems for Uranium Mill Tailings	Oct-80	Very detailed on what is to be inspected and how frequently. Seems like the requirements should depend on how full the retention pond is and how much liquid remains. The procedures for inspection and surveillance in this RG should be updated to be consistent with the update of RG 3.11 and made more generic to provide flexibility to use the state-of-the technology procedures in geotechnical engineering. Consider updating this RG to include the use of at least portions of ASCE 43-05 and ISG-01 for preclosure seismic analysis at Yucca Mountain. Should be made consistent with RG 3.73 for earthquake ground motion at ISFSI and MRS facilities.

## ACNW&M Comments on Regulatory Guides

3.12	General Design Guide for Ventilation Systems of Plutonium Processing and Fuel Fabrication Plants	Aug-73	Too prescriptive to be RIPB.
3.13	Guide for Acceptable Waste Storage Methods at UF6 Production Plants	Oct-73	Invokes ALAP, assumed on-site waste disposal for some facilities, 1970 COE manual may have been superceded by EM 1110-2-2300, July 2004.
3.14	Seismic Design Classification for Plutonium Processing and Fuel Fabrication Plants	Oct-73	Seems to presume a specific design when designating items that are seismic Category 1 which is not RIPB.
3.15	Standard Format and Content of License Applications for Storage Only of Unirradiated Power Reactor Fuel and Associated Radioactive Material	Apr-83	Refers to withdrawn RG 3.41 on criticality instead of RG 3.71.
3.17	Earthquake Instrumentation for Fuel Reprocessing Plants	Feb-74	Provides very specific guidance that could be dated. This RG is outdated and needs to be revised in favor of up-to-date guidance on earthquake instrumentation.
3.18	Confinement Barriers and Systems for Fuel Reprocessing Plants	Feb-74	Refers to ALAP in 10 CFR Part 50 which now only refers to reactors, and to nonexistent parts of 10 CFR Part 20 the replacement for which refers to ALARA.
3.19	Reporting of Operating Information for Fuel Reprocessing Plants	Feb-74	Reporting on effluents and wastes was based on RG 1.21 for reactors as an interim measure, but nothing specific to reprocessing appears to have been developed. Refers to old 10 CFR Part 20 sections. Bins for occupational dose probably need to be reconsidered in light of the reductions in doses and dose limits over the years. Review needs to consider more modern plant design and control concepts.
3.20	Process Offgas Systems for Fuel Reprocessing Plants	Feb-74	Refers to imminent promulgation of Appendix D to 10 CFR Part 50 which never occurred. Refers to ALAP and potential Kr/T release limits that never occurred. Background discussion includes off-gas cleanup technology that is likely to be outdated. Design considerations seem to be trivial/obvious.
3.21	Quality Assurance Requirements for Protective Coatings Applied to Fuel Reprocessing and to Plutonium Processing and Fuel Fabrication Plants	Mar-74	Refers to ANSI N101.4-1972, which no longer exists. New standard (ASTM D3843-00?) needs to be identified and reviewed for inclusion.
3.22	Periodic Testing of Fuel Reprocessing Plant Protection System Actuation Functions	Jun-74	Appears to be sufficiently generic to be acceptable but needs to be reviewed in light of years of experience with actuators and failures thereof in fuel cycle and reactor facilities.
3.25	Standard Format and Content of Safety Analysis Reports for Uranium Enrichment Facilities	Dec-74	Refers to portions of 10 CFR Parts 20, 50, and 52 that do not exist. Appears to have relied on a very different Part 52 that was never developed. Also, refers to 10 CFR Part 20.3 that does not exist.

