THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

3.7 PLANT SYSTEMS

3.7.12 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.12 Two CREVS trains shall be OPERABLE.

-----------------------------**NOTE**-----------------------------
The control complex habitability envelope (CCHE) boundary may be opened intermittently under administrative control.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREVS train inoperable.	A.1 Restore CREVS train to OPERABLE status.	7 days
B. Two CREVS trains inoperable due to inoperable CCHE boundary.	B.1 Restore CCHE boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours
D. Two CREVS trains inoperable for reasons other than Condition B.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each CREVS train for ≥ 15 minutes.	31 days
SR 3.7.12.2	Perform required CREVS filter testing in accordance with the Ventilation Filter Testing Program.	In accordance with the Ventilation Filter Testing Program
SR 3.7.12.3	Verify each CREVS train actuates to the emergency recirculation mode on an actual or simulated actuation signal.	24 months
SR 3.7.12.4	Verify control complex habitability envelope integrity in accordance with ITS 5.6.2.21.	In accordance with the Control Complex Habitability Envelope Integrity Program

THIS PAGE INTENTIONALLY LEFT BLANK

3.7 PLANT SYSTEMS

3.7.18 Control Complex Cooling System

LCO 3.7.18 Two Control Complex Cooling trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable. AND At least 100% of the cooling capability of a single OPERABLE Control Complex Cooling train available.	A.1 Ensure adequate cooling capability from the Control Complex Cooling system in operation. AND A.2 Restore Control Complex Cooling trains(s) to OPERABLE status.	Immediately 7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in Mode 3. AND B.2 Be in Mode 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify each chilled water pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.7.18.2	Verify the redundant capability of the Control Complex Cooling System to remove the assumed heat load.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.12 Control Room Emergency Ventilation System (CREVS)

BASES

BACKGROUND

The principal function of the Control Room Emergency Ventilation System (CREVS) is to provide an enclosed environment from which the plant can be operated following an uncontrolled release of radioactivity or toxic gas.

The CREVS consists of two trains with much of the non-safety related equipment common to both trains and with two independent, redundant components supplied for major items of safety related equipment (Ref. 1). The major equipment consists of the normal duty filter banks, the emergency filters, the normal duty and emergency duty supply fans, and the return fans. The normal duty filters consist of one bank of glass fiber roughing filters. The emergency filters consist of a roughing filter similar to the normal filters, high efficiency particulate air (HEPA) filters, and activated charcoal adsorbers for removal of gaseous activity (principally iodine). The rest of the system, consisting of supply and return ductwork, dampers, and instrumentation, is not designed with redundant components. However, redundant dampers are provided for isolation of the ventilation system from the surrounding environment.

The Control Complex Habitability Envelope (CCHE) is the space within the Control Complex served by CREVS. This includes Control Complex floor elevations from 108 through 180 feet and the stair enclosure from elevation 95 to 198 feet. The elements which compromise the CCHE are walls, doors, a roof, floors, floor drains, penetration seals, and ventilation isolation dampers. Together the CCHE and CREVS provide an enclosed environment from which the plant can be operated following an uncontrolled release of radioactivity or toxic gas.

CREVS has a normal operation mode and recirculation modes. During normal operation, the system provides filtered, conditioned air to the control complex, including the controlled access area (CA) on the 95 foot elevation. When switched to the recirculation mode, isolation dampers close isolating the discharge to the controlled access area and isolating the outside air intake. In this mode the system recirculates filtered air through the CCHE.

(continued)

BASES

BACKGROUND (continued)

The control complex normal duty ventilation system is operated from the control room and runs continuously. During normal operation, the outside air intake damper is partially open, the atmospheric relief discharge damper is closed, the discharge to the CA is open, and the system return damper is throttled. This configuration allows a controlled amount of outside air to be admitted to the control complex. The design temperature maintained by the system is 75°F at a relative humidity of 50%.

