Strategic Teaming and Resource Sharing

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STRATEGIC TEAMING AND RESOURCE SHARING (STARS) COMMENTS ON DRAFT REGULATORY GUIDE DG-1114, "CONTROL ROOM HABITABILITY AT LIGHT-WATER NUCLEAR POWER REACTORS" AND DRAFT REGULATORY GUIDE DG-1115, "DEMONSTRATING CONTROL ROOM INTEGRITY AT NUCLEAR POWER STATIONS"

Reference: 1. Letter from D. R. Woodlan to the NRC Document Control Desk entitled, Strategic Teaming and Resource Sharing (STARS) "Demonstration of the Component Test Method for Determining Control Room In-leakage," dated June 7, 2002 (STARS-02008)

Gentlemen:

Attached are comments from the Strategic Teaming and Resource Sharing (STARS)[1] nuclear power plants on the subject draft regulatory guides issued in March 2002. STARS offers a different approach to the position in the draft guides regarding the method for measuring control room in-leakage and the proposed revision to Standard Technical Specification 3.7.10 for the Control Room Emergency Filtration System (CREFS). Specific comments are provided in Attachments 1 and 2 to this letter.

STARS plants have conducted testing to demonstrate that the Component Test Method endorsed by NEI 99-03, "Control Room Habitability Assessment Guidance," June 2001, is an acceptable method for baseline in-leakage testing. Reference 1 provides the basis for using the Component Test Method as a baseline method and provides facility test results. The comments in the

[1] STARS consists of six plants operated by TXU Generation Company LP, AmerenUE, Wolf Creek Nuclear Operating Corporation, Pacific Gas and Electric Company, STP Nuclear Operating Company and Arizona Public Service Company.

E-RFDS = ADM-03
Templeton = ADM-013
Cadr = A. Beranek (AFB)
W.M. Blumberg (WMB1)
SF. LaVie (SFL)

referenced letter regarding testing are consistent with the attachments to this letter and should be also considered in the final draft of proposed regulatory guides.

The draft regulatory guides specify that the test method described in ASTM E741-95, "Standard Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution," should be used as the only method for a baseline test to determine control room in-leakage. For the Component Test Method described to be acceptable, DG-1115 describes prerequisites and conditions that must be met. Attachment 2 to this letter provides comments to justify the deletion from the guide of the conditions described in DG-1115 for an acceptable Component Test. These conditions are not required by NEI 99-03. The Component Test Method is an acceptable method for determining in-leakage without the conditions prescribed in DG-1115.

DG-1114 proposes a technical specification revision to Standard Technical Specification 3.7.10. Although Attachment 1 to this letter provides comments on the proposed revision, STARS does not agree that a revision is necessary. Pressurization of the control room by the CREFS [2] is an important design feature to minimize in-leakage of contaminates. Each STARS facility technical specification verifies that one CREFS can maintain a positive pressure of $\geq$ 0.125 inches water gauge relative to adjacent areas or to the outside during the pressurization mode of operation with a plant-specific makeup flow requirement. This surveillance is directly related to the design performance requirements of the technical specification Limiting Condition for Operation - that two CREFS should be operable.

The unfiltered in-leakage into the control room is an assumed value to the accident analysis calculation based on the design of the control room boundary and the CREFS. Some aspects of the design (e.g., performance of the filters, actuation of the ventilation system during an accident, the capability to maintain a positive pressure in the control room) were considered significant enough that surveillances were included in the technical specification (for most licensees) to verify them on a periodic basis and thus confirm the conservative conclusions of the calculations. This is typical of all specifications in that all assumptions and design aspects of any system cannot be surveillance requirements or the burden would be unreasonable. The aspects to be tested or verified were selected for various reasons but an underlying criterion in every case was the potential significance of that aspect of the design on the overall safety of the system, plant and the public.

