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February 17, 2005
L-05-015

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit Nos. 1 and 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
License Amendment Request Nos. 325 and 195

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) requests an amendment to the above licenses in the form of changes to the Beaver Valley Power Station (BVPS) Technical Specifications. This license amendment request (LAR) would revise Technical Specifications 3.7.7.1 (Unit 1), "Control Room Emergency Habitability Systems" and 3.7.7 (Unit 2), "Control Room Emergency Air Cleanup and Pressurization System" by dividing each specification into two specifications, addressing control room emergency ventilation and control room air cooling functions separately. Other changes are proposed to improve consistency with the Standard Technical Specifications and consistency between the units.

The enclosure to this letter contains the FENOC evaluation of the proposed changes and includes several attachments. Mark-ups indicating proposed technical specification changes are provided in Attachments A-1 and A-2 for Unit Nos. 1 and 2, respectively. Retyped pages that incorporate the mark-ups are provided in Attachments C-1 and C-2. Proposed changes to the Technical Specification Bases are provided in Attachments B-1 and B-2. Attachments B-1, B-2, C-1 and C-2 are provided for information only.

FENOC requests approval of the proposed amendments by November 2005, with a subsequent implementation period of sixty days.

The Beaver Valley Power Station review committees have reviewed the proposed changes. The changes were determined to be safe and do not involve a significant hazard consideration as defined in 10 CFR 50.92 based on the attached safety analysis and no significant hazard evaluation.

There are no new regulatory commitments contained in this letter. If there are any questions concerning this matter, please contact Mr. Henry L Hegrat, Supervisor, Licensing at 330-315-6944.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on February 17, 2005.

Sincerely,

L. William Pearce

Enclosure:
FENOC Evaluation of the Proposed Changes

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, NRC Sr. Resident Inspector
Mr. S. J. Collins, NRC Region I Administrator
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ENCLOSURE

Beaver Valley Power Station, Unit Nos. 1 and 2
License Amendment Request Nos. 325 and 195

FENOC Evaluation of the Proposed Change

Subject: Application for Amendment of Technical Specifications 3/4.7.7 (BVPS-1 and 2) and tables associated with 3.3.3.1 (BVPS-1) regarding Control Room Habitability Systems.

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Number	Title
A-1	Unit No. 1 Proposed Marked-Up Technical Specification Changes
A-2	Unit No. 2 Proposed Marked-Up Technical Specification Changes
B-1	Unit No. 1 Proposed Technical Specification Bases Changes
B-2	Unit No. 2 Proposed Technical Specification Bases Changes
C-1	Unit No. 1 Proposed Retyped Technical Specification Pages
C-2	Unit No. 2 Proposed Retyped Technical Specification Pages

1.0 DESCRIPTION

FirstEnergy Nuclear Operating Company (FENOC) requests to amend Operating Licenses DPR-66 for Beaver Valley Power Station (BVPS) Unit No. 1 and NPF-73 for BVPS Unit No. 2. The proposed changes would revise Technical Specification (TS) 3.7.7.1 (Unit 1), "Control Room Emergency Habitability Systems" and 3.7.7 (Unit 2), "Control Room Emergency Air Cleanup and Pressurization System" by dividing each current TS into two TSs, addressing control room emergency ventilation and control room emergency air cooling capability separately. In addition to creating separate TS, the proposed changes would revise the BVPS TS to improve consistency between the BVPS Unit Nos. 1 and 2 TS requirements and make the BVPS TS more consistent with the Improved Standard Technical Specifications (ISTS) for Westinghouse Plants, NUREG-1431, Revision 3 (Ref. 1).

By letter L-03-192, dated December 5, 2003, FENOC provided the BVPS Unit Nos. 1 and 2 response to NRC Generic Letter 2003-01 "Control Room Habitability" dated June 12, 2003. In this letter, FENOC committed to "submit a License Amendment Request to propose revisions to the Technical Specification surveillance requirements on both BVPS units to utilize a more direct measurement method (i.e., leak rate test) to verify Control Room Envelope integrity and a periodic verification that a positive pressure is maintained between the Control Room Envelope and adjacent areas with the Control Room Emergency Ventilation System in operation." The due date provided for this commitment was revised in FENOC letter L-04-042, to be performed "within 180 days of NRC approval of Technical Specification Task Force (TSTF)-448." This License Amendment Request does not fulfill the commitment made in FENOC letter L-03-192, and revised in L-04-042. The commitment will be met in accordance with the current standing of the commitment due date, which is within 180 days of NRC approval of TSTF-448.

The proposed changes in this License Amendment Request (LAR) will facilitate the adoption of required changes in response to NRC Generic Letter (GL) 2003-01, "Control Room Habitability" (Ref. 2). Industry TS Task Force (TSTF) # 448 (Ref. 3) is currently under development to address the concerns of GL-2003-01. As the guidance provided in TSTF-448 for revising the control room habitability TS will be based on the ISTS requirements, the changes proposed in this LAR, by standardizing the BVPS TS to the ISTS, will greatly simplify the incorporation of changes resulting from GL-2003-01 and TSTF-448 when finalized by the NRC and industry. This LAR does not include changes from TSTF-448. The proposed changes in this LAR are based on the current ISTS (i.e., Rev. 3), and include an expanded TS Bases similar to the ISTS Bases.

Although the proposed changes improve consistency with the corresponding ISTS requirements, the ISTS requirements have been altered, as necessary, to address BVPS-

specific plant design, safety analyses, and licensing basis, and to be consistent with the current BVPS non-ISTS format and terminology.

2.0 PROPOSED CHANGES

The proposed changes are associated with the control room habitability systems. The proposed TS changes (marked-up draft), which are submitted for NRC review and approval, are provided in Attachment A-1 for BVPS Unit No. 1 and in Attachment A-2 for BVPS Unit No. 2. The TS changes proposed in this LAR can be categorized as follows:

1) Those proposed to be consistent with the ISTS for control room habitability systems;

2) Those proposed to achieve consistency between the two BVPS units' TS on control room habitability systems; and

3) Administrative changes for reformatting and repagination.

The changes proposed to the Technical Specification Bases, which are submitted to support NRC review, are provided in Attachments B-1/B-2 for BVPS Units Nos. 1/2, respectively. The BVPS Bases are extensively revised to reflect the proposed TS changes and are expanded consistent with the corresponding ISTS Bases. As the proposed TS changes in Attachments A-1 and A-2 involve the relocation of TS details into the associated Bases, the proposed new Bases are submitted for information only. The relocation of TS details to the Bases is acceptable as the BVPS TS Bases Control Program (specified in Section 6.0 of the TS) controls the review, approval, and implementation of changes to the Bases.

Attachments C-1/C-2 are provided for information purposes only. These two attachments provide the proposed Technical Specification 3/4.7.6 and 3/4.7.7 changes for BVPS Units Nos. 1/2, respectively, in a clean typed draft format to facilitate the review of the marked-up changes in Attachments A-1/A-2.

The proposed change to the TS and TS Bases have been prepared electronically. Deletions are shown with a strike-through and insertions are shown in text boxes or separate text inserts. This presentation allows the reviewer to readily identify the information that has been deleted or added.

To meet format requirements, the TS, TS Bases pages, and their indices will be revised and repaginated as necessary to reflect the changes being proposed by this LAR.

3.0 BACKGROUND

The proposed amendments would revise the Control Room Habitability Systems Technical Specification for each BVPS Unit. Each BVPS Unit's control room habitability systems include its own Control Room Emergency Ventilation System (CREVS) and Control Room Emergency Air Cooling System (CREACS). These control room habitability systems meet the regulatory requirements of General Design Criteria (GDC) 1, 2, 3, 4, 5 and 19 as described in each Unit's Updated Final Safety Analysis Report (UFSAR) (References 4 and 5). The Unit's control rooms are both a positive pressure design and share a common pressure envelope. A simplified figure showing the Unit 1 and Unit 2 CREVS and CREACS arrangement is provided immediately following Section 7 of this LAR.

The Unit Nos. 1 and 2 CREVS are configured in accordance with the facilities design and licensing basis. Encompassed within the CREVS design is the control room boundary, whose physical integrity is required in order for CREVS to be able to adequately perform its function. The Unit Nos. 1 and 2 CREVS are in physically separate locations within the control room envelope, each with its components on its own side of the combined control room envelope.

The Unit 1 CREVS includes one emergency pressurization air intake damper, two series outdoor air normal intake dampers (1 per train) and two series outdoor air exhaust dampers (1 per train). The dampers have bladders that are inflated to seal in the closed position and minimize leakage. Air for the dampers is provided by an independent control air system that is located within the control room envelope. Upon an automatic Unit 1 CREVS initiation, the Unit 1 normal outdoor air intake and exhaust dampers close. A Unit 1 automatic CREVS actuation signal will also result in the closure of the Unit 2 normal intake and exhaust dampers (to complete the isolation of the control room) and start a Unit 2 CREVS emergency supply fan. Operation of the Unit 1 CREVS fans/filter is an entirely manually-aligned process. A Unit 1 normally closed 10" butterfly outside supply valve is manually opened and 1 of the 2 emergency supply pressurization fans is manually started. Outside air is drawn in through the butterfly valve, across an electric heater and discharged through a single emergency ventilation filter bank consisting of a prefilter, a charcoal filter and a HEPA filter (refer to UFSAR figure 9.13-2 – Control Room Area – Air Conditioning).

The Unit 2 CREVS also consists of two parallel emergency pressurization air intake dampers, two series outside air normal intake dampers and two series outside exhaust dampers. These dampers are a low leakage design and do not contain bladders. Upon an automatic Unit 2 CREVS initiation, the normal Unit 2 outside air intake dampers close (exhaust dampers are normally closed). A Unit 2 CREVS actuation signal will also close the Unit 1 normal intake and exhaust dampers. One of two Unit 2 parallel

emergency supply fan intake dampers open and outside air is drawn in by 1 of the 2 emergency supply pressurization fans through 1 of the 2 emergency filter assemblies. The filter assembly consists of a moisture separator, an electric heater, a charcoal filter, and two HEPA filters (refer to UFSAR Figure 9.4-1 - Computer and Control Room Air-Conditioning and Ventilation System). One Unit 2 CREVS train is automatically actuated on a Containment Isolation Phase B (CIB) signal or a control room high radiation signal (from either Unit). If the first Unit 2 CREVS train's fan does not start, the second Unit 2 CREVS's fan will start after approximately 30 seconds (but is prohibited to start if the first train operates). CREVS flow rate is limited to between 800 and 1000 cfm.

The Unit 1 CREVS fans/filters are considered one train. This one train is a manually operated backup system and is only used in the unlikely event that both trains of the Unit 2 CREVS are unavailable. The Unit 1 licensing basis allows the use of any two of the three available CREVS trains within the combined control room to meet the TS requirement for two operable CREVS trains. Unit 2 licensing basis only allows the use of the two Unit 2-specific CREVS trains. An allowance of 30 minutes has been assumed in the control room habitability analyses to provide time for manual operator action to place the Unit 1 CREVS in service. The assumption in the safety analyses allowing 30 minutes for control room pressurization allows the Unit 1 manual CREVS to be credited as one of the two required Unit 1 trains of CREVS.

There are four design basis accidents that credit operability of the CREVS to mitigate the radiological consequences of the accidents. These are the Loss of Coolant Accident (LOCA - Unit 1/2), Main Steam Line Break (MSLB - Unit 1/2), Control Rod Ejection Accident (CREA - Unit 1/2), and Reactor Coolant Pump Locked Rotor Accident (LRA - Unit 1). The LOCA and CREA for both units have been analyzed using Alternative Source Term (AST) methodology. For the AST analyses, the unfiltered inleakage into the control room envelope is assumed to be 30 cfm after CREVS initiation. The MSLB and the LRA are currently analyzed using the original source term, and the unfiltered inleakage is assumed to be 10 cfm after CREVS initiation. The most limiting design basis radiological accident for control room habitability for the BVPS is the Unit 1 Main Steam Line Break outside of containment due to the application of Alternate Repair Criteria to the Unit 1 steam generators. As a result, the most limiting unfiltered inleakage into the control room envelope is currently 10 cfm.

As described in the BVPS letter in response to GL-2003-01 (Ref. 6), a tracer gas test was performed on the BVPS combined control room boundary in May of 2001. The test using the Unit 2 CREVS indicated a result of zero scfm inleakage, which was less than the 10 cfm assumed in the limiting radiological safety analyses. The test allowed control room ingress and egress during its performance. The test using the Unit 1 CREVS indicated a result of 35 scfm which was later attributed to leakage past two

intake dampers. These dampers were subsequently repaired and component tested. The final test report of the final tracer gas test stated that "Note that substantially all of the leakage measured in...Test 2 is due to leakage across the normal mode isolation dampers. Those dampers should be repaired. If the repair is successful as confirmed by a pressure decay test showing 'essentially zero' bypass leakage, control room envelope inleakage at BVPS will be reduced to a value of less than 10 cfm when operating the CREVS in the Pressurization Mode since no other sources of significant inleakage were discovered."

CREACS consists of two parallel trains of air circulation fans, each moving air across its separate safety-related heat exchanger cooled by the River Water System at Unit 1 and by the Service Water System at Unit 2. These fans are separate from the CREVS fans and filters. The Unit 1 CREACS has a supply and exhaust fan in series that comprises one train of air circulation fans. The Unit 2 CREACS has a single fan that comprises one train of air circulation fans. The CREACS fans are powered from emergency electrical buses. Parts of the same ventilation ducting is used for both CREACS and CREVS. The recirculation flow does not contain any HEPA or charcoal filters and is not credited for any radiological filtration. The recirculation flow at each unit is normally cooled by two non-safety related full capacity air conditioning coolers. Each CREACS train also contains emergency cooling coils supplied by safety-related River Water (Unit 1) and safety-related Service Water (Unit 2). The emergency cooling coils are normally not in operation. CREACS is a manually aligned operating system (i.e., the fans and emergency cooling coils are placed in service by manual operator action). Each Unit's CREACS system can also be manually aligned to 'purge' the control room. This purge arrangement involves aligning one train of CREACS air circulation fan flow to exhaust directly to outside atmosphere with the control room supply dampers fully open. The Unit 1 purge capability is approximately 33,000 cfm and the Unit 2 purge capability is approximately 20,000 cfm.

CREACS is required to provide heat removal from the control room envelope for temperature control whenever CREVS actuation is required and the control room must remain isolated from the outside atmosphere. Thus, the heat removal function of CREACS is required when control room isolation is required and the normal non-safety-related air conditioning equipment is unavailable. The post-accident control room purge function of CREACS is also credited to mitigate radiological consequences in the design basis accident radiological safety analyses calculations for MSLB (Unit 1/2) and FHA (Unit 1).

The design basis of the CREACS cooling capacity using the emergency cooling coils is to maintain the control room temperature within the equipment design limit for a mild environment (i.e., $\leq 120°F$).

The BVPS normal operating procedures ensure that the control room ventilation systems are operated in accordance with the design and licensing basis to limit the amount of unfiltered intake to less than that assumed in the DBA analyses. The normal operating procedures align the ventilation systems for both units in the recirculation mode. A maximum total of 500 cfm (for both Units) of unfiltered outside air is drawn in by both units' control room air conditioning systems through the normal intake supply dampers and mixed with the recirculated air. Manual dampers are set to limit this intake at Unit 1 to 300 cfm and to 200 cfm at Unit 2. The CREACS functions to recirculate and cool the control room air during both normal operation and during CREVS operation (emergency control room pressurization).

The control room's design and licensing basis for hazardous chemicals and smoke is described in the BVPS letter in response to GL 2003-01 (Ref. 6). The changes proposed in this LAR do not affect the design or licensing basis for hazardous chemicals and smoke as described in Reference 6.

4.0 TECHNICAL ANALYSIS

No physical plant modifications are being requested by this LAR and none will be necessary to support implementation of the proposed changes when approved. The proposed changes for each BVPS Unit are consistent with the current design basis and licensing basis at each BVPS Unit. The proposed changes reorganize the existing TS requirements to be more consistent with the standard presentation of these requirements.

Technical Specifications 3.7.7.1 "Control Room Emergency Habitability Systems" (Unit 1) and 3.7.7 "Control Room Emergency Air Cleanup and Pressurization System" (Unit 2) previously addressed both CREACS and CREVS components together. The proposed change provides two separate TS, consistent with the ISTS, that provide more system-specific requirements for each of the control room habitability systems. The proposed change improves the clarity and understanding of the TS requirements for each control room habitability system.

As two separate TS for the control room habitability requirements are proposed, the title of TS 3.7.7.1 (Unit 1) and 3.7.7 (Unit 2) would be changed to "Control Room Emergency Ventilation System (CREVS)." The revised name more accurately describes the specific components covered by the TS. In addition, to promote consistency between the BVPS units, the number of the Unit 1 TS (3.7.7.1) is changed to be the same as the Unit 2 TS number (i.e., 3.7.7). The TS renumbering is an editorial change that also affects the surveillance requirement numbering and is made solely to improve unit to unit consistency.

The following discussions describe the proposed changes by numbered group.

Change Number 1

Change No. 1 addresses the addition of the new TS for CREACS (3/4.7.6) and renaming and renumbering (Unit 1) the previous TS for control room habitability. This change consists of the reorganization of the control room habitability TS into two separate TS consistent with the ISTS. BVPS TS 3/4.7.6 was deleted by a previous TS amendment (#s 246/124). A new TS for the CREACS is proposed to be inserted into this previously unused TS 3/4.7.6. The new TS will add Limiting Condition for Operation (LCO), Applicability, Action and Surveillance Requirement (SR) criteria for CREACS. The new CREACS TS replaces the minimal control room air temperature requirements that were part of the existing Control Room Habitability TS (3/4.7.7). This includes Unit 1 LCO 3.7.7.1.c, Action "c", Action "c.1", SR 4.7.7.1.1.a, and Unit 2 SR 4.7.7.1.a which are deleted (i.e., replaced) by the adoption of new TS 3/4.7.6 for the CREACS. This change also includes revising the TS title of 3/4.7.7.1 (Unit 1) / 3/4.7.7 (Unit 2) to "Control Room Emergency Ventilation Systems (CREVS)." In addition, the proposed change makes the Unit 1 CREVS TS number (3/4.7.7.1) the same as the Unit 2 CREVS TS number (3/4.7.7).

Basis for Change Number 1

Consistent with ISTS 3.7.11, the air cooling system portion of the Unit 1 and the Unit 2 control room habitability systems will be addressed via its own separate TS. The current Unit 1 TS LCO 3.7.7.1.c specifies a requirement to verify that the control room air temperature is $\leq$ 88°F (Unit 2 has no LCO requirement for temperature but has a similar surveillance requirement to verify temperature). The existing TS requirement for the control room air temperature to be maintained $\leq$ 88°F provided a method to verify the control room was being cooled. The specified temperature of 88°F does not represent a design limit and was chosen for inclusion in the original TS arbitrarily to provide a positive indication that the control room air conditioning system was functioning. The verification of the control room air temperature does not provide an indication that the emergency cooling provided by the CREACS is operable and capable of performing its intended function. The design basis of the emergency cooling coils in the CREACS is to maintain the control room air temperature $\leq$ 120°F. As the emergency cooling coils are not normally in service, the simple verification of the control room air temperature does not provide an adequate verification of the heat removal capacity of the emergency cooling coils. The proposed change includes a new surveillance requirement to verify the heat removal capacity of the CREACS using the emergency cooling coils.

