Dominion Energy Kewaunee, Inc.
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Dominion®

August 3, 2012

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

Serial No. 12-419
LIC/CDS/R0
Docket No. 50-305
License No. DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION: LICENSE AMENDMENT REQUEST 244, PROPOSED REVISION TO RADIOLOGICAL ACCIDENT ANALYSIS AND CONTROL ROOM ENVELOPE HABITABILITY TECHNICAL SPECIFICATIONS (TAC NO. ME7110)

By application dated August 30, 2011 (Reference 1), Dominion Energy Kewaunee, Inc. (DEK), requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). This proposed amendment (LAR 244) would revise the KPS Operating License by modifying the Technical Specifications (TS) and the current licensing basis (CLB) to incorporate changes to the current radiological accident analysis (RAA) of record. This amendment would also fulfill a commitment made to the NRC in response to Generic Letter 2003-01, "Control Room Habitability" (Reference 2) to submit proposed changes to the KPS TS based on the final approved version of TSTF-448, "Control Room Habitability."

Subsequently, on May 15, 2012, the Nuclear Regulatory Commission (NRC) staff transmitted a request for additional information (RAI) regarding the proposed amendment (Reference 3 and 4). The following RAI questions and associated DEK responses are provided in Attachment 1 to this letter.

- ME7110-RAII-EICB-Alva-008-2012-06-15
- ME7110-RAII-EICB-Alva-009-2012-06-15
- ME7110-RAII-SCVB-Torres-004-2012-06-15
- ME7110-RAII-SCVB-Torres-005-2012-06-15
- ME7110-RAII-SCVB-Torres-006-2012-06-15
- ME7110-RAII-SCVB-Torres-007-2012-06-15
- ME7110-RAII-SCVB-Torres-008-2012-06-15
- ME7110-RAII-SCVB-Torres-009-2012-06-15
- ME7110-RAII-SCVB-Torres-010-2012-06-15
- ME7110-RAII-SCVB-Torres-011-2012-06-15
- ME7110-RAII-SCVB-Torres-012-2012-06-15

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NRR

If you have any questions or require additional information, please contact Mr. Craig Sly at 804-273-2784.

Sincerely,

J. Alan Price
Vice President – Nuclear Engineering

VICKI L. HULL
Notary Public
Commonwealth of Virginia
140542
My Commission Expires May 31, 2014

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and State aforesaid, today by J. Alan Price, who is Vice President – Nuclear Engineering, of Dominion Energy Kewaunee, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 3rd day of August, 2012.

My Commission Expires: May 31, 2014.

Vicki L. Hull
Notary Public

Attachment:

1. NRC Request for Additional Information Questions and Dominion Energy Kewaunee Responses

Enclosure:

1. LAR 244, Attachment 3, Replacement Marked-up Technical Specification Pages and Technical Specification Bases Pages

Commitments made in this letter:

1. A revised Locked Rotor Analysis will be pursued by DEK to address an emergent issue identified at Kewaunee Power Station. This revised analysis will be provided as a supplement to LAR-244.

References:

1. Letter from J. A. Price (DEK) to Document Control Desk (NRC), "License Amendment Request 244, Proposed Revision to Radiological Accident Analysis and Control Room Envelope Habitability Technical Specifications," dated August 30, 2011. [ADAMS Accession No. ML11252A521]
2. Letter from Craig W. Lambert (NMC) to Document Control Desk (NRC), "Generic Letter 2003-01; Control Room Habitability – Supplemental Response," dated April 1, 2005. [ADAMS Accession No. ML050970303]
3. E-mail from Karl D. Feintuch (NRC) to Craig D. Sly and Jack Gadzala (DEK), "ME7110 Agenda for draft RAI clarification call Re Wednesday 3-4 PM ET - EICB input," dated May 15, 2012. [ADAMS Accession No. ML12137A003]
4. E-mail from Karl D. Feintuch (NRC) to Craig D. Sly and Jack Gadzala (DEK), "ME7110 SCVB Draft RAI set Re: adoption of TSTF-51 & TSTF- 448, as part of Chi-over-Q action," dated May 15, 2012. [ADAMS Accession No. ML12138A007]

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ATTACHMENT 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION: LICENSE AMENDMENT REQUEST 244, PROPOSED REVISION TO RADIOLOGICAL ACCIDENT ANALYSIS AND CONTROL ROOM ENVELOPE HABITABILITY TECHNICAL SPECIFICATIONS

NRC REQUEST FOR ADDITIONAL INFORMATION QUESTIONS AND DOMINION ENERGY KEWAUNEE RESPONSES

KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.

NRC REQUEST FOR ADDITIONAL INFORMATION QUESTIONS AND DOMINION ENERGY KEWAUNEE RESPONSES

On May 15, 2012 the Nuclear Regulatory Commission (NRC) staff transmitted two requests for additional information (RAI) (Reference 3 and 4) regarding Dominion Energy Kewaunee, Inc. (DEK) proposed amendment LAR 244 (Reference 1). The following RAI questions and associated DEK responses are provided in Attachment 1 to this letter.

- ME7110-RAII-EICB-Alva-008-2012-06-15
- ME7110-RAII-EICB-Alva-009-2012-06-15
- ME7110-RAII-SCVB-Torres-004-2012-06-15
- ME7110-RAII-SCVB-Torres-005-2012-06-15
- ME7110-RAII-SCVB-Torres-006-2012-06-15
- ME7110-RAII-SCVB-Torres-007-2012-06-15
- ME7110-RAII-SCVB-Torres-008-2012-06-15
- ME7110-RAII-SCVB-Torres-009-2012-06-15
- ME7110-RAII-SCVB-Torres-010-2012-06-15
- ME7110-RAII-SCVB-Torres-011-2012-06-15
- ME7110-RAII-SCVB-Torres-012-2012-06-15

ME7110-RAII-EICB-Alva-008-2012-06-15

Background:

NUREG-0737, "Clarification of TMI Action Plan Requirements," Item III.D.3.4, "Control Room Habitability Requirements," required licensees to assure that control room operators will be adequately protected against the effects of accidental release of toxic and radioactive gas and that the plant can be safely operated or shutdown under design basis accident conditions.

Currently, Dominion Energy Kewaunee (DEK)'s Kewaunee Power Station uses either a safety injection (SI) signal or high radiation detection (R-23) to automatically isolate the control room and start 100 percent recirculation (CRPAR). R-23 continuously monitors the Control Room environment for an indication of airborne activity (radiation) entering through the Control Room ventilation system. If R-23 senses a high radiation condition, the monitor initiates closure of the outside air intake, provides a signal that isolates the control room ventilation system and starts the control room post-accident recirculation system. R-23 in conjunction with other radiation monitors demonstrates compliance with NUREG-0737.

R-23 is credited in the current Radiation Accident Analysis (RAA) for mitigating the consequences of an accident. Based on 10 CFR 50.36 criteria, Technical Specification (TS) actions and surveillance requirements for R-23 should be included in Kewaunee's TS.

The LAR-244 proposes removing radiation monitor channel R-23 from TS to the Kewaunee's Technical Requirements Manual (TRM). DEK is proposing to credit manual actuation of SI to isolate the control room and start CRPAR. Justifications for relocating R-23 to the TRM are:

- Radiation monitor R-23 is not safety grade
- R-23 is a single radiation monitor
- R-23 is a partial signal that will not close all control room inlet and outlet ventilation

EICB Question (ME7110-RAII-EICB-Alva-002-2011-12-29) – If R-23 is removed from TS, how will DEK comply with NUREG-0737, Item III.D.3.4?