Unfiltered in-leakage was an assumption in the Control Room Habitability (CRH) calculations. Sufficient conservatism existed in the overall calculation (including the assumed value of unfiltered in-leakage) that verification of the assumed value of unfiltered in-leakage was considered to be unnecessary. Verification of the ability of the ventilation system to maintain the required positive pressure was considered sufficient to ensure that unfiltered in-leakage paths would be minimal during the duration of the accident. The NRC licensed units and issued technical specification for those units without requiring periodic verification of unfiltered in-leakage into the control room. Testing results from older plants have shown that unfiltered in-leakage can be significantly greater in those plants than originally assumed. Testing at newer plants, including the STARS plants which have completed testing, has not shown such large

[2] The system name at each STARS facility for the Control Room Emergency Filtration System may not be the same as that used in the Standard Technical Specification.

unfiltered in-leakage values. Both STARS plants that were tested determined that there is no unfiltered in-leakage across the control room boundary. In neither case has the in-leakage value resulted in a significant safety concern at any plant (no plant has been shut down due to excessive unfiltered in-leakage). This confirms the original basis for not including unfiltered inleakage in the Technical Specifications.

Most test results for pressurized control rooms have had large uncertainties associated with them. It is questionable that in-leakage can be measured precisely enough to justify a technical specification surveillance requirement. In-leakage should be measured to confirm that a unit does not have the problems that existed at some of the older plants that were tested and to identified needed corrective action, but a Surveillance Requirement is not needed and is not appropriate. The test results can be evaluated to determine the appropriate assumed value for the accident analysis assumption. The conservatism in many of the other accident analysis inputs should compensate for any uncertainty associated with the in-leakage assumption.

Industry experience has demonstrated that there may be areas across the control room boundary where the pressure inside the control room boundary may be negative relative to adjacent areas or to the outside. In general, these are specific areas within the control room ventilation system that can not be measured by the positive pressure surveillance. STARS companies have assessed their facilities and have identified a limited number of specific areas where a positive pressure within the control room is not maintained. Testing has been initiated to identify the leakage across these areas. Although all facilities have not completed testing, the Comanche Peak facility and Palo Verde Unit Two have measured no unfiltered in-leakage across these areas. Testing at these two facilities has demonstrated that the integrity of these boundaries has not degraded after greater than ten years of operation.

In addition to baseline testing, STARS companies plan to initiate a licensee-controlled Control Room Habitability Program at their facilities. This program will provide assurance that the in-leakage into the control room does not exceed the value assumed in the accident radiological dose calculation over the long term rather than rely on a prescriptive technical specification surveillance. Attributes of this program are expected to include preventive maintenance, post modification testing as appropriate, periodic in-leakage assessments and toxic gas evaluations, configuration control, training and testing as appropriate. This type of program gives each licensee the flexibility to determine the specific requirements for their facility. For example, Comanche Peak or Palo Verde may determine that an unfiltered in-leakage test is only necessary every 10 years at their facility because recent testing demonstrated no in-leakage after greater than 10 years of operation. After other facilities complete in-leakage testing, they may choose a different frequency based on the test results. A program requiring periodic assessments would identify whether conditions have developed that would bring into question the validity of an established test periodicity. The licensee should have the flexibility to adjust test frequencies based on performance.

In summary, it is recommended that both regulatory guides allow for greater flexibility in the method for testing control room in-leakage and that a long-term licensee-controlled program be allowed for maintaining control room habitability rather than adoption of a technical specification change. Specific recommendations for improving the draft regulatory guides are found in Attachments 1 and 2.

The STARS plants appreciate the opportunity to comment on these draft regulatory guides. If there are any questions regarding these comments, please contact me at 254-897-6887 or dwoodla1@txu.com.

Sincerely,

D. R. Woodlan, Chairman
Integrated Regulatory Affairs Group
STARS

Attachments:

1. STARS Comments on DG-1114
2. STARS Comments on DG-1115

ATTACHMENT 1

STARS COMMENTS ON DG –1114

ATTACHMENT 1

STARS COMMENTS ON DG –1114

Note:

STARS does not agree with the proposed CRH Technical Specification and Bases for Westinghouse Plants presented in Appendix A. If the NRC decides to retain this appendix in the final regulatory guide, then comments for revision are presented below.