The ISTS 3.7.11 specifies LCO, Action, and surveillance requirements for the CREACS that provide assurance the required heat removal capability for the control room is

maintained following isolation of the control room. The requirements of ISTS 3.7.11 ensure that a train of CREACS is available to maintain control room temperature for 30 days of continuous occupancy following a DBA. The adoption of the proposed BVPS CREACS TS (3/4.7.6) is acceptable because the BVPS CREACS performs a post-accident mitigation function as described in the ISTS 3.7.11 Bases that meets the 10 CFR 50.36 criterion 3 for inclusion in the TS. The new BVPS TS for CREACS contains requirements and restrictions not previously specified in BVPS TS and provides additional assurance of CREACS operability beyond the current TS temperature verification requirements. The proposed new TS is appropriate for both BVPS units and applicable to the BVPS design.

Control room heat removal capability is required for those design basis accidents (DBAs) which require the control room to be isolated in order to show adequate control room operator radiological consequences. The safety analyses which address control room operator radiological consequences credit a post-DBA control room isolation capability for Main Steam Line Break (MSLB) for both Units in Modes 1-4, for Control Rod Ejection Accident (CREA) for both Units in Modes 1-4, for a Loss of Coolant Accident (LOCA) for both Units in Modes 1-4, and for a Locked Rotor Accident (LRA) for Unit 1 in Modes 1-4.

The proposed Limiting Condition for Operation (LCO) requires that two trains of Control Room Emergency Air Cooling System (CREACS) be operable. The Unit 1 and Unit 2 main control rooms share one common room area and one common enclosed environment when the control rooms are isolated from outside atmosphere. The CREACS TS only addresses heat removal. Each train of both Units' CREACS must be capable of removing sufficient heat to maintain the temperature on its side of the control room. Although each Unit's CREACS arrangement is slightly different, each unit's system will recirculate air across redundant heat exchangers cooled by river water at Unit 1 and service water at Unit 2. Since each Unit's CREACS only circulates air on its respective side of the control room, one Unit's CREACS train cannot be used to ensure sufficient temperature control on the opposite unit's side of the control room.

The radiological safety analysis for the Unit 1 FHA (movement of non-recently irradiated fuel) assumes that the control room is isolated, thereby retaining radioactivity in the room that entered prior to isolation and maximizing the control room operator's dose. If the control room is not isolated, the resulting control room operator dose would be lower. Hence, the heat removal function of CREACS (required when the control room is isolated) would not be required when Unit 1 is performing fuel handling involving non-recently irradiated fuel because actual control room isolation is not required to mitigate control room operator radiological consequences.

The BVPS safety analyses which address control room operator radiological consequences also credit a post-DBA control room purge capability for MSLB for both Units in Modes 1-4 and for an FHA for Unit 1 when performing fuel handling involving non-recently irradiated fuel. Thus, the CREACS must also provide this post-DBA control room purge function, in addition to the heat removal function discussed above. The purge flow rate credited for MSLB at Unit 1 was 28,000 cfm, and the purge flow rate credited for MSLB at Unit 2 was 16,900 cfm. The BVPS post-DBA purge capability is also part of the proposed CREACS TS requirements. This addition to the TS (beyond the ISTS requirements for a heat removal function) is acceptable because the CREACS purge requirement is a necessary post-accident mitigation function to limit the radiological exposure of control room personnel. A purge on either Unit's side of the common control room would adequately purge the entire control room envelope post-DBA, given sufficient purge flow rate. However, since the Unit 1 system purge flow rate capability is much larger than the Unit 2 system, Unit 2's CREACS is not sufficient to meet the Unit 1 safety analyses requirement for purge flow. Thus, the Unit 1 CREACS purge capability could be used to meet the CREACS purge function for either unit; but the Unit 2 CREACS purge capability can only be used to meet the CREACS purge flow requirement on Unit 2.

In summary, for each unit to meet its respective TS LCO on CREACS, it must show adequate heat removal capability for its respective side of the main control room and show adequate control room envelope purge capability.

The current radiological analyses for both Units' FHA DBA assumes a decay time of (at least) 100 hours, i.e., the threshold for 'recently' irradiated fuel. Thus, the FHA analysis for both units assumes fuel being moved is non-recently irradiated. The current TS for decay time (both units) prohibit the movement of recently irradiated fuel. Since the consequences of an FHA involving recently irradiated fuel are not currently analyzed at either Unit and it is unknown whether control room isolation and/or control room post-DBA purge would be required to show acceptable control room operator dose, the CREACS may be required if either Unit moves recently irradiated fuel. Thus, the proposed CREACS TS will require both the CREACS heat removal and purge functions to be operable for both Units if moving recently irradiated fuel. The addition of requirements for fuel movement involving recently irradiated fuel is consistent with the ISTS and anticipates potential future changes to the current TS decay time requirements.

In addition, since Unit 1's current FHA safety analysis credits the post-DBA purge capability of CREACS, Unit 1 CREACS is also required operable during fuel movement involving non-recently irradiated fuel. An exception in Note form is provided for the Unit 1 LCO acknowledging that only the purge function of CREACS is required when Unit 1 is moving non-recently irradiated fuel. Since the Unit 1 safety

analysis does not require control room isolation to mitigate the dose consequences from a fuel handling accident involving non-recently irradiated fuel, the heat removal function of CREACS is not needed for Unit 1 during fuel movement involving non-recently irradiated fuel.

The proposed CREACS TS Actions are consistent with the corresponding ISTS requirements for the same system. The proposed Actions provide a reasonable time for restoring one inoperable train of CREACS considering that the remaining operable train can perform the required CREACS Function. If the single inoperable train is not restored to operable status within the specified time or if two CREACS trains become inoperable, the proposed Actions require that the plant be placed in a condition where the CREACS is no longer required to be operable. The addition of Actions with shutdown requirements for the CREACS represent new operating restrictions for the BVPS units.

The proposed CREACS Surveillance changes the current TS by incorporating the new ISTS requirement to verify the heat removal function of the CREACS. This new surveillance replaces a simple control room temperature verification with a surveillance requirement to verify that each CREACS train has the capability to remove the required heat load from the control room. This surveillance will confirm that each train of CREACS has the heat removal capacity to maintain the control room air temperature $\leq 120°F$, which is the limit for the mild environment equipment qualification for the safety related systems, structures and components located within the control room envelope. In addition, the proposed CREACS surveillance includes a new requirement to verify the BVPS-specific CREACS purge function capability for each unit. The addition of the new surveillance requirements provides additional assurance that the CREACS will be maintained operable and capable of performing its intended safety function.

Change Number 2

Change No. 2 addresses the revision of the Unit 1 Applicability requirements for the control room habitability TS (proposed new CREVS TS) and associated control room radiation monitors to only address fuel movement involving recently irradiated fuel instead of fuel movement involving any irradiated fuel. This change does not affect Unit 2 because the current corresponding Unit 2 Applicability (for CREVS and the associated control room radiation monitors) already addresses fuel movement involving recently irradiated fuel. This change includes the following:

- Unit 1 TS 3.3.3.1, "Radiation Monitoring," Table 3.3.6 Notation (4), Action 41, in Table 3.3-6 and Table 4.3-3 footnote # # have been revised to address only 'recently' irradiated fuel assemblies.

- Unit 1 TS 3.7.7.1, "Control Room Emergency Habitability Systems," (proposed Unit 1 TS 3.7.7, "CREVS") Applicability has been revised to address only recently irradiated fuel assemblies.

Basis for Change Number 2

The Applicability for the proposed Unit 1 CREVS TS and the associated control room radiation monitors is changed to apply only during movement of recently irradiated fuel assemblies or during movement of fuel assemblies over 'recently' irradiated fuel assemblies. The current Applicability requirements for the Unit 1 control room habitability TS (3.7.7.1) are based on the fact that TS 3.7.7.1 addresses the functions performed by both the CREVS and the CREACS control room systems in a single TS. The Unit 1 safety analysis for an FHA involving non-recently irradiated fuel credits a manual purge of the control room atmosphere following an FHA to limit the radiological dose to control room personnel to within the required limits. The Unit 2 FHA safety analyses do not have a similar purge requirement to limit the dose to control room personnel. This Unit 1 specific requirement is due to the location of the control room with respect to a radiological release from a Unit 1 FHA.

The required Unit 1 purge may be accomplished using the CREACS. The Unit 1 FHA analysis does not require control room isolation or pressurization to limit the dose to control room personnel to within the required limits. Therefore, the CREVS and associated radiation monitors are not required to support the assumptions of the Unit 1 FHA analysis for fuel movement involving non-recently irradiated fuel. However, the current Unit 1 requirements consist of a single TS that addresses all the control room habitability systems, including the system necessary to accomplish the required Unit 1 control room purge. Therefore, the Applicability of the single Unit 1 control room habitability TS, and the associated radiation monitors, was maintained during movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies to support the Unit 1 safety analysis assumption of a control room atmosphere purge following a FHA.

The changes proposed in this LAR include the separation of the CREVS and CREACS into two different TS. Since the CREACS may be used to satisfy the Unit 1 FHA radiological safety analysis assumption of a control room atmosphere purge following an FHA involving non-recently irradiated fuel, the proposed Applicability of the new Unit 1 CREACS TS addresses fuel movement involving recently irradiated and non-recently irradiated fuel. However, the isolation and pressurization functions of the CREVS (and associated radiation monitors) are not required to satisfy the Unit 1 FHA safety analysis assumptions to limit the radiological dose from an FHA involving non-recently irradiated fuel. Therefore, the Applicability of the new separate CREVS TS (and associated control room radiation monitors) is revised to not require CREVS

during fuel movement involving non-recently irradiated fuel. The Applicability of the proposed new Unit 1 CREVS TS and associated control room radiation monitors will continue to require system and component operability during Modes 1-4 and for fuel movement involving recently irradiated fuel.

The proposed change to the Unit 1 Applicability for CREVS and the control room radiation monitors makes these Unit 1 TS requirements consistent with the current corresponding Unit 2 TS requirements. The corresponding Unit 2 TS 3/4.7.7 Applicability (and the Applicability for the Unit 2 control room radiation monitors) were previously revised to only address fuel movement involving recently irradiated fuel in Unit 2 License Amendment No. 121 issued August 30, 2001. The basis for the acceptability of the Unit 2 change that incorporated "recently" irradiated fuel in the applicability of TS 3/4.7.7 (and the Applicability for the Unit 2 control room radiation monitors) as discussed in the NRC Safety Evaluation Report for Unit 2 License Amendment No. 121 is now applicable to the corresponding Unit 1 requirements.

The proposed change is acceptable because it continues to require the appropriate systems and components operable consistent with the assumptions of the applicable safety analyses.

The current FHA safety analysis assumptions are based on moving non-recently irradiated fuel assemblies, and the movement of recently irradiated fuel assemblies is prohibited by the current decay time TS. However, the Applicability for fuel movement involving recently irradiated fuel is retained in the TS consistent with the content and requirements of the ISTS.

Change Number 3

Change No. 3 addresses the category of changes necessary to make the existing BVPS Unit 1 and 2 TS requirements for CREVS as consistent as possible between the units and as consistent as possible with the corresponding ISTS requirement (ISTS 3.7.10, "Control Room Emergency Filtration System"). However, due to format considerations, the ISTS requirements are revised as necessary to integrate uniformly with the existing BVPS TS format and presentation. In addition, BVPS does not have a Ventilation Filter Test Program like the ISTS to simplify the presentation of surveillance requirements. Therefore, unlike the ISTS, the current BVPS surveillance requirements for filter testing are retained in the proposed CREVS TS. The following is a list of the changes that fall into this category:

- The LCO is changed to require two CREVS trains operable.

- Unit 1/2 LCO 3.7.7.1.a/b are being deleted and the details on individual component operability are relocated to the TS Bases. This relocation includes the footnote ** contents pertaining to automatic actuation on CIB.
- A Note is added to the LCO to allow the control room boundary to be opened intermittently under administrative control.
- Unit 1 LCO 3.7.7.1 * footnote to LCO: "train of dampers" replaced with "CREVS train."
- Unit 2 LCO 3.7.7 * footnote to LCO: "train of dampers and fans of the pressurization filtration unit" replaced with "CREVS train." This footnote is also moved to modify the word "OPERABLE" in the proposed LCO wording.
- A new Action a.2 is added to address an inoperable control room boundary. A new action statement a.3 is added to provide guidance when two required CREVS trains are inoperable for reasons other than those specified in proposed Action a.2.
- Unit 1 LCO 3.7.7.1 action "a" is revised and becomes proposed action "a.1" and is placed under a new action header titled "MODES 1, 2, 3 and 4:" The current action "a" is additionally modified by replacing the words "less than two emergency ventilation subsystems, fans, and associated filters OPERABLE, restore at least two subsystems" with the words "one required CREVS train inoperable, restore the CREVS train...."
- Unit 2 LCO 3.7.7 action under the header "MODES 1, 2, 3 and 4" is revised and becomes proposed action "a.1". The words "required CREVS" are added to modify the word "train." The words "of the pressurization filtration Unit or one of two isolation dampers in series" are deleted. The word "system" is replaced with "CREVS train." The words "at least" are deleted.
- Unit 1 LCO 3.7.7.1 current action b. and b.1 are replaced by simplified actions a.1, b.1 and b.2. The current action a.1 is deleted.
- Unit 2 LCO 3.7.7 current actions "a" and "b" under movement of recently irradiated fuel are simplified to address one required CREVS train being inoperable or two required CREVS trains being inoperable when performing fuel movement involving recently irradiated fuel assemblies. The details on individual component inoperability are deleted. These two actions are modified to require "immediate" suspension of fuel assembly movement. Proposed action b.1 is also modified to allow plant operation beyond 7 days if the remaining CREVS train is placed in the emergency pressurization mode of operation.
- Unit 1 SR 4.7.7.1.1: "emergency ventilation subsystem" replaced with "CREVS"

- Unit 2 SR 4.7.7.1: "Control Room Emergency Air Cleanup and Pressurization System" replaced with "CREVS"
- Unit 1 SR 4.7.7.1.1.b: "initiating flow through the HEPA filter and charcoal adsorber train and" replaced with "verifying that the CREVS train operates." The words "with the heaters in operation" are added following the words "15 minutes". The symbol for "greater than or equal to" is added prior to "15 minutes".
- Unit 2 SR 4.7.7.1.b: "initiating flow through the HEPA filter and charcoal adsorber train and" replaced with "verifying that each CREVS train operates"
- Unit 2 SR 4.7.7.1.c.1: "the pressurization filtration system" replaced with "each CREVS train"
- Unit 2 SR 4.7.7.1.c.2: "the pressurization filtration system" replaced with "each CREVS train"
- Unit 1 SR 4.7.7.1.1.c.1: replace "the ventilation system" with "the CREVS train"
- Unit 1 SR 4.7.7.1.1.c.3: "system" replaced with "of the CREVS train"
- Unit 2 SR 4.7.7.1.c.3: "system" replaced with "of each CREVS train"
- Unit 1 SR 4.7.7.1.1.d.1: "the ventilation system" replaced with "the CREVS train"
- Unit 2 SR 4.7.7.1.e.1: "the pressurization filtration system" replaced with "each CREVS train"
- Unit 1 SR 4.7.7.1.1.d.2 (Unit 2 SR 4.7.7.1.e.2) that requires verification of automatic train actuation is revised to state only that each CREVS train actuates on a simulated or actuation signal without reference to the specific actuation signal or without reference to specific component movements (consistent with the ISTS). The details on specific component actuation and actuation signals are moved to the TS Bases.
- Unit 1 SR 4.7.7.1.1.d.3 wording "one emergency ventilation subsystem" is replaced with "each CREVS train. The surveillance interval is revised to 36 months on a STAGGERED TEST BASIS. Also, the word "system" is deleted and the words "at a flow rate of 800 – 1000 cfm" are added following the word "operation". As the test frequency is changed to 36 months on a staggered basis, the SR is moved to 4.7.7.1.e.
- Unit 2 SR 4.7.7.1.1.e.4 wording "the pressurization filtration" is replaced with "each CREVS train. The surveillance interval is revised to 36 months on a STAGGERED TEST BASIS. Also, the word "system" is deleted and add the words "at a flow rate of 800 – 1000 cfm" following the word "operation". As the

test frequency is changed to 36 months on a staggered basis, the SR is moved to 4.7.7.1.f.

- Various information in the existing TS is relocated to the expanded TS Bases to implement the changes described above and to make the scope and content of the proposed CREVS TS more consistent with the corresponding ISTS 3.7.10.

Basis for Change Number 3

Many of the changes listed above are similar in nature and have the same basis for the change. Some of the following discussions address the changes listed above by the type of change. Unique changes are discussed separately. The general types of changes discussed below are as follows:

- The introduction of a common and uniform TS requirement addressing a "CREVS Train" or "required CREVS Train" instead of listing individual components or subsystems throughout the TS. This is a general type of change that applies to many of the changes listed above, and
- The simplification and/or clarification of the TS requirements consistent with the ISTS. This type of change may consist of editorial changes that improve consistency with the wording used in the ISTS or the relocation of details from the current TS to the associated TS bases.

This discussion addresses the introduction of the common TS requirement for an operable CREVS train. Many of the current TS requirements addressed only a portion of a CREVS train's capability or did not address the full extent of a CREVS train. The current LCO, Action and surveillance requirements, in many cases, specify only a portion of a CREVS train (i.e., fans, dampers, filters, etc). In some cases, the name of the train or subsystem was inconsistently addressed in the current TS, introducing the possibility for confusion as to the scope of the TS requirements. The proposed changes listed above, by consistently substituting the use of "CREVS train" in lieu of individual components, specify the full extent of each train's capability and eliminate potential confusion regarding the operability of individual components of the CREVS. The proposed changes ensure that the complete train capability (operability) is required and addressed consistently throughout the proposed TS. The more detailed requirements (listing individual components) specified in the current TS are not necessary since the proposed expanded TS Bases for the CREVS includes a much more complete description of a CREVS train and associated functional requirements. Therefore, the proposed changes that replace the more detailed current TS requirements with "CREVS train" are acceptable because they do not eliminate any prior requirements, and, in some cases, may impose additional requirements due to the enlarged scope implicit by

referencing the whole CREVS train, rather than explicitly described certain components within the train.