NUREG-0737 requires safety grade radioactivity monitors required for automatic isolation purpose. SRP 6.4 habitability systems, Section 2.0, item B states that: "Single failure of an active component should not result in loss of the system's functional performance. All the components of the control room emergency filter train should be considered active components." Even though DEK recognized inconsistency with these requirements, DEK justified use of a single radioactivity monitor installed in the control room HVAC system air supply. This was justified because the automatic isolation function is accomplished by actuation of safety injection or high radiation in the control room air supply. These signals are diverse and provide adequate protection.

Further, in 1983 Kewaunee performed an analysis to show how the control room would be isolated during design basis accidents (DBA) if R-23 fails. In this analysis, DEK explained that failure of R-23 would cause an alarm in the control room alerting the control operators of loss of its function, and other radiation monitors (R-1 and R-5) will detect and confirm the presence of unusual levels of radiation at the radiation monitoring panel located in the control room, or a control room ventilation system isolation signal would occur, such that the single monitor in the air intake would never be the sole means of isolating that system. However, R1 and R-5 only warns operators to the presence of an abnormal condition. Thus, the operator would have to manually isolate the control room.

The NRC's safety evaluation (SE) for NUREG-0737 found that the control room habitability systems were acceptable and would provide a safe, habitable environment under DBA radiation and toxic gas conditions. In this SE, the staff stated that for radiation monitor, a radiation monitor in addition to R-23 should alarm in the control room or a control room ventilation system isolation signal would occur, such that the

single monitor in the air intake would never be the sole means of isolating that system. High radiation signal detected by R-23 and SI signal would initiate the CRPAR system.

LAR-244 is proposing relocating R-23 from TS to TRM. R-23 would remain part of the control room isolation logic and control room post-accident recirculation system (CRPAR), providing defense-in-depth for the control room isolation function.

LAR-244 and RAI response received on January 25, 2012 justified relocating R-23 based on a revised RAA without crediting the isolation function provided by R-23. DEK is proposing to credit operator actions to isolate the control room or a SI signal to perform isolation of the control room. DEK states that this is sufficient to meet the requirements in NUREG-0737.

Further, if R-23 is not credited in the revised RAA, R-23 won't meet the criteria in 10 CFR 50.36 to remain in TS.

Based on this information, the NRC staff has the following follow up question:

a) If an SI signal is not actuated and there is a radiation release, how will DEK meet the NUREG-0737 requirement for automatic isolation capability?

b) The basis to TS 3.12 indicates that the recirculation filter system is designed to automatically start on a safety injection signal or a high radiation signal. How will the design of the recirculation filter system be modified if R-23 is relocated to TRM?

c) The current design considers the safety injection signal providing a diverse means of post-accident actuation for R-23. If R-23 is relocated to the TRM, what component will provide diverse means for the SI signal?

Response:

(Note: Based on discussions with the NRC staff concerning DEK's proposal in LAR-244 to relocate R-23 from the KPS Technical Specifications to the Technical Requirements Manual, DEK has decided to leave the existing TS in place and modify the wording of the TS bases to reflect the proposed new licensing basis for R-23. A revised copy of TS 3.3.7, "CRPAR System Actuation Instrumentation," and the associated TS 3.3.7 Bases is provided in Enclosure 1.)

a) The capability of R-23 to automatically isolate the control room is not being removed or modified. In LAR 244, DEK proposed only that R-23 be relocated from the KPS Technical Specifications to the KPS Technical Requirements Manual. The testing requirements for R-23 would not be changed.

   There are two accident scenarios for which an SI signal will not or may not occur, the fuel handling accident (FHA) and the locked rotor accident (LRA). For the FHA, DEK proposed a new TS limiting condition for operation that would require the

control room envelope to be isolated during movement of recently irradiated fuel. Therefore, the CRE does not need to "automatically" isolate in order to ensure control room habitability after a FHA because the CRE will be required to be pre-isolated. In the case of the LRA, DEK has proposed a simple manual operator action to isolate the control room within one hour after initiation of a LRA. This manual action was proposed to compensate for the proposed TS changes that would discontinue credit for automatic isolation of the control room using a high radiation signal from R-23. The rationale and regulatory basis for crediting the manual action is described in LAR 244, Attachment 5. While the proposed manual action is not an "automatic" action, DEK believes that the proposed manual action is simple and can be readily accomplished.

b) The design of the recirculation filter system, which includes automatically starting on a safety injection signal or a high radiation signal from R-23, is not changed by the proposed revision.

c) The CRPAR system actuation logic is actuated by a safety injection signal. The logic consists of two trains of automatic actuation logic and actuation relays. Both trains of automatic actuation logic are required to be maintained operable per KPS TS 3.3.7. Therefore, for design basis accidents that rely on an SI signal to actuate the CRPAR system, redundant safety-related actuation logic is in place and will continue to remain in place.

As stated in response a) above, R-23 will continue to function as presently designed and continue to provide a diverse means of isolating the control room. The relocation of the TS related to R-23 to the TRM was proposed only because DEK considered the relocation consistent with the criteria of 10 CFR 50.36.

ME7110-RAII-EICB-Alva-009-2012-06-15

Background:

KPS UFSAR Rev 23, page 9.6-12 states:

The operator can add fresh air to the Control Room under post-accident conditions by first verifying that conditions at the intake plenum will not cause contamination of the Control Room atmosphere, then manually opening the selected outside air damper and the damper at the suction of the post-accident recirculation fans. Excess air is exhausted to the Turbine Room through a backdraft damper. The operator can confirm the incoming fresh/recirculation air mix is not contaminating the Control Room atmosphere by observing a radiation monitor channel in the Control Room. Damper control switches are spring return to the normal position so that when the damper control switches are released the dampers automatically return to the recirculation configuration

Since this is an isolation design, the control room needs to supplement the breathable air after a week to 10 days to keep the air habitable. Please explain if the radiation monitor credited in the UFSAR for fresh air is R-23.

Response:

The USAR statement above contains requirements to; 1) verify that conditions at the intake plenum would allow the intake to be opened, and; 2) confirm that while intake is open, the incoming air is not causing additional control room contamination.

1. Procedure AOP-ACC-001, "Abnormal Control Room A/C System Operation," provides guidance for system operation under design basis accident conditions. The normal and alternate air intakes are verified to be shut if a valid SI, High Radiation or Steam Exclusion signal exists. This procedure presently allows operators to open either control room intake for a short duration to provide fresh air to the control room. (Note: Procedure AOP-ACC-001 will be revised as part of the implementation process for this amendment to not allow opening of the alternate intake. See response to ME7110-RAII-AADB-Blum-009-2012-03-02 in Reference 4 for details.) Fresh air would be introduced through the control room charcoal and HEPA filters. This procedure requires that operators in the control room request radiation protection personnel verify that conditions at the intake plenum will not likely cause contamination of the control room atmosphere after opening the inlet damper for fresh air. This verification is required to be performed prior to opening the inlet damper.
2. After the intake damper is opened, operators would use R-23 to monitor radiation levels in the air being introduced to the control room. The radiation levels can be monitored at a panel mounted readout or a panel mounted pen recorder, both of which are located in the control room.

ME7110-RAII-SCVB-Torres-004-2012-06-15

As presented in Table 3.6-1 of Attachment 4, "Basic Data and Assumptions for Locked Rotor Accident (LRA)," unfiltered inleakage at 800 cfm is not assumed until the control room is isolated at 60 minutes following the onset of an accident. Provide justification for assuming zero inleakage during the first 60 minutes while the control room is not isolated, discuss the potential radiation dose from inleakage during this time period.

Response:

Prior to control room isolation, during operation of normal ventilation (unfiltered intake mode) the control room would be slightly pressurized which would tend to decrease unfiltered inleakage or result in net outleakage. Furthermore, compared to the concentration of radioactivity that would exist at the intake on the roof of the auxiliary building, which is only about 12 meters from the assumed worst case release point from a LRA (Steam Generator B PORV), the concentrations in areas where inleakage could occur would be significantly less. Therefore, inleakage was not included for the first hour of the LRA, prior to control room isolation. DEK verified that dose consequences from inleakage during the first hour are insignificant. Assuming an additional 800 cfm of unfiltered inleakage flow during the first 60 minutes of the LRA results in a dose increase of approximately 100 mRem TEDE to the control room occupants. The total dose remains less than the reported dose of 4.7 Rem TEDE provided in Table 3.6-2 of LAR-244.