COMMENT NUMBER	PAGE	PARAGRAPH	COMMENT	PROPOSED REVISION
1	2	5, last sentence	Used 0MB vs. OMB, editorial	Change the zero to an "O"
2	2	B,1st para	1) 2nd Sentence: Editorial- Spell CRE. 2) 4th Sentence: Editorial- consistent with DG-1115	1) Add, "The Control Room Envelope (CRE)....accident." 2) Add, "CRHSs typically.....under normal and **maintain in a safe condition during** accident conditions.
3	3	B, 3rd para	Editorial	Read as, "The primary design function of **CRHS** is to.....operator."
4	3	1.1	Third bullet: The majority of nuclear power plants do not have their alternate shutdown panels located within their CRE. The same requirements proposed for CREs would presumably apply to shutdown panels outside the CRE.	Modify the bullet to indicate it only applies to shutdown panels located inside CREs. This would preclude imposing backfit requirements to upgrade shutdown panel environments.
5	4	Item #6 at top of page	At the end of sentence #6, There is no regulatory requirement for the Alternate shutdown panel to be habitable for a radiological or hazardous chemical event.	Add words .. "in case of fire events only"

6	5	2.1	This regulatory position section makes little reference to Section 4 of NEI 99-03. During the NEI CRH TF and NRC meetings, the staff indicated that they generally agreed with Section 4 of NEI 99-03. Since the ACRS encouraged the staff to make liberal use of NEI 99-03 in the development of their regulatory guides, endorsement of Section 4 in the DG appears appropriate. Section 2.1.1 of the DG is not necessary since the CRE will be determined by the licensing basis review. The last 3 paragraphs of Section 2.1.2 of the DG appear to be additional information beyond that found in Section 4 of NEI 99-03.	Delete subsection 2.1.1. Add the following words "Section 4 supplemented by Appendix B of NEI 99-03 (Ref. 2) provides an acceptable method for determining the licensing basis of the CRHS. The following information is provided in amplification of this guidance." Retain last 3 paragraphs of Section 2.1.2. Change words "are likely to" in last paragraph to "will."
7	6	2.3.1	2nd para- TS require measurements of certain parameters ...CRE integrity tests.	Define "CRE integrity tests" in TS or its BASES.
8	7	2.3.1	Of the approximately 30 percent tested, one facility was mentioned that achieved in-leakage less than the assumed value in the design analysis. In addition, this is the only time that it is mentioned in DG-1114 or DG-1115 that a facility had less in-leakage.	If this was not Palo Verde, then Palo Verde should be included. For a balanced view, there should be some discussion that recently, newer facilities tested have achieved low in-leakage values. Whenever the 30 percent tested is referred to in DG-1114 or DG-1115, the recognition that a facility(s) passed should be mentioned for a balanced view.
9	7	2.3.1	Statement is made that licensees should "fix any deficiencies before testing." On page 8 of Section 2.3 of DG-1115, a statement is made that "seal replacement or adjustment, ventilation re-balancing, or other similar maintenance actions should not be performed closely prior to a scheduled integrity test." These positions appear to be in conflict with one another.	Revise DG-1115 to agree with DG-1114.
10	7	2nd paragraph, last sentence under Section 2.3.2	The statement that contains, "..each potential radiological accident to ensure that they..."	The statement should be changed to state that consequences should be evaluated for bounding events for each accident classification.