For example, the proposed new LCO 3.7.7 (Unit 1) / LCO 3.7.7 (Unit 2) addressing two CREVS trains operable is sufficient to encompass all the required individual train components. This will include components such as the required intake and exhaust dampers and the associated controls for these components. The TS Bases will address the licensing basis that Unit 1 may credit any two of the three CREVS trains available for the control room, but Unit 2 may only credit the two CREVS trains associated with Unit 2 components, consistent with current licensing bases.

In addition, as there are a total of three CREVS Trains, the word "required" has been added to the Actions when referring to "CREVS Trains". This change clarifies that the Actions are only applicable to two out of the three CREVS trains required operable by the LCO.

Another change listed above introduces a Note to the LCO that allows the control room boundary to be opened under administrative controls. The addition of this Note is consistent with the ISTS and is necessary to allow normal activities such as entry and exit from the control room without the TS Actions becoming applicable. The specific administrative controls are described in the TS Bases and are very similar to the current TS administrative controls used to open a locked or sealed closed containment isolation valve as described in the current Bases for Technical Specification 3/4.6.3 at both Units. The ISTS Note will allow the control room boundary to be opened on an intermittent basis with the appropriate administrative controls in place. The proposed change is acceptable because the administrative controls assure that the control room boundary can be quickly re-established if an unexpected need for control room integrity occurs.

The current TS requirements do not directly address an inoperable control room boundary. The existing TS requirements indirectly address this situation through an Action for a stuck open valve or an Action for two inoperable CREVS trains or two inoperable series isolation dampers. Where addressed in the current TS, entry into Specification 3.0.3 is required. Consistent with the ISTS, a new Action is proposed to specifically address two inoperable CREVS trains due to an inoperable control room boundary. The ISTS Action allows a 24 hour Completion Time that would replace the current TS requirements to enter Specification 3.0.3. Proposed new Action a.2 requires a plant shutdown if the control room boundary is not restored to operable status within 24 hours. This proposed relaxation to allow 24 hours when the control room pressure boundary is inoperable is acceptable based on the implementation of compensatory measures (temporary repairs to seal the control room boundary and/or the availability of respirators for control room personnel) discussed in the associated TS Bases and given the low probability of a DBA occurring during this time period that would require

operation of the CREVS. The proposed change continues to require entry into specification 3.0.3 when two trains of CREVS are inoperable for reasons other than an inoperable control room boundary.

The current TS Actions applicable when moving fuel are revised and made consistent between the units. New proposed Actions b.1 and b.2 address fuel movement involving recently irradiated fuel and are consistent with the ISTS. The proposed new Actions are similar to the previously required Unit 2 Actions but specifically require the Actions to be performed immediately. The requirement to perform the specified Action immediately is acceptable because it provides additional assurance of prompt Action. In addition, the new ISTS Actions for moving fuel provide an allowance for continued fuel movement with a single inoperable CREVS train if the operable CREVS train is placed in service. The allowance to continue fuel movement with one inoperable CREVS train and one CREVS train in service is acceptable because the operating train is performing the required safety function and any failures of the operating train will be readily detected. With two CREVS trains inoperable, fuel movement must be suspended immediately.

Current Unit 1 TS Surveillance 4.7.7.1.1.b requires that CREVS train operation be verified for 15 minutes. This current surveillance is revised to add the requirement that heater operation be specifically included in the surveillance. The verification of heater operation when the CREVS train is operating is acceptable because heater operation during train operation is assumed due to the required charcoal test conditions of $\geq$ 70% relative humidity. This requirement is also added to the Unit 1 surveillance for consistency with the corresponding Unit 2 surveillance and with the ISTS. Due to the mild control room environment where the CREVS trains are located, the requirement to operate the CREVS trains for 15 minutes with heaters operating is acceptable. The BVPS CREVS does not require the extended (10 hours specified in the ISTS) heater operation to assure the moisture content of the charcoal filters is controlled. The BVPS current requirement for operating ESF filters for only 15 minutes was previously evaluated and approved by the NRC in Section 6.5.1.3 of the Unit 2 initial license SER, NUREG-1057 dated October 1985. The NRC determination of acceptability was based on the existing Unit 1 Technical Specifications. The basis for this determination is not changed by this LAR.

The current TS surveillance to verify each CREVS train's flow rate every 18 months (SR 4.7.7.1.1.d.3 at Unit 1; SR 4.7.7.1.e.4 at Unit 2), is revised, consistent with the ISTS, to require each train of CREVS to be tested every 36 months on a staggered test basis. As the current TS definition of Staggered Test Basis requires that the stated frequency be divided by the number of trains being tested, the new frequency results in one train being tested every 18 months (consistent with the ISTS). The affected surveillance requirements provide assurance that the control room boundary remains

sufficiently intact such that a single CREVS train can maintain a positive pressure in the control room. A staggered test basis for verifying the capability to pressurize the control room to a positive pressure is acceptable since the passive control room boundary's capability to maintain a positive pressure continues to be tested every 18 months by each CREVS train and because each CREVS train continues to be tested monthly and additional CREVS train testing (including required flow rate verification) is required every 18 months for filter performance verification requirements.

The current TS LCO, Actions, and surveillance requirements are further modified, consistent with the ISTS, by simplifying the proposed requirements specified in the new CREVS TS. This is due, in part, to changes made to conform to the ISTS method of format and presentation for TS requirements. The changes resulting from conformance to more standard format, presentation, and wording are acceptable as these changes do not introduce a technical change to the current TS. However, in many changes listed above, the simplification of the current TS requirements is due to moving details from the current TS to the Bases. The proposed (ISTS like) expanded Bases are included in this LAR (in Attachment B-1 and B-2 for each unit, respectively). The removal of detail from the TS into the Bases is acceptable because the removed details are not necessary to ensure the adequacy of the affected TS requirements and the information removed from the TS will be adequately controlled in the TS Bases. Changes to the Bases are controlled by the BVPS Technical Specification Bases Control Program which is specified in the Administrative Controls section (Section 6) of the current TS. This program requires the evaluation of Bases changes to ensure that the Bases are properly controlled and that prior NRC review and approval is requested when required.

The proposed changes to the current TS requirements discussed above provide a more comprehensive and consistent approach to the presentation of the control room habitability requirements. The proposed changes result in consistent requirements between the BVPS units and more consistency with the standard requirements of the ISTS.

Change Number 4

Change No. 4 addresses the Unit 1 TS surveillance 4.7.7.1.2 which is replaced in its entirety by a requirement to comply with the applicable Unit 2 surveillance requirements (4.7.7.1).

Basis for Change Number 4

The current Unit 1 TS can credit any two of the three available CREVS trains to meet the current Unit 1 LCO 3.7.7.1. However, the current Unit 2 TS only credits the two

CREVS trains associated with the Unit 2 side of the common control to meet the Unit 2 LCO 3.7.7. Thus, this change only affects Unit 1.

The current Unit 1 TS surveillance 4.7.7.1.2 addresses the operability of the Unit 2 CREVS trains. This Unit 1 surveillance reiterated the criteria within the Unit 2 TS Surveillance 4.7.7.1. This reiteration of requirements allows for potential differences between the Unit 1 TSs and the Unit 2 TSs for surveillance requirements on the same Unit 2 CREVS components, which would introduce unwarranted and unnecessary confusion. For consistency between the units, the Unit 1 surveillance is revised to reference the Unit 2 TS surveillances to ensure that the same surveillance criteria is applied to the Unit 2 CREVS trains. The proposed change is acceptable because the change continues to assure the Unit 2 CREVS are adequately tested to demonstrate operability. The proposed change continues to maintain a reference within the Unit 1 TS that requires compliance with the appropriate Unit 2 surveillances. The proposed Unit 1 requirement continues to ensure that the required surveillances will be performed on Unit 2 components when the Unit 2 CREVS is credited by Unit 1 to meet the Unit 1 LCO.

5.0 REGULATORY SAFETY ANALYSIS

FirstEnergy Nuclear Operating Company (FENOC) is proposing to modify the Beaver Valley Power Station (BVPS) Unit No. 1 Technical Specification (TS) 3.7.7.1, "Control Room Emergency Habitability Systems" and BVPS Unit No. 2 TS 3.7.7, "Control Room Emergency Air Cleanup and Pressurization System," to divide the current specification into two separate specifications addressing control room emergency ventilation and control room emergency air cooling capability. In addition, the proposed changes include revising the Applicability of the Unit 1 control room radiation monitors in TS 3.3.3.1. The proposed changes make the requirements for each BVPS unit as similar as possible and improve consistency with the Nuclear Regulatory Commission (NRC) Improved Standard Technical Specifications (ISTS) for Westinghouse Plants, NUREG-1431, Revision 3.

5.1 No Significant Hazards Consideration

FENOC has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   No.

The proposed changes do not adversely affect accident initiators or precursors or alter the design assumptions, conditions or configuration of the facility. The proposed changes do not alter or prevent the ability of structures, systems, or components to perform their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. The proposed change revises the TSs for the control room ventilation systems which are mitigating systems designed to minimize inleakage, to filter the control room atmosphere and to provide heat removal for the control room envelope. These functions maintain the control room temperature within design limits and protect the control room personnel following accidents previously analyzed. The proposed changes do not alter or reduce the capability of the affected systems to maintain the control room temperature and protect the control room personnel consistent with the assumptions of the applicable safety analyses. Therefore, the probability of any accident previously evaluated is not significantly increased. The proposed change continues to assure adequate system and component testing is performed to verify the operability of the control room habitability systems to ensure mitigation features are capable of performing the assumed functions. Therefore, the consequences of any accident previously evaluated are not significantly increased.

Therefore, it is concluded that the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   No.

   The proposed changes will not adversely impact the accident analysis. The changes will not alter the requirements of the control room ventilation systems or their functions during accident conditions. No new or different accidents result from the application of the revised TS requirements. The changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a significant change in the methods governing normal plant operation. The changes do not alter assumptions made in the safety analyses. The proposed changes are consistent with the safety analyses assumptions and current plant operating practices.

   Therefore, the proposed change does not create the possibility of a new or different accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   No.

   The proposed changes do not alter the manner in which safety limits, limiting safety system settings or limiting conditions for operation are determined. The safety analysis acceptance criteria are not affected by these changes. The proposed changes will not result in plant operation in a configuration outside the design basis for an unacceptable period of time without compensatory measures. The proposed changes do not adversely affect systems that respond to safely shut down the plant and to maintain the plant in a safe shutdown condition.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, FENOC concludes that the proposed amendments present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

In the following paragraphs applicable criteria and acceptance limits as they are related to the proposed changes are discussed. A summary of the applicable regulatory requirements and criteria are provided in the following tables:

	General Design Criteria	Assessment
1	Quality Standards and Records	No Impact
2	Design Bases for Protection Against Natural Phenomena	No Impact
3	Fire Protection	No Impact
4	Environmental and Dynamic Effects Design Bases	No Impact
5	Sharing of Structure, Systems, and Components	No Impact
19	Control Room	No Impact

The proposed changes will continue to ensure that the requirements contained in Title 10 of the Code of Federal Regulations Part 50, Appendix A, "General Design Criterion (GDC)," Criterion 19 are maintained.

In conclusion, based upon the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Nuclear Regulatory Commission's regulations, and (3) the approval of the proposed

changes will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. NUREG-1431, Revision 3, "Standard Technical Specifications Westinghouse Plants," March 2004.

2. NRC Generic Letter 2003-01, dated June 12, 2003, "Control Room Habitability."

3. Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change TSTF-448, "Control Room Habitability," (Under Development).

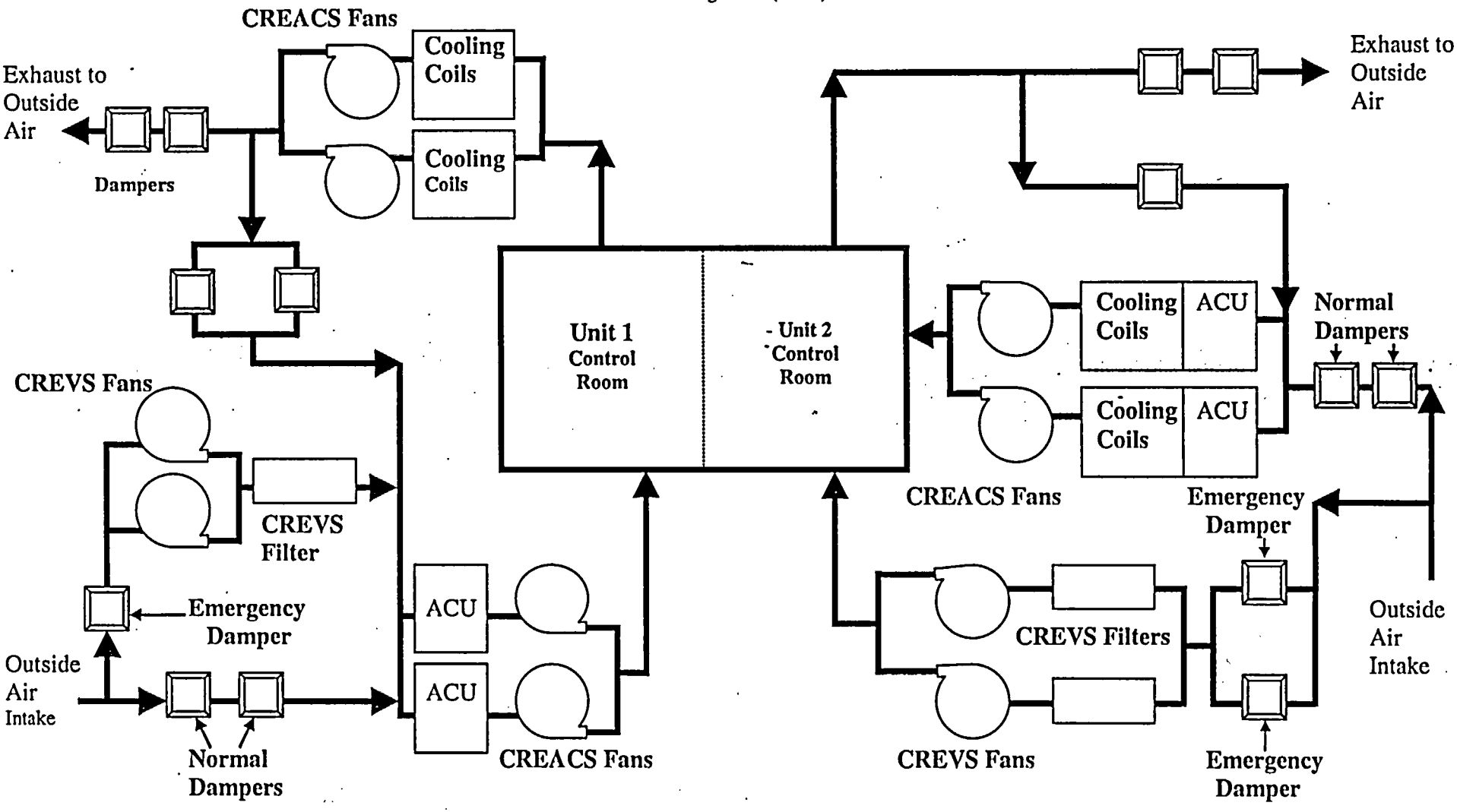
4. Beaver Valley Power Station Unit No. 1 Updated Final Safety Analysis Report.

5. Beaver Valley Power Station Unit No. 2 Updated Final Safety Analysis Report.

6. FENOC Letter L-03-192, dated December 5, 2003, "180-Day Response to Generic Letter 2003-01, Control Room Habitability."

Simplified Figure
BVPS Control Room Ventilation Systems

Note: Air Conditioning Units (ACU) not credited.



ATTACHMENT A-1

Beaver Valley Power Station, Unit No. 1
License Amendment Request No. 325

This Attachment shows the mark-up proposed Technical Specification changes.

The following is a list of the affected Technical Specification pages:

VII
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VENTILATION

(CREVS)

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

(1) (Not used)
(2) During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.
(3) Above background.
(4) During movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies.

recently

ACTION STATEMENTS

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 21 - This Action is not used.

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

ACTION 35 - With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable Channel(s) to OPERABLE status within 72 hours, or:

a) Initiate the preplanned alternate method of monitoring the appropriate parameter(s), and

b) Return the channel to OPERABLE status within 30 days, or, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

ACTION 41 - a) With the number of Unit 1 OPERABLE channels one less than the Minimum Channels OPERABLE requirement:

1. Verify the respective Unit 2 control room radiation monitor train is OPERABLE within 1 hour and at least once per 31 days.

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

recently

ACTION 41 (Continued)

2. With the respective Unit 2 control room radiation monitor train inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the Unit 1 control room radiation monitor to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.

b) With no Unit 1 control room radiation monitors OPERABLE:

1. Verify both Unit 2 control room radiation monitors are OPERABLE within 1 hour and at least once per 31 days.

2. With either Unit 2 control room radiation monitor inoperable, suspend all operations involving movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies within 1 hour and restore the respective Unit 1 control room radiation monitor train to OPERABLE status within 7 days or isolate the control room from the outside atmosphere by closing all series air intake and exhaust isolation dampers, unless the respective Unit 2 control room radiation monitor train is restored to OPERABLE status within 7 days.

3. With no Unit 2 control room radiation monitors OPERABLE, immediately isolate the combined control room by closing all series air intake and exhaust isolation dampers and be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. AREA MONITORS				
a. Deleted				
b. Containment				
i. Purge & Exhaust Isolation (RMVS 104 A & B)	S	R	M	**
ii. Area (RM-RM-219 A & B)	S	R	M	1,2,3,& 4
c. Control Room Isolation (RM-RM-218 A & B)	S	R	M###	1,2,3,4, and ##
2. PROCESS MONITORS				
a. Containment				
i. Gaseous Activity RCS Leakage Detection (RM 215B)	S	R#	M	1,2,3 & 4
ii. Particulate Activity RCS Leakage Detection (RM 215A)	S	R#	M	1,2,3 & 4
b. Deleted				

recently

** During movement of recently irradiated fuel assemblies within the containment and during movement of fuel assemblies over recently irradiated fuel assemblies within the containment.

Surveillance interval may be extended to the upcoming refueling outage if the interval between refueling outages is greater than 18 months.

During movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies.

Control Room intake and exhaust isolation dampers are not actuated.

3/4.7.6 ~~(This Specification number is not used.)~~

SEE INSERT FOR NEW TECHNICAL SPECIFICATION 3/4.7.6, CREACS

INSERT: NEW CREACS SPECIFICATION

3/4.7.6 CONTROL ROOM EMERGENCY AIR COOLING SYSTEM (CREACS)

LIMITING CONDITION FOR OPERATION

3.7.6 Two CREACS trains shall be OPERABLE*.

- General Note -

The heat removal function of CREACS is not required OPERABLE to support fuel movement involving non-recently irradiated fuel.

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of irradiated fuel assemblies, and

During movement of fuel assemblies over irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.2 With two CREACS trains inoperable, enter Specification 3.0.3 immediately.

During movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies:

b.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or immediately place the OPERABLE CREACS train in operation or immediately suspend movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies.

b.2 With two CREACS trains inoperable, immediately suspend movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.7.6.1 CREACS shall be demonstrated OPERABLE at least once per 18 months by verifying each CREACS train has the capability to remove the required heat load and purge the control room atmosphere at the required flow rate.

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* Emergency backup power for only one CREACS train is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

PLANT SYSTEMS — VENTILATION — (CREVS)

3/4.7.7 CONTROL ROOM EMERGENCY ~~HABITABILITY~~ SYSTEMS

Bases

LIMITING CONDITION FOR OPERATION — Two CREVS trains shall be

INSERT: NEW LCO NOTE

3.7.7 ~~The control room emergency habitability system is~~ OPERABLE* ~~when:~~

~~a. Two out of three emergency ventilation subsystems, fans, associated filters and dampers are OPERABLE, and~~

~~b. The series normal air intake and exhaust isolation dampers for both units are OPERABLE, and capable of automatic closure on a CIB** and Control Room High Radiation isolation signal, or OPERABLE by being secured in a closed position with power removed.~~

DELETED, SEE NEW TECH SPEC 3/4.7.6 FOR COOLING REQUIREMENTS

~~c. The control room air temperature is maintained ≤ 88°F.~~

APPLICABILITY: MODES 1, 2, 3 and 4, and — recently

During movement of irradiated fuel assemblies, and

MODES 1, 2, 3 and 4:

During movement of fuel assemblies over irradiated fuel assemblies.

ACTION: — 1 — one required CREVS train inoperable, restore the CREVS train

a. With ~~less than two emergency ventilation subsystems, fans, and associated filters OPERABLE, restore at least two subsystems~~ to OPERABLE status within 7 days or be in ~~at least~~ HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Replaced by Standard TS Actions

~~a.1 With an emergency ventilation subsystem inlet isolation damper open and not capable of being closed, the requirements of 3.0.3 are applicable.~~

INSERT NEW ACTIONS FOR MODES 1-4

a.2 With two required CREVS trains inoperable due to an inoperable control room boundary, restore the control room boundary to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.3 With two required CREVS trains inoperable for reasons other than described in ACTION a.2, enter Specification 3.0.3 immediately.

CREVS

* Emergency power for only one train ~~of dampers~~ is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

~~** Automatic actuation on a CIB signal is only required in MODES 1 through 4.~~

Bases

LCO NOTE INSERT

- General Note -

The control room boundary may be opened intermittently under administrative control.

LIMITING CONDITION FOR OPERATION (continued)

b. With one open series normal air intake or exhaust isolation damper inoperable and not capable of closing, restore all series dampers to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Inoperable dampers moved to Action Bases describing one and two inoperable trains

b.1 With both series normal air intake or exhaust isolation dampers inoperable and not capable of being closed, the requirements of 3.0.3 are applicable and movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies shall be suspended.

c. With the control room air temperature > 88°F but ≤ 105°F, return the temperature to ≤ 88°F in 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

DELETED, SEE NEW SPECIFICATION 3/4.7.6 FOR COOLING REQUIREMENTS

c.1 With the control room air temperature > 105°F, be in at least HOT STANDBY within the next 4 hours and in COLD SHUTDOWN within the following 30 hours.

INSERT NEW ACTIONS DURING FUEL MOVEMENT INVOLVING RECENTLY IRRADIATED FUEL

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies:

b.1 With one required CREVS train inoperable, restore the CREVS train to OPERABLE within 7 days, or immediately place the OPERABLE CREVS train in the emergency pressurization mode of operation, or immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

b.2 With two required CREVS trains inoperable, immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

SEE NEW SPECIFICATION 3/4.7.6 FOR COOLING REQUIREMENTS

SURVEILLANCE REQUIREMENTS

CREVS

4.7.7.1 [X] The ~~BV-1 emergency ventilation subsystem~~ shall be demonstrated OPERABLE:

Deleted.

a. ~~At least once per 12 hours by verifying that the control room air temperature is ≤ 88°F.~~

b. At least once per 31 days by ~~initiating flow through the HEPA filter and charcoal adsorber train and~~ verifying that ~~the~~ the CREVS train operates for ≥ 15 minutes with the heaters in operation.

c. At least once per 18 months or after every 720 hours of system operation or (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank, or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housing or (3) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the filtration system satisfies the in-place penetration and by-pass leakage testing acceptance criteria of less than 0.05% when tested in accordance with ANSI N510-1980 while operating ~~the ventilation system~~ the CREVS train at a flow rate of 800 - 1000 cfm.

2. Within 31 days after removal, subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 99% for radioactive methyl iodine at an air flow velocity of .68 ft/sec with an inlet methyl iodide concentration of 1.75 mg/m^3, ≥ 70% relative humidity, and 30°C; other test conditions including test parameter tolerances shall be in accordance with ASTM D3803-1989. The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Removing a longitudinal sample from an adsorber tray using a slotted-tube sampler, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with length equal to the thickness of the bed.

SURVEILLANCE REQUIREMENTS (continued)

3. Verifying a system flow rate of 800 - 1000 cfm during ~~system~~ operation of the CREVS train.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating ~~the ventilation system~~ the CREVS train at a flow rate of 800 - 1000 cfm.

2. Verifying that on a simulated or actual actuation signal, ~~control room high radiation/~~ containment phase B isolation test signal from either Unit, the system automatically closes all the series isolation ventilation system dampers which isolate the combined control room from the outside atmosphere. each CREVS train actuates

Deleted. BASES

3. Verifying ~~that one emergency ventilation subsystem~~ maintains the combined control room at a positive pressure of ≥ 1/8 inch Water Gauge relative to the outside atmosphere during ~~system~~ operation at least once every 36 months on a STAGGERED TEST BASIS, each CREVS train can at a flow rate of 800-1000 cfm. Bases

e. 4. Verifying that the heaters dissipate at least 3.87 kw and not exceeding 5.50 kw when tested in accordance with ANSI N510-1980.

The BV-2 CREVS, when utilized to meet BV-1 Technical Specification 3.7.7, shall be demonstrated OPERABLE in accordance with BV-2 Technical Specification 4.7.7.1.

By

4.7.7.1.2 ~~The BV-2 emergency ventilation subsystems shall be demonstrated OPERABLE:~~

~~a. At least once per 12 hours by verifying that the control room air temperature is ≤ 88°F.~~

~~b. At least once per 31 days by initiating flow through each HEPA filter and charcoal adsorber train and by verifying that each train operates for 15 minutes.~~

~~c. At least once per 18 months, or after every 720 hours of system operation and (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank, or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (3) following painting, fire or chemical release in any ventilation zone communicating with the system by:~~ Replaced by a reference to the U2 surveillances instead of repeating the U2 surveillances.

~~1. Verifying that the filtration system satisfies the in-place penetration and by-pass leakage testing acceptance criteria of less than 0.05% when tested in accordance with ANSI N510-1980 while operating the ventilation system at a flow rate of 800-1000 cfm.~~

SURVEILLANCE REQUIREMENTS (continued)

2. Within 31 days after removal, subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 99% for radioactive methyl iodine at an air flow velocity of 0.70 ft/sec with an inlet methyl iodine concentration of 1.75 mg/m^3, ≥ 70% relative humidity, and 30°C; other test conditions including test parameter tolerances shall be in accordance with ASTM D3803-1989. The carbon samples not obtained from test canisters shall be prepared by either:

   a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with a length equal to the thickness of the bed, or

   b) Removing a longitudinal sample from an adsorber tray using a slotted-tube sampler, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with a length equal to the thickness of the bed.

3. Verifying a system flow rate of 800 to 1000 cfm during system operation.

d. At least once per 18 months by:

1. Verifying that the pressure drop for the combined HEPA filters and charcoal adsorber banks is less than 5.6 inches Water Gauge while operating the ventilation system at a flow rate of 800 to 1000 cfm.

2. Verifying that on a Containment Isolation Phase B/ Control Room High Radiation test signal from either Unit, the system automatically closes all the series isolation ventilation system dampers which isolate the combined control room from the outside atmosphere and the system automatically starts and supplies air to the control room through the HEPA filters and charcoal adsorber banks.

3. Deleted

Replaced by a reference to the Unit 2 Surveillances instead of repeating the the U2 Surveillances.

SURVEILLANCE REQUIREMENTS (continued)

~~4. Verifying that one emergency ventilation subsystem maintains the control room at a positive pressure of ≥ 1/8 inch Water Gauge relative to the outside atmosphere during system operation.~~

Replaced by a reference to Unit 2 Surveillances instead of repeating the U2 Surveillances.

~~5. Verifying that the heaters dissipate at least 3.87 kw and not exceeding 5.50 kw when tested in accordance with ANSI N510-1980.~~

ATTACHMENT A-2

Beaver Valley Power Station, Unit No. 2
License Amendment Request No. 195

This Attachment shows the mark-up proposed Technical Specification changes.

The following is a list of the affected Technical Specification pages:

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LIMITING CONDITION FOR OPERATION AND SURVEILLANCE REQUIREMENTS

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3/4.7.3	PRIMARY COMPONENT COOLING WATER SYSTEM.....	3/4 7-11
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3/4.7.5	ULTIMATE HEAT SINK - OHIO RIVER.....	3/4 7-13
3/4.7.7	CONTROL ROOM EMERGENCY ~~AIR CLEANUP AND PRESSURIZATION~~ SYSTEM.....	3/4 7-15
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VENTILATION

(CREVS)

3/4.7.6 ~~(This Specification number is not used.)~~

SEE INSERT FOR NEW TECHNICAL SPECIFICATION 3/4.7.6, CEACS

INSERT: NEW CREACS SPECIFICATION

3/4.7.6 CONTROL ROOM EMERGENCY AIR COOLING SYSTEM (CREACS)

LIMITING CONDITION FOR OPERATION

3.7.6 Two CREACS trains shall be OPERABLE*.

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of recently irradiated fuel assemblies, and

During movement of fuel assemblies over recently irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.2 With two CREACS trains inoperable, enter Specification 3.0.3 immediately.

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies:

b.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or immediately place the OPERABLE CREACS train in operation or immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

b.2 With two CREACS trains inoperable, immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.7.6.1 CREACS shall be demonstrated OPERABLE at least once per 18 months by verifying each CREACS train has the capability to remove the required heat load and purge the control room atmosphere at the required flow rate.

---

* Emergency backup power for only one CREACS train is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

PLANT SYSTEMS

VENTILATION

(CREVS)

3/4.7.7 CONTROL ROOM EMERGENCY ~~AIR CLEANUP AND PRESSURIZATION~~ SYSTEM

INSERT: NEW LCO NOTE

Two CREVS trains

LIMITING CONDITION FOR OPERATION

3.7.7 ~~The Control Room Emergency Air Cleanup and Pressurization System comprised of the following~~ shall be OPERABLE:*

BASES

a. ~~A pressurization filtration unit comprised of two trains of fans and filters, and flow path control dampers.~~*

b. ~~Two isolation dampers in series in each of four normal air flow paths (two intake and two exhaust) with each damper OPERABLE by automatic actuation** or OPERABLE by being secured in a closed position with power removed.~~

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of recently irradiated fuel assemblies *, and

During movement of fuel assemblies over recently irradiated fuel assemblies *

Delete asterisk

ACTION:

required CREVS

a.1 MODES 1, 2, 3 and 4:

Action Bases

With one train ~~of the pressurization filtration unit or~~ two isolation dampers in series inoperable, restore the ~~system~~ to OPERABLE status within 7 days or be in ~~at least~~ HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

one of

CREVS train

CREVS

BASES

* Emergency backup power for only one train ~~of dampers and fans of the pressurization filtration unit~~ is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

~~** Automatic actuation on a CIB signal is only required in MODES 1 through 4.~~

INSERT NEW ACTIONS FOR MODES 1-4

a.2 With two required CREVS trains inoperable due to an inoperable control room boundary, restore the control room boundary to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.3 With two required CREVS trains inoperable for reasons other than described in ACTION a.2, enter Specification 3.0.3 immediately.

LCO NOTE INSERT

- General Note -

The control room boundary may be opened intermittently under administrative control.

LIMITING CONDITION FOR OPERATION (continued)

or immediately place the OPERABLE CREVS train in the emergency pressurization mode of operation,

ACTION (Continued)

required CREVS

CREVS train

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies:

b.1

Action Bases

or one

a. With one ~~train of the pressurization filtration unit~~ of two isolation dampers in series inoperable, restore the ~~inoperable system~~ to OPERABLE status within 7 days, or

immediately

suspend ~~all operations involving~~ movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

b.2

two

b. With ~~both trains of the pressurization filtration unit or~~ two of two isolation dampers in series inoperable, suspend ~~all operations involving~~ movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

Action Bases

immediately

CREVS

SURVEILLANCE REQUIREMENTS

SEE NEW SPECIFICATION 3/4.7.6 FOR COOLING REQUIREMENTS

4.7.7.1 The ~~Control Room Emergency Air Cleanup and Pressurization System~~ shall be demonstrated OPERABLE:

Deleted.

a. ~~At least once per 12 hours by verifying that the control room air temperature is ≤ 88°F.~~

b. At least once per 31 days by ~~initiating flow through the HEPA filter and charcoal adsorber train and~~ verifying that

each CREVS

~~the~~ train operates for ≥ 15 minutes with the heaters in operation.

c. At least once per 18 months or (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank, or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings by:

1. Verifying that the charcoal adsorbers remove ≥ 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating ~~the pressurization filtration system~~ at a flow rate of 800 to 1000 cfm.

2. Verifying that the HEPA filter banks remove ≥ 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1980 while operating ~~the pressurization filtration system~~ at a flow rate of 800 to 1000 cfm.

each CREVS train

SURVEILLANCE REQUIREMENTS (Continued)

of each CREVS train.

3. Verifying a system flow rate of 800 to 1000 cfm during ~~system~~ operation.

d. At least once per 18 months or (1) after 720 hours of system operation, or (2) following painting, fire or chemical release in the vicinity of control room outside air intakes while the system is operating, within 31 days after removal, subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 99% for radioactive methyl iodide at an air flow velocity of 0.7 ft/sec with an inlet methyl iodide concentration of 1.75 mg/m^3, ≥ 70% relative humidity, and 30°C; other test conditions including test parameter tolerances shall be in accordance with ASTM D3803-1989. The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

e. At least once per 18 months by:

each CREVS train

1. Verifying that the pressure drop for the combined HEPA filters and charcoal adsorber banks is less than 5.6 inches Water Gauge while operating ~~the pressurization filtration system~~ at a flow rate of 800 to 1000 cfm.

each CREVS train actuates

simulated or actual actuation signal.

2. Verifying that on a ~~Containment Isolation~~ Phase B/ Control Room High Radiation test signal, the ~~system~~ automatically closes all the series isolation ventilation system dampers which ~~isolate~~ the control room from the outside ~~atmosphere~~ and the system automatically starts and supplies air to the control room through the HEPA filters and charcoal adsorber banks.

3. Deleted

BASES

Deleted.

at least once every 36 months on a STAGGERED TEST BASIS, that each CREVS train can

at a flow rate of 800 to 1000 cfm

SURVEILLANCE REQUIREMENTS (Continued)

4. By ~~V~~verifying ~~that the pressurization filtration system~~ maintains the control room at a positive pressure of ≥ 1/8 inch Water Gauge relative to the outside atmosphere during ~~system~~ operation.

5. Verifying that the heaters dissipate at least 3.87 kw and not exceeding 5.50 kw when tested in accordance with ANSI N510-1980.

f.

ATTACHMENT B-1

Beaver Valley Power Station, Unit No. 1
License Amendment Request No. 325

This Attachment shows the Technical Specification Bases proposed changes.

The following is a list of the affected Technical Specification Bases pages:

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B 3/4 7-5

TECHNICAL SPECIFICATION BASES INDEX

BASES

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3/4.7.1.1	Main Steam Safety Valves (MSSVs)	B 3/4 7-1
3/4.7.1.2	Auxiliary Feedwater System	B 3/4 7-2
3/4.7.1.3	Primary Plant Demineralized Water	B 3/4 7-2j
3/4.7.1.4	Activity	B 3/4 7-3
3/4.7.1.5	Main Steam Line Isolation Valves	B 3/4 7-3
3/4.7.3	COMPONENT COOLING WATER SYSTEM	B 3/4 7-4
3/4.7.4	RIVER WATER SYSTEM	B 3/4 7-4
3/4.7.5	ULTIMATE HEAT SINK	B 3/4 7-4
3/4.7.7	CONTROL ROOM EMERGENCY ~~HABITABILITY~~ SYSTEM (CREVS)	B 3/4 7-~~5~~
3/4.7.8	SUPPLEMENTAL LEAK COLLECTION AND RELEASE SYSTEM	B 3/4 7-~~6~~
3/4.8 ELECTRICAL POWER SYSTEMS		
3/4.8.1 AND 3/4.8.2	A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS	B 3/4 8-1
3/4.7.6	CONTROL ROOM EMERGENCY AIR COOLING SYSTEM (CREACS)	B 3/4 7-4

VENTILATION

3/4.7.2 (This Specification number is not used.)

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the component cooling water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident analyses. A component cooling water heat exchanger remains operable when in a standby mode (e.g., with its inlet component cooling water valve open and its outlet valve closed) since safety analyses credits manual operator actions for post-accident operation.

3/4.7.4 RIVER WATER SYSTEM

The OPERABILITY of the river water system ensures that sufficient cooling capacity is available for continued operation of safety related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the accident conditions.

3/4.7.5 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink level and temperature ensure that sufficient cooling capacity is available to either 1) provide normal cooldown of the facility, or 2) to mitigate the effects or accident conditions within acceptable limits.

The limitations on minimum water level and maximum temperature are based on providing a 30 day cooling water supply to safety related equipment without exceeding their design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants."

3/4.7.6 ~~(This Specification number is not used.)~~

CONTROL ROOM EMERGENCY AIR COOLING SYSTEM (CREACS)

See CREACS 3/4.7.6 Bases Insert

VENTILATION

(CREVS)

3/4.7.7 CONTROL ROOM EMERGENCY ~~HABITABILITY~~ SYSTEM

The OPERABILITY of the control room emergency habitability system ensures that the control room will remain habitable for operations personnel during and following all credible accident conditions. The ambient air temperature is controlled to prevent exceeding the allowable equipment qualification temperature for the equipment and instrumentation in the control room. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent, or 5 rem TEDE, as applicable. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50 or 10 CFR 50.67, as applicable.