A revised LRA analysis is being conducted to address an emergent issue identified at KPS. A recent discovery at one of Dominion's other nuclear plants identified that not all of the Control Rod Drive Mechanism (CRDM) fans are on vital power busses and therefore the cooldown rate of the Reactor Coolant System (RCS) following a Locked Rotor Accident (LRA) with a Loss of Offsite Power (LOOP) would be longer than assumed in the radiological analyses. An extent of condition review determined that this issue is also applicable to KPS. This revised analysis will be provided as a supplement to LAR-244. DEK will include an assumption of 800 cfm unfiltered inleakage during the first 60 minutes following a LRA in this revised analysis.

ME7110-RAII-SCVB-Torres-005-2012-06-15

Attachment 4 Table 3.2-5 “Basic Data and Assumptions for LOCA,” identifies containment spray coverage as being 100%. Please define what you mean by “containment spray coverage” and identify the surfaces and surface area taken into consideration. Please justify the assumption of 100% spray coverage.

Response:

Containment spray coverage is defined as the containment air volume that is included in the sprayed volume of containment. The sprayed volume benefits from spray removal of airborne gaseous and particulate radioactivity. The modeling of containment spray coverage was previously addressed in 2002 as part of a response to a request for additional information (Reference 6). The use of a sprayed volume equal to the containment vessel net volume (i.e., affected surfaces and surface area modeled instead as the total containment volume, less the volume of structures and components) is consistent with the licensing basis value used to determine Containment Spray capability in previous submittals to the NRC. The containment spray coverage assumption has only limited impact on the overall analysis results. Specifically, containment spray is only credited for a brief period (0.91 hrs) at the beginning of the LOCA analysis. This short duration of spray provides only a limited reduction in containment airborne gaseous and particulate radioactivity, and results in only a minor reduction in LOCA offsite dose consequences. If a reduced spray coverage were assumed, Control Room doses would continue to be demonstrated to remain within dose limits.

ME7110-RAII-SCVB-Torres-006-2012-06-15

There appears to be a dichotomy between some statements made in the LAR and the change requiring isolation of the alternate intake which is used to justify not crediting radiation monitor R-23 and removing it from technical specifications. The alternate control room intake could now be opened using the note in TS 3.7.10. The presence of the note challenges the provided justification for the removal of R-23 which partially relies on the permanent closure of the alternate control room intake. Please clarify the treatment of the alternate control room intake considering the following statements contained in the LAR.

Page 29 of Attachment 4 states: As a result of the analyses documented in this License Amendment Request (LAR), the alternate control room intake will be restricted from use. This restriction is required because of the X/Q that would result due to the close proximity of the alternate intake to various release points; one of which is < 10 m from the alternate intake. Administrative controls will be in place to assure the alternate control room intake is closed and prohibit its use during normal operation, following an accident, or while moving recently irradiated fuel.

Attachment 4, page 73 states: A single Kewaunee Power Station (KPS) Fuel Handling Accident (FHA) scenario models the bounding FHA which does not credit mitigating systems (e.g., radiation monitor isolation, bypass and closure signals, or ventilation filtration) and maximizes source term, dispersion and dose. This bounding scenario provides the basis to allow all penetrations to be open under administrative control while moving recently irradiated fuel. The results of this analysis show that control room isolation is required prior to moving recently irradiated fuel assemblies in order to maintain operator dose within 5 rem TEDE.

Technical Specification (TS) 3.7.10, "Control Room Post Accident Recirculation (CRPAR) System" contains a note that applies to openings in the CRE boundary that could be rapidly restored to the design condition, such as doors, dampers, hatches, floor plugs, and access panels. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, dampers, hatches, floor plugs, and access panels.

Response:

(Note: Based on discussions with the NRC staff concerning DEK's proposal in LAR-244 to relocate R-23 from the KPS Technical Specifications to the Technical Requirements Manual, DEK has decided to leave the existing TS in place and modify the wording of the TS bases to reflect the proposed new licensing basis for R-23. A revised copy of TS 3.3.7, "CRPAR System Actuation Instrumentation," and the associated TS 3.3.7 Bases is provided in Enclosure 1.)

The alternate control room intake will not be allowed to be opened under administrative controls. In order to make this clear in the KPS TS, DEK proposes to add wording to the TS 3.7.10 Note stating, "This Note does not apply to the alternate control room intake, which must remain isolated at all times."

A copy of the revised marked-up TS 3.7.10 is provided in Enclosure 1.

ME7110-RAII-SCVB-Torres-007-2012-06-15

Given that Attachment 4 states that control room isolation is required in order to maintain operator dose within 5 rem TEDE (including the alternate control room intake), please confirm that the note will not be used to open the control room. If the control room is allowed to be opened, please provide the methodology that will be used to verify that the time to close the opening does not impact the design basis analyses and the methods which are being used to determine the time of closure and insure that the boundary integrity is restored to its design state (i.e. leakage is not greater than the design value). In addition, please state whether the methods used to perform this assessment includes all current design basis assumptions. If not, please state which assumptions are to be changed and justify not using the design bases to perform this assessment.

Response:

The KPS control room is assumed to be isolated prior to moving recently irradiated fuel assemblies because the previously credited automatic isolation device, R-23, is no longer credited. The analysis assumes all containment penetrations are open. The most conservative pathway to the control room was modeled as an unfiltered release pathway from the reactor building ventilation exhaust stack, which has the largest calculated control room X/Q. The analysis assumes essentially all activity is released within 2 hours and the release rate is conservatively biased to release 80% of all activity within the first half hour of the event. No credit is taken for dilution or mixing of the activity released to the auxiliary building or containment air volumes. The time for the release to reach the control room and the time for R-23 to cause the control room to isolate was not modeled because operation of R-23 is not credited in the analysis. The FHA does assume that operators in the control room manually start CRPARS and initiate filtered recirculation within 20 minutes after the accident. The analysis assumes 800 cfm of unfiltered inleakage and 800 cfm of unfiltered outleakage.

The control room intake will not be allowed to be opened during movement of recently irradiated fuel assemblies. In order to make this clear in the KPS TS, DEK proposes to add wording to the TS 3.7.10 Note that states, "This Note does not apply to the normal control room intake during movement of recently irradiated fuel assemblies."

A copy of the revised marked-up TS 3.7.10 is provided in Enclosure 1.

ME7110-RAII-SCVB-Torres-008-2012-06-15

The KPS UFSAR states: *The operator can add fresh air to the Control Room under post-accident conditions by first verifying that conditions at the intake plenum will not cause contamination of the Control Room atmosphere, then manually opening the selected outside air damper and the damper at the suction of the post-accident recirculation fans. Excess air is exhausted to the Turbine Room through a backdraft damper. The operator can confirm the incoming fresh/recirculation air mix is not contaminating the Control Room atmosphere by observing a radiation monitor channel in the Control Room. Damper control switches are spring return to the normal position so that when the damper control switches are released the dampers automatically return to the recirculation configuration.* (*KPS UFSAR Rev 23, page 9.6-12)*

Since this is an isolation design, the control room needs to supplement the breathable air after a week to 10 days to keep the air habitable. Is the radiation monitor that is being credited in the UFSAR for fresh air the same monitor that is being proposed to be removed from credit in the radiological analyses (R-23)? Since the radiological analyses assume that the control room will remain isolated throughout the accident and that no extra radiation (other than unfiltered inleakage) will enter the control room, how do you intend to monitor for fresh air?