11	8	2.4	The reference to Regulatory Position 2.1 appears to be incorrect	Revise to refer to Regulatory Position 2.3.2
12	8	2.5	Staff recommended conducting a survey of the location, types, and quantities of mobile and stationary hazardous chemical sources at least once every 3 years, or more frequently as applicable. The staff also recommends annual performance of an onsite survey of hazardous chemical sources.	Revise to endorse Section 9.3.4 of NEI 99-03.
13	8	2.6	Editorial	Read the sentence as, "Demonstrating the facility's **ability to meet GDC–19,** CRH includes….reactor."
14	9	2.7.1	Statement is made the "licensees should perform testing to ensure they maintain CRH."	Revise to agree with Section 9 position on NEI 99-03 regarding testing. Section 9 states that the need for testing will be determined by periodic assessment findings.
15	9	2.7.1	2nd para: A separate technical specification (appendix A) is not required. The same requirement can be incorporated in the licensee control documents such as Technical Requirement Manual or Maintenance program etc.	NRC should delete issuing a separate Technical Specification and provide guidance to include in the licensee control documents.
16	10	2.7.1	1st para; Regulatory Guide 1.140 does not apply to air filtration and adsorber units of post-accident engineered safety feature atmosphere cleanup units.	NRC should delete the reference to RG 1.140 because it only applies to normal atmosphere cleanup systems.
17	10	2.7.3, 2nd sentence	Editorial, spelling error	Correct the spelling of, "(SCBA)" in lieu of (SCUBA)."
18	A-2 to A-12	SR 3.7.10.4 and associated BASES	In the cases where plants quantified the unfiltered in-leakage and it was in excess of the design limit, the consensus has been that the CR boundary was degraded but operable. The condition report came with an operability evaluation and appropriate corrective action was initiated commensurate with the nuclear safety risk and uncertainty of the condition. All of this was done without the TS telling the plant to act responsibly.	Re-consider the alteration of SR 3.7.10.4 as it has been demonstrated at multiple sites that unfiltered in-leakage in excess of analysis assumptions does not make the boundary inoperable, it is typically only degraded. Furthermore, the nuclear safety implications associated with the testing results were rarely significant. It is not clear that the issue warrants a license change to ensure that all plants adequately address this issue.

19	A-2 to A-12	SR 3.7.10.4 and associated BASES	If a TS is going to apply to boundary operability, it should encompass the potential contribution from filtered in-leakage as well (e.g. pressurization flow or damper bypass flow in excess of design basis assumptions). Unfiltered in-leakage most significantly affects the thyroid dose, which typically has the least margin to the limit. However, filtered in-leakage in excess of design basis assumptions affects the whole body and skin doses. Exceeding either assumption limit will cause the boundary to be degraded and if the new TS SR is implemented, the boundary will be inoperable.	If this TS SR is going to be kept, then add a filtered bypass limit as well. The limit should be the filtered in-leakage that produces a hypothetical operator dose in excess of the SRP limits.
20	A-2 & A-3	Actions B & C	STARS do not agree with this proposed TS, suggest to put this requirement in licensee controlled documents such as TRM Maintenance program etc, with the following exceptions 1) Change 14 days to 30 days in completion time for action B. 2) Change immediately to 72 hours in completion time for action C	Delete the proposed TS and provide guidance to put this information in a licensee-controlled document.
21	A-2	Note	Is it intended that the Note apply to Action C in addition to Action B? Most plants don't intentionally enter LCOs that require IMMEDIATE actions.	Place Note in ACTION B LCO only
22	A-3	Action C	Is required action C.3 required for every entry into this LCO? For example, if the inoperable boundary condition is corrected in less than 90 days, is the submission of a corrective action plan to the NRC still required?	Provide clarification in the BASES.
23	A-5	SR 3.7.10.4	The words used in SR 3.7.10.4 using "… the limiting radiological mode of operation…" seem to add an element of interpretation to their meaning.	Replace with the words that are used for this surveillance in the Bases section, "in the operating condition that results in the largest consequence to the operator." (page A-12).