The control room DBA assumes that the control room of the accident by manually actuati ilation subsystem (CREVS). Althou n fan is manually actuated, the s actuation of the Unit 2 CREVS pres

A start time dela cuitry of the Unit 2 CREVS pressuriz ime delay includes the following con

1. The delay ti rization fans onto the emergen Emergency Diesel Generator load sequencing is completed.

2. The pressurization fan delay times are staggered to ensure only one fan will be operating.

3. A pressurization fan is started early to minimize dose to the operators.

4. The delay times are selected such that sufficient time will be available for the manual initiation of the Unit 1 pressurization fan within 30 minutes after an accident should a Unit 2 pressurization fan fail to start.

The Bases format for this section is changed to be similar to that used in the Improved Standard Technical Specifications. The current Bases text is retained, as appropriate, within the applicable sections of the new format, as shown in the insert.

FOR INFORMATION ONLY

Insert for 3/4.7.6 CREACS BASES

Note

The Technical Specification Bases address both Unit 1 and Unit 2 since information on the opposite unit may be useful to address issues involving the control room boundary which encompasses both BVPS Units' control rooms.

Background

The Control Room Emergency Air Cooling System (CREACS) is a subsystem providing 1) a control room air heat removal function necessary following isolation of the control room, and 2) a control room ventilation purge capability for the combined Units' main control room. The heat removal function ensures that the control room equipment qualification is maintained following isolation of the control room. The purge capability is necessary to limit the dose received by the control room personnel following certain design basis accidents (DBAs). Each Unit has its own CREACS. Each Unit's CREACS consists of a single ventilation air intake and two independent and redundant trains consisting of river/service water emergency cooling coils, ventilation ducts, fans and fan controls. The CREACS heat removal function is discussed in the UFSAR, Section 9.13 (Unit 1) and Section 9.4 (Unit 2). The CREACS control room atmosphere purge function is discussed in the UFSAR, Table 11.3-7 (Unit 1) and Table 15.0-13 (Unit 2).

The CREACS is an emergency system, parts of which operate during normal unit operations. A single train of CREACS on each unit is capable of maintaining its side of the combined control room at ≤ the equipment design limit of 120°F. A single train of CREACS at Unit 1 is capable of providing an adequate purge flow to meet either Unit's DBA purge requirements. However, a single train of CREACS at Unit 2 is only capable of providing adequate purge flow to meet Unit 2's DBA purge requirement, but is not sufficient to meet Unit 1's DBA purge requirement.

Applicable Safety Analyses

The design basis of the CREACS heat removal function is to provide emergency air cooling for the control room to maintain the temperature within the equipment design limit for a mild environment (120°F) following certain DBAs when the control room is isolated. The CREACS also provides an atmosphere purge function for the control room following certain DBAs. Only manual actuation is credited for both CREACS functions at each Unit.

The CREACS components are arranged in redundant, safety related trains. A single active failure of a component of the CREACS, with a loss of offsite power, does not impair the ability of the system to

perform its design function. The CREACS is designed in accordance with Seismic Category I requirements.

During normal and emergency control room operation, the control room air cooling is usually maintained by the non-safety related air conditioning equipment which is integral to the control room ventilation systems. During emergency operation when the control room is isolated, the safety related CREACS is manually initiated to provide air cooling to maintain the temperature ≤ 120°F when the normal non-safety related air conditioning becomes unavailable. The CREACS is capable of removing sensible and latent heat loads from the control room, which include consideration of equipment heat loads to ensure equipment OPERABILITY. The CREACS heat removal function is only required following post-DBA isolation of the control room (when control room isolation is required to meet radiological dose analysis requirements) and the normal non-safety related air conditioning equipment is unavailable.

The heat removal function of CREACS may be required in design basis accidents for MODES 1, 2, 3, and 4 (e.g., the Main Steam Line Break and Control Rod Ejection DBAs for both Units require control room isolation). Since neither Unit requires control room isolation (and hence the control room heat removal function of CREACS) to meet its Fuel Handling Accident (FHA) DBA nor requires control room isolation following any other DBA in Modes 5 and 6 (e.g., Waste Gas Tank Rupture DBA), the heat removal function of CREACS is not required in Modes 5 and 6 or during fuel movement involving non-recently irradiated fuel.

The CREACS control room ventilation purge function ensures the capability to manually purge the air from the control room for selected design basis accidents to ensure acceptable dose consequences to the control room crew following a DBA. For Unit 1, the main steam line break (MSLB) analysis credits a 30 minute control room ventilation purge at a flow rate of ≥ 28,000 cfm after the accident sequence is complete and the environmental release has been terminated. Also for Unit 1, the FHA analysis credits a 30 minute control room ventilation purge at a flow rate of ≥ 16,900 cfm after the accident sequence is complete and the environmental release has been terminated. For Unit 2, only the MSLB accident analysis credits the control room ventilation purge function at a flow rate of ≥ 16,900 cfm. Only Unit 1 requires the purge function of CREACS during fuel movement involving non-recently irradiated fuel. Therefore, the purge function of CREACS is required for Unit 1 whenever Unit 1 has movement involving non-recently irradiated fuel. Thus, the control room ventilation purge functions of CREACS are credited in design basis accidents for MODES 1, 2, 3, and 4 at both Units, and for fuel movement involving non-recently irradiated fuel assemblies at Unit 1.

CREACS is also required OPERABLE for both Units during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part

of a critical reactor core within the previous 100 hours) and during movement of fuel assemblies over recently irradiated fuel assemblies. The applicability for fuel movement involving recently irradiated fuel assemblies is included because there is a potential for a limiting FHA for which the requirements of this Specification (i.e. control room purge function) may be necessary to limit radiation exposure to personnel occupying the control room to within the requirements of 10 CFR 50.67 and limit control room temperature should control room isolation be required. Although the movement of recently irradiated fuel is not currently permitted for either Unit, the requirements for both the heat removal and purge functions are retained in the Technical Specifications in case the CREACS functions are necessary to support the assumptions of a FHA safety analysis for fuel movement involving recently irradiated fuel. The retention of Technical Specification requirements for fuel movement involving recently irradiated fuel is consistent with the guidance of NUREG-1431,"Standard Technical Specifications Westinghouse Plants" Rev. 3.

The CREACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

As the Unit 1 FHA analysis does not require control room isolation, a General Note modifying the LCO requirement clarifies that the Unit 1 heat removal function of CREACS is not required OPERABLE to support fuel movement involving non-recently irradiated fuel. Only the CREACS control room ventilation purge function is required during fuel movement involving non-recently irradiated fuel to satisfy Unit 1 safety analyses. The Note is only applicable to Unit 1 because the Unit 2 CREACS is not credited in the Unit 2 FHA for fuel movement involving non-recently irradiated fuel, and therefore, is not required OPERABLE for fuel movement involving non-recently irradiated fuel at Unit 2.

Two trains of the CREACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disabling the other train. Total system failure of the heat removal function could result in the equipment operating temperature exceeding limits in the event of a DBA requiring control room isolation. Total system failure of the control room atmosphere purge function could result in exceeding the applicable dose limit for the control room personnel in the event of a large radioactive release following a DBA that requires the purge function to limit dose.

With regard to the control room atmospheric purge function only, the Unit 2 LCO requirement for two OPERABLE CREACS trains may also be met by crediting OPERABLE Unit 1 CREACS train(s). This is acceptable because the Unit 1 CREACS purge flow capability is greater than Unit 2 CREACS purge flow capability and will satisfy the Unit 2 safety analyses requirements for a manual purge of the common control room envelope. However, the Unit 1 LCO requirements can not be met by crediting OPERABLE Unit 2 CREACS train(s) since the Unit 2 CREACS

purge flow capability is less than the credited Unit 1 purge flow requirements.

The CREACS is considered to be OPERABLE when the individual components necessary to maintain the control room temperature ≤ 120°F (when the control room is isolated) and to provide a control room ventilation purge with the required flow rate are OPERABLE in two trains. The CREACS trains share common ventilation ductwork and normal air inlet and exhaust flow paths. The required individual CREACS components must be capable of manual operation. The automatic function of CREACS components is not required for OPERABILITY. The required components include the river/service water emergency cooling coils, necessary ductwork and associated dampers, fans and fan controls. In addition, the CREACS must be operable to the extent that air circulation necessary for the required temperature control can be maintained.

The LCO is modified by a footnote * that requires emergency backup power for only one CREACS train in Modes 5, 6 and with no fuel assemblies in the reactor pressure vessel. This footnote allows emergency power sources to be taken out of service during a unit shutdown consistent with the shutdown Electrical Power Technical Specifications.

Applicability

CREACS must be OPERABLE at its respective Unit in MODES 1, 2, 3, 4 and during fuel movement involving recently irradiated fuel (i.e., fuel that occupied part of a critical reactor core within the previous 100 hours). CREACS OPERABILITY provides assurance that control room temperatures will not exceed equipment operational requirements after control room isolation and that the control room atmosphere can be purged after a DBA to limit the dose to control room personnel.

For Unit 1 only, during movement of non-recently irradiated fuel assemblies and during movement of fuel assemblies over non-recently irradiated fuel assemblies, the ventilation purge function of CREACS must be OPERABLE, but the heat removal function is not required OPERABLE.

CREACS is not required in Modes 5 or 6 at either Unit during no fuel movement nor is it required during fuel movement involving non-recently irradiated fuel at Unit 2.

The applicability for fuel movement involving recently irradiated fuel assemblies is included because there is a potential for a limiting FHA for which the requirements of this Specification may be necessary to limit radiation exposure to personnel occupying the control room to within the requirements of 10 CFR 50.67. Although the movement of recently irradiated fuel is not currently permitted for either Unit, the requirements for both the heat removal and purge

functions are retained in the Technical Specifications in case the CREACS functions are necessary to support the assumptions of a FHA safety analysis for fuel movement involving recently irradiated fuel. The retention of Technical Specification requirements for fuel movement involving recently irradiated fuel is consistent with the guidance of NUREG-1431,"Standard Technical Specifications Westinghouse Plants" Rev. 3.

Actions

MODES 1, 2, 3 and 4:

Action a.1

With one CREACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE CREACS train is adequate to maintain temperature ≤ 120°F when the control room is isolated and provide the required control room atmospheric purge function. However, the overall reliability is reduced because a single failure in the OPERABLE CREACS train could result in loss of CREACS function. The 30 day Completion time is based on the low probability of an event requiring control room isolation or control room atmosphere purging, the consideration that the remaining train can provide the required protection, and that alternate safety and non-safety related means of control room air heat removal and purging are available.

If the inoperable CREACS train cannot be restored to OPERABLE status within the required Completion time, the unit must be placed in a MODE that minimizes the risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within the following 30 hours. The allowed Completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

Action a.2

If both CREACS trains are inoperable, the control room CREACS may not be capable of performing its intended function. Therefore, Specification 3.0.3 must be entered immediately.

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies at both Units, and during fuel movement involving non-recently irradiated fuel at Unit 1:

Action b.1

With one CREACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining

OPERABLE CREACS train is adequate to maintain temperature ≤ 120°F when the control room is isolated and provide the required control room atmospheric purge function. However, the overall reliability is reduced because a single failure in the OPERABLE CREACS train could result in loss of CREACS function. The 30 day Completion time is based on the low probability of an event requiring control room isolation or control room atmosphere purging, the consideration that the remaining train can provide the required protection, and that alternate safety and non-safety related means of control room air heat removal and purging are available.

If the inoperable CREACS train cannot be restored to OPERABLE status within the required Completion time, the OPERABLE CREACS train must be placed in operation immediately. This action requires that the OPERABLE CREACS fan be in service circulating control room air and if the heat removal function is required by the LCO river/service water being supplied to the CREACS emergency cooling coils. This action ensures the remaining train is OPERABLE and active failures will be readily detected.

An alternative to placing the OPERABLE CREACS train in operation is to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room or a purge of the control room atmosphere. This involves suspending the movement of recently irradiated fuel assemblies and the movement of fuel assemblies over recently irradiated fuel assemblies for both units and suspending the movement of irradiated fuel assemblies and the movement of fuel assemblies over irradiated fuel assemblies for Unit 1. This places the unit in a condition that minimizes accident risk. This Action does not preclude the movement of fuel to a safe position.

Action b.2

If both CREACS trains are inoperable, action must be taken to immediately suspend activities that could release radioactivity that might require isolation of the control room or a purge of the control room atmosphere. This involves suspending the movement of recently irradiated fuel assemblies and the movement of fuel assemblies over recently irradiated fuel assemblies for both units and suspending the movement of irradiated fuel assemblies and the movement of fuel assemblies over irradiated fuel assemblies for Unit 1. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

Surveillance Requirements

SR 4.7.6.1

This SR verifies the heat removal capability of the system is sufficient to remove the required heat load to maintain the control room temperature within the design limit. The verification of heat

removal capability consists of a combination of river/service water flow measurement, fan performance, and mechanical cleaning and inspections of the river/service water emergency cooling coils.

This SR also verifies the capability of the control room atmosphere purge is sufficient to remove air from the control room for the design basis accidents that require a control room purge to limit dose. The control room purge capability is verified by assuring each train of CREACS can be aligned to purge the control room atmosphere with a purge flow rate of ≥ 28,000 cfm at Unit 1 and ≥ 16,900 cfm at Unit 2. This part of the SR may be accomplished by measuring fan performance during normal system alignment to verify the fan's capability to purge the control room at the required flow rate. The ability of the required dampers to be aligned for a control room purge can be verified by observing partial movement of the dampers. Realignment of the CREACS to the purge mode of operation and measuring the purge flow rate is not required to satisfy this SR.

The 18-month Frequency is appropriate since significant degradation of the CREACS capabilities is slow and is not expected to impact the CREACS OPERABILITY over this time period.

FOR INFORMATION ONLY

Insert for 3/4.7.7 CREVS BASES

Note

The Tech Spec Bases address both Unit 1 and Unit 2 since information on the opposite unit may be useful to address issues involving the control room boundary which encompasses both BVPS Units' control rooms.

Background

The Control Room Emergency Ventilation System (CREVS) provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity.

BVPS has a common control room pressure envelope for Unit 1 and Unit 2. The CREVS consists of pressurization fan subsystems and the control room isolation subsystems. There are three CREVS pressurization fan subsystems, one (Unit 1) and two (Unit 2). The pressurization fan subsystems draw filtered outside air into the control room.

The CREVS control room isolation subsystems isolate the Unit 1 and Unit 2 normal air intake and exhaust penetration flow paths by closing at least one of the two series isolation dampers in each of the four penetration flow paths. Closure of both Units' intake and exhaust isolation dampers may be initiated by an isolation signal from either unit. However, the operation of the intake and exhaust dampers at each unit is dependent upon the availability of that Unit's power sources. The isolation subsystem of a CREVS train consists of all 4 isolation dampers in that train (2 per unit). Both the Unit 1 and Unit 2 isolation dampers associated with a train are required OPERABLE for an OPERABLE CREVS train. The isolation subsystem is OPERABLE for a Unit when the associated Unit 1 and Unit 2 dampers are capable of closing on that Unit's isolation signals or the damper(s) are secured closed.

The CREVS pressurization fan subsystem located on the Unit 1 side of the combined control room consists of one manually started pressurization fan and filter subsystem that provides filtered air to pressurize the control room. The Unit 1 pressurization fan subsystem filter consists of a prefilter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), a high efficiency particulate air (HEPA) filter, and one of the two 100% capacity Unit 1 fans. Only one of the two Unit 1 fans is required for an OPERABLE CREVS Train.

The CREVS pressurization fan subsystems located on the Unit 2 side of the Control Room consists of two automatically started redundant train related subsystems that draw in outside air through filters to provide filtered air to pressurize the control room. Each

pressurization fan subsystem filter consists of a moisture separator, a HEPA filter, an activated charcoal adsorber, a second HEPA filter, and a fan. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter.

For both Units, ductwork, heaters, valves or dampers, and instrumentation also form part of the system.

Unit 1 can credit any two of the three available CREVS pressurization fan subsystems to meet the LCO requirement for two OPERABLE CREVS trains. However, Unit 2 can only credit the Unit 2 specific pressurization fan subsystems to meet the LCO requirement for two OPERABLE CREVS trains.

The CREVS is an emergency system, parts of which may also operate during normal unit operations in the standby mode of operation. Upon receipt of a CREVS actuating signal(s), normal unfiltered outside air supply and exhaust dampers to the control room are closed and (for Unit 2 only) a pressurization fan subsystem is initiated and the emergency air supply damper in the operating CREVS train is opened to bring in outside air through filters to pressurize the control room envelope. The Unit 1 pressurization fan subsystem is manually placed in service if required. The air continues to be recirculated within the control room envelope by CREACS (TS 3/4.7.6) both during normal operation and during CREVS operation.

Pressurization of the control room minimizes infiltration of unfiltered air from surrounding areas of the control room. A single CREVS train will pressurize the control room to maintain a positive pressure relative to the outside atmosphere. The CREVS operation in maintaining the control room habitable is discussed in UFSAR, Section 9.13 (Unit 1) and Section 9.4 (Unit 2)

Redundant CREVS trains are required OPERABLE to ensure the pressurization and filtration function can be accomplished should one train fail. Normally open isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation. The CREVS is designed in accordance with Seismic Category I requirements.

The control room boundary is the combination of walls, floor, roof, ducting, isolation dampers, doors, penetrations and equipment that physically form the control room envelope. The control room envelope includes the "control room" (i.e., the space that operators inhabit to control the plant for normal and accident conditions) as well as other adjacent areas. The control room is protected for normal operation, natural events, and accident conditions.

The CREVS, in conjunction with control room design provisions, is designed to maintain the control room environment for 30 days of continuous occupancy after a Design Basis Accident (DBA) without

exceeding a 5 rem or less whole body, or its equivalent, or 5 rem total effective dose equivalent (TEDE), as applicable. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50 or 10 CFR 50.67, as applicable.

The CREVS is automatically actuated by a Containment Isolation Phase B (CIB) signal (required in MODES 1-4 only) or a control room area high radiation signal (required in MODES 1-4 and for fuel movement involving recently irradiated fuel). LCO 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation" contains the OPERABILITY requirements for the CIB actuation instrumentation. LCO 3.3.3.1, "Radiation Monitoring Instrumentation" contains the OPERABILITY requirements for the Control Room Area High Radiation actuation instrumentation.

The CREVS does not have automatic detection and isolation for toxic gas. If toxic gas were identified to be onsite, the control room could be isolated by closing all supply and exhaust dampers and verifying CREVS is not in operation. These actions would minimize outside air intake into the control room envelope.

Applicable Safety Analyses

The CREVS components are arranged in redundant, safety related ventilation trains. The location of most CREVS components is within the control room envelope. This helps to minimize air in leakage and ensures an adequate supply of filtered air to all areas requiring access. The CREVS provides airborne radiological protection for the control room operators, as demonstrated by the control room accident dose analyses for the most limiting design basis accident (i.e., loss of coolant accident), fission product release presented in the UFSAR, Chapter 14 (Unit 1) and Chapter 15 (Unit 2). Control Room isolation and operation of CREVS was not credited in either Unit's Fuel Handling Accident (FHA) design basis accident.

