NRCREP - Comments on Draft Regulatory Guide DG-4012, Issuance, Availability, 72 Federal Register 41794, July 31, 2007

From: "ANDERSEN, Ralph" <rla@nei.org>
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Subject: Comments on Draft Regulatory Guide DG-4012, Issuance, Availability, *72 Federal Register 41794*, July 31, 2007

Project Number: 689

This letter provides the comments of the Nuclear Energy Institute (NEI), on behalf of the nuclear energy industry, on the subject Federal Register notice that solicits public comments on Draft Regulatory Guide DG-4012, "Minimization of Contamination and Radioactive Waste Generation – Life Cycle Planning." DG-4012 provides guidance on implementation of Title 10 *Code of Federal Regulations* Part 20 (10 CFR 20) Section 20.1406, "Minimization of Contamination." The final rule was issued on July 21, 1997, and applies to applications submitted after August 20, 1997.

The NRC staff is to be commended for actively seeking and encouraging stakeholder input throughout the process of developing the regulatory guide. NEI, the Electric Power Research Institute (EPRI), and the nuclear energy industry have provided input during initial development of the draft regulatory guide and ongoing feedback on the draft guide in several public meetings held since publication of the document for comment. This letter updates and summarizes our previous comments.

Our specific comments are enclosed. In summary, we have included suggestions to clarify the purpose and objectives of the underlying rule, better emphasize a risk-informed approach, and enhance flexibility in implementation.

We encourage the NRC to issue the guide as an "interim regulatory guide for use and comment," rather than as a final guide, after this current round of public comments has been addressed. To our knowledge, the rule has not been tested until the present, where it is being applied for the first time in conjunction with the development of applications for new nuclear power plant design certifications (DC) and construction and operating licenses (COL). Although regulatory guidance is needed now to aid both new applicants and regulatory agency reviewers, much experience and insight will be gained during this initial period of implementation –i.e., there will be a significant learning curve. Issuing the guide on an interim basis for the first few years of implementation will encourage and enable innovation by applicants in implementing the new rule and support incorporation of lessons-learned and improvements to the clarity and consistency of the guide in a timely and resource-effective manner.

We appreciate the opportunity to comment on the draft guide. If you have any questions regarding our comments, please do not hesitate to contact me at 202.739.8111 or rla@nei.org.

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[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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Sincerely,

Ralph Andersen

Ralph L. Andersen

Enclosure

c: NRC Document Control Desk

NEI Comments on Draft Regulatory Guide DG-4012, "Minimization of Contamination and Radioactive Waste Generation – Life Cycle Planning"

Background

Draft Regulatory Guide DG-4012, "Minimization of Contamination and Radioactive Waste Generation – Life Cycle Planning," provides guidance on implementation of Title 10 *Code of Federal Regulations* (CFR) Part 20.1406, "Minimization of Contamination." Part 20.1406 was published in 1997, as part of a final rule on Radiological Criteria for License Termination (Subpart E to 10 CFR Part 20), and revised in August 2007 to redefine the applicability of the rule. The rule requires that applicants for licenses, standard design certifications, standard design approvals, and manufacturing licenses, whose applications are submitted after August 20, 1997, describe in the application how facility design and operational programs will "minimize, the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize to the extent practicable, the generation of radioactive waste."

The Supplementary Information accompanying publication of the final rule in 1997 (62 Federal Register 39058, July 21, 1997) describes the purpose of the 10 CFR 20 Subpart E rulemaking as follows:

> "The Nuclear Regulatory Commission is amending its regulations regarding decommissioning of licensed facilities to provide specific radiological criteria for the decommissioning of lands and structures. This action is necessary to ensure that decommissioning will be carried out without undue impact on public health and safety and the environment."

The Supplementary Information to the Subpart E rulemaking describes the intent of 10 CFR Part 20.1406 as follows:

> "The intent of this provision is to emphasize to a license applicant the importance, in an early stage of planning, for facilities to be designed and operated in a way that would minimize the amount of radioactive contamination generated at the site during its operating lifetime and would minimize the generation radioactive waste during decontamination."
>
> "Specific minimization requirements ... are directed towards those making application for a new license because it is more likely that consideration of design and operational aspects that would reduce dose and minimize waste can be cost effective at that time compared to such considerations during the license renewal stage where the existing design and previous operations may be a major constraint."

The Supplementary Information also clarifies that Part 20.1406 is intended to serve as an analogue to existing "as low as is reasonably achievable" (ALARA) requirements that apply to licensees. In its response to public comments suggesting that Part 20.1406 should be revised to apply to licensees, as well as applicants, NRC states:

"[licensees] are already required by [the ALARA provisions in 10 CFR Part 20.1101] to have radiation protection programs aimed towards reducing exposure and minimizing waste." NRC goes on to emphasize that "current requirements require both applicants and existing licensees, including renewals, to minimize contamination."

