

NRC Staff Resolution of Public Comments Received on
the Draft Generic Letter on Control Room Habitability

Table 1 Key for Resolution of Comments

Source(s) of comments, (ADAMS Accession #)	Comment Designator¹	Remarks
Nuclear Energy Institute (NEI), (ML022550284)	N	
Tennessee Valley Authority (TVA), (ML022680543)	T	All comments are included in the NEI comments. The TVA comments did not include responses to the paperwork reduction act statements.
BWR Owners Group, (ML022550280)	B	Several comments are similar or are the same as comments provided by NEI. Were applicable the Staffs responses to the comments are cross referenced to the Staff responses to the NEI comments.
Strategic Teaming and Resource Sharing (STARS), (ML022600548)	S	Several comments are similar or are the same as comments provided by NEI. Were applicable the Staffs responses to the comments are cross referenced to the Staff responses to the NEI comments.
Lagus Applied Technology (ML022550278)	L	
Exelon, (ML022600521)	Not Needed	Endorses NEI comments.
Dominion, (ML022680548)	D	

Note: The TVA and Dominion comments were received after the end of the public comment period.

¹ Used to distinguish between comment numbers from various sources. This designator is used in the table below that resolves these comment. For example, the first comment by NEI is designated N-1.

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Table 2 Resolution Matrix

Comment #	Resolution F- Fully Incorporated, P- Partially Incorporated, N – Not Incorporated
N-1	<p>N - Approximately 30% of licensees have used the ASTM E741 standard test to determine inleakage into nuclear control rooms. Outside the nuclear industry tracer gases have been used to measure air infiltration and ventilation characteristics for more than 30 years. These systems are often large and complex and may span multiple levels in a building. The licensees that have used this test have reported their results and utilized these numbers in their licensing bases. Outside of the nuclear industry the ASTM E741 test has been used to determine inleakages in multistory buildings and complex volumes. Therefore, there is a basis for it being an appropriate test for other complex volumes.</p> <p>NEI proposes that additional details be included in the generic letter. The staff believes that inclusion of these details in the generic letter is not appropriate. The staff has developed regulatory guidance that addresses many of these issues in detail.</p> <p>In addition, the staff held five regional workshops over the summer of 2002 with the public. These workshops were held in each region to address issues with the generic letter and regulatory guides associated with control room habitability. The bulleted items were discussed in detail at these workshops. Rather than incorporate the details of these concerns within the generic letter they are addressed within the regulatory guides.</p> <p>Below the staff provides brief descriptions of our resolution to these comments. Each bulleted item is treated separately and designated with a unique alphabetic letter. For example bullet number one is designated N-1a.</p>
N-1a	<p>The ASTM E741 test determines an unfiltered inleakage value. Basically, the method involves homogeneously dispersing a nontoxic gas throughout the control room envelope and measuring the dilution of the tracer gas caused by inleakage. From the measurement of the tracer gas concentration the total inleakage from all sources is determined. Therefore, it provides a measurement of the inleakage into the control room. For the tests described above values for unfiltered inleakage have been determined through this method.</p>

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N-1b	<p>The ASTM E741 test does not define the method for inferring the split between filtered and unfiltered inleakage. Commonly used methods to measure inleakage from individual components include conventional pressure techniques or tracer gas tests. These tests are routinely used by the industry to determine this split.</p> <p>It should be noted that if the design bases are known and reflected in the operation of the control room habitability systems these tests are unnecessary.</p>
N-1c	<p>The staff believes this comment is not accurate. The ASTM E741 test provides guidance on how to defining the uncertainty associated with the values of inleakage.</p>
N-1d	<p>The staff has provided guidance in the regulatory guides on determining the alignment operation and performance and what to consider when testing to establish the limiting condition.</p> <p>Guidance is provided in the ASTM E741 standard on mixing. Guidance on how to mix the tracer is dependent upon the configuration of the control room and is also based upon the vendor or utility performing the test.</p> <p>The ASTM E741 provides testing methods for various applications. Depending upon the type of control room ventilation system, the type of application should be chosen. Application of the standard is beyond the scope of the generic letter.</p>
N-1e	<p>ASTM E741 does not deal with how uncertainties are applied for radiological and other hazardous contaminants for habitability concerns. The use of the numbers derived by ASTM E741 is independent of the standard. The staff's regulatory guidance on testing addresses these issues.</p>
N-1f	<p>These considerations are beyond the scope of the generic letter. Limited guidance on testing conditions is provided within the ASTM E741 standard.</p>
N-1g	<p>Verbatim compliance of any standard is not typical. No single standard can be written for all applications. While this may be true, the fact remains that this standard provides methods that have been selected and applied by approximately 30% of the licensees and others outside the nuclear industry to determine inleakage. Guidance in the application of the standard to the wide variety of control room configurations is outside the scope of this generic letter.</p>