24	A-5	SR 3.7.10.4	Proposed surveillance only has a value for 'unfiltered" in-leakage. Note, that some plants may have additional "filtered" in-leakage that should be accounted for.	Revise surveillance to recognize that a value for "filtered in-leakage" may also need to be considered.
25	A-6	Bases – Background Section	Statement is made that "the emergency radiation state also initiates pressurization and filtered ventilation of the air supply to the control room." Not all control rooms are pressurized. This statement and other earlier statements appear to imply that the only pressurized control rooms are expected to adopt the proposed TS with a surveillance for unfiltered in-leakage.	This regulatory guide should be clear that a TS to conduct a surveillance for unfiltered in-leakage applies to all control room designs.
26	A-7	Background(2nd para)	Pressure test of CRE is a baseline test of Component test Methodology of STARS plant.	Restore the surveillance requirement.
27	A-9	B.1	The time allowed of 14 days is too short for damper leakage repair or replacement.	Change allowed time to 30 days.
28	A-9	B.1, C.1, C.2, C.3	The language regarding compensatory actions for action B is inconsistent with the language for compensatory actions for action C	Make the language consistent. Suggest using the language for action B.
29	A-9	C.1, C.2, C.3	Delete this requirement from proposed TS and address in licensing control document.	Delete this requirement from DG-1114 and address in licensing control documents. The actions are already required by 10CFR50, Appendix B except for the 90 days report to the NRC. It is not clear what purpose this report would fulfill that cannot be evaluated through the NRC Inspection and Enforcement program.
30	A-11	SR3.7.10.4	DG proposes to delete the 1/8" w.g pressure test of CRE.	Reinstate the differential pressure test of the CRE. This is a measurement of the system performance. It is part of the Component Test Methodology.
31	A-11	SR 3.7.10.4 and its BASES	Statement is made that based on actual data, the NRC will work with the industry to establish a more appropriate, performance based test frequency. It does not seem efficient to revise a license with the expectation it will be revised in the near future based on actual performance data.	This is a primary reason why performance based testing can be controlled more efficiently in a licensee controlled program and why a change to technical specifications does not effectively achieve its intended purpose.

32	A-12	Surv. Req.	Only test protocol recognized in ASTM E741-95	Recognize industry efforts (i.e. endorse Appendix I of NEI 99-03) to establish a credible alternate means of quantifying unfiltered in-leakage. NEI 99-03 provides guidance for both the tracer gas and component test methods and it is very thorough. Furthermore, data exists that substantiates the validity of a component test vs. a tracer gas test.
33	RA-2	II	The last sentence of the paragraph is not clear. Does this mean a plant makes a major modification such as replacement of steam generator, they have to conform to this Regulatory guide requirements.	Clarify this requirements.
34	RA-4	Section IV.2; first bullet on page	Statement is made that regulatory guide will minimize unnecessary regulatory burden through implementation of a CRE integrity testing program.	The regulatory guide actually increases regulatory burden by imposing the program through a technical specification change that limits the licensee's flexibility on using the test method most appropriate for its facility.
35	RA-8	Backfit Analysis	States that no new regulatory staff position is imposed. States that no modification of procedures is required. Yet, the method of testing for in-leakage is a new staff position. The expectation of revising Tech Specs if a plant volunteers to adopt this guide results in a change to procedures. A licensee can not change their plant without adopting the new staff position presented in this draft regulatory guide.	This DG represents a backfit and an analysis should be conducted to justify the amended position and imposition of change on the licensee.

ATTACHMENT 2

STARS COMMENTS ON DG-1115

ATTACHMENT 2

STARS COMMENTS ON DG –1115

COMMENT NUMBER	PAGE	PARAGRAPH	COMMENT	PROPOSED REVISION
1	1	2	DG does not fully endorse App I of NEI 99-03.	Recognize industry efforts (i.e. endorse Appendix I of NEI 99-03) to establish a credible alternate means of quantifying unfiltered in-leakage. NEI 99-03 provides guidance for both the tracer gas and component test methods and it is very thorough. Furthermore, CPSES and Palo Verde tests were rigorously performed and the results confirmed no unfiltered in-leakage. This substantiates the validity of a component test vs. a tracer gas test. The test results at these two plants have confirmed that the self-assessment and component test methodology have produced the same results as the integrated tracer gas test.
2	2	B, 1st para, 4th sentence	Editorial, revise the sentence consistent with DG-1114	Read as, "Control room …… monitoring, and **the necessary sustenance and sanitation to ensure**…..situations,"
3	3	B	States that approximately 30% of facilities tested have measured in-leakage greater than that assumed in the design analysis. Does not recognized control rooms that have tested in-leakage with results less than that assumed.	Revise to present a balance view. Whenever reference is made to number of facilities tested, facilities that passed test should be recognized. Both Comanche Peak and Palo Verde measured zero unfiltered in-leakage.
4	3	B	Statement is made the ΔP measurement is not a direct measurement of in-leakage. Actually the ΔP measurement is a direct measurement of in-leakage in that a positive pressure with respect to the outside of adjacent areas equates to zero in-leakage.	Delete the first reference to an inherent deficiency. The second one should be characterized as a "challenge" and not a "deficiency." The delta P measurement in conjunction with the component tests identified by the self assessment described in NEI 99-03 is sufficient to demonstrate CRE integrity.

