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Rules and Directives Branch
Office of Administration
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Public Comment on Draft Regulatory Guides DG-1102 and DG-1103, (65 *Fed. Reg. 65024*)
Request for Comments

PROJECT NUMBER: 689

Enclosed are the Nuclear Energy Institute's (NEI)[1] comments on draft Regulatory Guides:

- DG-1102, *Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants,* and

- DG-1103, *Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Normal Ventilation Exhaust Systems in Light-Water-Cooled Nuclear Power Plants*

A comment with policy implications affecting these and other regulatory guides is the NRC staff activity to update regulatory guides to incorporate improved technical knowledge and to reference revised or new consensus standards.

The value/impact statements of DG-1102 and DG-1103 state that the guides were prepared to address provisions no longer recommended by the NRC staff. However, the Implementation section of the guides states that the guides are for voluntary use. These statements could result in misunderstanding about the guides' applicability to operating plants. If a plant licensing basis includes an earlier

[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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version of the regulatory guide, it remains in effect until the licensee elects to adopt the later edition or the NRC promulgates a revised rule or plant order. An operating reactor licensee who voluntarily proposes to initiate system modifications consistent with the current licensing basis should not be placed in a position of defending to the NRC staff a decision to not apply an updated regulatory guide. These and future revised regulatory guides should contain a statement that it is not the responsibility of the licensee to defend its decision to not implement new NRC staff positions in a later revision of a regulatory guide.

Please direct any questions to Kurt Cozens at 202-739-8085, koc@nei.org.

Sincerely,

David J. Modeen

KOC/maa
Enclosures

Enclosure 1

NEI Comments on DG-1102

COMMENT NUMBER	LOCATION	COMMENT	PROPOSED CHANGE
1.	B, C.4.4 General	To avoid confusion, clarify that the term "gas" also includes "air."	Change "gas" to "air or gas" stream.
2.	B. 2nd para., 3rd sent.	The term "secondary containment" is widely used throughout the industry and also encompasses several of the other areas in the sentence. It should be included in the description to avoid confusion.	Add the term "secondary containment."
3.	B 2nd to the last para.	ASTM D4069-81 should be ASTM D4069-95 as per Ref.11	Revise reference.
4.	C.1	A statement should be added to indicate that if a system is designed and maintained per RG 1.52, Revision 2 or its earlier versions, that system can use the testing criteria provided in Section 6 and 7 of RG 1.52, Revision 3.	Revise the document to permit licensees with systems satisfying all editions of RG-1.52, Revision 2 to use the testing criteria provided in Section 6 and 7 of RG 1.52, Revision 3.
5.	C.1 2nd sentence	ASME AG-1 replaces ASME N510-1989.	Revise to read: 'This code replaces ... (Ref.7) and ASME N510-1989 (Ref.8)."
6.	C.1	The paragraph states that systems are acceptable if built to ASME N509-89 and tested to ASME N510-89. It also states that systems tested to earlier versions of N510 are also acceptable. It is unclear if the paragraph means that systems designed and built to earlier versions of N509 are acceptable.	Revise the second to the last sentence as follows: "However, atmosphere cleanup systems designed to ASME N509-1989, or its earlier versions, and tested to ASME N510-1989, or its earlier versions, would be adequate to protect public health and safety."

7.	C.2	Clarify the 1st paragraph to reflect that AG-1 replaced ASME N509.	Revise to read: "In addition to respective environmental design ... guidelines."
8.	C.3	There is no mention of surge protection requirements in this section, similar to that discussed in Section 2d of RG 1.52, Rev. 2. This criteria applies to some operating plants and should be included in Revision 3.	Include the surge protection contained in RG 1.52 (Rev. 2), section 2.d back into Revision 3.
9.	C.3.11	Clarify the citation of ASME Subsection SA.	Revise to read: "ESF atmosphere...Section SA-4500 of ASME AG-1-1997 ... Section TA of ASME AG-1-1997."
10.	C.3.3	Revise the sentence to achieve a consistent reference citation format.	Revise to read: " All components ...Seismic Category 1 (see Regulatory Guide 1.29, (Ref. 12) if ... environments."
11.	C.3.5	ASME AG-1-1997, *Code on Nuclear Air and Gas Treatment, Article I-1000,* (Page 459) permits a higher flow rate that reduces residence time. The draft regulatory guide should be revised to reflect this consensus document.	The second to the last sentence should be corrected as follows: "... such that at the maximum accident flow rate the adsorber residence time is not less than design (typically 0.25 seconds per 2 inches of charcoal)."
12.	C.3.6	Additional reference to either AG-1 or ASME N509 would make the item more complete rather than using only reference to ERDA 76-21. The ERDA document, although correct, is approximately 25 years old.	Added AG-1 and ASME N509 as optional references.