Please note that in accordance to Safety Review Plan 6.4, Section III.3.IV which refers to duel inlets for the emergency zone, the NRC staff would not allow full credit for operator action to take in only un-contaminated air.

Response:

See response to ME7110-RAII-EICB-Alva-009-2012-06-15 above.

ME7110-RAII-SCVB-Torres-009-2012-06-15

TS 3.3.6- APPLICABILITY- In the Bases of TSTF-51 it is stated that "The Manual Initiation, Automatic Logic and Actuation Relays, Containment Isolation – Phase A, and Containment Radiation Functions are required OPERABLE in MODES 1, 2, 3, and 4, and during movement of [recently] irradiated fuel assemblies [(i.e., fuel that has occupied part of a critical reactor core within the previous [x] days)] within containment. Under these conditions, the potential exists for an accident that could release *significant* fission product radioactivity into containment." However, in your mark-up, dated July 25, 2011 (ML11222A123) the words *"an accident that could release significant"* is not included. In order to be in compliance with TSTF-51 please update your mark-up to include these words, or provide acceptable justification explaining why it is not necessary.

Response:

DEK would prefer to maintain the wording of TS 3.3.6 – Applicability, as proposed in the amendment request based on the discussion below.

On August 24, 2009, DEK submitted an application to convert the KPS TS from the old custom TS format to the Improved Technical Specification (ITS) format [Agencywide Documents Access and Management System (ADAMS) Accession No. ML092440398]. For this conversion, DEK used NUREG-1431, Revision 3.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) [ADAMS Accession No. ML062510017]. The words *"an accident that could release significant"* were included in the proposed KPS TS 3.3.6 - Applicability Bases in the initially submitted license amendment for the ITS conversion [ADAMS Accession No. ML092440398 (see Attachment 1, Volume 8, page 431 of 517)].

On December 2, 2010, DEK submitted a supplement to the ITS amendment [ADAMS Accession Nos. ML1103400334, ML103400327, and ML103400335]. In that submittal, DEK provided NRC with proposed changes to some of the originally proposed TS Bases. DEK felt these particular TS Bases changes were necessary because the originally submitted wording could be construed as changing the current licensing basis of the plant to include design basis accidents or events not presently postulated in the KPS USAR. The change to TS 3.3.6 - Applicability Bases was one of the changes included in that letter. Specifically, the wording of TS Bases 3.3.6 - Applicability was deliberately modified as compared to the standard wording contained in the original ITS submittal per DEK letter to NRC dated December 2, 2010 (see Attachment 1, Volume 8, Rev. 2, page 442 of 529). The wording of TS Bases 3.3.6 - Applicability was modified explicitly to ensure there would be no confusion regarding the current licensing basis of the plant.

On February 2, 2011, the NRC staff approved the conversion of the KPS Technical Specifications from the original custom TS to the ITS format. The December 2, 2010 supplement was referenced in the NRC Safety Evaluation.

ME7110-RAII-SCVB-Torres-010-2012-06-15

The NRC staff understands that credit for the control room ventilation intake radiation monitor R-23, which provides control room isolation, is being removed. And that, only the current fuel handling accident (FHA) and locked rotor accident (LRA) events use and credit the R-23 system for control room isolation. The proposed new FHA requires that the control room be isolated prior to moving recently irradiated fuel therefore R-23 is no longer required for that accident. A proposed operator action will be required one hour following a LRA to isolate the control room. You stated that one hour is sufficient time for the operator to identify the accident, take necessary emergency steps in response to the accident, and direct action to isolate the control room and start the control room post accident recirculation system (CRPARS). Please provide a discussion demonstrating continued compliance with 10 CFR 20.1701.

Response:

(Note: Subsequent to discussions with the NRC staff concerning DEK's proposal in LAR-244 to relocate R-23 from the KPS Technical Specifications to the Technical Requirements Manual, DEK has decided to leave the existing TS in place and modify the wording of the TS bases to reflect the proposed new licensing basis for R-23. A revised copy of TS 3.3.7, "CRPAR System Actuation Instrumentation," and the associated TS 3.3.7 Bases is provided in Enclosure 1.)

10 CFR 20.1701 states: *"The licensee shall use, to the extent practicable, process or other engineering controls (e.g. containment, decontamination, or ventilation) to control the concentration of radioactive materials in air."*

R-23 will continue to provide the same function to control the concentration of radioactive materials in the control room environment in the future as it has in the past. All control room isolation actions are conducted from the control room. Operators do not need to perform remote actions in the plant to isolate the control room or start the CRPAR system.

ME7110-RAII-SCVB-Torres-011-2012-06-15

In order for a licensee to correctly implement TSTF-51-A, Rev 2, it needs to include Insert O "Reviewer's Note" into the Applicability Section of TS Bases 3.9-4 "Containment Penetrations". The proposed Bases for Kewaunee TS 3.9-4, omit the inclusion of such a note. The note requires that the licensee make a commitment consistent with draft NUMARC 93-01, Revision 3, Section 11.3.6.5, "Safety Assessment for Removal of Equipment from Service During Shutdown Condition," subheading "Containment-Primary (PWR)/Secondary (BWR)." The staff notes that in Page 26 of Attachment 2 to Kewaunee's LAR dated August 30, 2011 (ADAMS No. ML11252A651), the licensee has made an equivalent commitment to NUMARC 91-06 in regard to the assessment of fuel handling/core alterations, ventilation system and radiation monitor availability, with respect to the filtration and monitoring of releases from the fuel. If the note is not to be included, please justify the omission of Insert O in TS Bases 3.9-4. (Note: The NRC staff considers it acceptable to provide a Reviewer's Note in the applicable TS bases committing to NUMARC 91-06)

Response:

(Note: In the KPS ITS, Section 3.9.6, "Containment Penetrations," is the equivalent section to TS 3.9.4, "Containment Penetrations," as presented in TSTF-51-A, Revision 2. Therefore the discussion below refers to KPS ITS Section 3.9.6.)

The Improved Standard Technical Specifications (ISTS) (NUREG-1431 for Westinghouse plants) contains Reviewer's Notes. These Reviewer's Notes are intended to be used by NRC when reviewing plant-specific amendment requests which propose to adopt the standard language in the ISTS for a specific plant. The Reviewer's Notes themselves are not intended to be part of the plant-specific technical specifications or the plant-specific Technical Specification Bases. Therefore, DEK does not believe that adoption of this Reviewer's Note in the KPS plant-specific TS bases, in its entirety and exactly as written, is appropriate. In this case, DEK believes that it is appropriate to adopt language in the KPS plant-specific TS Bases that is consistent with the Reviewer's Note mentioned above.

DEK proposes the following be added to the Bases of TS 3.9.6 – Applicability:

> *"The plant has committed to implement the guidance contained in NUMARC 93-01, Section 11.3.6.5, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading, "Containment – Primary (PWR)/Secondary (BWR)," related to the assessment of systems removed from service during movement of recently irradiated fuel."*

A copy of the revised marked-up TS Bases page is provided in Enclosure 1.

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Included in Kewaunee's LAR dated August 30, 2011 (ADAMS No. ML11252A521) is a new TS Section 5.5 "Programs and Manual." Subheading 5.5.9 "Ventilation Filter testing Program (VFTP)," to the associated TS states "Demonstrate for each of the safety related systems listed below that an inplace test of the HEPA filters shows a penetration and system bypass ≤ **1.0%** when tested in accordance with Regulatory Position C.5.c of the Regulatory Guide 1.52, Revision 2, and ANSI N510-1975 at the system flowrate specified below ± 10%." The proposed penetration bypass is inconsistent with the bypass stated in Regulatory Position C.5.c in Reg Guide 1.52 Rev 2, which states "The in-place DOP test for HEPA filters should conform to Section 10 of ANSI N510-1975 (Ref. 2). HEPA filter sections should be tested in place (1) initially, (2) at least once per 18 months thereafter, and (3) following painting, fire, or chemical release in any ventilation zone communicating with the system to confirm a penetration of less than **0.05%** at rated flow."