5	3	B	Paragraph on E741 testing states that it is a "direct" measurement of the total in-leakage.	Actually the total in-leakage is "inferred." Ref: E741, Section 4
6	5	1.1	Statement is made that "industry experience with tests performed with tracer gas methods has shown that the ΔP tests can underestimate the amount of in-leakage."	After "has shown" , add the words ",in a number of cases,"
7	5	1.1	Same comment as # 2 above	
8	5	1.1	Statement is made that tracer gas testing performed "to date" indicates unexpectedly high in-leakage results. This is not a balanced statement of industry experience. More recently, industry testing has found no unexpected in-leakage or a small amount of in-leakage.	Statement should be more balanced. Revise "to date" to "in a number of cases"
9	4	1.1	The staff has determined that a baseline integrated test should be performed, using test methods described in ASME E741 for each control room envelope (CRE) at plants holding operating licenses.	An integrated baseline test should be performed to determine control room in-leakage to validate the basis in the assumption used in accident safety analyses. However, the integrated test method should allow the option of the Component Test method described in NEI 99-03. (See Note 1 following this table)
10	5	1.1	The guide states that no formal industry justification for component testing has been provided to the staff for confirmation that this test method can reliably establish total unfiltered in-leakage.	STARS-01002 was submitted to the NRC on August 31, 2001 and reported that the Palo Verde Unit 2 control room was tested had measured 0 unfiltered in-leakage. STARS-02008 was submitted on June 7, 2002 with the detailed results of testing at the Palo Verde Unit 2 facility and at the Comanche Peak facility to provide justification for component testing

11	5	1.1	The staff has determined that an integrated test using the test methods of ASME E741 is necessary to confirm the appropriateness of the selection of component tests that are selected for testing using the Component Test method.	Delete. The NEI 99-03 self-assessment process for identifying components vulnerable to in-leakage is a logical review of the system design. The design is validated by field walkdown. The assessment also takes advantage of industry experience to ensure all potential in-leakage paths are assessed. The identification of those components for testing is similar to identifying containment building penetrations for Appendix J local leak rate testing. The comparison testing (Ref: STARS-02008 submitted on June 7 , 2002) conducted at the Comanche Peak and Palo Verde facilities provides a high level of confidence that potential in-leakage paths did not go unnoticed. Although an integrated test using the test methods of ASME E741 can confirm the appropriateness of the selection of component tests that are selected for testing using the Component Test method, this test is not necessary provided the process provided in NEI 99-03 is followed.
12	5	1.1	The staff states that one inherent limitation of the differential pressure test method is that this test is not a direct measurement of in-leakage.	The discussion referring to this test as a limitation should be deleted. The differential pressure test method is a direct measurement of in-leakage for the areas of the boundary tested. If the differential pressure is measured to be sufficiently positive with respect to adjacent spaces, then one can confidently quantify the "in-leakage" as zero. Any leakage across the measured boundary would have to be "out-leakage." Note that the differential pressure test is only one component of the Component Test Method.