Two signals will cause the system to automatically switch to the recirculation modes of operation.

1. Engineered Safeguards Actuation System (ESAS) signal (high reactor building pressure).

2. High radiation signal from the return duct radiation monitor RM-A5.

The recirculation modes isolate the CCHE from outside air to ensure a habitable environment for the safe shutdown of the plant. In these modes of operation, the controlled access area is isolated from the CCHE.

Upon detection of ESAS, the system switches to the normal recirculation mode. In this mode, dampers for the outside air intake and the exhaust to the CA will automatically close, isolating the CCHE from outside air exchange, and the system return damper will open thus allowing air in the CCHE to be recirculated. Additionally, the CA fume hood exhaust fan, CA fume hood auxiliary supply fan, and CA exhaust fan are de-energized and their corresponding isolation dampers close. The return fan, normal filters, normal fan, and the cooling (or heating) coils remain in operation in a recirculating mode.

Upon detection of high radiation by RM-A5 the system switches to the emergency recirculation mode. In this mode, the dampers that isolate the CCHE from the surroundings will automatically close. The CA fume hood exhaust fan, CA fume hood auxiliary supply fan, CA exhaust fan, normal supply fan, and return fan are tripped and their corresponding isolation dampers close. Manual action is required to restart the return fan and place the emergency fans and filters in operation. The cooling (or heating) coils remain in operation.

(continued)

BASES

APPLICABLE SAFETY ANALYSIS

During emergency operations the design basis of the CREVS and the CCHE is to provide radiation protection to the control room operators. The limiting accident which may threaten the habitability of the control room (i.e., accidents resulting in release of airborne radioactivity) is the postulated Control Rod Ejection accident. The consequences of this event result in the limiting radiological source term for the control room habitability evaluation (Ref. 2). The CREVS and the CCHE ensures that the control room will remain habitable following all postulated design basis events, maintaining exposures to control room operators within the limits of GDC 19 of 10 CFR 50 Appendix A (Ref. 3).

The CREVS is not in the primary success path for any accident analysis. However, the Control Room Emergency Ventilation System meets Criterion 3 of the NRC Policy Statement since long term control room habitability is essential to mitigation of accidents resulting in atmospheric fission product release.

LCO

Two trains of the control room emergency ventilation system are required to be OPERABLE to ensure that at least one is available assuming a single failure disabling the other train. Failure to meet the LCO could result in the control room becoming uninhabitable in the unlikely event of an accident.

The required CREVS trains must be independent to the extent allowed by the design which provides redundant components for the major equipment as discussed in the BACKGROUND section of this bases. OPERABILITY of the CREVS requires the following as a minimum:

a. A Control Complex Emergency Duty Supply Fan is OPERABLE;

b. A Control Complex Return Fan is OPERABLE;

c. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration functions;

d. Ductwork and dampers are OPERABLE, and air circulation can be maintained; and

(continued)

BASES

LCO (continued)

e. The CCHE is intact as discussed below.

The CCHE boundary including the integrity of the doors, walls, roof, floors, floor drains, penetration seals, and ventilation isolation dampers must be maintained within the assumptions of the design calculations. Breaches in the CCHE must be controlled to provide assurance that the CCHE remains capable of performing its function.

If CCHE integrity cannot be maintained, the CCHE is rendered inoperable and entry into LCO Condition B is required. If the Required Action of LCO Condition B is not met within the respective Completion Time, then Condition C must be entered.

The LCO is modified by a Note allowing the CCHE 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 designed openings such as hatches, panels and access ports, 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 when a need for control room isolation is indicated.

The ability to maintain temperature in the Control Complex is addressed in Technical Specification 3.7.18.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CREVS must be OPERABLE to ensure that the CCHE will remain habitable during and following a postulated accident.