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N-2	P - The recommended text was not fully incorporated, but the existing text was clarified. The intent of the comment is incorporated in the first paragraph of the background section. Conforming changes were made throughout the generic letter. Where appropriate, “control room envelope” is changed to “control room” to incorporate the intent of this comment.
N-3	N - The staff does not believe that the paragraph overstates the E741 testing benefits and it is appropriate to credit it with identifying the deficiencies stated. Approximately, 30 percent of all licensees had control rooms with inleakage greater than that assumed in their design basis calculations. Before, E741 tests were performed, the existing surveillance testing did not identify that these design basis inputs were not correct. Therefore, E741 tests made licensees look for deficiencies previously not found. As stated the paragraph is correct.
N-4	P - The recommended text was incorporated, but the staff did not change all references to “surveillance tests.” 10 CFR 50.36 defines: “(3) <i>Surveillance requirements</i> . Surveillance requirements are <u>requirements relating to test</u> , calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.” Surveillance requirements that are tests are typically referred to as surveillance tests.
N-5	N - The staff does not believe that the delta p test is not characterized correctly. The bases of the Improved Standard Technical Specifications say that this surveillance test demonstrates control room integrity with respect to unfiltered inleakage. The surveillance is not reliable in that it does not demonstrate control room integrity. As stated above for comment N-3, there is conclusive proof that past industry implementation of the delta p surveillance did not demonstrate control room integrity. Many of the control rooms assumed no inleakage in their control room habitability assessments. Results show that the majority of the plants tested did not meet their assumption of no inleakage.
N-6	P - Restated details within the supporting paragraph so that it was clearer. The staff believes that the statement presented is not a matter of opinion. Human error analysis provides documented case studies where stress and harsh environments impact the ability to perform actions.
N-7	P - Changes meet the intent of the comment and the proposed revision.
N-8	F

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N-9	F
N-10	N - The staff believes that the text in question is not extraneous. As described in the Background section of the proposed generic letter, these tests show that the current methods of checking control room integrity are not reliable. This should be a consideration when addressing this information.
N-11	N - The staff disagrees with the comment that the information collection is not necessary. As described in the proposed generic letter, tests performed by a significant fraction of licensees indicate that licensees in general may not be meeting their regulatory requirements for control room habitability. Since 1998, the staff has worked with the industry and the Nuclear Energy Institute to develop guidance to enable licensees to address these issues. Through this effort, it has become apparent to the staff that some of the information being requested is not currently known to many licensees. This may require further investigation by licensees to understand their licensing bases fully, and involve additional testing of the control room habitability systems. In these cases, the staff does not believe that they can practically obtain the information it is requesting in a timely manner through means outside this generic letter.
N-12	N - The comment does not provide an adequate basis for the opinion expressed. Nevertheless, the staff believes the requested information is necessary and has practical value to both the licensees and the staff. The information provides assurance that licensees continue to meet their applicable regulatory requirements for control room habitability. Industry testing to date has consistently shown that a significant number of licensees have not been able to meet their design basis values for control room integrity.
N-13	N - The staff disagrees with the counter estimate of the time it will take to respond to the generic letter. In the staff's estimate of the response time, the staff assumes that licensees understand the licensing basis for their control room habitability systems. If the licensee does not understand their licensing basis then the licensee may need more time to respond to the generic letter than what the staff has estimated.
N-14	P - The staff has incorporated many of the submitted comments to improve clarity. The NRC staff reviewed NEI 99-03 and found that it could not fully endorse it. Rather than endorse NEI 99-03, the NRC staff chose to prepare its own guidance document. The staff's guidance document references NEI 99-03 to the extent possible, yet provides additional guidance where it takes exception to the NEI document. Licensees are not required to comply with staff guidance, but may find it useful in responding to the generic letter.

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N-15	F - Staff interaction with industry groups and licensees on the matter of control room habitability has been ongoing since 1998. This interaction will continue and it serves to minimize the burden of any information request.
N-16	F - The staff agrees with the answer provided to this question. Like the Nuclear Energy Institute, the staff does not believe that an automatic collection technique for this information exists.
B-1	N - The E741 test determines an unfiltered inleakage value. From the measurement of tracer gas concentration the total inleakge from all sources is calculated. Therefore, it provides a measurement of the inleakage into the control room.
B-2	See the comment resolution for N-3.
B-3	N - During the five regional workshops on this subject, the staff addressed this concern. The staff, the nuclear industry and the Nuclear Energy Institute agree that smoke, regardless of the source, can have an adverse impact on control room habitability. This is documented in a letter from the Nuclear Energy Institute to the NRC dated, August 19, 2002.
B-4	See the comment resolution for N-5.
L-1	F - The staff deliberately omitted the year of issue for the ASTM. Citing the year of the standard (in the context of the generic letter) is not necessary and may be confusing since various versions have been utilized to perform the testing discussed. The staff will provide the specific year of the standard recommended by the staff in a control room habitability testing regulatory guide.