13.	C.4.10	Correct the sentence for either FD "or" FE for the design of the adsorber	Revise to read: "Adsorbers should be designed ... for type II adsorber cells or Section FE for type III ... (Ref.9)."
14.	C.4.10 (3rd para.; 2nd sent.)	To avoid confusion, the text should use the term "fire suppression system" rather than "fire system."	Revise to read that a "fire suppression system" should be installed.
15.	C.5.1	To improve the ability to perform maintenance, revise the 3 feet criteria.	Revise to read: "For ease of maintenance, ... provide for at least a minimum of 3 feet ... components."
16.	C.6.3	For HEPA filters incorporate the allowances of GL 83-13 for penetration and bypass leakage testing including the less than 1% bypass leakage with 95% or less efficiency.	Add to the end: " To be credited with a 95% ... leak test result of less than 1% of the challenge aerosol at rated flow +/- 10 %.
17.	C.6.3 and C.6.4	The sections specify in-place leakage test criteria of 0.05% or less for HEPA filter sections and adsorber sections, respectively. The sections specify that if there are failures of either test then the HEPA or adsorber sections should be examined to determine the location and cause of leaks and implies that the leakage should be repaired prior to restoring the system. Accident analysis typically assumes 99% efficiency for HEPA filters and from 90 to 99% efficiency for charcoal adsorbers. This criterion creates a safety factor of 20 for HEPA filters and a safety factor of 20 to 200 for adsorbers. Although current technology may be capable of producing filter and adsorber seals that can meet this criteria, application of this criteria during the operating life of these components may prove impractical or at least not cost effective. For example: a maintenance activity could result in an in-place leakage test of 0.5% or 10	Add a sentence to evaluate the consequences of tested leakage. If the accident dose consequences are significant (i.e. 10% reduction in margin to regulatory limit) then repairs should be pursued prior to restoration. If the accident dose consequences are not significant, then the repair may be pursued during subsequent planned maintenance but within 50% of the next regular testing period.

		times the criteria. However, the consequences of such leakage may be insignificant. In the case of a HEPA filter the second (required) HEPA filter would reduce overall system leakage to well below the 99% assumed in accident analysis. In the case of an adsorber, the significance of the leakage would depend on the requirements of the specific application. A system credited for 99% efficiency could release approximately 1.5% of the inlet radioactivity for a 50% increase in release, while a system credited for 90% efficiency could release approximately 10.5% of the inlet radioactivity for a 5% increase in release. Depending on the magnitude of dose consequences from the increase neither may be significant. Determining the cause of the leakage may incur significant expense, especially if it causes delays in restoring the system and leads to a Tech Spec required plant shutdown	
18.	C.6.3, C.6.4, C.7.2	There is no basis to link testing frequency to the refueling outage.	The periodic test frequency should be revised to "at least once per 24 months."
19.	C.6.4	Allowances should be made for increased bypass leakage for systems that assume less than 95% efficiency charcoal. For plants that have assumed 90% or less efficiency in their calculations, the 0.05% bypass leakage is too restrictive. The 0.05% bypass leakage should only apply to 95% or higher efficiencies assumed in calculations. For lower efficiencies, a lessening of the bypass leakage would not affect the analysis, as the filter would still be capable of meeting the efficiencies used in calculations.	Revise the document to allow a bypass leakage of 1% for systems that assume <95% efficiency for charcoal.

20.	C.6.4	For adsorber filters incorporate the allowances of GL 83-13 for penetration and bypass leakage testing including the less than 1 % bypass leakage with 95% or less efficiency.	At the end of this paragraph add: "The leak test should confirm ... adsorber section of 1% or less of the challenge aerosol at rated flow +/- 10 %."
21.	C.6.5	Clarify the RG 1.52, Rev 2, for use of silicone sealants for ductwork.	Add at the end: "The use of silicone sealants on filters, housing or mounting frames should not be allowed."
22.	C.7.2	The term "foreign material" is ambiguous. Define the term. It appears that the term (foreign material) applies to liquid or gaseous material that entered the housing uncontrolled between inspections and that may have affected either the particulate filters or charcoal filters.	Define the term "foreign material."
23.	C.7.3	"New or old" carbon if it fails the tests, should be replaced and should not be used in the ESF atmospheric cleanup systems. Delete the word, "new."	Revise to read: "If the activated carbon fails to meet ... systems."
24.	Figure 2	The recirculation line shown from the filter unit discharge to the fan discharge should be shown returning to upstream of the fan and not downstream. The airflow direction cannot be from the low to high pressure point.	Revise Figure 2 as recommended.
25.	Table 1	The table title is more of a definition than a title. This information is better suited to be included in a Note to the table.	Revise table title and move title information to a table Note.
26.	Table 1	Footnote "c" provides the basis for the Penetration Acceptance Criterion. Moving the footnote to the table Notes would provide a better indication that alternate acceptance criterion are acceptable.	Move the footnote to the table Notes.