From the foregoing, our perspective is that Part 20.1406 is risk-informed (in that it is based on meeting the Subpart E radiological criteria for license termination) and requires that practicability and cost-effectiveness be taken into account in implementing the rule. It is our understanding that the purpose of the rule is to support eventual decommissioning of the facilities "without undue impact on public health and safety and the environment." We understand the intent of the rule is as described in the Supplementary Information, above.

We understand the objectives of the rule are to minimize contamination of the facility and the environment, minimize radioactive waste generated during contamination, and facilitate decommissioning through the use, to the extent practical, of procedures and engineering controls as described in the license or certification application. We also understand that the rule is analogous to existing ALARA requirements for licensees (10 CFR Part 20.1101) and therefore implementation guidance should leverage regulatory approaches and operational experience that have been demonstrated to be highly effective and successful in achieving occupational doses and doses to members of the public that are ALARA.

Our comments below are based on this perspective and understanding of the rule. Suggestions are arranged by respective sections of the draft guide. Where applicable, specific reference to the page and paragraph within the draft guide is given in brackets, for example, reference to the first page and first paragraph of the guide is shown as [1,1].

Comments on Section A. Introduction

[1,1] The opening paragraph in the Introduction should be updated to reflect the August 2007 revision to the rule (72 FR 49485, August 26, 2007). Throughout the guide, reference should be made to "license *and certification*" applications to reflect the August revision to the rule.

[1,2] The guide specifically calls for "prompt and aggressive cleanup." Cleanup may not be practicable. For example, contamination from a leak may be under a structure, system, or component where removal of soil or fluids might affect the structural integrity or operability of the SSC. Also, cleanup may not be warranted on the basis of the amount or type of radioactive material, physical form, mobility, etc. The wording should be changed to wording similar to: "prompt assessment to support a timely and appropriate response." This approach should be reflected throughout the guide.

[1,2] For improved clarity and consistency with existing terminology in NRC regulations and guidance, we suggest that "the use of good engineering and science" be changed to "the use, to the

extent practicable, of procedures and engineering controls based on sound radiation protection principles." This wording is found in 10 CFR Part 20.1101 and in related regulatory guidance. Similar wording should be reflected throughout the guide.

Comments on Section B. Discussion

[General] The discussion should provide additional background information to help applicants better understand the purpose, intent and objectives of the underlying regulation. Also, the Discussion should help explain the analogous relationship to existing ALARA requirements. The information provided in the "Background" section, above, may be useful for that purpose. In particular, we suggest that the discussion include the quoted text from the Supplementary Information accompanying publication of the final rule and an explicit statement of the rule's purpose, intent, and objectives.

[General] The Discussion includes a useful and comprehensive set of implementation guidance for license and certification applicants. In fact, the text reflects a high-level and broad overview that is more appropriate to be included in the Regulatory Position section in the guide, rather than the Discussion section. We suggest that the current Discussion section (reflecting our comments below) be relocated to the Regulatory Position section. In turn, we also suggest that the current listing of specific examples of measures that may be considered by license and certification applicants should be relocated to an Appendix to the guide (this suggestion is discussed in more detail under our comments on the Regulatory Position section, below).

Following are our comments on the specific paragraphs contained in the Discussion section of the draft guide:

[2,5 – Explore Opportunities for Minimizing Contamination Prior to Application Submittal] In particular, we believe the concluding sentence that succinctly conveys the performance basis for Part 20.1406, which is "meeting the Subpart E radiological criteria in 10 CFR 20..." for license termination.

[2,6 – Minimize Leaks and Spills and Provide Containment] We suggest several revisions to the text to emphasize the risk-informed and performance basis of the rule. The text should refer to "radiologically significant" leaks and spills. Containments should be considered where "practicable and cost-effective." The phrase "quickly detect and clean up leaks and spills that do occur" should be changed to wording similar to "provide for detection that supports timely assessment and response for such leaks and spills, and corrective action to stop the leaks." The phrase, "minimize the amount of radiological work performed outside the restricted area" is somewhat ambiguous and unnecessarily prescriptive and should be deleted.