The worst case single active failure of a component of the CREVS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The control room dose calculation for the limiting DBA assumes that the control room is isolated following CREVS actuation and then pressurized within 30 minutes of the accident by manually actuating a control room pressurization fan subsystem. However, the specification conservatively requires automatic actuation of the Unit 2 CREVS pressurization fan subsystem(s).

A start time delay is included in the initiation circuitry of the Unit 2 CREVS pressurization fans. The basis for this time delay includes the following considerations:

1. The delay times prevent loading of the pressurization fans onto the emergency busses until after the Emergency Diesel Generator load sequencing is completed.

2. The pressurization fan delay times are staggered to ensure only one fan will be operating.

3. A pressurization fan is started early to minimize dose to the operators.

4. The delay times are selected such that sufficient time will be available for the manual initiation of a pressurization fan within 30 minutes after an accident should a pressurization fan fail to start.

CREVS is also required OPERABLE for both Units during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) and during movement of fuel assemblies over recently irradiated fuel assemblies. The applicability for fuel movement involving recently irradiated fuel assemblies is included because there is a potential for a limiting FHA for which the requirements of this Specification may be necessary to limit radiation exposure to personnel occupying the control room to within the required limit. Although the movement of recently irradiated fuel is not currently permitted for either Unit, the requirements for CREVS OPERABILITY are retained in the Technical Specifications in case the CREVS is necessary to support the assumptions of a FHA safety analysis for fuel movement involving recently irradiated fuel. The retention of Technical Specification requirements for fuel movement involving recently irradiated fuel is consistent with the guidance of NUREG-1431, "Standard Technical Specifications Westinghouse Plants" Rev. 3.

An evaluation of all toxic gas hazards from onsite, offsite, and transportation sources has determined that the probability of a toxic chemical spill resulting in unacceptable exposures was less than NRC design basis criteria and, hence, is not included in the plant design basis (Reference BVPS Unit 2 UFSAR, Section 2.2.3.1.2 and 6.4.4.2). Technical Specification Amendment No. 233 (Unit 1) and No. 115 (Unit 2) removed the control room chlorine detection system. In addition, Technical Specification Amendment No. 257 (Unit 1) / No. 139 (Unit 2), which removed the control room bottled air pressurization system, confirmed that the ability to manually isolate the control room and the availability of self-contained breathing apparatus, are sufficient to address any credible toxic gas or smoke events.

The CREVS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two CREVS trains (which include the train related inlet and exhaust dampers) are required to be OPERABLE to ensure that at least one train is available assuming a single failure disables the other train. A combination of two out of three CREVS pressurization fan subsystems from either Unit 1 or Unit 2 satisfies the LCO requirement for Unit 1. Only the Unit 2 CREVS pressurization fan subsystems may be used to satisfy the LCO requirement for Unit 2. The OPERABILITY of CREVS ensures that the control room will remain habitable with respect to potential radiation hazards for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent, or 5 rem TEDE, as applicable. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50 or 10 CFR 50.67, as applicable. Total system failure could result in exceeding these dose limits in the event of a large radioactive release.

The CREVS is considered OPERABLE when the individual components necessary to limit operator exposure are OPERABLE in both trains. A CREVS train is OPERABLE when the associated:

a. Fan is OPERABLE (including the required automatic start capability for Unit 2 fans),

b. HEPA filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions, and

c. Heater, prefilter (Unit 1), moisture separator (Unit 2), ductwork, valves, and dampers are OPERABLE. This includes:

    1. In MODES 1, 2, 3 and 4, the series normal air intake and exhaust isolation dampers for both units must be OPERABLE and capable of automatic actuation on a CIB or a Control Room High Radiation actuation signal. The series normal air intake and exhaust isolation dampers for both units may also be considered OPERABLE when secured in a closed position with power removed.

    2. During fuel movement involving recently irradiated fuel, the series normal air intake and exhaust isolation dampers for both units must be capable of automatic actuation on a Control Room High Radiation signal. The series normal air intake and exhaust isolation dampers for both units may also be considered OPERABLE when secured in a closed position with power removed.

LCO 3.3.3.1, Radiation Monitoring, contains the Operability, Action, and Surveillance requirements for the CREVS actuating radiation

monitors. LCO 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation" contains the OPERABILITY, Action, and Surveillance requirements for the CIB actuation instrumentation.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors in order to maintain the capability of the CREVS to pressurize the control room.

The LCO is modified by a General Note allowing the control room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings (hatches, access panels, floor plugs, etc.), these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening and restore the control room boundary to the design condition when a need for control room isolation is indicated. If the above conditions for utilizing the LCO Note cannot be met, then Action a.2 should be applied.

The LCO is modified by a footnote * that requires emergency backup power for only one CREVS train in Modes 5, 6 and with no fuel assemblies in the reactor pressure vessel. This footnote allows emergency power sources to be taken out of service during a unit shutdown consistent with the shutdown Electrical Power Technical Specifications.

Applicability

In MODES 1, 2, 3, 4, and during the movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) and the movement of fuel assemblies over recently irradiated fuel assemblies, CREVS is required to be OPERABLE to control operator exposure during and following a DBA.

In Modes 5 and 6, when no fuel movement involving recently irradiated fuel is taking place, there are no requirements for CREVS OPERABILITY consistent with the safety analyses assumptions applicable in these MODES. A FHA involving non-recently irradiated fuel will result in radiation exposure, to personnel occupying the control room, that is within the guideline values specified in 10 CFR 50.67 without any reliance on the requirements of this Specification to limit personnel exposure.

This LCO is applicable during movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies. Recently irradiated fuel is fuel that has occupied part of a critical reactor core within the previous 100 hours. During fuel movement involving recently irradiated fuel,

there is a potential for a limiting FHA for which the requirements of this Specification may be necessary to limit radiation exposure to personnel occupying the control room to within the requirements of 10 CFR 50.67. Although the movement of recently irradiated fuel is not currently permitted, these requirements are retained in the Technical Specifications in case the CREVS is necessary to support the assumptions of a safety analysis for fuel movement involving recently irradiated fuel, consistent with the guidance of NUREG-1431,"Standard Technical Specifications Westinghouse Plants" Rev. 3.

Actions

Modes 1, 2, 3 and 4:

a.1

With one required CREVS train inoperable (this Action includes the condition of one or more inoperable series isolation dampers in the same train), action must be taken to restore the CREVS train (and/or train of damper(s)) to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train (and train of isolation dampers) is adequate to perform the control room radiation protection function. However, the overall reliability is reduced because a single failure in the OPERABLE train could result in loss of CREVS function. The 7 day Completion time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

If the inoperable train can not be restored to OPERABLE status within the required Completion time, the unit must be placed in at least MODE 3 within the next 6 hours, and in MODE 5 within the following 30 hours. The allowed Completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

a.2

If the control room boundary is inoperable, the required CREVS trains may not be able to perform their intended functions. Therefore, Actions must be taken to restore the control room boundary to OPERABLE status. The CREVS functions to pressurize the control room boundary with filtered air to limit the radiological exposure of control room personnel to within the required limits. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room personnel from potential radiological exposure in excess of the required limits. Preplanned measures should be available to address an inoperable control room boundary for intentional and unintentional entry into this Action.

Depending on the location and size of the failure which caused the control room boundary to be inoperable, the use of compensatory measures such as temporary closures and readily available respirators may be employed to support control room habitability requirements. Administrative controls should ensure adequate compensatory measures are maintained and that control room personnel are aware of the required measures.

The 24 hour Completion time is reasonable based on the low probability of a DBA occurring during this time period, and the required use of compensatory measures. The 24 hour Completion time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.

If the inoperable control room boundary can not be restored to OPERABLE status within the required Completion time, the unit must be placed in at least MODE 3 within the next 6 hours, and in MODE 5 within the following 30 hours. The allowed Completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

a.3

This Action addresses the condition of two required CREVS trains inoperable for reasons other than an inoperable control room boundary (i.e., Action a.2). Two inoperable trains also include the conditions of one or more inoperable series isolation dampers in both trains or one or more inoperable series isolation dampers in one train and the opposite CREVS train inoperable. In this condition, the CREVS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, Specification 3.0.3 must be entered immediately.

During Movement of Recently Irradiated Fuel Assemblies and During Movement of Fuel Assemblies Over Recently Irradiated Fuel Assemblies

b.1

With one required CREVS train inoperable (this Action includes the condition of one or more inoperable series isolation dampers in the same train), action must be taken to restore the CREVS train (and/or train of damper(s)) to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE train is adequate to perform the control room radiation protection function. However, the overall reliability is reduced because a single failure in the OPERABLE CREVS train could result in loss of CREVS function. The 7 day Completion time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

If the inoperable train cannot be restored to OPERABLE status within the required Completion time, the OPERABLE CREVS train must immediately be placed into operation (i.e., the emergency pressurization mode) which consists of isolating the Unit 1 and Unit 2 normal air intake and exhaust penetration flow paths by closing at least one of the two series isolation dampers in each of the four penetration flow paths and starting one CREVS pressurization fan subsystem. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure would be readily detected.

An alternative action is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This involves suspending movement of recently irradiated fuel assemblies and suspending movement of fuel assemblies over recently irradiated fuel assemblies. This places the unit in a condition that minimizes risk. This does not preclude the movement of fuel to a safe position.

b.2

If two required CREVS trains are inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require the CREVS function. Two inoperable trains also include the conditions of one or more inoperable series isolation dampers in both trains or one or more inoperable series isolation dampers in one train and the opposite CREVS train inoperable. This Action involves suspending movement of recently irradiated fuel assemblies and suspending movement of fuel assemblies over recently irradiated fuel assemblies. This places the unit in a condition that minimizes accident risk. This Action does not preclude the movement of fuel to a safe position.

Surveillance Requirements

4.7.7.1.b

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. The CREVS fan and filter flow path is operated for ≥ 15 minutes by initiating flow through the HEPA filter and charcoal adsorber train and with heaters operating to ensure that they are functional. Isolation of the control room is not required to perform this surveillance. The 31 day Frequency is based on the reliability of the equipment and train redundancy availability.

4.7.7.1.c, 4.7.7.1.d.1 (Unit 1)
4.7.7.1.c, 4.7.7.1.d, 4.7.7.1.e.1 (Unit 2)

These SRs verify that the required CREVS pressurization fan subsystem testing is performed in accordance with design standards. These surveillances include testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. The surveillance Frequencies are consistent with the applicable (licensing basis) industry guidance and standards.

4.7.7.1.d.2 (Unit 1)
4.7.7.1.e.2 (Unit 2)

This SR verifies that each CREVS train starts and operates on a simulated or actual Containment Isolation Phase B actuation signal (required in MODES 1-4) and Control Room High Radiation actuation test signal (required in MODES 1-4 and for fuel movement involving recently irradiated fuel). The actuation testing includes verification that the series air intake and exhaust isolation dampers for both units close to isolate the control room from the outside atmosphere. In addition, for Unit 2, the automatic start (following a time delay) of the CREVS fan supplying air to pressurize the control room through the HEPA filters and charcoal adsorber banks is verified. For Unit 1, an automatic start of the CREVS pressurization fan subsystem is not required since the associated fan and filter subsystem are placed in service by manual operator action.

LCO 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation" contains the surveillance requirements for the Containment Isolation Phase B actuation instrumentation. LCO 3.3.3.1, "Radiation Monitoring Instrumentation" contains the surveillance requirements for the Control Room Area High Radiation actuation instrumentation.

The frequency of 18 months is consistent with the testing frequencies specified in Regulatory Guide 1.52.

4.7.7.1.d.4 (Unit 1)
4.7.7.1.e.5 (Unit 2)

This Surveillance Requirement verifies that the heaters associated with CREVS pressurization fan subsystem are capable of providing the required heat input to ensure that the inlet air to the filtration unit is maintained within the required relative humidity range.

4.7.7.1.e (Unit 1)
4.7.7.1.f (Unit 2)

This Surveillance Requirement verifies the capability of the CREVS to pressurize the control room to $\geq$ 1/8 inch Water Gauge relative to the outside atmosphere. The capability to pressurize the control room to

a positive pressure is periodically tested to confirm the capability of the CREVS to perform its intended safety function. The CREVS is designed to pressurize the control room to a positive pressure with respect to the outside atmosphere in order to minimize unfiltered inleakage. The CREVS is designed to maintain this positive pressure with one train operating at a makeup flow rate of 800 to 1000 cfm.

For Unit 1 the requirement to verify each CREVS train 36 months on a staggered basis results in performing the required test with one of the two 100% capacity fans and one train of isolation dampers every 18 months such that both trains of isolation dampers are tested every 36 months. For Unit 2 staggered testing results in performing the required test with one CREVS train every 18 months such that both Unit 2 CREVS trains are tested every 36 months.

The frequency of 36 months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800.

4.7.7.2 (Unit 1)

This Surveillance Requirement provides guidance on the Surveillance Requirements for Unit 2 CREVS equipment that is relied upon to meet the Unit 1 LCO requirements. The applicable Surveillance Requirements pertain to the Unit 2 CREVS pressurization fan subsystems since one or both systems are utilized to meet the Unit 1 LCO requirements. The Unit 1 Surveillance Requirements for the control room isolation subsystems adequately address the Unit 2 normal intake and exhaust penetration flow path isolation function.

ATTACHMENT B-2

Beaver Valley Power Station, Unit No. 2
License Amendment Request No. 195

This Attachment shows the Technical Specification Bases proposed changes.

The following is a list of the affected Technical Specification Bases pages:

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FOR INFORMATION ONLY

BASES

3/4.7.6 ~~(This Specification number is not used.)~~

See Bases Insert for 3/4.7.6, CREACS

VENTILATION (CREVS)

3/4.7.7 CONTROL ROOM EMERGENCY ~~AIR CLEANUP AND PRESSURIZATION~~ SYSTEM

See Bases Insert for 3/4.7.7, CREVS

This LCO is applicable during MODES 1, 2, 3 and 4. This LCO is also applicable during movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies because there is a potential for the limiting fuel handling accident (FHA) for which the requirements of this Specification may be required to limit radiation exposure to personnel occupying the control room. A FHA which does not involve recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) will result in radiation exposure to personnel occupying the control room, that is within the guide .67 without any reliance on the r limit personnel exposure. The 1 ent radiological analysis for a of 100 hours. LCO 3.9.3 prohib s 100 hours of decay has occur n will not be applicable, dur decay time in Specification 3.9 logical analysis for a FHA are red

The OPERABILITY ir cleanup and pressurization s om will remain habitable with respect to potential radiation hazards for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent, or 5 rem TEDE, as applicable. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50 or 10 CFR 50.67, as applicable.

The Bases format for this section is changed to be similar to that used in the Improved Standard Technical Specifications. The current Bases text is retained, as appropriate, within the applicable sections of the new format.

3/4.7.7 CONTROL ROOM EMERGENCY AIR CLEANUP AND PRESSURIZATION SYSTEM (Continued)

The control room air cleanup and pressurization system consists of two redundant filtration pressurization systems which draw outside air through filters and Unit 1 and Unit 2 air intake and exhaust isolation dampers. Closure of the intake and exhaust dampers can be initiated by Unit 2 control systems. However, closure of dampers in one intake and in one exhaust is dependent upon availability of Unit 1 power sources.

The control room dose calculation for the limiting DBA assumes that the control room is [illegible] the accident by manually actuating [illegible] tion subsystem (CREVS). However, t[illegible] ic actuation of the Unit 2 CREVS pre[illegible]

A start time delay i[illegible] try of the Unit 2 CREVS pressurizati[illegible] delay includes the following consid[illegible]

1. The delay times[illegible] ation fans onto the emergency b[illegible] iesel Generator load sequencing[illegible]

2. The pressurization fan delay times are staggered to ensure only one fan will be operating.

3. A pressurization fan is started early to minimize dose to the operators.

4. The delay times are selected such that sufficient time will be available for the manual initiation of a pressurization fan within 30 minutes after an accident should a pressurization fan fail to start.

The Bases format for this section is changed to be similar to that used in the Improved Standard Technical Specifications. The current Bases text is retained, as appropriate, within the applicable sections of the new format.

FOR INFORMATION ONLY

Insert for 3/4.7.6 CREACS BASES

Note

The Technical Specification Bases address both Unit 1 and Unit 2 since information on the opposite unit may be useful to address issues involving the control room boundary which encompasses both BVPS Units' control rooms.

Background

The Control Room Emergency Air Cooling System (CREACS) is a subsystem providing 1) a control room air heat removal function necessary following isolation of the control room, and 2) a control room ventilation purge capability for the combined Units' main control room. The heat removal function ensures that the control room equipment qualification is maintained following isolation of the control room. The purge capability is necessary to limit the dose received by the control room personnel following certain design basis accidents (DBAs). Each Unit has its own CREACS. Each Unit's CREACS consists of a single ventilation air intake and two independent and redundant trains consisting of river/service water emergency cooling coils, ventilation ducts, fans and fan controls. The CREACS heat removal function is discussed in the UFSAR, Section 9.13 (Unit 1) and Section 9.4 (Unit 2). The CREACS control room atmosphere purge function is discussed in the UFSAR, Table 11.3-7 (Unit 1) and Table 15.0-13 (Unit 2).

The CREACS is an emergency system, parts of which operate during normal unit operations. A single train of CREACS on each unit is capable of maintaining its side of the combined control room at ≤ the equipment design limit of 120°F. A single train of CREACS at Unit 1 is capable of providing an adequate purge flow to meet either Unit's DBA purge requirements. However, a single train of CREACS at Unit 2 is only capable of providing adequate purge flow to meet Unit 2's DBA purge requirement, but is not sufficient to meet Unit 1's DBA purge requirement.

Applicable Safety Analyses

The design basis of the CREACS heat removal function is to provide emergency air cooling for the control room to maintain the temperature within the equipment design limit for a mild environment (120°F) following certain DBAs when the control room is isolated. The CREACS also provides an atmosphere purge function for the control room following certain DBAs. Only manual actuation is credited for both CREACS functions at each Unit.

The CREACS components are arranged in redundant, safety related trains. A single active failure of a component of the CREACS, with a loss of offsite power, does not impair the ability of the system to

perform its design function. The CREACS is designed in accordance with Seismic Category I requirements.

During normal and emergency control room operation, the control room air cooling is usually maintained by the non-safety related air conditioning equipment which is integral to the control room ventilation systems. During emergency operation when the control room is isolated, the safety related CREACS is manually initiated to provide air cooling to maintain the temperature $\leq$ 120°F when the normal non-safety related air conditioning becomes unavailable. The CREACS is capable of removing sensible and latent heat loads from the control room, which include consideration of equipment heat loads to ensure equipment OPERABILITY. The CREACS heat removal function is only required following post-DBA isolation of the control room (when control room isolation is required to meet radiological dose analysis requirements) and the normal non-safety related air conditioning equipment is unavailable.