## ACNW&M Comments on Regulatory Guides

3.26	Standard Format and Content of Safety Analysis Reports for Fuel Reprocessing Plants	Feb-75	Refers to ALAP, accident analysis based on credible accident scenario, seismic analysis approach seems a bit prescriptive and probably dated, does not acknowledge 40 CFR Part 190 restrictions on effluents, and SAR to be based on scenario approach. Should consider updating this reg guide to include the use of at least portions of ASCE 43-05 and ISG-01 for preclosure seismic analysis at Yucca Mountain. Should be made consistent with RG 3.73 for earthquake ground motion at ISFI and MRS facilities.
3.27	Nondestructive Examination of Welds in the Liners of Concrete Barriers in Fuel Reprocessing Plants	May-77	Prescriptive but perhaps appropriate. A subject matter expert in NDE needs to review to determine whether the recommended techniques are state-of-the-art.
3.28	Welder Qualification for Welding in Areas of Limited Accessibility in Fuel Reprocessing Plants and in Plutonium Processing and Fuel Fabrication Plants	May-75	Prescriptive but perhaps appropriate. A subject matter expert needs to review to determine whether the recommended training and requalification requirements are still appropriate and are in accordance with the ASME Code and American Welding Society.
3.29	Preheat and Interpass Temperature Control for the Welding of Low-Alloy Steel for Use in Fuel Reprocessing Plants and in Plutonium Processing and Fuel Fabrication Plants	May-75	Prescriptive but perhaps appropriate. A subject matter expert in welding technology needs to review the RG to determine whether the recommended techniques are state-of-the-art.
3.30	Selection, Application, and Inspection of Protective Coatings (Paints) for Fuel Reprocessing Plants	May-77	Refers to ANSI N101.2-1972, no longer exists. New standard (ASTM D5144-00?) needs to be identified and reviewed for inclusion although it is not clear a standard for other than reactors exists.
3.31	Emergency Water Supply Systems for Fuel Reprocessing Plants	May-77	Reliability of system to be evaluated based on deterministic approach, design specific: number of water sources and conduits.
3.32	General Design Guide for Ventilation Systems for Fuel Reprocessing Plants	Sep-75	Refers to ALAP, has some very specific criteria, eg, numerical air flow rates, specific test methods, Refers to numerous outdated consensus standards and specifications.
3.37	Guidance for Avoiding Intergranular Corrosion and Stress Corrosion in Austenitic Stainless Steel Components of Fuel Reprocessing Plants	Sep-75	Relies on ASTM standard that seems to still be valid. Cited 1973 ANSI standard may have been superceded by a 1980 version.

