Analysis of Public Comments on Draft DANU-ISG-2022-03

Advanced Reactor Content of Application Project

Chapter 9, "Control of Routine Plant Radioactive Effluents, Plant Contamination and Solid Waste"

Comments on the draft interim staff guidance (ISG) are available electronically at http://www.nrc.gov/reading-rm/adams.html. From this page, the public can access the Agencywide Documents Access and Management System (ADAMS), which provides text and image files of the U. S. Nuclear Regulatory Commission (NRC) public documents. The following table lists the comments the NRC received on the draft ISG.

Comment Number	ADAMS Accession Number	Commenter Affiliation	Commenter Name
NRC-2022-0076-DRAFT-0002	ML23194A209	Hybrid Power Technologies LLC	Michael F. Keller
NRC-2022-0074-DRAFT-0006	ML23229A120	Nuclear Energy Institute	Ben Holtzman

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NRC-2022-0076-DRAFT-0002 - 1	References to Part 53	Purpose, p1 Background, p2 Backfitting, p13	Delete all requirements in the ISG that rely on speculation of prospective elements in the proposed and unapproved 10CFR53 and planned amendments to 10CFR50 and 52. Appears the NRC staff is attempting to use the ISG for back fitting, considering that a number of new requirements are apparently being proposed that are outside the existing Code of Federal Regulations and industry codes/standards. Citing the unapproved 10CFR53 or intended amendments to 10CFR50/52 as a justification for new requirements, even on an interim basis, is of doubtful validity. If simplifications (i.e. fewer requirement) are intended, then state reason for such simplifications (e.g. refer to Nuclear Modernization Act).	The NRC staff disagrees with the comment. The guidance in the ISG is based on the requirements in existing regulations (i.e., 10 CFR Parts 20, 50, and 52). The references to "future" Part 53 are only for general background information. The ISG does not address any proposed Part 53 requirements. No change has been made to the ISG.
NRC-2022-0076-DRAFT-0002 - 2	Rule reference topics	Application Guidance, p4. 5th paragraph	Identify the topic of the reference 10CFR50.xxx, 52.xxx. Overly difficult to follow intent of section.	The NRC staff disagrees with the comment. Page 3 of the ISG provides the titles for the various referenced Part 50 and Part 52 sections. It is unnecessary to repeat this information on page 4. No change has been made to the ISG.

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NRC-2022-0076-DRAFT-0002 - 3	Radiation protection programs	Section 9.1, liquid and gaseous effluents, p5	10 CFR 20.1101(b). Add "to extent practical" as well as actual text of cited section(s). The staff has omitted a key consideration embedded in the subject CFR. The staff should not alter the actual text associated with using various 20.xxxx sections, as new requirements appear to be morphing from such omissions/additions.	The NRC staff agrees with the comment. The referenced ISG text is revised to add the phrase "to the extent practical" to be consistent with the text in 10 CFR 20.1101(b).
NRC-2022-0076-DRAFT-0002 - 4	Dose limits for individual members of the public	Section 9.1, liquid and gaseous effluents p5	Various citations to 10CFR1302, 1301. The staff should not alter the text associated with apparently paraphrasing citations to various sections, as new requirements appear to be morphing from such omissions/additions.	The NRC staff disagrees with the comment. The ISG text describing 10 CFR 20.1301 and 20.1302 accurately reflects the rule requirements. No change has been made to the ISG.
NRC-2022-0076-DRAFT-0002 - 5	Analysis of effluents	Section 9.1. liquid and gaseous effluents, p6, 1st paragraph	Delete reference to "detailed calculations". The staff's claim that detailed calculations are required is not supported by the cited sections of 10CFR50.xx, 52.xx. Also, appears that the staff is manufacturing new requirements that are not risk based, contrary to the Modernization Act.	The NRC staff partially agrees with the comment. The referenced regulations on DANU-ISG-2022-03, page 6, first paragraph, specify, in part, that an application should include a "description of the equipment and procedures for the control of gaseous and liquid effluents…and an estimate of… (i) The quantity of each of the principal radionuclides expected to be released annually to unrestricted areas." These requirements are explained on page 3 of DANU-ISG-2022-03. This ISG is revised in Section 9.1, and Item (g) in Section 9.1.1, to remove the word "detailed" when referencing "system descriptions and analysis." The ISG does not use the term "calculation." The Nuclear Energy Innovation and Modernization Act (NEIMA) specifies, in part, that the NRC develop strategies for the increased use of risk-informed, performance-based licensing evaluation techniques and guidance for commercial advanced nuclear reactors within the existing regulatory framework. The ARCAP and this ISG are part of the implementation of that strategy. Further, contrary to the comment's assertion, NEIMA calls for risk-informed and not risk-based licensing..
NRC-2022-0076-DRAFT-0002 - 6	Estimate of dose	Section 9.1.	Delete requiring identification of summary of estimated doses. As long as the doses are below threshold limits, there is no sound reason to include the requested	The NRC staff disagrees with the comment.