[3,1 – Prompt Detection of Leakage] We suggest several revisions to the text to emphasize the risk-informed and performance basis of the rule. We also suggest deleting the reference to developing advance "mitigation plans." Detection methods should provide for timely assessment and

determination of an appropriate response to leakage and/or contamination. In particular, for large and complex facilities, experience has shown that the unique circumstances surrounding a specific leak or spill call for situation-specific remedial responses based on detailed assessments, rather than preconceived "mitigation plans" that simply cannot anticipate the wide range of possible circumstances. Suggested wording includes the following:

> "The facility should be designed, to the extent practicable and cost-effective, such that structures, systems, and components (SSCs) which have the potential for radiologically significant leakage are provided with adequate leak detection capability. In addition to design considerations to minimize radioactive system leakage, it is important during operations to be able to detect leakage to support timely assessment and response to prevent significant contamination and corrective action to stop the leak. Thus, routine monitoring and surveillance procedures form an important part of a program to minimize contamination. This approach may include the use of equipment and instrumentation to monitor leakage from SSCs that pose a significant potential for contamination and operational practices (e.g., surveillance, testing, and inspection) to prevent or minimize such leakage."

[3,2 – Avoid Release of Contamination from Undetected Leaks] This section appears to be informational, rather than guidance and should be retained and incorporated into the suggested revision to the Discussion section.

[3,3 – Measures for Reducing the Need to Decontaminate Equipment and Structures] This section provides useful information and guidance and should be included in the Regulatory Position.

[4,1 – Operational Practices Should be Periodically Reviewed] This section provides useful information and guidance and should be included in the Regulatory Position. We suggest that the reference to "root-cause analysis" be changed to "analysis" because a full root-cause analysis is a defined formal process usually reserved for evaluating significant events.

[4,2/3 – Related Regulatory Guides] This section provides useful information and guidance and should be included in the Regulatory Position.

[4,4 – Proper Records will Facilitate Decommissioning] This section should be limited to simply referencing the appropriate (listed) parts within NRC regulations. These regulations contain requirements for records that are adequate to support decommissioning because that is their specific purpose. The guidance should not imply that the existing requirements are inadequate and necessitate actions beyond the regulations.

[4,5 – Final Site Configuration to Prevent or Confine Contamination] This section provides useful information and guidance and should be included in the Regulatory Position. We suggest deleting the reference to making the onsite monitoring program "an integral part of the radiological environmental monitoring program (REMP)." The REMP is a distinct program required by the license

for the purpose of monitoring significant dose pathways to humans associated with effluents releases during facility operations to confirm the adequacy of the radiological effluent control program. Onsite monitoring to minimize contamination in accordance with Part 20.1406 serves a different purpose from the REMP. Although there may be some overlap between the two programs, we believe that attempting to integrate the two programs may lead to dilution of purpose, confusion, and unnecessary burden.

Comments on Section C – Regulatory Position

We suggest that the initial part of the Regulatory Position confirm the risk-informed basis of the rule, endorse a graded approach to considering design features and operational procedures, and reflect the flexibility in regulatory guidance that has supported highly effective and successful implementation of existing ALARA requirements. Our detailed comments below are intended to expand on these suggestions.

The Regulatory Position should at the outset convey the risk-informed nature of the rule and define a graded approach to implementing it. Wording from the draft guide's Implementation section [15,2] is especially appropriate for this purpose:

> "An applicant should use technically sound engineering judgment and a practical risk-informed approach to achieve the objectives of 10 CFR 20.1406. This approach should consider the materials and processes involved (e.g., solids, liquids, gases) and focus on: (1) the relative significance of potential contamination; (2) areas most susceptible to leaks; and (3) the appropriate level of consideration to prevention and control of contamination that should be incorporated in facility design. Following this approach should result in meeting the objectives of 10 CFR 20.1406."

The Regulatory Position should also reflect the flexibility in implementation that has proven highly effective and successful in meeting ALARA requirements. Wording from USNRC Regulatory Guide 8.8 may be adapted to be useful for this purpose:

> "The methods and examples in this guide are deliberately stated such that considerable flexibility can be used in a manner by which the objectives of 10 CFR 20.1406 can be achieved. Differences between facilities and licensee operations might necessitate further innovation in methods to achieve the objectives."

As described in the previous comments, we suggest much of the text contained in the Discussion section of the draft guide should be relocated to the Regulatory Position section, taking into account our comments on the specific paragraphs. We also suggest that the detailed listing in the Regulatory Position of the draft guide (of measures that might be considered by applicants) should be located to an Appendix in the guide as "Examples," rather than being retained as a "regulatory position." This will help alleviate the prescriptive nature of the current configuration of the guide

and also encourage the future incorporation of innovative measures and lessons-learned that should result from implementation experience.

We have no comments on the Implementation Section of the draft guide. In regard to the detailed listing of measures to be considered by the applicant (that we have suggested be relocated to an Appendix as "Examples), we are not making specific comments at this time because we believe that the NRC should encourage ongoing feedback and updating to the listing as applicants "field test" these items in the context of preparing applications.