## ACNW&M Comments on Regulatory Guides

3.39	Standard Format and Content of License Applications for Plutonium Processing and Fuel Fabrication Plants	Jan-76	Refers to portions of 10 CFR Part 20 that do not exist, characterize impacts of abnormal releases in man-rem units, seismic analysis based on operating basis earthquake and probably dated, seems to have powder-to-pellet fuels in mind not metals, carbides, or carbon-based (HTGR) fuels that have unique considerations. Refers to RG 8.6 on Geiger-Mueller counters and refers to withdrawn RG 8.3 on film badges. Requires calculation of dose to critical organ and safety analysis based on credible accidents from minor to design basis. Should consider updating this RG to include the use of at least portions of ASCE 43-05 and ISG-01 for preclosure seismic analysis at Yucca Mountain. Should be made consistent with RG 3.73 for earthquake ground motion at ISFI and MRS facilities.
3.40	Design Basis Floods for Fuel Reprocessing Plants and for Plutonium Processing and Fuel Fabrication Plants	Dec-77	Based on a 1976 ANSI standard that was superceded by a 1992 ANSI/ANS standard that was withdrawn in 2002. Could not identify a successor.
3.42	Emergency Planning for Fuel Cycle Facilities and Plants Licensed Under 10 CFR Parts 50 and 70	Sep-79	Does not reflect the need for communication to government official and the public (TMI lessons learned) or any aspects related to terrorism. Despite the title, mostly format and content. It appears to have been superceded by the newer RG 3.67.
3.44	Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Water-Basin Type)	Jan-89	Refers to an older version of ANSI/ANS 57.7. Refers to an older version of 10 CFR Part 20. Calls for collective dose to be used to estimate offsite.
3.46 (DG 3026)	Standard Format and Content of License Applications, Including Environmental Reports, for In-Situ Uranium Solution Mining	Jun-82	Revision underway, DG 3026 not available for review.
3.48	Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation or Monitored Retrievable Storage Installation (Dry Storage)	Aug-89	Refers to old version of Part 20. Calls for collective dose to be used to estimate off-site impacts. Refers to an older version of ANSI/ANS 57.9. No Monitored Retrievable Storage Installations have been built.
3.49	Design of an Independent Spent Fuel Storage Installation (Water-Basin Type)	Dec-81	Based on ANSI/ANS 57.7-1981 which has been superceded.
3.50	Standard Format and Content for a License Application To Store Spent Fuel and High-Level Radioactive Waste	Sep-89	Should be revised to incorporate interim staff guidance memorandums.
3.51	Calculational Models for Estimating Radiation Doses to Man from Airborne Radioactive Materials Resulting from Uranium Milling Operations	Mar-82	Model is MILDOS. Staff's approach involves too many environmental and human behavior parameters that do not vary with the site. Calls for calculation of collective dose.
3.52	Standard Format and Content for the Health and Safety Sections of License Renewal Applications for Uranium Processing and Fuel Fabrication	Aug-89	Refers to old version of 10 CFR Part 20. Relationship of this RG to other RGs containing standard format and content for the same facilities is not clear.
3.53	Applicability of Existing Regulatory Guides to the Design and Operation of an Independent Spent Fuel Storage Installation	Jul-82	Refers to withdrawn RG 3.41; this RG is a massive crosswalk of other RGs and needs to be reviewed in its entirety for currency.



## ACNW&M Comments on Regulatory Guides

3.54	Spent Fuel Heat Generation in an Independent Spent Fuel Storage Installation	Jan-99	Burnup limited to 45 MWd/kgU for BWR and 50 MWd/kgU for PWR. Needs to be increased. Title is misleading: this RG explains how to calculate SNF decay heat in any out-of-reactor application. Need to incorporate this as updated in all RGs that need decay heat calculations. Also, needs review by NMSS Division of Spent Fuel.
3.55	Standard Format and Content for the Health and Safety Sections of License Renewal Applications for Uranium Hexafluoride Production	Apr-85	Refers to older 10 CFR Part 20 and does not use collective dose as a measure of radiological impact on the public.
3.56	General Guidance for Designing, Testing, Operating, and Maintaining Emission Control Devices at Uranium Mills	May-86	Refers to older 10 CFR Part 20. Appears to be a short tutorial on design and maintenance that would not be adequate to any real design.
3.59	Methods for Estimating Radioactive and Toxic Airborne Source Terms for Uranium Milling Operations	Mar-87	Model is MILDOS. Model has too many fixed parameters.
3.60	Design of an Independent Spent Fuel Storage Installation (Dry Storage)	Mar-87	Based on ANSI/ANS 57.7-1984 and ANSI/ANS 5.1-1979, both of which have been superceded. Suggest substituting RG 3.54 for ANSI/ANS 5.1.
3.61	Standard Format and Content for a Topical Safety Analysis Report for a Spent Fuel Dry Storage Cask	Feb-89	Calls for accident impacts to be estimated as collective dose. Does not seem to recognize that some storage casks are inside larger structures, especially, for horizontal placement. Update with staff guidance. Consider adding information from dry cask storage PRA.
3.62	Standard Format and Content for the Safety Analysis Report for Onsite Storage of Spent Fuel Storage Casks	Feb-89	Calls for accident impacts to be estimated as collective dose. Unclear whether it recognizes that some storage casks are inside larger structures, esp. for horizontal placement.
3.63	Onsite Meteorological Measurement Program for Uranium Recovery Facilities - Data Acquisition and Reporting	Mar-88	Approach being outlined in the RG seems reasonable.
3.64	Calculation of Radon Flux Attenuation by Earthen Uranium Mill Tailings Covers	Jun-89	Based on ASTM-D698, which may be current. Uses the RADON program. Parameters seem to be mostly input. Conceptual model seems to be very simplistic.
3.67	Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities	Jan-92	Seems to be fairly current with respect to more recent concepts like dealing with federal and the public but probably needs updating to reflect terrorism and DHS considerations.
3.69	Topical Guidelines for the Licensing Support Network	Jun-04	Describes what kind of documents need to go into LSN and provides a hierarchy for organizing them. No obvious problems.
3.71	Nuclear Criticality Safety Standards for Fuels and Material Facilities	Oct-05	RG was first established in 1998 and used at that time to withdraw numerous other RGs in favor of referring to consensus ANSI/ANS standards. The 2005 revision goes through the standards to reaffirm (or not) the NRC's endorsement of them but states that the original RG 3.71 is still valid. It is not evident how to access the 1998 RG 3.71. This RG is only applicable to 10 CFR Part 70 and 76. What about 10 CFR Part 71 and 10 CFR Part 72?