Enclosure 2

NEI Comments on DG-1103

COMMENT NUMBER	LOCATION	COMMENT	PROPOSED CHANGE
1.	A 2nd para, 1st sentence	Correct typographical error. Revise "and" to "plant."	Revise to read: "In Appendix A, ... nuclear power plant design include ... handling operations."
2.	A 1st para ,3rd sent., C.5, Various places	To clarify add "normal" ahead of "atmosphere cleanup system" to differentiate from ESF systems.	Revise to read: "A normal atmosphere cleanup system installed ... differential pressure."
3.	B 2nd to the last para.	ASTM D4069-81 and Ref. 5 should be ASTM D4069-95	Change reference.
4.	C.1	Many of the existing systems are designed to earlier versions of ASME N509-1989.	Revise the second to the last sentence to read as follows: "However, atmosphere cleanup systems designed to ASME N509-1989, or its earlier versions, and tested to ASME N510-1989, or its earlier versions, would be adequate to protect public health and safety."
5.	C.1	A statement should be added to indicate that if a system is designed and maintained per RG 1.140 Revision 1 or its earlier versions, that it can use the testing criteria provided in Section C.6 and C.7 of this document.	Revise the document to permit licensees with systems satisfying all editions of RG 1.140 to use the testing criteria provided in Section C.6 and C.7 of RG 1.140, Revision 2.
6.	C.1	The paragraph states that systems are acceptable if built to ASME N509-89 and tested to ASME N510-89 are acceptable. It also states that systems tested to earlier versions of N510 are also acceptable. It is unclear if the paragraph means that systems designed and built to earlier versions of N509 are acceptable.	Clarify if all versions of N509 are acceptable for the systems.

7.	C.1	Correct editorial error. Delete "nuclear safety related or ESF" and replace with "normal atmosphere air and gas" ASME AG-1 replaced ASME N510-1989.	Revise to read: "ASME AG-1-1997 ... in normal atmosphere air and gas... plants. However, normal atmosphere cleanup system ... this regulatory guide)." This code replaces ... (Ref 1) and ASME N510-1989 (Ref 2).
8.	C.2.4	As a technical clarification, add "moisture" which may degrade the cleanup system operation.	Revise to read: "The design of ... chemicals, moisture, or other particulate.... operation."
9.	C.3	Replace "4.7" with "4.0", as whole section is involved with the design in lieu of part section.	Revise to read: "Atmosphere cleanup ... Section 4.0 of ASME N509-1989 ... by the following:"
10.	C.3.1	Many existing plants do not have all the referenced components. Therefore, add "at least" for components of normal atmosphere cleanup system to provide more flexibility in selection of components.	Revise to read: " Atmosphere cleanup systems ... but they should at least consist of ... instrumentation."
11.	C.3.3	Additional reference to either AG-1 or ASME N509 would make the item more complete rather than using only reference to ERDA 76-21. The ERDA document, although correct, is approximately 25 years old.	Add references to AG-1 or ASME N509.
12.	C.6.4	Allowances should be made for increased bypass leakage for systems that assume less than 95% efficiency charcoal. For plants that have assumed 90% or less efficiency in their calculations the 0.05% bypass leakage is too restrictive. The 0.05% bypass leakage should only apply to 95% or higher efficiencies assumed in calculations. For lower efficiencies a lessening of the bypass leakage would not affect the analysis, as the filter would still be capable of meeting the efficiencies used in calculations.	Revise the regulatory guide to allow bypass leakage of 1% for systems that assume <95% efficiency for the charcoal.