In addition, subheading 5.5.9.b states "Demonstrate for each of the safety related systems listed below that an inplace test of the charcoal adsorber shows a penetration and system bypass ≤ **1.0%** when tested in accordance with Regulatory Position C.5.d of the Regulatory Guide 1.52, Revision 2, and ANSI N510-1975 at the system flowrate specified below ± 10%." Regulatory Position C.5.d of the Reg. Guide 1.52, Rev 2 states "The activated carbon adsorber section should be leak tested with a gaseous halogenated hydrocarbon refrigerant in accordance with Section 12 of ANSI N510-1975 (Ref. 2) to ensure that bypass leakage through the adsorber section is less than **0.05%**."

Please justify the proposed penetration and leakage bypass of ≤ **1.0%** taking into consideration that it differs from Regulatory Position C.5.c and C.5.d which states a penetration and leakage bypass of ≤ **0.05%.**

Response:

The amendment request dated August 30, 2011 does not propose adding a new TS Section 5.5.9, "Ventilation Filter Testing Program," to the KPS Technical Specifications. The KPS TS currently include a Section 5.5.9, "Ventilation Filter Testing Program (VFTP)," and no changes to current KPS TS 5.5.9 are being proposed as part of this amendment request. The only change to Technical Specification Section 5.5, "Programs and Manuals," that was proposed in the amendment request dated August 30, 2011 is the addition of new Section 5.5.17, "Control Room Envelope Habitability Program."

For a discussion regarding how the bypass of < 1.0% is accounted for in the design basis radiological calculations, please refer to DEK response to NRC Question 13 (ME7110-RAII-AADB-Blum-013-2012-03-02) in Reference 4.

References

1. Letter from J. A. Price (DEK) to Document Control Desk (NRC), "License Amendment Request 244, Proposed Revision to Radiological Accident Analysis and Control Room Envelope Habitability Technical Specifications," dated August 30, 2011. [ADAMS Accession No. ML11252A521]
2. E-mail from Karl D. Feintuch (NRC) to Craig D. Sly and Jack Gadzala (DEK), "ME7110 Agenda for draft RAI clarification call Re Wednesday 3-4 PM ET - EICB input," dated May 15, 2012. [ADAMS Accession No. ML12137A003]
3. E-mail from Karl D. Feintuch (NRC) to Craig D. Sly and Jack Gadzala (DEK), "ME7110 SCVB Draft RAI set Re: adoption of TSTF-51 & TSTF- 448, as part of Chi-over-Q action," dated May 15, 2012. [ADAMS Accession No. ML12138A007]
4. Letter from J. A. Price (DEK) to Document Control Desk, "Response to Request for Additional Information: License Amendment Request 244, Proposed Revision to Radiological Accident Analysis and Control Room Envelope Habitability Technical Specifications (TAC No ME7110)," dated April 30, 2012. [ADAMS Accession No. ML12124A283]
5. Letter from L. N. Hartz (DEK) to Document Control Desk, "License Amendment Request 211, 'Radiological Accident Analysis and Associated Technical Specification Change,'" dated January 30, 2006. [ADAMS Accession No. ML060540217]
6. Letter from T. Coutu (NMC) to NRC, "Response to Request for Additional Information Related to Proposed Revision to Kewaunee Nuclear Power Plant Design-Basis Radiological Analysis Source Term," dated September 13, 2002. [ADAMS Accession No. ML022680167]

ENCLOSURE 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION: LICENSE AMENDMENT REQUEST 244, PROPOSED REVISION TO RADIOLOGICAL ACCIDENT ANALYSIS AND CONTROL ROOM ENVELOPE HABITABILITY TECHNICAL SPECIFICATIONS

NRC REQUEST FOR ADDITIONAL INFORMATION QUESTIONS AND DOMINION ENERGY KEWAUNEE RESPONSES

LAR 244, Attachment 3, Replacement Marked-up Technical Specification Pages and Technical Specification Bases Pages

TS 3.3.7, "CRPAR Actuation Instrumentation"
TS B3.3.7, "CRPAR Actuation Instrumentation"
TS 3.7.10, "CRPAR System"
TS B3.7.10, "CRPAR System"
TS B3.9.6, "Refueling Operations"

KEWAUNEE POWER STATION

DOMINION ENERGY KEWAUNEE INC.

3.3 INSTRUMENTATION

3.3.7 Control Room Post Accident Recirculation (CRPAR) System Actuation Instrumentation

LCO 3.3.7 The CRPAR System actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Automatic Actuation Logic and Actuation Relay train inoperable.	A.1 Place associated CRPAR train in emergency mode.	7 days
B. Two Automatic Actuation Logic and Actuation Relay trains inoperable. OR Control Room Vent Radiation Monitor inoperable.	B.1.1 Place one CRPAR train in emergency mode. AND B.1.2 Enter applicable Conditions and Required Actions for one CRPAR train made inoperable by inoperable CRPAR System actuation instrumentation. OR B.2 Place both CRPAR trains in emergency mode.	Immediately Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5.	36 hours
D. Required Action and associated Completion Time for Condition A or B not met during movement of [recently] irradiated fuel assemblies.	D.1	Suspend movement of [recently] irradiated fuel assemblies.	Immediately
~~E. Required Action and associated Completion Time for Condition A or B not met in MODE 5 or 6.~~	~~E.1~~	~~Initiate action to restore one CRPAR train to OPERABLE status.~~	~~Immediately~~

SURVEILLANCE REQUIREMENTS

--NOTE--

Refer to Table 3.3.7-1 to determine which SRs apply for each CRPAR System Actuation Function.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.7.2	Perform COT in accordance with the Setpoint Control Program.	92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.7.3	------------------------------NOTE------------------------------ This Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation. -- Perform ACTUATION LOGIC TEST.	18 months
SR 3.3.7.4	Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.	18 months

Table 3.3.7-1 (page 1 of 1)
CRPAR System Actuation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS
1. Automatic Actuation Logic and Actuation Relays	1, 2, 3, 4, ~~5, 6,~~ (a)	2 trains	SR 3.3.7.3
2 Control Room Vent Radiation Monitor	1, 2, 3, 4, ~~5, 6,~~ (a)	1	SR 3.3.7.1 SR 3.3.7.2 SR 3.3.7.4
3. Safety Injection	Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements.		

(a) During movement of [recently] irradiated fuel assemblies.

B 3.3 INSTRUMENTATION

B 3.3.7 Control Room Post Accident Recirculation (CRPAR) System Actuation Instrumentation

BASES

BACKGROUND

The CRPAR System provides an enclosed control room environment from which the unit can be operated following an uncontrolled release of radioactivity. The CRPAR System is part of the Control Room Air Conditioning System. During normal unit operation, the Control Room Air Conditioning System provides cooling and heating of recirculated and fresh air to ventilate the control room. Upon receipt of an actuation signal, both CRPAR fans are started, the flow path through the Emergency Filtration System is opened, and a portion of the return air volume is filtered to remove airborne contaminants and airborne radioactivity, then mixed with the recirculated return air. This system is described in the Bases for LCO 3.7.10, "Control Room Post Accident Recirculation (CRPAR) System."

The actuation instrumentation consists of a single radiation monitor (R-23) located on the common discharge of the outlet of the air conditioning fan units. A high radiation signal from the detector will initiate both trains of the CRPAR System. The control room operator can also start the CRPAR fan(s) by manual switches in the control room. The CRPAR System is also actuated by a safety injection (SI) signal. The SI Function is discussed in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."