## ACNW&M Comments on Regulatory Guides

3.72	Guidance for Implementation of 10 CFR 72.48, Changes, Tests, and Experiments	Mar-01	Refers to Monitored Retrieval Systems, which do not exist. Document is tailored to 50.59. Very reactor based and not cask- design based. Needs to be updated to include relevant examples for cask designs for applicants to have as a guide when doing a 10 CFR 72.48 review. Should add examples of good and bad 72.48 changes based on lessons learned.
3.73	Site Evaluations and Design Earthquake Ground Motion for Dry Cask Independent Spent Fuel Storage and Monitored Retrievable Storage Installations	Oct-03	Based on probabilistic seismic hazard analysis. Consider updating other RGs to adopt this approach. Should be updated for ASCE 43-05 and ISG-01.
4.1	Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants	Apr-75	Update with MARSSIM guides.
4.2	Preparation of Environmental Reports for Nuclear Power Stations	Feb-76	Applicable standards may have changed (e.g., EPA ground water standards). MOUs with other agencies may be dated or nonexistent. Appears to use a deterministic approach.
4.4	Reporting Procedure for Mathematical Models Selected To Predict Heated Effluent Dispersion in Natural Water Bodies	May-74	The modeling procedure suggested in this document is 30 years old. As a result, it should be thoroughly checked against current state of the art. Procedures are suggested only, thus the impact of the guide is not critical.
4.5	Measurements of Radionuclides in the Environment-Sampling and Analysis of Plutonium in Soil	May-74	Update with MARSSIM and MARLAP.
4.6	Measurements of Radionuclides in the Environment-Strontium-89 and Strontium-90 Analyses	May-74	Update with MARSSIM and MARLAP.
4.7	General Site Suitability Criteria for Nuclear Power Stations	Apr-98	Should this be updated for enhanced security plans? Should this be updated to include consideration of climate change on meteorologic considerations and water temperature?
4.8	Environmental Technical Specifications for Nuclear Power Plants	Dec-75	Needs updating for current practices, including monitoring of tritium in ground water, security, etc. Should also be reviewed by the ACRS.
4.9	Preparation of Environmental Reports for Commercial Uranium Enrichment Facilities	Oct-75	Same concerns as in RG 4.2. This also needs updating for security, changes in technologies, effluent streams, etc. Input from ACNW&M white paper on reprocessing would be useful.
4.11	Terrestrial Environmental Studies for Nuclear Power Stations	Aug-77	Appears to be outdated with respect to security, MARSSIM, MARLAP, and control of tritium releases to ground water. The document is based on practices that have changed over the past 30 years.
4.13	Performance, Testing, and Procedural Specifications for Thermoluminescence Dosimetry: Environmental Applications	Jul-77	Update to incorporate MARSSIM and MARLAP.
4.14 (DG 4011)	Radiological Effluent and Environmental Monitoring at Uranium Mills	Apr-80	Latest revision was 27 years ago. Also, needs to be updated for current practices and regulations.
4.15	Quality Assurance for Radiological Monitoring Programs (Normal Operations) -- Effluent Streams and the Environment	Mar-07	Appears to incorporate the latest regulations and practices.

