

From: "Hamer, Mike" <mhamer@entergy.com>
To: "Jonathan Rowley" <JGR@nrc.gov>
Date: Thu, Jun 22, 2006 7:55 AM
Subject: RE: filter question

Jonathan,

Please see the attached four pages from the HVAC DBD. The Control Room was designed to conform with Draft AEC Criterion 11 which is equivalent to the Final GDC Criterion 19.

Control Room Habitability was reanalyzed during implementation of AST. Current analysis and licensing basis indicates that there is no need for charcoal filtration. 30 day dose is ~3.5 Rem with essentially unlimited in-leakage.

G-191237 Sheet 2 shows CR-HVAV.

From: Jonathan Rowley [mailto:JGR@nrc.gov]
Sent: Wednesday, June 21, 2006 4:44 PM
To: Hamer, Mike
Subject: filter question

Mike

Could you attain an answer to the following question:

Does Vermont Yankee's control room design include charcoal and HEPA filters to meet GDC 19 requirements for radiation does?

Jonathan Rowley, Project Manager
License Renewal Branch B
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
(301) 415-4053

CC: "Lach, David J" <DLach@entergy.com>

Mail Envelope Properties (449A8512.B2B : 1 : 19243)

Subject: RE: filter question
Creation Date Thu, Jun 22, 2006 7:54 AM
From: "Hamer, Mike" <mhamer@entergy.com>

Created By: mhamer@entergy.com

Recipients

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Files	Size	Date & Time
MESSAGE	939	Thursday, June 22, 2006 7:54 AM
CR HVAC DBD.pdf	219710	
Mime.822	1	

Options

Expiration Date: None
Priority: Standard
ReplyRequested: No
Return Notification: None

Concealed Subject: No
Security: Standard

Junk Mail Handling Evaluation Results

Message is eligible for Junk Mail handling
This message was not classified as Junk Mail

Junk Mail settings when this message was delivered

Junk Mail handling disabled by User
Junk Mail handling disabled by Administrator
Junk List is not enabled
Junk Mail using personal address books is not enabled
Block List is not enabled

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2.0 SYSTEM DESIGN BASES REQUIREMENTS

2.1. SYSTEM FUNCTIONS

2.1.1. Safety Related Functions

- 2.1.1.1. **Control Room** - The Control Room HVAC system shall provide the appropriate temperature conditions for personnel and equipment in the Control Room during any mode of operation or the most adverse emergency condition. (Reference 5.6.1 Appendix I)
- 2.1.1.2. **Control Room** - The Control Room HVAC system shall limit exposure of personnel to airborne contaminants by isolating the Control Room to prevent migration of air to radioactively clean areas from areas of progressively higher contamination. The function is provided by the Control Room HVAC system to meet Draft AEC Criterion 11 and 10CFR20. (Reference 5.6.1 Appendices I and F)
- 2.1.1.3. **Deleted**
- 2.1.1.4. **Diesel Generator Rooms** - The Diesel Generator ventilation system shall provide adequate flow of cool air from the outside to ensure that the reliable operation of the Diesel Generator and its auxiliary equipment will be maintained. (References 5.6.1, Section 10.12.3.2)
- 2.1.1.5. **ECCS Corner Rooms** - The Reactor Recirculation Units RRU-7 and RRU-8 shall provide adequate cooling to the ECCS Rooms during all modes of operation to ensure reliable operation of the Core Spray Pumps, Residual Heat Removal Pumps, and the RHR Service Water Pumps. (References 5.2.17 and 5.3.18)
- 2.1.1.6. **ECCS Corner Rooms** - The Reactor Recirculation Units RRU-5 and RRU-6 shall maintain the SW System pressure boundary integrity so as not to adversely impact SW System heat removal and flooding design bases. (References 5.2.17 and 5.3.18)
- 2.1.1.7. **Reactor Building** - Reactor Building ventilation isolation shall be provided to ensure that the Standby Gas Treatment System limits the exfiltration from the secondary containment and maintains the Reactor Building at a sub-atmospheric pressure. (References 5.6.1 Section 5.3.4, and 5.8.4) The function is provided by Reactor Building ventilation isolation to meet Draft AEC Criterion 10 and the original guidelines of 10CFR100 (Reference 5.6.1 Appendix F) and the present limits of 10CFR50.67. (Reference 5.6.27)

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- 2.1.1.8. **Reactor Building** - The cooling coils for Reactor Recirculation Units RRUs 1, 2, 3, and 4 shall provide a pressure boundary between primary containment and RBCCW. The RRU-1, 2, 3 and 4 component pressure boundary ensures that a radioactive material boundary is established for any fluid escaping the Reactor Coolant System pressure boundary. (Reference 5.9.3)
- 2.1.1.9. **Reactor Building** - The ventilation to the RCIC Room shall be designed to prevent the environment resulting from a HELB from reaching the Equipment Room on the elevation above. (Reference 5.9.4)
- 2.1.1.10. **Battery Room** - The Main Station Battery Room Ventilation System shall prevent an explosive concentration of hydrogen from building up in the room. (Reference 5.6.1, Question 8.6)
- 2.1.1.11. **Battery Room** - The Main Station Battery Room Ventilation System shall provide the appropriate temperature $\geq 60^{\circ}\text{F}$ for operation of the safety-related batteries. (Reference 5.1.19).