13.	C.2.1	Clarify that the conditions of normal operations and normal operational transients are of interest.	Revise to read: " The design of each atmosphere ... Radiation levels, during normal plant operation, including anticipated operational occurrences."
14.	C.4.3	For consistency, add "(Ref.3)" at the end of the sentence.	Revise to read: "The HEPA ... (Ref 3)."
15.	C.4.8	Clarify use of either FD "or" FE but not both. For continuity, add the last two paragraphs of Section 4.10, of DG-1102 (page 9).	Revise to read: "Adsorber cells ... type II adsorber cells or Section FE for ... (Ref 3)." Revise to read: "The design of ...cooling airflow." And "when a water-based ... ALARA practices."
16.	C.6.3	Delete Note 5. Add "+/- 10 %" to rated flow. Revise 4.4 with correct reference used in 4.3. Delete "and Filter Test Stations" because not required for HEPA filters used in Normal Atmosphere cleanup system.	Revise to read: "In-place aerosol leak test for upstream up-stream HEPA filters in normal atmosphere cleanup systems should be performed ... cleanup system." Revise to read: "The leak test ... at rated flow +/- 10%." Revise to read: HEPA filters ... Regulatory Position 4.3 of this guide." Revise C6.3, 3rd para, 2nd sentence to read: "The 0.3 micrometer ... by manufacturers."

17.	C.6.3 and C.6.4	The sections specify in-place leakage test criteria of 0.05% or less for HEPA filter sections and adsorber sections, respectively. The sections specify that if there are failures of either test then the HEPA or adsorber sections should be examined to determine the location and cause of leaks and implies that the leakage should be repaired prior to restoring the system. Accident analysis typically assumes 99% efficiency for HEPA filters and from 90% to 99% efficiency for charcoal adsorbers. This criterion creates a safety factor of 20 for HEPA filters and a safety factor of 20 to 200 for adsorbers. Although current technology may be capable of producing filter and adsorber seals that can meet this criteria, application of this criteria during the operating life of these components may prove impractical or not cost effective. For example: a maintenance activity could result in an in-place leakage test of 0.5% or 10 time the criteria. However, the consequences of such leakage may be insignificant. In the case of a HEPA filter the second (required) HEPA filter would reduce overall system leakage to well below the 99% assumed in accident analysis. In the case of an adsorber, the significance of the leakage would depend on the requirements of the specific application. A system credited for 99% efficiency could release approximately 1.5% of the inlet radioactivity for a 50% increase in release, while a system credited for 90% efficiency could release approximately 10.5% of the inlet radioactivity for a 5% increase in release. Depending on the magnitude of dose consequences from the increase neither may be significant.	Add a sentence to evaluate the consequences of tested leakage. If the accident dose consequences are significant (i.e. 10% reduction in margin to regulatory limit) then repairs should be pursued prior to restoration. If the accident dose consequences are not significant, then the repair may be pursued during subsequent planned maintenance but with 50% of the next regular testing period.

		Determining the cause of the leakage may incur significant expense, especially if it causes delays in restoring the system and leads to a Tech Spec required plant shutdown	
18.	C.6.3, C.6.4, C.7.2	There is no basis to link testing frequency to the refueling outage.	The periodic test frequency should be revised to "at least once per 24 months".
19.	C.6.3, C.6.4, C.7.2	Modified the normal ventilation exhaust systems criteria to permit as an alternate use of actual process stream radioactivity measurements to bypass leakage and laboratory charcoal efficiency testing. Situations exist when the process stream activity of iodines and particulates is sufficiently high to obtain valid concentration measurements upstream and downstream of the exhaust filters. This data could be used to calculate the current overall filter system efficiency for iodine and particulate removal. This would demonstrate whether or not the filters meet the assumed efficiency in the plants "Demonstration of Compliance with 10CFR50 Appendix I" submittal. If such data was available, the performance of DOP and Refrigerant-11 leak tests and laboratory charcoal efficiency tests would be redundant and hence an unnecessary cost.	Modify the draft guidance as proposed.
20.	C6.4 1st para, last sent.	The criteria should allow for the ability to accurately measure flow. Add "+/- 10 %" to rated flow	Revise to read: "The leak test ... at rated flow +/- 10 %."

21.	C6.5	Add Regulatory Position "6.1" and the statement silicone sealant should not be used with exclusion of ductwork. (See RG 1.140, Rev 1).	Revise to read: "If welding ... Positions 6.1, 6.2, 6.3, and 6.4." Add the following sentence at the end: "The use of silicone sealants on filters, housing or mounting frames should not be allowed."
22.	C7.2	Add "System" to clarify the sentence and to be consistent with RG 1.140, Rev.1.	Revise to read: "Where system activated carbon ... adsorbent."
23.	Table 1	The table title is more of a definition than a title. This information is better suited to be included in a Note rather than a table.	Revise table title and move title information to a table Note.
24.	Table 1	Footnote C provides the basis for the Penetration Acceptance Criterion. Moving the footnote to the table Notes would provide a better indication that alternate acceptance criterion are acceptable	Move the footnote to the table Notes.