13	5	1.2	The staff considers the CRE design characteristics provided in Section 5.3.2 of Appendix I of NEI 99-03 as prerequisites to be met for a component test to be found acceptable.	Change "as prerequisites to be met for a component test to be found acceptable" to "support the use of the Component Test Method." The features discussed in Section 5.3.2 support the selection of component testing as a preferred method for determining CRE in-leakage. If justification can be provided, all these features should not be considered necessary for using component testing. In the case of the testing conducted at the Palo Verde facility, the majority of the control room HVAC equipment is located outside the CRE. However, the system design resulted in no vulnerable in-leakage paths from this system into the envelope.
14	5	1.2	The staff found that the following condition must be met for component testing to be acceptable: An integrated in-leakage test, as discussed in Sections 5.3.1 and 5.4.1 of Appendix I on NEI 99-03, is performed to determine the total boundary leakage.	Delete this condition. The Component Test method is an acceptable method to determine the total boundary leakage for control room designs described in NEI 99-03.
15	6	1.2	The staff found that the following condition must be met for component testing to be acceptable: Component testing accounts for no less than 95 percent of the total boundary leakage	Delete this condition. If component testing is performed in accordance with NEI 99-03 guidance, the licensee should reasonably conclude that total boundary leakage has been determined. (See note 2 following this table.)
16	6	1.2	The staff found that the following condition must be met for component testing to be acceptable: Approximately 20 percent margin exists between the radiation doses or hazardous chemical concentrations calculated using the measured total boundary leakage and the corresponding acceptance criterion. The 20 percent margin compensates for the uncertainties involved with the companion differential pressure testing and the identification of vulnerable components.	Delete this condition. Although component testing will accurately determine total boundary leakage, the establishment of a margin could be accepted if the margin was applied to the measured in-leakage value and not the margin between the calculated radiation dose and acceptance criterion. The changing of the margin for radiation dose is already controlled by 10CFR50.59. It would be more acceptable to apply a margin that is a percent of measured in-leakage to the input in-leakage value in the radiological dose

				calculation. This complements the conservatism applied to other inputs into this calculation. If this method of application of margin is accepted, it should also be applied to the measured in-leakage results from the performance of an integrated tracer gas test.
17	6	1.2, para. Discussing Section 5.4.2.1	…", the Staff considers using 0.125" water gauge as the differential pressure required for the component test. However, on Paragraph 2.2 on Page 7, there is no such requirement for performing the tracer gas test. If the licensee chooses to have the two tests validate each other, they should be performed under the same conditions.	Specify use of the 0.125" water gage for both tests. Comparison of results of the two test methods would not be meaningful unless they were performed under the same conditions.
18	6	Footnote 4	Footnote states that filtered air intake and adjustments for ingress and egress are not considered in the radiological analysis. This is incorrect. They are inputs to the radiological analysis.	The footnote is appropriate, but it should be revised to read: "Filtered air intake for the purpose of intentional CRE pressurization is not considered in the total boundary leakage **when comparing with the results of component testing.** Adjustments for projected ingress and egress are not included **when comparing with the results of component testing.**
19	7	2.2	Staff recommended that periodic surveillance tests that assess performance of systems be conducted prior to the integrity test	Delete word "surveillance." This word implies that these tests are tech spec related.
20	7	2.2	If deviations from the licensing bases alignments are needed, a sensitivity evaluation should be performed.	It is not clear how this type of evaluation would be conducted. If the fans and open doors are necessary to ensure good mixing, then what alignment is this going to be evaluated against to ensure that it remains bounding? This is a disadvantage of the E741 method for some control room designs.
21	7	2.2	On Page 6, the paragraph starting with "Section 5.4.2.1, …", the Staff considers using 0.125" water gauge as the differential pressure required for the component test. However, on Paragraph 2.2 on Page 7, there is no such requirement for performing the tracer gas test. If the licensee chooses to have the two tests validate each other, they should be performed under the same conditions.	Specify use of the 0.125" water gage for both tests.