The heat removal function of CREACS may be required in design basis accidents for MODES 1, 2, 3, and 4 (e.g., the Main Steam Line Break and Control Rod Ejection DBAs for both Units require control room isolation). Since neither Unit requires control room isolation (and hence the control room heat removal function of CREACS) to meet its Fuel Handling Accident (FHA) DBA nor requires control room isolation following any other DBA in Modes 5 and 6 (e.g., Waste Gas Tank Rupture DBA), the heat removal function of CREACS is not required in Modes 5 and 6 or during fuel movement involving non-recently irradiated fuel.

The CREACS control room ventilation purge function ensures the capability to manually purge the air from the control room for selected design basis accidents to ensure acceptable dose consequences to the control room crew following a DBA. For Unit 1, the main steam line break (MSLB) analysis credits a 30 minute control room ventilation purge at a flow rate of $\geq$ 28,000 cfm after the accident sequence is complete and the environmental release has been terminated. Also for Unit 1, the FHA analysis credits a 30 minute control room ventilation purge at a flow rate of $\geq$ 16,900 cfm after the accident sequence is complete and the environmental release has been terminated. For Unit 2, only the MSLB accident analysis credits the control room ventilation purge function at a flow rate of $\geq$ 16,900 cfm. Only Unit 1 requires the purge function of CREACS during fuel movement involving non-recently irradiated fuel. Therefore, the purge function of CREACS is required for Unit 1 whenever Unit 1 has movement involving non-recently irradiated fuel. Thus, the control room ventilation purge functions of CREACS are credited in design basis accidents for MODES 1, 2, 3, and 4 at both Units, and for fuel movement involving non-recently irradiated fuel assemblies at Unit 1.

CREACS is also required OPERABLE for both Units during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part

of a critical reactor core within the previous 100 hours) and during movement of fuel assemblies over recently irradiated fuel assemblies. The applicability for fuel movement involving recently irradiated fuel assemblies is included because there is a potential for a limiting FHA for which the requirements of this Specification (i.e. control room purge function) may be necessary to limit radiation exposure to personnel occupying the control room to within the requirements of 10 CFR 50.67 and limit control room temperature should control room isolation be required. Although the movement of recently irradiated fuel is not currently permitted for either Unit, the requirements for both the heat removal and purge functions are retained in the Technical Specifications in case the CREACS functions are necessary to support the assumptions of a FHA safety analysis for fuel movement involving recently irradiated fuel. The retention of Technical Specification requirements for fuel movement involving recently irradiated fuel is consistent with the guidance of NUREG-1431,"Standard Technical Specifications Westinghouse Plants" Rev. 3.

The CREACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

As the Unit 1 FHA analysis does not require control room isolation, a General Note modifying the LCO requirement clarifies that the Unit 1 heat removal function of CREACS is not required OPERABLE to support fuel movement involving non-recently irradiated fuel. Only the CREACS control room ventilation purge function is required during fuel movement involving non-recently irradiated fuel to satisfy Unit 1 safety analyses. The Note is only applicable to Unit 1 because the Unit 2 CREACS is not credited in the Unit 2 FHA for fuel movement involving non-recently irradiated fuel, and therefore, is not required OPERABLE for fuel movement involving non-recently irradiated fuel at Unit 2.

Two trains of the CREACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disabling the other train. Total system failure of the heat removal function could result in the equipment operating temperature exceeding limits in the event of a DBA requiring control room isolation. Total system failure of the control room atmosphere purge function could result in exceeding the applicable dose limit for the control room personnel in the event of a large radioactive release following a DBA that requires the purge function to limit dose.

With regard to the control room atmospheric purge function only, the Unit 2 LCO requirement for two OPERABLE CREACS trains may also be met by crediting OPERABLE Unit 1 CREACS train(s). This is acceptable because the Unit 1 CREACS purge flow capability is greater than Unit 2 CREACS purge flow capability and will satisfy the Unit 2 safety analyses requirements for a manual purge of the common control room envelope. However, the Unit 1 LCO requirements can not be met by crediting OPERABLE Unit 2 CREACS train(s) since the Unit 2 CREACS

purge flow capability is less than the credited Unit 1 purge flow requirements.

The CREACS is considered to be OPERABLE when the individual components necessary to maintain the control room temperature ≤ 120°F (when the control room is isolated) and to provide a control room ventilation purge with the required flow rate are OPERABLE in two trains. The CREACS trains share common ventilation ductwork and normal air inlet and exhaust flow paths. The required individual CREACS components must be capable of manual operation. The automatic function of CREACS components is not required for OPERABILITY. The required components include the river/service water emergency cooling coils, necessary ductwork and associated dampers, fans and fan controls. In addition, the CREACS must be operable to the extent that air circulation necessary for the required temperature control can be maintained.

The LCO is modified by a footnote * that requires emergency backup power for only one CREACS train in Modes 5, 6 and with no fuel assemblies in the reactor pressure vessel. This footnote allows emergency power sources to be taken out of service during a unit shutdown consistent with the shutdown Electrical Power Technical Specifications.

Applicability

CREACS must be OPERABLE at its respective Unit in MODES 1, 2, 3, 4 and during fuel movement involving recently irradiated fuel (i.e., fuel that occupied part of a critical reactor core within the previous 100 hours). CREACS OPERABILITY provides assurance that control room temperatures will not exceed equipment operational requirements after control room isolation and that the control room atmosphere can be purged after a DBA to limit the dose to control room personnel.

For Unit 1 only, during movement of non-recently irradiated fuel assemblies and during movement of fuel assemblies over non-recently irradiated fuel assemblies, the ventilation purge function of CREACS must be OPERABLE, but the heat removal function is not required OPERABLE.

CREACS is not required in Modes 5 or 6 at either Unit during no fuel movement nor is it required during fuel movement involving non-recently irradiated fuel at Unit 2.

The applicability for fuel movement involving recently irradiated fuel assemblies is included because there is a potential for a limiting FHA for which the requirements of this Specification may be necessary to limit radiation exposure to personnel occupying the control room to within the requirements of 10 CFR 50.67. Although the movement of recently irradiated fuel is not currently permitted for either Unit, the requirements for both the heat removal and purge

functions are retained in the Technical Specifications in case the CREACS functions are necessary to support the assumptions of a FHA safety analysis for fuel movement involving recently irradiated fuel. The retention of Technical Specification requirements for fuel movement involving recently irradiated fuel is consistent with the guidance of NUREG-1431, "Standard Technical Specifications Westinghouse Plants" Rev. 3.

Actions

MODES 1, 2, 3 and 4:

Action a.1

With one CREACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE CREACS train is adequate to maintain temperature $\leq$ 120°F when the control room is isolated and provide the required control room atmospheric purge function. However, the overall reliability is reduced because a single failure in the OPERABLE CREACS train could result in loss of CREACS function. The 30 day Completion time is based on the low probability of an event requiring control room isolation or control room atmosphere purging, the consideration that the remaining train can provide the required protection, and that alternate safety and non-safety related means of control room air heat removal and purging are available.

If the inoperable CREACS train cannot be restored to OPERABLE status within the required Completion time, the unit must be placed in a MODE that minimizes the risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within the following 30 hours. The allowed Completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

Action a.2

If both CREACS trains are inoperable, the control room CREACS may not be capable of performing its intended function. Therefore, Specification 3.0.3 must be entered immediately.

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies at both Units, and during fuel movement involving non-recently irradiated fuel at Unit 1:

Action b.1

With one CREACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining

OPERABLE CREACS train is adequate to maintain temperature ≤ 120°F when the control room is isolated and provide the required control room atmospheric purge function. However, the overall reliability is reduced because a single failure in the OPERABLE CREACS train could result in loss of CREACS function. The 30 day Completion time is based on the low probability of an event requiring control room isolation or control room atmosphere purging, the consideration that the remaining train can provide the required protection, and that alternate safety and non-safety related means of control room air heat removal and purging are available.

If the inoperable CREACS train cannot be restored to OPERABLE status within the required Completion time, the OPERABLE CREACS train must be placed in operation immediately. This action requires that the OPERABLE CREACS fan be in service circulating control room air and if the heat removal function is required by the LCO river/service water being supplied to the CREACS emergency cooling coils. This action ensures the remaining train is OPERABLE and active failures will be readily detected.

An alternative to placing the OPERABLE CREACS train in operation is to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room or a purge of the control room atmosphere. This involves suspending the movement of recently irradiated fuel assemblies and the movement of fuel assemblies over recently irradiated fuel assemblies for both units and suspending the movement of irradiated fuel assemblies and the movement of fuel assemblies over irradiated fuel assemblies for Unit 1. This places the unit in a condition that minimizes accident risk. This Action does not preclude the movement of fuel to a safe position.

Action b.2

If both CREACS trains are inoperable, action must be taken to immediately suspend activities that could release radioactivity that might require isolation of the control room or a purge of the control room atmosphere. This involves suspending the movement of recently irradiated fuel assemblies and the movement of fuel assemblies over recently irradiated fuel assemblies for both units and suspending the movement of irradiated fuel assemblies and the movement of fuel assemblies over irradiated fuel assemblies for Unit 1. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

Surveillance Requirements

SR 4.7.6.1

This SR verifies the heat removal capability of the system is sufficient to remove the required heat load to maintain the control room temperature within the design limit. The verification of heat

removal capability consists of a combination of river/service water flow measurement, fan performance, and mechanical cleaning and inspections of the river/service water emergency cooling coils.

This SR also verifies the capability of the control room atmosphere purge is sufficient to remove air from the control room for the design basis accidents that require a control room purge to limit dose. The control room purge capability is verified by assuring each train of CREACS can be aligned to purge the control room atmosphere with a purge flow rate of ≥ 28,000 cfm at Unit 1 and ≥ 16,900 cfm at Unit 2. This part of the SR may be accomplished by measuring fan performance during normal system alignment to verify the fan's capability to purge the control room at the required flow rate. The ability of the required dampers to be aligned for a control room purge can be verified by observing partial movement of the dampers. Realignment of the CREACS to the purge mode of operation and measuring the purge flow rate is not required to satisfy this SR.

The 18-month Frequency is appropriate since significant degradation of the CREACS capabilities is slow and is not expected to impact the CREACS OPERABILITY over this time period.

Insert for 3/4.7.7 CREVS BASES

Note

The Tech Spec Bases address both Unit 1 and Unit 2 since information on the opposite unit may be useful to address issues involving the control room boundary which encompasses both BVPS Units' control rooms.

Background

The Control Room Emergency Ventilation System (CREVS) provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity.

BVPS has a common control room pressure envelope for Unit 1 and Unit 2. The CREVS consists of pressurization fan subsystems and the control room isolation subsystems. There are three CREVS pressurization fan subsystems, one (Unit 1) and two (Unit 2). The pressurization fan subsystems draw filtered outside air into the control room.

The CREVS control room isolation subsystems isolate the Unit 1 and Unit 2 normal air intake and exhaust penetration flow paths by closing at least one of the two series isolation dampers in each of the four penetration flow paths. Closure of both Units' intake and exhaust isolation dampers may be initiated by an isolation signal from either unit. However, the operation of the intake and exhaust dampers at each unit is dependent upon the availability of that Unit's power sources. The isolation subsystem of a CREVS train consists of all 4 isolation dampers in that train (2 per unit). Both the Unit 1 and Unit 2 isolation dampers associated with a train are required OPERABLE for an OPERABLE CREVS train. The isolation subsystem is OPERABLE for a Unit when the associated Unit 1 and Unit 2 dampers are capable of closing on that Unit's isolation signals or the damper(s) are secured closed..

The CREVS pressurization fan subsystem located on the Unit 1 side of the combined control room consists of one manually started pressurization fan and filter subsystem that provides filtered air to pressurize the control room. The Unit 1 pressurization fan subsystem filter consists of a prefilter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), a high efficiency particulate air (HEPA) filter, and one of the two 100% capacity Unit 1 fans. Only one of the two Unit 1 fans is required for an OPERABLE CREVS Train.

The CREVS pressurization fan subsystems located on the Unit 2 side of the Control Room consists of two automatically started redundant train related subsystems that draw in outside air through filters to provide filtered air to pressurize the control room. Each

pressurization fan subsystem filter consists of a moisture separator, a HEPA filter, an activated charcoal adsorber, a second HEPA filter, and a fan. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter.

For both Units, ductwork, heaters, valves or dampers, and instrumentation also form part of the system.

Unit 1 can credit any two of the three available CREVS pressurization fan subsystems to meet the LCO requirement for two OPERABLE CREVS trains. However, Unit 2 can only credit the Unit 2 specific pressurization fan subsystems to meet the LCO requirement for two OPERABLE CREVS trains.

The CREVS is an emergency system, parts of which may also operate during normal unit operations in the standby mode of operation. Upon receipt of a CREVS actuating signal(s), normal unfiltered outside air supply and exhaust dampers to the control room are closed and (for Unit 2 only) a pressurization fan subsystem is initiated and the emergency air supply damper in the operating CREVS train is opened to bring in outside air through filters to pressurize the control room envelope. The Unit 1 pressurization fan subsystem is manually placed in service if required. The air continues to be recirculated within the control room envelope by CREACS (TS 3/4.7.6) both during normal operation and during CREVS operation.

Pressurization of the control room minimizes infiltration of unfiltered air from surrounding areas of the control room. A single CREVS train will pressurize the control room to maintain a positive pressure relative to the outside atmosphere. The CREVS operation in maintaining the control room habitable is discussed in UFSAR, Section 9.13 (Unit 1) and Section 9.4 (Unit 2)

Redundant CREVS trains are required OPERABLE to ensure the pressurization and filtration function can be accomplished should one train fail. Normally open isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation. The CREVS is designed in accordance with Seismic Category I requirements.

The control room boundary is the combination of walls, floor, roof, ducting, isolation dampers, doors, penetrations and equipment that physically form the control room envelope. The control room envelope includes the "control room" (i.e., the space that operators inhabit to control the plant for normal and accident conditions) as well as other adjacent areas. The control room is protected for normal operation, natural events, and accident conditions.

The CREVS, in conjunction with control room design provisions, is designed to maintain the control room environment for 30 days of continuous occupancy after a Design Basis Accident (DBA) without

exceeding a 5 rem or less whole body, or its equivalent, or 5 rem total effective dose equivalent (TEDE), as applicable. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50 or 10 CFR 50.67, as applicable.

The CREVS is automatically actuated by a Containment Isolation Phase B (CIB) signal (required in MODES 1-4 only) or a control room area high radiation signal (required in MODES 1-4 and for fuel movement involving recently irradiated fuel). LCO 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation" contains the OPERABILITY requirements for the CIB actuation instrumentation. LCO 3.3.3.1, "Radiation Monitoring Instrumentation" contains the OPERABILITY requirements for the Control Room Area High Radiation actuation instrumentation.

The CREVS does not have automatic detection and isolation for toxic gas. If toxic gas were identified to be onsite, the control room could be isolated by closing all supply and exhaust dampers and verifying CREVS is not in operation. These actions would minimize outside air intake into the control room envelope.

Applicable Safety Analyses

The CREVS components are arranged in redundant, safety related ventilation trains. The location of most CREVS components is within the control room envelope. This helps to minimize air in leakage and ensures an adequate supply of filtered air to all areas requiring access. The CREVS provides airborne radiological protection for the control room operators, as demonstrated by the control room accident dose analyses for the most limiting design basis accident (i.e., loss of coolant accident), fission product release presented in the UFSAR, Chapter 14 (Unit 1) and Chapter 15 (Unit 2). Control Room isolation and operation of CREVS was not credited in either Unit's Fuel Handling Accident (FHA) design basis accident.

The worst case single active failure of a component of the CREVS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The control room dose calculation for the limiting DBA assumes that the control room is isolated following CREVS actuation and then pressurized within 30 minutes of the accident by manually actuating a control room pressurization fan subsystem. However, the specification conservatively requires automatic actuation of the Unit 2 CREVS pressurization fan subsystem(s).

A start time delay is included in the initiation circuitry of the Unit 2 CREVS pressurization fans. The basis for this time delay includes the following considerations:

1. The delay times prevent loading of the pressurization fans onto the emergency busses until after the Emergency Diesel Generator load sequencing is completed.

2. The pressurization fan delay times are staggered to ensure only one fan will be operating.

3. A pressurization fan is started early to minimize dose to the operators.

4. The delay times are selected such that sufficient time will be available for the manual initiation of a pressurization fan within 30 minutes after an accident should a pressurization fan fail to start.

CREVS is also required OPERABLE for both Units during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) and during movement of fuel assemblies over recently irradiated fuel assemblies. The applicability for fuel movement involving recently irradiated fuel assemblies is included because there is a potential for a limiting FHA for which the requirements of this Specification may be necessary to limit radiation exposure to personnel occupying the control room to within the required limit. Although the movement of recently irradiated fuel is not currently permitted for either Unit, the requirements for CREVS OPERABILITY are retained in the Technical Specifications in case the CREVS is necessary to support the assumptions of a FHA safety analysis for fuel movement involving recently irradiated fuel. The retention of Technical Specification requirements for fuel movement involving recently irradiated fuel is consistent with the guidance of NUREG-1431, "Standard Technical Specifications Westinghouse Plants" Rev. 3.

An evaluation of all toxic gas hazards from onsite, offsite, and transportation sources has determined that the probability of a toxic chemical spill resulting in unacceptable exposures was less than NRC design basis criteria and, hence, is not included in the plant design basis (Reference BVPS Unit 2 UFSAR, Section 2.2.3.1.2 and 6.4.4.2). Technical Specification Amendment No. 233 (Unit 1) and No. 115 (Unit 2) removed the control room chlorine detection system. In addition, Technical Specification Amendment No. 257 (Unit 1) / No. 139 (Unit 2), which removed the control room bottled air pressurization system, confirmed that the ability to manually isolate the control room and the availability of self-contained breathing apparatus, are sufficient to address any credible toxic gas or smoke events.

The CREVS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two CREVS trains (which include the train related inlet and exhaust dampers) are required to be OPERABLE to ensure that at least one train is available assuming a single failure disables the other train. A combination of two out of three CREVS pressurization fan subsystems from either Unit 1 or Unit 2 satisfies the LCO requirement for Unit 1. Only the Unit 2 CREVS pressurization fan subsystems may be used to satisfy the LCO requirement for Unit 2. The OPERABILITY of CREVS ensures that the control room will remain habitable with respect to potential radiation hazards for operations personnel during and following all credible accident conditions. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rem or less whole body, or its equivalent, or 5 rem TEDE, as applicable. This limitation is consistent with the requirements of General Design Criteria 19 of Appendix "A", 10 CFR 50 or 10 CFR 50.67, as applicable. Total system failure could result in exceeding these dose limits in the event of a large radioactive release.