APPLICABLE SAFETY ANALYSES

The control room must be kept habitable for the operators stationed there during accident recovery and post accident operations.

The CRPAR System acts to terminate the normal supply of unfiltered outside air to the control room, both CRPAR fans are started, the flow path through the Emergency Filtration System is opened, and a portion of the return air volume is filtered to remove airborne contaminants and airborne radioactivity, then mixed with the recirculated return air. These actions are necessary to ensure the control room is kept habitable for the operators stationed there during accident recovery and post accident operations by minimizing the radiation exposure of control room personnel.

~~The radiation monitor~~Manual actuation of the CRPAR System is a backup for the SI signal actuation. This ensures initiation of the CRPAR System during a loss of coolant accident or steam generator tube rupture when an initiation of SI is anticipated. In addition, ~~the radiation monitor~~ manual actuation of the CRPAR System is the primary means to ensure control room habitability in the event of a locked rotor accident.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~The radiation monitor~~Manual actuation of the CRPAR System ~~in MODES 5 and 6,~~ and a requirement for the control room envelope to be isolated during movement of recently irradiated fuel assemblies (TS 3.7.10) is the primary means to ensure control room habitability in the event of a fuel handling~~, volume control tank, or waste gas decay tank rupture~~ accident.

The Safety Injection signal portion of CRPAR System actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). R-23, while not specifically credited in the design basis accident radiological consequences analysis, provides a diverse means for actuating the CRPAR system during accident recovery and post-accident operations.

LCO

The LCO requirements ensure that instrumentation necessary to initiate the CRPAR System is OPERABLE.

1. Automatic Actuation Logic and Actuation Relays

   The LCO requires two trains of Actuation Logic and Relays OPERABLE to ensure that no single random failure can prevent automatic actuation.

   Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b., SI, in LCO 3.3.2 and include the slave relays that send the SI signal to the CRPAR System. The applicable MODES and specified conditions for the CRPAR System portion of these functions are different than those specified for their SI roles. If one or more of the SI functions becomes inoperable in such a manner that only the CRPAR System function is affected, the Conditions applicable to their SI function need not be entered. The less restrictive Actions specified for inoperability of the CRPAR System Functions specify sufficient compensatory measures for this case.

2. Control Room Vent Radiation Monitor

   The LCO specifies one Control Room Vent Radiation Monitor to ensure that the radiation monitoring instrumentation necessary to initiate the CRPAR System remains OPERABLE.

   For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, and filter motor operation, as well as detector OPERABILITY, if these supporting features are necessary for trip to occur under the conditions assumed by the safety analyses.

3. Safety Injection

Refer to LCO 3.3.2, Function 1, for all initiating Functions and requirements.

BASES

APPLICABILITY

The CRPAR Functions must be OPERABLE in MODES 1, 2, 3, 4, and during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of the critical reactor core within the previous 375 hours). ~~The Functions must also be OPERABLE in MODES 5 and 6 when required for a waste gas decay tank rupture accident, to ensure a habitable environment for the control room operators.~~

The Applicability for the CRPAR actuation on the ESFAS Safety Injection Functions are specified in LCO 3.3.2. Refer to the Bases for LCO 3.3.2 for discussion of the Safety Injection Function Applicability.

ACTIONS

The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the unit specific calibration procedures. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a COT, when the process instrumentation is set up for adjustment to bring it within specification. If the Trip Setpoint is less conservative than the tolerance specified by the calibration procedure, the channel must be declared inoperable immediately and the appropriate Condition entered.

A.1

Condition A applies to the Automatic Actuation Logic and Actuation Relays Function of the CRPAR System.

If one train is inoperable, 7 days are permitted to restore it to OPERABLE status. The 7 day Completion Time is the same as is allowed if one train of the mechanical portion of the system is inoperable. The basis for this Completion Time is the same as provided in LCO 3.7.10. If the train cannot be restored to OPERABLE status, the associated CRPAR train must be placed in the emergency mode of operation. This accomplishes the actuation instrumentation Function and places the unit in a conservative mode of operation.

B.1.1, B.1.2, and B.2

Condition B applies to the failure of two Automatic Actuation Logic and Actuation Relay trains or the Control Room Vent Radiation Monitor. The first Required Action is to place one CRPAR train in the emergency mode of operation immediately. This accomplishes the actuation instrumentation Function that may have been lost and places the unit in a conservative mode of operation. The applicable Conditions and Required

BASES

ACTIONS

B.1.1, B.1.2, and B.2 (continued)

Actions of LCO 3.7.10 must also be entered for the CRPAR train made inoperable by the inoperable actuation instrumentation and not placed in the emergency mode of operation. This ensures appropriate limits are placed upon train inoperability as discussed in the Bases for LCO 3.7.10.

Alternatively, both CRPAR trains may be placed in the emergency mode. This ensures the CRPAR function is performed even in the presence of a single failure.

C.1 and C.2

Condition C applies when the Required Action and associated Completion Time for Condition A or B have not been met and the unit is in MODE 1, 2, 3, or 4. The unit must be brought to a MODE in which the LCO requirements are not applicable. To achieve this status, the unit must be brought to MODE 3 within 6 hours and MODE 5 within 36 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.

D.1

Condition D applies when the Required Action and associated Completion Time for Condition A or B have not been met when recently irradiated fuel assemblies are being moved. Movement of recently irradiated fuel assemblies must be suspended immediately to reduce the risk of accidents that would require CRPAR System actuation.

~~E.1~~

~~Condition E applies when the Required Action and associated Completion Time for Condition A or B have not been met in MODE 5 or 6. Actions must be initiated to restore the inoperable train(s) to OPERABLE status immediately to ensure adequate isolation capability in the event of a waste gas decay tank rupture.~~

BASES

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that Table 3.3.7-1 determines which SRs apply to which CRPAR System Actuation Functions.

SR 3.3.7.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.7.2

A COT is performed once every 92 days on each required channel to ensure the entire channel will perform the intended function. This test verifies the capability of the instrumentation to provide the CRPAR System actuation. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable COT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Setpoint Control Program (SCP) has controls which require verification that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology. The Frequency is based on the known reliability of the monitoring equipment and has been shown to be acceptable through operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.3

SR 3.3.7.3 is the performance of an ACTUATION LOGIC TEST. For the portion of the logic common to ESFAS, Function 1.b ACTUATION LOGIC TEST, the train being tested is placed in the test condition, thus preventing inadvertent actuation and all possible SI logic combinations are tested for each protection function. For the portion of the logic not tested as part of the ESFAS Function 1.b ACTUATION LOGIC TEST (i.e., the slave relay), actuation of the end devices may occur. The Frequency of 18 months is based on the refueling outage cycle, since the slave relay cannot be tested at power without resulting in actuation of affected components.

The SR is modified by a Note stating that the Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation.

SR 3.3.7.4

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

The SCP has controls which require verification that the instrument channel functions as required by verifying the as-left and as-found setting are consistent with those established by the setpoint methodology.

The Frequency is based on operating experience and is consistent with the typical industry refueling cycle.

REFERENCES

1. WCAP-15376, Rev. 0, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," October 2000.

AND

The CRE shall be isolated during movement of recently irradiated fuel assemblies.

3.7 PLANT SYSTEMS

3.7.10 Control Room Post Accident Recirculation (CRPAR) System

envelope (CRE)

LCO 3.7.10 Two CRPAR trains shall be OPERABLE.

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

This Note does not apply to the alternate control room intake, which must remain closed at all times. This Note does not apply to the normal control room intake during movement of recently irradiated fuel assemblies.