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		liquid and gaseous effluents, p6, 2nd paragraph	information in the PSAR or FSAR. Means that a PSAR/FSAR change is necessary if calculations are modified, even though discharges remain below threshold limits. Appears that the staff is manufacturing new requirements that are not risk-based, contrary to the Modernization Act.	The staff is specifying in the ISG, as an alternate to providing estimates of the quantity of each of the principal radionuclides expected to be released annually to unrestricted areas, that an estimate of dose be included as a more streamlined approach to demonstrating that the applicant meets the regulations for effluent releases. Regarding the NEIMA, refer to the response to comment NRC-2022-0076-DRAFT-0002 – 5. No change has been made to the ISG.
NRC-2022-0076-DRAFT-0002 - 7	Principal design criteria	Section 9.1.1 p8, item f	Open ended. Instead, applicant should identify industry standards intended for design, construction and operation. By definition, this ISG involves issues that are far removed representing an undue risk to the public. In the context of the Modernization Act, the systems are not particularly risk significant. As such, reasonable measures are sufficient, as should be staff efforts. In passing, we note GDC 64 does not require in-depth information.	The NRC staff disagrees with the comment. 10 CFR Part 50, Appendix A, requires that "Under the provisions of § 50.34, an application for a construction permit must include the principal design criteria for a proposed facility. Under the provisions of 10 CFR 52.47, 52.79, 52.137, and 52.157, an application for a design certification, combined license, design approval, or manufacturing license, respectively, must include the principal design criteria for a proposed facility." The guidance in Item "f" on page 8 is consistent with these requirements. Additionally, the ISG references RG 1.232, "Guidance for Developing Principal Design Criteria for Non-Light-Water Reactors," regarding guidance for developing principal design criteria. No change has been made to the ISG.
NRC-2022-0076-DRAFT-0002 - 8	Use of NEI template – effluent releases	P 8, 9.1.1 Applications Using NEI-18-04	Overly restrictive – delete and simply allow use of NEI-18-04. The staff's expectations greatly exceed the risk – see item #7 Basis for Comment.	The NRC staff disagrees with the comment. The use of NEI 18-04 is described as an option and is not required. Regardless, applicants need to show that effluent releases meet 10 CFR 20.1301. No change has been made to the ISG.