22	7	2.3	The suggestion that we perform surveillance tests including a single failure is unprecedented in our current Technical Specification required surveillance. The suggestion that we perform tests on multiple configurations would be onerous.	The present TS SR is enough.
23	8 & 9	2.5	(1) Does the actual test procedure need to be submitted or will a description of the test suffice? (2) What is the basis that an alternative test can not be acceptable until at least 3 facilities have conducted the test?	(1) Clarify if a description of the test will suffice. (2) A licensee should be able to determine the number of tests that are necessary to provide a basis for the confidence in the test results.
24	9	3	Discussion on testing frequency should be based on Section 9 of NEI 99-03.	Endorse Section 9 of NEI 99-03 instead. It does not make sense for a facility like Comanche Peak or Palo Verde Unit 2 that have operated for greater than 10 years and have measured 0 unfiltered in-leakage to have to retest again in 2 years.
25	9 & 10	D	Clarify how NRC is going to review other License Amendment Request's (such as steam generator replacements etc.) affecting CRH?	
26	14	IV.2.	Editorial in second sentence of first paragraph	Change "NE" to "NEI"
27	16	IV	First bullet impact evaluation states that regulatory efficiency would be improved by reducing uncertainty as to what is acceptable.	In-leakage results from many integrated tracer gas tests have large uncertainties associated with them. NRC needs to address this issue in their guide.
28	General	N/A	Consider the fact that analyses and assumptions as well as the SRP limits for radiological consequences are very conservative. Establishing the equivalent of a safety limit for dose analysis seems extreme given the relative low risk and uncertainty associated with the nuclear safety aspects of this issue.	If limits on measured flow into the CRE (unfiltered in-leakage, damper bypass leakage, and pressurization flow) must be established to demonstrate GDC 19 compliance, then consider allowing the limits to be a nominal value that is within an acceptable (e.g., 10 %) range of the assumed value. This will alleviate the need to perform substantial analyses to support the revised criteria that "demonstrate" compliance with GDC 19. *Take pressurization flow for instance. A nominal value of 800 cfm is assumed in the analysis. If a subsequent test measures this flow to be 850 cfm it is*

				reasonable to say that this is well within the accuracy of the design basis since the nominal measured value is less than 880 cfm (the suggested criterion of 10%). *Similar situations exist for damper bypass leakage and unfiltered in-leakage.*

Note 1: Although ASTM E741 is a valid method for determining the air change in a single zone, and thus a method to infer in-leakage into the zone, the test has some disadvantages when applied to the low-leakage, positively-pressurized control rooms. Industry experience with this testing method has generally demonstrated that the test results for pressurized control rooms have a high degree of uncertainty. The uncertainty can be an order of magnitude larger than the measured unknown in-leakage. Licensees may be required to account for this uncertainty in their dose analysis calculations. The dose margin to regulatory limits can unnecessarily be used up to account for the uncertainty in the test results. The Component Test method has demonstrated test results with much less uncertainty than results from integrated tracer gas testing.

The Component Test method focuses on specific components. Therefore, the source of in-leakage is both quantified and identified. An Integrated Tracer Gas Test does not require that the source of in-leakage be identified as long as the accident analysis can support the result. Therefore, an opportunity to improve the material condition of a leaking component may be lost.

Thus far, the integrated tracer gas tests performed in accordance with ASTM E741 have required contractor support. These tests have been relatively expensive to perform – on the order of $50 to $100K per control room. Most component tests are within the capability of the plant staff. Therefore, the cost of these tests are generally less expensive than the ASTM E741.

Note 2: Comparison leak rate testing has been conducted at two STARS facilities to demonstrate that component testing can determine total boundary leakage. The 95 percent criterion assumes that the Integrated Tracer Gas Method has established the total boundary leakage for making a comparison. It will most likely be difficult to quantitatively compare the results from two test methods of different orders of uncertainty. For example, the Palo Verde measured unfiltered in-leakage using the integrated tracer gas testing was 0 +/- 52 scfm with the train-A ventilation system in the emergency mode. If the licensee established the in-leakage result as 52 scfm to be conservative, then the 0 unfiltered in-leakage (determined by component testing) would not meet the 95 percent criterion discussed in the draft guide.