APPLICABILITY: MODES 1, 2, 3, 4, ~~5, and 6,~~
During movement of irradiated fuel assemblies.

and

recently

ACTIONS

for reasons other than Condition B

Insert 2

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRPAR train inoperable.	A.1 Restore CRPAR train to OPERABLE status.	7 days
~~B. Two CRPAR trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4.~~	~~B.1 Restore control room boundary to OPERABLE status.~~	~~24 hours~~
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of recently irradiated fuel assemblies.	D.1	Place OPERABLE CRPAR train in emergency mode.	Immediately
	OR		
	D.2	Suspend movement of recently irradiated fuel assemblies.	Immediately
E. Two CRPAR trains inoperable in MODE 5 or 6, or during movement of recently irradiated fuel assemblies.	E.1	Suspend movement of recently irradiated fuel assemblies.	Immediately
Insert 3			
F. Two CRPAR trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Operate each CRPAR train for ≥ 15 minutes.	31 days
SR 3.7.10.2	Perform required CRPAR filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.10.3	Verify each CRPAR train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.10.4	Perform required CRE unfiltered air inleakage testing in accordance with CRE Habitability Program	In accordance with CRE Habitability Program

Insert 2:

B. One or more CRPAR trains inoperable due to an inoperable CRE boundary in Modes 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. AND B.3 Restore CRE boundary to OPERABLE status.	Immediately 24 hours 90 days

Insert 3:

OR Required Actions and associated Completion Times of Condition B not met during movement of recently irradiated fuel assemblies. OR CRE not isolated during movement of recently irradiated fuel assemblies.		

B 3.7 PLANT SYSTEMS

B 3.7.10 Control Room Post Accident Recirculation (CRPAR) System

BASES

BACKGROUND

The CRPAR System provides a protected environment from which ~~operators~~ occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or ~~toxic gas~~smoke.

The CRPAR System consists of two independent, redundant trains that recirculate and filter the air in the control room envelope (CRE) and a CRE boundary that limits the inleakage of unfiltered air~~outside air~~. Each CRPAR train consists of a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Common ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system.

The CRE is the area within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, and other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

The CRPAR System is an emergency system, which is normally in the standby mode of operation. The CRPAR System is part of the Control Room Air Conditioning (CRAC) System. During normal unit operation, the CRAC System provides cooling of recirculated and fresh air to ventilate the control room. Upon receipt of the actuating signal(s), normal outside air intake supply to the ~~control room~~CRE is isolated, both CRPAR fans are started, the flow path through the Emergency Filtration System is opened, and a portion of the return air volume is filtered to remove airborne contaminants and airborne radioactivity, then mixed with the recirculated return air. The prefilters remove any large particles in the air to prevent excessive loading of the HEPA filters and charcoal adsorbers.

The neutral pressure envelope design of the ~~control room~~CRE minimizes infiltration of unfiltered air from the surrounding areas of the building. The CRPAR System fans are started upon receipt of a safety injection signal,

~~or~~manual SI initiation through switches in the control room, or a high radiation signal as detected by the radiation monitor R-23 mounted in the main control room emergency zone (CREZ) supply duct.

The CRPAR System operation in maintaining a habitable environment in the CRE ~~control room habitable~~ is discussed in the USAR, Section 9.6.4 (Ref. 1).

Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open isolation dampers of the CRAC Alternate Cooling System provide double/redundant isolation capability so that the failure of one damper to shut will not result in a breach of control room ventilation isolation. The CRPAR System is designed in accordance with Seismic Category I requirements.

Isolation of the CRE during movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 375 hours) and manual actuation of the CRPAR within 20 minutes after a fuel handling accident is the primary means to ensure CRE habitability in the event of a fuel handling accident while handling recently irradiated fuel. Actuation of the CRPAR System and CRE isolation are performed by a SI actuation signal, either automatically or manually initiated. Calculated doses to CRE occupants from a volume control tank rupture or waste gas decay tank rupture are sufficiently small that manual actuation of the CRPAR System is not required for these postulated accidents.

BASES

BACKGROUND (continued)

The CRPAR System is designed to maintain a habitable environment in the CRE ~~control room environment~~ for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 rem total effective dose equivalent (TEDE).

APPLICABLE SAFETY ANALYSES

The CRPAR System components are arranged in redundant, safety related ventilation trains. The location of components and ducting within the ~~control room envelope~~CRE ensures an adequate supply of filtered air to all areas requiring access. The CRPAR System provides airborne radiological protection for the ~~control room operators~~CRE occupants, as demonstrated by the ~~control room accident~~CRE occupant dose analyses for the most limiting design basis ~~loss of coolant~~ accident~~,~~ fission product release presented in the USAR, Chapter 14 (Ref. 2).

The CRPAR System also provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 6). The evaluation of a smoke challenge also demonstrates that it will not result in the inability of the CRE occupants to control the reactor either from the control room or from the remote shutdown panel (Ref. 7). ~~for the control room operators in the remote possibility of a fire in the control room, as described in Reference 1.~~

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

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

LCO

Two independent and redundant CRPAR trains are required to be OPERABLE to ensure that at least one is available ~~assuming~~ if a single active failure disables the other train. Total system failure, such as from a loss of both ventilation trains or from an inoperable CRE boundary, could result in exceeding a dose of 5 rem TEDE to the control room operator in the event of a large radioactive release.

~~The~~ Each CRPAR ~~System~~ train is considered OPERABLE when the individual components necessary to limit ~~operator~~ CRE occupant exposure are OPERABLE ~~in both trains~~. A CRPAR train is OPERABLE when the associated:

a. Fan is OPERABLE;

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

c. Ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

In addition, the CRAC fan in the same train must be OPERABLE when the CRPAR train is required. ~~Furthermore, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

In order for the CRPAR trains to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analyses for DBAs, and that CRE occupants are protected from hazardous chemicals and smoke.

The CRE is also required to be isolated during movement of recently irradiated fuel assemblies. The fuel handling accident analysis assumes the control room is isolated at the initiation of the accident. Pre-isolation of the control room minimizes infiltration of radioactive materials into the CRE prior to initiation of the CRPAR in the emergency mode and ensures dose to CRE occupants remains within applicable limits.

BASES

LCO (continued)

The LCO is modified by a Note allowing the control roomCRE boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, dampers, hatches, floor plugs, and access panels. 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, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CREcontrol room. This individual will have a method to rapidly close the opening and restore the CRE boundary to a condition equivalent to the design condition when a need for control roomCRE isolation is indicated. The Note does not apply to the alternate control room intake, which must remain closed at all times. The Note also does not apply to the normal control room intake during movement of recently irradiated fuel assemblies.

APPLICABILITY

In MODES 1, 2, 3, and 4, 5, and 6, and during movement of recently irradiated fuel assemblies, the CRPAR System must be OPERABLE to ensure that the CRE will remain habitable control operator exposure during and following a DBA.

In MODE 5 or 6, the CRPAR System is required to cope with the release from the rupture of an inside waste gas tank.

During movement of recently irradiated fuel assemblies, the CRPAR System must be OPERABLE to cope with the release from a fuel handling accident involving handling of recently irradiated fuel. The CRPAR is only required to be OPERABLE during fuel handling involving handling of recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 375 hours), due to radioactive decay.

ACTIONS

A.1

When one CRPAR train is inoperable, for reasons other than an inoperable CRE boundary, action must be taken to restore OPERABLE status within 7 days. In this condition, the remaining OPERABLE CRPAR train is adequate to perform the control roomCRE occupant protection function. However, the overall reliability is reduced because a single active failure in the OPERABLE CRPAR train could result in loss of CRPAR 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.

B.1, B.2, and B.3

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 rem TEDE), or inadequate protection of CRE occupants from hazardous chemicals or smoke, the CRE boundary is inoperable. Actions must be taken to restore an OPERABLE CRE boundary within 90 days.

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24-hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90-day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

~~If the control room boundary is inoperable in MODE 1, 2, 3, or 4, the CRPAR trains cannot perform their intended functions. Action must be taken to restore an OPERABLE control room boundary within 24 hours. 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 operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for~~

BASES

ACTIONS (continued)

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

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable CRPAR train or ~~control room~~ the CRE boundary cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 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.