## ACNW&M Comments on Regulatory Guides

4.16	Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants	Dec-85	Should be updated for recent procedures, regulations, and technology. Should evaluate based on ACNW&M Reprocessing White Paper.
4.17	Standard Format and Content of Site Characterization Plans for High-Level-Waste Geologic Repositories	Jan-87	Should be updated for 10 CFR Part 63 and LARP.
4.20	Constraint on Releases of Airborne Radioactive Materials to the Environment for Licensees other than Power Reactors	Dec-96	Appears to be up to date.
5.57	Shipping and Receiving Control of Strategic Special Nuclear Material	Jun-80	Current practice conforms to this RG, but staff should note that additional security measures may have been implemented by NSIR.
6.3	Design, Construction, and Use of Radioisotopic Power Generators for Certain Land and Sea Applications	Mar-74	Appears to be outdated, but needs a review by ACRS.
6.6	Acceptance Sampling Procedures for Exempted and Generally Licensed Items Containing Byproduct Material	Jun-74	Should be reviewed for standard current practices.
6.7	Preparation of an Environmental Report To Support a Rule Making Petition Seeking an Exemption for a Radionuclide-Containing Product	Jun-76	Based on NEPA 69. It does not appear to be updated with current regulations and fails to consider important topics such as security and tracking of sources.
6.8	Identification Plaque for Irretrievable Well-Logging Sources	Oct-78	Looks appropriate.
7.1	Administrative Guide for Packaging and Transporting Radioactive Material	Jun-74	Calls out ANSI 14.10, if the latter is current, no need to change.
7.4	Leakage Tests on Packages for Shipment of Radioactive Materials	Jun-75	Consider the technical basis contained in NMSS staff guidance on the design/qualification of welds on canisters as containment boundary for spent fuel transportation. Revise to current ANSI standard.
7.5	Administrative Guide For Obtaining Exemptions From Certain NRC Requirements Over Radioactive Material Shipments	Mar-87	Calls out ANSI 14.10. Note that if current, no need to change.
8.1	Radiation Symbol	Feb-60	ANSI N2.1, American National Standards Institute Radiation Symbol, 1989. is the current ANSI N2.1 revision This RG is based on the 1969 standard. Also, out of date with 10 CFR Part 20 sections.
8.3	Criteria for Film Dosimeter Performance	no date	N13.7-1989 is the current standard. The RG is based on the N13.7 1972 version. Consideration underway to withdraw standard.
8.2	Guide for Administrative Practices in Radiation Monitoring	Feb-73	ANSI N13.2-1969, "Guide for Administrative Practices in Radiation Monitoring" is the basis for this standard and is not current. The July 1999 version is reported to be in balloting
8.4	Direct-Reading and Indirect-Reading Pocket Dosimeters	Feb-73	ANSI N13.5-1972 (the version in the RG) predates a lot of the electronic dosimeters now in use N13.5-1989. Note that the current version, "Performance Specifications for Direct Reading and Indirect Reading Pocket Dosimeters For X- and Gamma-Radiation is under discussion with N42.