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L-2	<p>N - The staff believes that the 180-day time frame is a realistic time for industry response to the generic letter. The staff bases this belief on the extensive and advance interactions with the industry and feedback from other tracer gas testing vendors.</p> <p>The staff interactions with the industry on this issue have been extensive since 1998. During this time frame, several licensees have tested or have been preparing to test. Additionally, the draft generic letter was issued for comments on May 9, 2002. It is anticipated that the final letter will be issued in 2003. During this time period between the draft and the final issuance of the generic letter, licensees were given the opportunity to plan ahead. Furthermore, 5 NRC public meetings on the generic letter were held to communicate NRC views on this subject and receive public feedback.</p> <p>Interactions with other tracer gas testing vendors indicate that they alone would be able to complete testing of the remaining control rooms in the 180-day period. The tester who provided this information has extensive experience in tracer gas testing. Their work is referenced in the ASTM 741 standard that the NRC endorses.</p> <p>The NRC staff believes that many licensees will be able to complete any test needed to answer the generic letter in the 180-time frame. If they are unable to respond to the generic letter in this time frame, the generic letter provides for these situations. The generic letter states: "If an addressee cannot provide the information or cannot meet the requested completion date, the addressee should submit a written response indicating this within 60 days of the date of this generic letter. The response should address any alternative course of action the addressee proposes to take, including the basis for the acceptability of the proposed alternative action."</p>
S-1	P - See the comment resolution for N-2
S-2	F - See the comment resolution for N-4
S-3	N - See the resolution for comments N-1, N-1b, N-1e.
S-4	N - See the comment resolution for N-5.
S-5	N - See the comment resolution for N-3.

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S-6	P - The intent of the comment was addressed, but the second recommended revision was changed slightly to address comment N9.
D-1	F
D-2	F
D-3	N - See the comment resolution for B1.
D-4	N - The staff does not believe this is a subjective statement. It has been proven true for many if not all the control rooms tested. The assumption that one can characterize the tracer gas concentration within a zone with a single value has been validated for the control room tracer gas tests performed. While mixing fans were used to enhance mixing in some of these tests it is the staff's understanding that they were not required. These fans and forced alignment changes were used to expedite the test.
D-5	<p>P - The staff believes that the testing record is clear that the delta p surveillance as implemented at most of the tested facilities is not reliable. The staff also acknowledges that a single facility has shown that their unfiltered inleakage is less than the design value. The text does not elaborate on the specifics of this facility, nor does the staff attempt to determine why this facility met their unfiltered inleakage design bases.</p> <p>The testing method described for recent comparison testing ("a rigorous assessment of the CRE, combined with equipment PT and verification of positive delta p" - hereafter referred to as an enhanced delta p test) is equated to the delta p surveillance requirement test (typically only verification of positive delta p across the control room boundary). These methods are not equivalent. The fact that the enhanced method is now being used for comparison infers that the delta p surveillance test was not adequate. In order to avoid confusion between the two methods the generic letter was modified. References to the "delta p test" were changed to "delta p surveillance."</p>
D-6	N - This comment is similar to N-5. See comment resolution for N-5.
D-7	N - See the comment resolution for B-3.
D-8	N - The staff disagrees with the comment that the generic letter should only address design basis events. The impact of unfiltered inleakage on the operator is not limited to only design basis events. The staff agrees with the comment that severe accidents are beyond the scope of design basis events.

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D-9	<p>N - Industry testing experience performed from 1991 to 2001 show that this statement is true. The generic letter includes an information request that asks licensees to verify that their technical specification is adequate in light of the E741 testing results. This provides an opportunity for a licensee to justify their belief that their technical specification is valid. The staff believes no change is necessary to the generic letter based upon these facts.</p>
D-10	<p>N - Per comment N9, from the Nuclear Energy Institute, Required Information paragraph 1b was change to the following:</p> <p>“Also, confirm that the reactor control capability is preserved from either the control room or the alternate shutdown panel in the event of a fire.”</p> <p>As stated in the resolution to B-3, The staff, the nuclear industry and the Nuclear Energy Institute agree that smoke, regardless of the source, can have an adverse impact on habitability. Therefore, the recommended change will not be used.</p>
D-11	<p>N - The staff does not agree that the cited regulatory requirement is taken out of context. The staff believes the cited requirement applies to all subsequent analyses. Any reanalyses would need to have a verified inleakage assumption. This is consistent with Dominion’s comment that states that</p> <p>“This verification of adequacy is meant to be performed prior to, or as a part of initial construction, or <u>modification</u> as evidenced by a later statement in the paragraph, which reads: <i>Where a test program is used to verify the adequacy of a specific design feature in lieu of other verifying or checking processes, it shall include suitable qualifications testing of a prototype unit under the most adverse design conditions.</i>” Note the text in italics is taken from 10 CFR part 50, Appendix B.</p> <p>In this text prototype can be the actual control room if the control room has already been built. For the purposes of this generic letter licensees are requested to provide information that confirms that their control room meets its habitability requirements. The value used for inleakage into these control rooms is subject to Appendix B requirements.</p>
D-12	<p>N - The comment recommends the same change as recommended in D-10. Please see the resolution to D-10.</p>

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D-13	N - The staff agrees with the comment that severe accident analysis is beyond design basis analysis, but does not agree that it is not relevant to the generic letter. The impact of unfiltered inleakage on the operator is not limited to only design basis events.
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