D.1 and D.2

~~In MODE 5 or 6, or d~~During movement of recently irradiated fuel assemblies, if the inoperable CRPAR train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE CRPAR train in the emergency mode. This action ensures that the remaining train is OPERABLE and that any active failure would be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the ~~control room~~CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

E.1

~~In MODE 5 or 6, or d~~During movement of recently irradiated fuel assemblies, with two CRPAR trains inoperable, or with one or more CRPAR trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might ~~enter~~ require isolation of the CRE~~control room~~. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

BASES

ACTIONS (continued)

F.1

If both CRPAR trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable ~~control room~~CRE boundary (i.e., Condition B), the CRPAR System may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

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. Operating each CRPAR train for ≥ 15 minutes demonstrates the function of the system. The 31 day Frequency is based on the reliability of the equipment and the two train redundancy ~~availability~~.

SR 3.7.10.2

This SR verifies that the required CRPAR testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.10.3

This SR verifies that each CRPAR train starts and operates on an actual or simulated actuation (~~high radiation and~~ safety injection) signal. The frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle. ~~Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

SR 3.7.10.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 4) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 5). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 3). Options for restoring the CRE boundary to OPERABLE status include changing the licensing basis DBA consequence analysis, repairing the CRE boundary, or a combination of these actions. Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

REFERENCES

1. USAR, Section 9.6.4.
2. USAR, Chapter 14.
3. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI), "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability," dated January 30, 2004. [ADAMS Accession No. ML040300694].
4. Regulatory Guide 1.196, Rev. 1.
5. NEI 99-03, "Control Room Habitability Assessment Guidance," June 2001.
6. Letter from C. R. Steinhardt to NRC, "Submittal of Kewaunee's Updated Control Room Habitability Evaluation Report to Address Concerns Over Control Room Ventilation," dated February 28, 1989.
7. USAR Section 9.6.4.

B 3.9 REFUELING OPERATIONS

B 3.9.6 Containment Penetrations

BASES

BACKGROUND

During movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 375 hours) within containment, a release of fission product radioactivity within containment will be restricted from escaping to the environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. The LCO requirements are referred to as "containment closure" rather than "containment OPERABILITY." Containment closure means that all potential escape paths are closed or capable of being closed. Since there is no potential for containment pressurization, the Appendix J leakage criteria and tests are not required.

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained well within the guidance of Regulatory Guide 1.183 (Ref. 1). Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During movement of recently irradiated fuel assemblies within containment, the equipment hatch may remain open, but must be capable of being closed ~~must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced~~.

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown when containment closure is not required, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. During movement of recently irradiated fuel assemblies within containment, containment closure is required; therefore, the door interlock mechanism may remain disabled, but one air lock door must always remain capable of being closed.

BASES

BACKGROUND (continued)

The requirements for containment penetration closure ensure that a release of fission product radioactivity within containment will be restricted to within regulatory limits.

Two systems can be used to purge or ventilate the containment; the Containment Purge and Vent System and the Post LOCA Hydrogen Control System. The Containment Purge and Vent System includes a 36 inch purge penetration and a 36 inch vent penetration. The Post LOCA Hydrogen Control System includes a 2 inch purge penetration and a 2 inch vent penetration. During MODES 1, 2, 3, and 4, the two valves in each of the normal purge and vent penetrations are secured in the closed position. The post LOCA hydrogen control subsystem contains two trains. The valves in Train A are normally closed. The valves in Train B are also normally closed but are periodically opened to control containment pressure within the required limits. The Train B valves receive a signal to close via the Engineered Safety Features Actuation System and the Containment Purge and Vent Isolation System. Neither of the systems are subject to a Specification in MODE 5.

In MODE 6, fresh, tempered air is provided to conduct refueling operations. The normal 36 inch purge system is used for this purpose, and all four valves are closed by the ESFAS in accordance with LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."

The other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated or capable of being isolated on at least one side. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods must be approved and may include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during recently irradiated fuel movements.

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident involving handling of recently irradiated fuel. The fuel handling accident is a postulated event that involves damage to irradiated fuel. Fuel handling accidents, analyzed in Reference 2, include dropping a single irradiated fuel assembly vertically onto a rigid surface or onto other irradiated fuel assemblies. The requirements of LCO 3.9.5, "Refueling Cavity Water Level," in conjunction with a minimum decay time of 100 hours prior to irradiated fuel movement, ensures that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in Regulatory Guide 1.183 (Ref. 1).

BASES

LCO

This LCO limits the consequences of a fuel handling accident involving handling recently irradiated fuel in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except when appropriate administrative controls are in place which ensure the capability to close the penetration ~~for the OPERABLE containment purge and vent penetrations and the containment personnel air locks~~. For the OPERABLE containment purge and vent penetrations, this LCO ensures that these penetrations are isolable by the Containment Purge and Vent Isolation System.

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident.

The containment personnel air lock doors may be open during movement of recently irradiated fuel in the containment provided that one door is capable of being closed within 30 minutes in the event of a fuel handling accident within containment. When both personnel airlock doors are open during the movement of irradiated fuel in the containment, appropriate plant personnel shall be notified of this condition. A specified individual(s) is designated and available to close the airlock following a required evacuation of containment. Any obstruction(s) (e.g., cables and hoses) that can prevent closure of an open airlock shall be able to be removed in a timely manner (i.e., within the 30 minutes specified above). Should a fuel handling accident occur inside containment, one personnel air lock door will be closed following an evacuation of containment.

The containment equipment hatch may be open during movement of recently irradiated fuel in the containment provided that it is capable of being closed within 45 minutes in the event of a fuel handling accident within containment. When the equipment hatch is open during the movement of irradiated fuel in the containment, appropriate plant personnel shall be notified of this condition. A specified individual(s) is designated and available to close the equipment hatch following a required evacuation of containment. Any obstruction(s) (e.g., cables and hoses) that can prevent closure of the equipment hatch within 45 minutes shall be able to be removed in a timely manner. Should a fuel handling accident occur inside containment, the equipment hatch will be closed following an evacuation of containment.

APPLICABILITY

The containment penetration requirements are applicable during movement of recently irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident within containment. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 375 hours) will result in doses that are within the guideline values specified in 10 CFR 50.67, even without containment closure capability. Therefore, under these conditions no requirements are placed on containment penetration status.

The plant has committed to implement the guidance contained in NUMARC 93-01, Section 11.3.6.5, "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading, "Containment – Primary (PWR)/Secondary (BWR)," related to the assessment of systems removed from service during movement of irradiated fuel.

ACTIONS

A.1

If the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, including the Containment Purge and Vent Isolation System not capable of automatic actuation when the purge and vent valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of recently irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

This Surveillance demonstrates that each required containment penetration is in the required status. The Surveillance on the open purge and vent valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each valve operator has motive power, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and vent isolation signal.

The Surveillance is performed every 7 days during movement of recently irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident involving handling recently irradiated fuel that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Regulatory Guide 1.183 (Reference 1).

SR 3.9.6.2

This Surveillance demonstrates that each required containment purge and vent valve actuates to its isolation position on an actual or simulated high radiation signal. The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. LCO 3.3.6, "Containment Purge and Vent Isolation Instrumentation," provides additional Surveillance Requirements for the containment purge and vent valve actuation circuitry. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident involving handling of recently irradiated fuel to limit a release of fission product radioactivity from the containment.

The SR is modified by a Note stating that this Surveillance is not required to be met for valves in isolated penetrations. The LCO provides the option to close penetrations in lieu of requiring automatic actuation capability.

REFERENCES

1. Regulatory Guide 1.183, July 2000.
2. USAR, Section 14.2.1.