## ACNW&M Comments on Regulatory Guides

8.5	Criticality and Other Interior Evacuation Signals	Mar-81	Reference standard ANSI/ANS N2.3-1979 seems to be the current version.
8.6	Standard Test Procedure for Geiger-Mueller Counters	May-73	ANS N42.3-1969 is the standard referenced in the RG. The current version is dated 1999.
8.7	Instructions for Recording and Reporting Occupational Radiation Exposure Data	Nov-05	Comports with 10 CFR 20 dosimetry methods.
8.8	Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be as Low as Is Reasonably Achievable	Jun-78	Does not reflect risk-informed approaches, safety conscious work environment, or current operating experiences at nuclear power plants.
8.9	Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program	Jul-93	Current with ICRP-26 and ICRP-30 dosimetry methods.
8.10	Operating Philosophy for Maintaining Occupational Radiation Exposures as Low as Is Reasonably Achievable	May-77	Principles and practices rather than providing specific guidance. Does not reflect risk-informed decisionmaking or safety conscious work environment approaches. Appears to be a simplistic approach to "pencil and paper" dose tracking methods. With modern dosimetry and tracking on line, real-time dosimetry is being accomplished as work proceeds.
8.11	Applications of Bioassay for Uranium	Jun-74	Does not reflect more modern methods for uranium bioassay (e.g., MSGC and others).
8.13	Instruction Concerning Prenatal Radiation Exposure	Jun-99	Seems to be current.
8.15	Acceptable Programs for Respiratory Protection	Oct-99	Seems to be current.
8.18	Information Relevant to Ensuring that Occupational Radiation Exposures at Medical Institutions Will Be as Low as Is Reasonably Achievable	Oct-82	Should be referred to ACUMI.
8.19	Occupational Radiation Dose Assessment in Light-Water Reactor Power Plants - Design Stage Man-Rem Estimates	Jun-79	Pencil and paper approach to dose assessment and sets forth methods for making collective dose estimates. Not clear how this RG is risk informed and how the result will be interpreted.
8.20	Applications of Bioassay for I-125 and I-131	Sep-79	Out of date with current 10 CFR Part 20 dosimetry concepts.
8.21	Health Physics Surveys for Byproduct Material at NRC Licensed Processing and Manufacturing Plants	Oct-79	Out of date with current 10 CFR Part 20 dosimetry concepts.
8.22	Bioassay at Uranium Mills	Aug-88	Does not discuss the use of single voided samples versus 24 hour collections. Does not recognize the current use of MSGC assay methods of urine bioassay. The basic approaches are acceptable but the RG is out of date with technology and some dosimetry concepts.
8.24	Health Physics Surveys During Enriched Uranium-235 Processing and Fuel Fabrication	Oct-79	Uses sound principles, but is out of step with radiation measurement technology and ALARA and risk-informed health physics practice.
8.25	Air Sampling in the Workplace	Jun-92	Outdated with current 10 CFR 20 dosimetry concepts.
8.26	Applications of Bioassay for Fission and Activation Products	Sep-80	NOT AVAILABLE
8.27	Radiation Protection Training for Personnel at Light-Water-Cooled Nuclear Power Plants	Mar-81	More up-to-date concepts related to "safety conscious work environment" and ALARA.

## ACNW&M Comments on Regulatory Guides

8.28	Audible-Alarm Dosimeters	Aug-81	Relies on ANSI N13.27. The current version of N13.27 is the 1992 version, entitled, "Performance Specifications for Pocket-Sized Alarming Dosimeters/Ratemeters."
8.29	Instruction Concerning Risks from Occupational Radiation Exposure	Feb-96	Seems to be current.
8.32	Criteria for Establishing a Tritium Bioassay Program	Jul-88	Not current with the current version of 10 CFR 20. However, the guidance for establishing the criteria is still valid. ANSI N13.14-1983 is the references ANSI standard for this RG.
8.33	Quality Management Program	Oct-91	Should be referred to ACUMI.
8.34	Monitoring Criteria and Methods To Calculate Occupational Radiation Doses	May-92	Seems to be current.
8.35	Planned Special Exposures	Jul-92	Seems to be current.
8.36	Radiation Dose to the Embryo/Fetus	Jul-92	Seems to be current.
8.37	ALARA Levels for Effluents from Materials Facilities	Jul-93	The RG will have to be updated based on what happens to RGs 8.10, 8.11 and 8.30.
8.38	Control of Access to High and Very High Radiation Areas of Nuclear Plants	May-06	Seems to be current.
8.39	Release of Patients Administered Radioactive Materials	Apr-97	Should be referred to ACUMI.