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NRC-2022-0076-DRAFT-0002 - 9	Use of NEI template – contamination control	P9, 9.2 Contamination Control	Delete “staff endorsement”, including requiring the applicant to justify the use of NEI-08-08A. There is no sound basis for staff endorsement of NEI-08-08A, including requiring the applicant justify the standard’s use, particularly in light of this issue being well removed from being of risk significant. Also see item #7 Basis for Comment.	The NRC staff disagrees with the comment. The use of NEI 08-08A by an applicant is an option. While the NRC staff has not endorsed NEI 08-08A, it has approved the NEI 08-08A minimization of contamination program template via safety evaluation and NEI 08-08A is similar to an approved topical report. Accordingly, an applicant who wishes to adopt the NEI 08-08A program template to minimize facility contamination should explain why the program template applies to its proposed facility, including how the conditions for use of the template, if any, are satisfied, and add any information the program template identifies as an applicant’s responsibility. No change has been made to the ISG.
NRC-2022-0076-DRAFT-0002 - 10	NEI template – solid waste	P. 11, last paragraph, Solid Waste	Delete “staff endorsement”, including requiring the applicant to justify the use of NEI-07-10A. There is no sound basis for staff endorsement of NEI-07-10A, including requiring the applicant justify the standard’s use, particularly in light of this issue being well removed from being risk significant. Also see item #7 Basis for Comment.	The NRC staff disagrees with the comment. The use of NEI 07-10A is an option. While the NRC staff has not endorsed NEI 07-10A, it has approved the Process Control Program (PCP) template via safety evaluation and NEI 07-10A is similar to an approved topical report. Accordingly, an applicant who wishes to employ the NEI 07-10A PCP template for the portion of the Chapter 9 application content it covers should explain why the template applies to its proposed facility, including how the conditions for use of the template, if any, are satisfied, and add any information the template notes as an applicant’s responsibility. No change has been made to the ISG.
NRC-2022—0074- DRAFT-0006-1			Please rephrase to indicate the guidance is technology-inclusive and is equally applicable to both LWR and non-LWR designs. Throughout all the documents of the package, there are statements that this guidance is applicable to non-Light Water Reactors (LWRs). However, all the guidance is technology-inclusive and is equally applicable to LWRs. ARCAP is supposed to be applicable for any technology	The NRC staff disagrees with the comment. The NRC staff is considering expanding the applicability of ARCAP guidance documents beyond non-light water reactors (non-LWRs). However, expansion of the guidance beyond non-LWRs at this time is considered premature. The final ISG continues to note that the NRC staff is developing an optional performance-based, technology-inclusive regulatory framework for licensing nuclear power plants designated as 10 CFR

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			(non-LWR and LWR), any licensing approach (LMP, classical, etc.), and any licensing path (CP, COL, DC etc.). For the ARCAP guidance, industry specifically requested the NRC develop guidance applicable to both non-LWRs and LWR SMRs, and we were informed in various meetings that this would be the NRC's approach. While NEI 18-04 and NEI 21-07 were developed specifically for advanced non-LWRs, applicants with LWR designs should also be able to use the Licensing Modernization Project (LMP) methodology if they elect to do so (e.g., NEI 18-04 and NEI 21-07). It would be up to the applicants to justify the use of the guidance documents and associated regulatory guides.	Part 53, "Licensing and Regulation of Advanced Nuclear Reactors," (RIN 3150-AK31). Should the 10 CFR Part 53 rulemaking include requirements for both LWR and non-LWRs the NRC staff envisions that the guidance documents supporting that rulemaking would provide a basis to expand the concepts found in the ARCAP ISGs guidance beyond non-LWRs. In the interim, the NRC staff notes that the applicability section of the ISG notes that applicants desiring to use the ISG for a light water reactor application should contact the NRC staff to hold pre-application discussions on their proposed approach. No change has been made to the ISG at this time.
NRC-2022-0074 DRAFT 0006-16	Chapter 9	ARCAP Roadmap ISG and ARCAP ISG Chapter 9	Note the ARCAP Roadmap ISG comment resolution table provides a response to the comment that includes changes to ARCAP ISG Chapter 9. The comment is repeated here for ease of reference and to document the change to ARCAP ISG Chapter 9 ML applications should only be required to include information to identify the kinds and quantities of radioactive materials expected to be produced during operation and the means for controlling/limiting effluents.	The NRC staff agrees with the comment. DANU-ISG-2022-03 (Chapter 9) has been revised to add the following after the first paragraph under "Application Guidance": "For Chapter 9 content, DC [design certification], SDA [standard design approvals], and ML applications need only include (i) information to identify the kinds and quantities of radioactive materials expected to be produced in the operation and the means for controlling and limiting radioactive effluents and radiation exposures within the limits set forth in Part 20 (per 10 CFR 52.47(a)(5), 52.137(a)(5) and 52.157(e), respectively); (ii) information required by 10 CFR 20.1406 (per 10 CFR 52.47(a)(6), 52.137(a)(6), and 52.157(f)(9), respectively); and (iii) information with respect to the design of equipment to maintain control over radioactive material in gaseous and liquid effluents produced during normal reactor operations as described in 10 CFR 50.34a(e) (per 10 CFR 52.47(a)(10), 52.137(a)(10), and 52.157(f)(11), respectively). Programmatic information identified below related to Chapter 9 (e.g., radiation protection program description) that is not included in an application for a DC, SDA, or ML should be addressed in the subsequent COL applications."