2.1.2. Non-Safety Related Functions

- 2.1.2.1. **Control Room** - The Control Room HVAC system shall provide the appropriate humidity conditions for personnel and equipment in the Control Room. (Reference 5.6.1, Section 10.12.2)
- 2.1.2.2. **Control Room** - The Control Room HVAC system shall filter outside air to limit the introduction of particulate matter into the plant. (Reference 5.6.1, Section 10.12.2)
- 2.1.2.3. **Control Room** - The Control Room HVAC system shall provide heating to the Control Room during cold weather conditions. (Reference 5.6.1, Section 10.12.2)
- 2.1.2.4. **Diesel Generator Rooms** - The EDG Room heaters shall maintain a minimum temperature of 50°F to ensure the operability of the AS-2 batteries. (Reference 5.1.18) Normal room infiltration shall maintain hydrogen concentration well below 2% by volume (hydrogen is potentially generated from the AS-2 batteries.) (Reference 5.1.20)
- 2.1.2.5. **ECCS Rooms** - The Reactor Recirculation Units RRU-5 and RRU-6 shall provide supplemental cooling to the ECCS Rooms containing the RHR Service Water Pumps during all modes of operation to enhance the reliability of the RHRSW Pump motors and electrical equipment (Reference 5.3.18).

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Appendix F of the UFSAR (Reference 5.6.18) contains the original evaluation of the design bases of the facility relative to each of the nine groups of the 70 proposed General Design Criteria. In each group, a statement of VYNPS' understanding of the intent of the criteria of that group is made and a discussion of the plant design conformance is presented. UFSAR Appendix F is designated as historical.

The following is a listing of proposed General Design Criteria that were identified as being applicable to the HVAC Systems in the original FSAR Appendix F conformance evaluation. A cross reference between these proposed General Design Criteria and corresponding final GDC's is provided to facilitate understanding of which GDC could be applied as design criteria guidance.

Draft AEC Criterion	Equivalent Final GDC Criterion
1. Quality Standards	1. Quality Standards & Records
2. Performance Standards	2. Design Basis for Protection Against Natural Phenomena
3. Fire Protection	3. Fire Protection
5. Records Requirements	1. Quality Standards & Records
10. Containment	16. Containment Design
11. Control Room	19. Control Room
12. Instrumentation & Control Systems	13. Instrumentation & Control

The proposed General Design Criteria 2, 3, 10, 11 and 12 were applied by the AEC to the review of the VY Operating License application. Since these criteria apply specifically to the HVAC Systems, they will be discussed below. The other criteria listed above have generic applicability to the HVAC Systems and will not be specifically addressed in this document.

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Vital fire barriers separate vital fire areas. Where ducts penetrate vital fire barriers, a fire damper is installed in the penetration. The dampers shut when fusible links, or electro-thermal links (ETL), open at 165°F. The ETLs can be released remotely with an electrical signal. Fire dampers that cause alarms when they shut annunciate on the Control Room pyrotronics panel. The Control Room can be isolated by operation of the damper ETL switches if required to prevent intrusion of an adverse environment. (Reference 5.9.15)

2.2.1.3. Draft AEC Criteria 10 – Containment

Reactor Building ventilation isolation is provided to ensure that the Reactor Building, in the event of a design basis accident, contains airborne fission products such that the release of fission products is within the original dose limits specified in 10CFR100 (Reference 5.6.1 Section 5.3.4 and Appendix F) and the present limits of 10CFR50.67. (Reference 5.6.27)

Conformance with Draft AEC Criterion 10 is outlined in Appendix F of the FSAR. (Reference 5.6.1 Appendix F) Reactor Building ventilation isolation is provided to allow the Standby Gas Treatment System to maintain a negative pressure in the Reactor Building. (References 5.3.23, 5.4.10, 5.6.5 and 5.8.8)

2.2.1.4. Draft AEC Criterion 11 – Control Room

A centralized Control Room is designed having adequate shielding to permit access and occupancy within the prescribed dose limits during any of the design basis accidents analyzed to conform to Draft AEC Criteria 11. (Reference 5.6.5)

Conformance with Draft AEC Criterion 11 is outlined in Appendix F of the FSAR. (Reference 5.6.1 Appendix F) The HVAC Systems are provided to ensure occupancy is maintained within prescribed dose limits and to allow safe control of the station to be maintained from the Control Room. (Reference 5.6.10)

2.2.1.5. Draft AEC Criterion 12 - Instrumentation and Control Systems

Instrumentation and controls is provided to monitor and maintain variables within the prescribed operating ranges of the HVAC Systems to conform to Draft AEC Criterion 12. (Reference 5.6.5)