The CREVS is considered OPERABLE when the individual components necessary to limit operator exposure are OPERABLE in both trains. A CREVS train is OPERABLE when the associated:

d. Fan is OPERABLE (including the required automatic start capability for Unit 2 fans),

e. HEPA filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions, and

f. Heater, prefilter (Unit 1), moisture separator (Unit 2), ductwork, valves, and dampers are OPERABLE. This includes:

    1. In MODES 1, 2, 3 and 4, the series normal air intake and exhaust isolation dampers for both units must be OPERABLE and capable of automatic actuation on a CIB or a Control Room High Radiation actuation signal. The series normal air intake and exhaust isolation dampers for both units may also be considered OPERABLE when secured in a closed position with power removed.

    2. During fuel movement involving recently irradiated fuel, the series normal air intake and exhaust isolation dampers for both units must be capable of automatic actuation on a Control Room High Radiation signal. The series normal air intake and exhaust isolation dampers for both units may also be considered OPERABLE when secured in a closed position with power removed.

LCO 3.3.3.1, Radiation Monitoring, contains the Operability, Action, and Surveillance requirements for the CREVS actuating radiation

monitors. LCO 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation" contains the OPERABILITY, Action, and Surveillance requirements for the CIB actuation instrumentation.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors in order to maintain the capability of the CREVS to pressurize the control room.

The LCO is modified by a General Note allowing the control room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings (hatches, access panels, floor plugs, etc.), these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening and restore the control room boundary to the design condition when a need for control room isolation is indicated. If the above conditions for utilizing the LCO Note cannot be met, then Action a.2 should be applied.

The LCO is modified by a footnote * that requires emergency backup power for only one CREVS train in Modes 5, 6 and with no fuel assemblies in the reactor pressure vessel. This footnote allows emergency power sources to be taken out of service during a unit shutdown consistent with the shutdown Electrical Power Technical Specifications.

Applicability

In MODES 1, 2, 3, 4, and during the movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) and the movement of fuel assemblies over recently irradiated fuel assemblies, CREVS is required to be OPERABLE to control operator exposure during and following a DBA.

In Modes 5 and 6, when no fuel movement involving recently irradiated fuel is taking place, there are no requirements for CREVS OPERABILITY consistent with the safety analyses assumptions applicable in these MODES. A FHA involving non-recently irradiated fuel will result in radiation exposure, to personnel occupying the control room, that is within the guideline values specified in 10 CFR 50.67 without any reliance on the requirements of this Specification to limit personnel exposure.

This LCO is applicable during movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies. Recently irradiated fuel is fuel that has occupied part of a critical reactor core within the previous 100 hours. During fuel movement involving recently irradiated fuel,

there is a potential for a limiting FHA for which the requirements of this Specification may be necessary to limit radiation exposure to personnel occupying the control room to within the requirements of 10 CFR 50.67. Although the movement of recently irradiated fuel is not currently permitted, these requirements are retained in the Technical Specifications in case the CREVS is necessary to support the assumptions of a safety analysis for fuel movement involving recently irradiated fuel, consistent with the guidance of NUREG-1431,"Standard Technical Specifications Westinghouse Plants" Rev. 3.

Actions

Modes 1, 2, 3 and 4:

a.1

With one required CREVS train inoperable (this Action includes the condition of one or more inoperable series isolation dampers in the same train), action must be taken to restore the CREVS train (and/or train of damper(s)) to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train (and train of isolation dampers) is adequate to perform the control room radiation protection function. However, the overall reliability is reduced because a single failure in the OPERABLE train could result in loss of CREVS function. The 7 day Completion time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

If the inoperable train can not be restored to OPERABLE status within the required Completion time, the unit must be placed in at least MODE 3 within the next 6 hours, and in MODE 5 within the following 30 hours. The allowed Completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

a.2

If the control room boundary is inoperable, the required CREVS trains may not be able to perform their intended functions. Therefore, Actions must be taken to restore the control room boundary to OPERABLE status. The CREVS functions to pressurize the control room boundary with filtered air to limit the radiological exposure of control room personnel to within the required limits. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room personnel from potential radiological exposure in excess of the required limits. Preplanned measures should be available to address an inoperable control room boundary for intentional and unintentional entry into this Action.

Depending on the location and size of the failure which caused the control room boundary to be inoperable, the use of compensatory measures such as temporary closures and readily available respirators may be employed to support control room habitability requirements. Administrative controls should ensure adequate compensatory measures are maintained and that control room personnel are aware of the required measures.

The 24 hour Completion time is reasonable based on the low probability of a DBA occurring during this time period, and the required use of compensatory measures. The 24 hour Completion time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.

If the inoperable control room boundary can not be restored to OPERABLE status within the required Completion time, the unit must be placed in at least MODE 3 within the next 6 hours, and in MODE 5 within the following 30 hours. The allowed Completion times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

a.3

This Action addresses the condition of two required CREVS trains inoperable for reasons other than an inoperable control room boundary (i.e., Action a.2). Two inoperable trains also include the conditions of one or more inoperable series isolation dampers in both trains or one or more inoperable series isolation dampers in one train and the opposite CREVS train inoperable. In this condition, the CREVS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, Specification 3.0.3 must be entered immediately.

During Movement of Recently Irradiated Fuel Assemblies and During Movement of Fuel Assemblies Over Recently Irradiated Fuel Assemblies

b.1

With one required CREVS train inoperable (this Action includes the condition of one or more inoperable series isolation dampers in the same train), action must be taken to restore the CREVS train (and/or train of damper(s)) to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE train is adequate to perform the control room radiation protection function. However, the overall reliability is reduced because a single failure in the OPERABLE CREVS train could result in loss of CREVS function. The 7 day Completion time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

If the inoperable train cannot be restored to OPERABLE status within the required Completion time, the OPERABLE CREVS train must immediately be placed into operation (i.e., the emergency pressurization mode) which consists of isolating the Unit 1 and Unit 2 normal air intake and exhaust penetration flow paths by closing at least one of the two series isolation dampers in each of the four penetration flow paths and starting one CREVS pressurization fan subsystem. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure would be readily detected.

An alternative action is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This involves suspending movement of recently irradiated fuel assemblies and suspending movement of fuel assemblies over recently irradiated fuel assemblies. This places the unit in a condition that minimizes risk. This does not preclude the movement of fuel to a safe position.

b.2

If two required CREVS trains are inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require the CREVS function. Two inoperable trains also include the conditions of one or more inoperable series isolation dampers in both trains or one or more inoperable series isolation dampers in one train and the opposite CREVS train inoperable. This Action involves suspending movement of recently irradiated fuel assemblies and suspending movement of fuel assemblies over recently irradiated fuel assemblies. This places the unit in a condition that minimizes accident risk. This Action does not preclude the movement of fuel to a safe position.

Surveillance Requirements

4.7.7.1.b

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. The CREVS fan and filter flow path is operated for ≥ 15 minutes by initiating flow through the HEPA filter and charcoal adsorber train and with heaters operating to ensure that they are functional. Isolation of the control room is not required to perform this surveillance. The 31 day Frequency is based on the reliability of the equipment and train redundancy availability.

4.7.7.1.c, 4.7.7.1.d.1 (Unit 1)
4.7.7.1.c, 4.7.7.1.d, 4.7.7.1.e.1 (Unit 2)

These SRs verify that the required CREVS pressurization fan subsystem testing is performed in accordance with design standards. These surveillances include testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. The surveillance Frequencies are consistent with the applicable (licensing basis) industry guidance and standards.

4.7.7.1.d.2 (Unit 1)
4.7.7.1.e.2 (Unit 2)

This SR verifies that each CREVS train starts and operates on a simulated or actual Containment Isolation Phase B actuation signal (required in MODES 1-4) and Control Room High Radiation actuation test signal (required in MODES 1-4 and for fuel movement involving recently irradiated fuel). The actuation testing includes verification that the series air intake and exhaust isolation dampers for both units close to isolate the control room from the outside atmosphere. In addition, for Unit 2, the automatic start (following a time delay) of the CREVS fan supplying air to pressurize the control room through the HEPA filters and charcoal adsorber banks is verified. For Unit 1, an automatic start of the CREVS pressurization fan subsystem is not required since the associated fan and filter subsystem are placed in service by manual operator action.

LCO 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation" contains the surveillance requirements for the Containment Isolation Phase B actuation instrumentation. LCO 3.3.3.1, "Radiation Monitoring Instrumentation" contains the surveillance requirements for the Control Room Area High Radiation actuation instrumentation.

The frequency of 18 months is consistent with the testing frequencies specified in Regulatory Guide 1.52.

4.7.7.1.d.4 (Unit 1)
4.7.7.1.e.5 (Unit 2)

This Surveillance Requirement verifies that the heaters associated with CREVS pressurization fan subsystem are capable of providing the required heat input to ensure that the inlet air to the filtration unit is maintained within the required relative humidity range.

4.7.7.1.e (Unit 1)
4.7.7.1.f (Unit 2)

This Surveillance Requirement verifies the capability of the CREVS to pressurize the control room to ≥ 1/8 inch Water Gauge relative to the outside atmosphere. The capability to pressurize the control room to

a positive pressure is periodically tested to confirm the capability of the CREVS to perform its intended safety function. The CREVS is designed to pressurize the control room to a positive pressure with respect to the outside atmosphere in order to minimize unfiltered inleakage. The CREVS is designed to maintain this positive pressure with one train operating at a makeup flow rate of 800 to 1000 cfm.

For Unit 1 the requirement to verify each CREVS train 36 months on a staggered basis results in performing the required test with one of the two 100% capacity fans and one train of isolation dampers every 18 months such that both trains of isolation dampers are tested every 36 months. For Unit 2 staggered testing results in performing the required test with one CREVS train every 18 months such that both Unit 2 CREVS trains are tested every 36 months.

The frequency of 36 months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800.

4.7.7.2 (Unit 1)

This Surveillance Requirement provides guidance on the Surveillance Requirements for Unit 2 CREVS equipment that is relied upon to meet the Unit 1 LCO requirements. The applicable Surveillance Requirements pertain to the Unit 2 CREVS pressurization fan subsystems since one or both systems are utilized to meet the Unit 1 LCO requirements. The Unit 1 Surveillance Requirements for the control room isolation subsystems adequately address the Unit 2 normal intake and exhaust penetration flow path isolation function.

ATTACHMENT C-1

Beaver Valley Power Station, Unit No. 1
License Amendment Request No. 325

This Attachment shows the clean retyped pages for Technical Specifications 3/4.7.6 and 3/4.7.7.

The following pages are provided for information only.

3/4 7-15
3/4 7-16
3/4 7-17
3/4 7-18

For Information Only

3/4.7.6 CONTROL ROOM EMERGENCY AIR COOLING SYSTEM (CREACS)

LIMITING CONDITION FOR OPERATION

3.7.6 Two CREACS trains shall be OPERABLE*.

- General Note -

The heat removal function of CREACS is not required OPERABLE to support fuel movement involving non-recently irradiated fuel.

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of irradiated fuel assemblies, and

During movement of fuel assemblies over irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.2 With two CREACS trains inoperable, enter Specification 3.0.3 immediately.

During movement of irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies:

b.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or immediately place the OPERABLE CREACS train in operation or immediately suspend movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies.

b.2 With two CREACS trains inoperable, immediately suspend movement of irradiated fuel assemblies and movement of fuel assemblies over irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.7.6.1 CREACS shall be demonstrated OPERABLE at least once per 18 months by verifying each CREACS train has the capability to remove the required heat load and purge the control room atmosphere at the required flow rate.

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* Emergency backup power for only one CREACS train is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

For Information Only

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEMS (CREVS)

LIMITING CONDITION FOR OPERATION

3.7.7 Two CREVS trains shall be OPERABLE*:

- General Note -

The control room boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of recently irradiated fuel assemblies, and

During movement of fuel assemblies over recently irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a.1 With one required CREVS train inoperable, restore the CREVS train to OPERABLE status within 7 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.2 With two required CREVS trains inoperable due to an inoperable control room boundary, restore the control room boundary to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.3 With two required CREVS trains inoperable for reasons other than described in ACTION a.2, enter Specification 3.0.3 immediately.

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies:

b.1 With one required CREVS train inoperable, restore the CREVS train to OPERABLE within 7 days, or immediately place OPERABLE CREVS train in the emergency pressurization mode of operation, or immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

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* Emergency power for only one CREVS train is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

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LIMITING CONDITION FOR OPERATION (continued)

ACTION (Continued)

b.2 With two required CREVS trains inoperable, immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.7.7.1 The CREVS shall be demonstrated OPERABLE:

a. Deleted.

b. At least once per 31 days by verifying that the CREVS train operates for ≥ 15 minutes with the heaters in operation.

c. At least once per 18 months or after every 720 hours of system operation or (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank, or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housing or (3) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the filtration system satisfies the in-place penetration and by-pass leakage testing acceptance criteria of less than 0.05% when tested in accordance with ANSI N510-1980 while operating the CREVS train at a flow rate of 800 - 1000 cfm.

2. Within 31 days after removal, subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 99% for radioactive methyl iodine at an air flow velocity of .68 ft/sec with an inlet methyl iodide concentration of 1.75 mg/m^3, ≥ 70% relative humidity, and 30°C; other test conditions including test parameter tolerances shall be in accordance with ASTM D3803-1989. The carbon samples not obtained from test canisters shall be prepared by either:

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with a length equal to the thickness of the bed, or

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SURVEILLANCE REQUIREMENTS (continued)

b) Removing a longitudinal sample from an adsorber tray using a slotted-tube sampler, mixing the adsorbent thoroughly, and obtaining a sample volume equivalent to at least two inches in diameter and with length equal to the thickness of the bed.

3. Verifying a system flow rate of 800 - 1000 cfm during operation of the CREVS train.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the CREVS train at a flow rate of 800 - 1000 cfm.

2. Verifying that each CREVS train actuates on a simulated or actual actuation signal.

3. Deleted

4. Verifying that the heaters dissipate at least 3.87 kw and not exceeding 5.50 kw when tested in accordance with ANSI N510-1980.

e. By verifying at least once every 36 months on a STAGGERED TEST BASIS, each CREVS train can maintain the control room at a positive pressure of ≥ 1/8 inch Water Gauge relative to the outside atmosphere during operation at a flow rate of 800-1000 cfm.

4.7.7.2 The BV-2 CREVS, when utilized to meet BV-1 Technical Specification 3.7.7, shall be demonstrated OPERABLE in accordance with BV-2 Technical Specification 4.7.7.1.

ATTACHMENT C-2

Beaver Valley Power Station, Unit No. 2
License Amendment Request No. 195

[redacted]

This Attachment shows the clean retyped pages for
Technical Specifications 3/4.7.6 and 3/4.7.7

The following pages are provided for information only.

3/4 7-14
3/4 7-15
3/4 7-16
3/4 7-17

For Information Only

3/4.7.6 CONTROL ROOM EMERGENCY AIR COOLING SYSTEM (CREACS)

LIMITING CONDITION FOR OPERATION

3.7.6 Two CREACS trains shall be OPERABLE*.

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of recently irradiated fuel assemblies, and

During movement of fuel assemblies over recently irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.2 With two CREACS trains inoperable, enter Specification 3.0.3 immediately.

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies:

b.1 With one CREACS train inoperable, restore the CREACS train to OPERABLE status within 30 days or immediately place the OPERABLE CREACS train in operation or immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

b.2 With two CREACS trains inoperable, immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.7.6.1 CREACS shall be demonstrated OPERABLE at least once per 18 months by verifying each CREACS train has the capability to remove the required heat load and purge the control room atmosphere at the required flow rate.

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* Emergency backup power for only one CREACS train is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

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3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM (CREVS)

LIMITING CONDITION FOR OPERATION

3.7.7 Two CREVS trains shall be OPERABLE*.

- General Note -

The control room boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3 and 4, and

During movement of recently irradiated fuel assemblies, and

During movement of fuel assemblies over recently irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a.1 With one required CREVS train inoperable, restore the CREVS train to OPERABLE status within 7 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.2 With two required CREVS trains inoperable due to an inoperable control room boundary, restore the control room boundary to OPERABLE status within 24 hours or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a.3 With two required CREVS trains inoperable for reasons other than described in ACTION a.2, enter Specification 3.0.3 immediately.

During movement of recently irradiated fuel assemblies and during movement of fuel assemblies over irradiated fuel assemblies:

b.1 With one required CREVS train inoperable, restore the CREVS train to OPERABLE within 7 days, or immediately place OPERABLE CREVS train in the emergency pressurization mode of operation, or immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

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* Emergency backup power for only one CREVS train is required in MODES 5, 6 and with no fuel assemblies in the reactor pressure vessel.

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LIMITING CONDITION FOR OPERATION (continued)

ACTION (Continued)

b.2 With two required CREVS trains inoperable, immediately suspend movement of recently irradiated fuel assemblies and movement of fuel assemblies over recently irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.7.7.1 The CREVS shall be demonstrated OPERABLE:

a. Deleted.

b. At least once per 31 days by verifying that each CREVS train operates for ≥ 15 minutes with the heaters in operation.

c. At least once per 18 months or (1) after each complete or partial replacement of a HEPA filter or charcoal adsorber bank, or (2) after any structural maintenance on the HEPA filter or charcoal adsorber housings by:

1. Verifying that the charcoal adsorbers remove ≥ 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1980 while operating each CREVS train at a flow rate of 800 to 1000 cfm.

2. Verifying that the HEPA filter banks remove ≥ 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1980 while operating each CREVS train at a flow rate of 800 to 1000 cfm.

3. Verifying a system flow rate of 800 to 1000 cfm during operation of each CREVS train.

d. At least once per 18 months or (1) after 720 hours of system operation, or (2) following painting, fire or chemical release in the vicinity of control room outside air intakes while the system is operating, within 31 days after removal, subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 99% for radioactive methyl iodide at an air flow velocity of 0.7 ft/sec with an inlet methyl iodide concentration of 1.75 mg/m^3, ≥ 70% relative humidity, and 30°C; other test conditions including test parameter tolerances shall be in accordance with ASTM D3803-1989. The carbon samples not obtained from test canisters shall be prepared by either:

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SURVEILLANCE REQUIREMENTS (Continued)

a) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or

b) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed.

e. At least once per 18 months by:

1. Verifying that the pressure drop for the combined HEPA filters and charcoal adsorber banks is less than 5.6 inches Water Gauge while operating each CREVS train at a flow rate of 800 to 1000 cfm.

2. Verifying that each CREVS train actuates on a simulated or actual actuation signal.

3. Deleted

4. Deleted

5. Verifying that the heaters dissipate at least 3.87 kw and not exceeding 5.50 kw when tested in accordance with ANSI N510-1980.

f. By verifying at least once every 36 months on a STAGGERED TEST BASIS, that each CREVS train can maintain the control room at a positive pressure of $\geq$ 1/8 inch Water Gauge relative to the outside atmosphere during operation at a flow rate of 800 to 1000 cfm.