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NRC-2022-0074 DRAFT 0006-14 and NRC-2022-0074 DRAFT 0006-17	As low as reasonably achievable (ALARA)	ARCAP Roadmap ISG and ARCAP ISG Chapter 9	This comment repeats two comments provided on the ARCAP roadmap ISG regarding ALARA. The specific comments are: The wording on ALARA in Chapter 10 indicates that the guidance will continue the well-established operational program for ALARA but not extend ALARA into the design, as a regulatory requirement. Industry agrees with this position as it provides a predictable regulatory framework. The ML application should only be required to address the facility and equipment design, and radiation sources. Operational programs and descriptions of management, policy and organizational structure necessary to ensure occupational radiation exposure are ALARA should be addressed in a COLA.	Although the comments refer to ARCAP ISG Chapter 10, the NRC staff believes clarification to ARCAP ISG Chapter 9 is warranted to clarify the guidance related to keeping doses as low as reasonably achievable in normal effluents. The NRC staff disagrees with the assertion that ALARA principles need not be addressed in design-centered applications (e.g., design certifications). Based on these comments the NRC staff made the following changes to ARCAP ISG Chapter 9: Page 3: "… However, as discussed below, an alternative approach to demonstrating compliance with these requirements is for an application to provide a summary of the design features and describe a performance monitoring program for effluent releases in lieu of providing detailed system descriptions and analysis of estimated effluent releases. This alternative would likely require an exemption to some of the listed regulations." Similar change made in items (e) and (g) of Section 9.1.1. *** Also on Page 3: "This guidance for Chapter 9 applies to a non-LWR application for a 10 CFR Part 50 CP and OL or a 10 CFR Part 52 COL …" Page 6, second paragraph: "As an alternative to providing detailed system descriptions and analysis of estimated effluent releases, an applicant may submit a request for an exemption to these requirements if it can demonstrate compliance with 10 CFR Part 20 by establishing a performance monitoring program to confirm design features and programmatic controls effectively limit the release of radioactive effluents. This request for exemption should describe a performance monitoring program for effluent releases that will ensure that effluent release limits

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				will be met during normal operations for the life of the plant, and this program description may be in Chapter 9 of the FSAR or the radiation protection program document. Information related to plant systems can be limited to general descriptions of layout and technologies used to limit the release of the various inventories of radioactive materials within the plant and how operating experience or other information provides confidence in the expected system performance. While the application does not have to include the specific analysis of effluent releases, an applicant should provide a summary of estimated doses to a member of the public from any such releases and develop such a specific analysis for its internal engineering documents. These specific analyses along with additional details of the design features and associated programmatic controls could be the subject of an audit by NRC staff reviewers at the time of application review or subsequently as part of inspections during plant construction or operation." Page 4, fourth paragraph "The guidance in Sections 9.1 through 9.3 below summarizes the information that should be included in an application regarding control and management of liquid and gaseous effluents, contamination, and solid waste ~~using performance monitoring to the extent practicable~~. The guidance also summarizes the information that should be included in a risk-informed approach to demonstrate compliance with the applicable regulations." Page 5, first paragraph "The application must provide assurance that the limits on the release of radioactive liquid and gaseous effluents and direct radiation, as appropriate, during normal operation (including anticipated operational occurrences (AOOs)) will meet the relevant requirements in 10 CFR Part 20 and 10 CFR Parts 50 and 52. Specifically, the applicant must address the following:" Page 7, third paragraph: "When an applicant elects to pursue an exemption to the content of application requirements referenced above ~~and~~ by use of a performance monitoring program in lieu of providing complete system descriptions and supporting analyses, significant portions of the system design

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				information that has historically been provided in FSARs may not be required to be included in Chapter 9 of the application's FSAR, such as the following:"