ACTIONS

A.1

With one CREVS train inoperable, action must be taken to restore the train to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREVS train is adequate to perform the radiation protection function for control room personnel. However, the overall reliability is reduced because a failure in the OPERABLE CREVS train could result

(continued)

BASES

ACTIONS (continued)

A.1 (continued)

in loss of CREVS function. The 7 day Completion Time is based on the low probability of an accident occurring during this time period, and ability of the remaining train to provide the required capability.

B.1

With the CCHE inoperable, the CREVS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE CCHE boundary within 24 hours. During the time frame that the CCHE 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 radiation, toxic chemicals and smoke. Restoration of the CCHE boundary is not limited to returning the boundary to its previous condition, but can also be accomplished using temporary sealing measures as described in plant procedures and/or work instructions.

Condition B will permit maintenance and modification to the habitability envelope boundary. It also will provide the opportunity to repair the boundary in a time frame consistent with the safety significance. Breaches in the envelope, that are either planned or discovered, may be evaluated in accordance with design basis documents to determine if the CCHE remains OPERABLE. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour completion time is reasonable based on the low probability of a significant release occurring during this time and the use of compensatory measures.

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable CREVS train or CCHE boundary cannot be restored to OPERABLE status, within the associated Completion Time, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1

If both CREVS trains are inoperable the CREVS may not be capable of performing the intended function and the plant is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month adequately checks proper function of this system. Systems such as the CR-3 design without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system. The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required CREVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CREVS filter tests are in accordance with Regulatory Guide 1.52, (Ref. 4) as described in the VFTP Program description (FSAR, Section 9.7.4). The VFTP includes testing HEPA filter performance, charcoal absorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal. Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.12.3

This SR verifies that each CREVS train actuates to place the control complex into the emergency recirculation mode on an actual or simulated actuation signal. The Frequency of 24 months is consistent with the typical fuel cycle length.

SR 3.7.12.4

This SR verifies that CCHE integrity is maintained. The details of the program are contained in the Control Complex Habitability Envelope Program, which is required by Technical Specification 5.6.2.21. Failure to meet individual program requirements does not necessarily make the CCHE inoperable. Each individual failure should be evaluated in accordance with design basis documents to determine if the CCHE can still perform its safety function. If the CCHE can still function as required in the design basis analysis, the system remains OPERABLE.

(continued)

BASES

REFERENCES

1. FSAR, Section 9.7.2.1.g.
2. FPC Calculation N-00-0006.
3. 10 CFR 50, Appendix A, GDC 19.
4. Regulatory Guide 1.52, Rev. 2, 1978.

THIS PAGE INTENTIONALLY LEFT BLANK

BASES

APPLICABLE SAFETY ANALYSIS (continued)	personnel occupancy requirements, to ensure equipment OPERABILITY. The Control Complex Cooling System satisfies Criterion 3 of the NRC Policy Statement.
LCO	Two redundant trains of the Control Complex Cooling System are required to be OPERABLE to ensure that at least one train is available, assuming a single failure disables one redundant component. A Control Complex Cooling train consists of a chiller and associated chilled water pump as well as a duct mounted heat exchanger that provides cooling of recirculated control complex air. All components of an OPERABLE train must be energized by the same train electrical bus. Total system failure could cause control complex equipment to exceed its operating temperature limits. In addition, the Control Complex Cooling System must be OPERABLE to the extent that air circulation can be maintained (See Specification 3.7.12).
APPLICABILITY	In MODES 1, 2, 3, and 4, the Control Complex Cooling System must be OPERABLE to ensure that the control complex temperature will not exceed equipment OPERABILITY requirements.
ACTIONS	<u>A.1</u> The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy and diversity of subsystems, the inoperability of one component in a train does not render the Control Complex Cooling System incapable of performing its safety function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the Control Complex Cooling System. The intent of this Condition is to maintain a combination of equipment such that the cooling capability equivalent to 100% of a single train remains available and in operation. This allows increased flexibility in plant operations under circumstances when components in opposite trains are inoperable.

(continued)

BASES

ACTIONS

A.1 (continued)

With one or more components inoperable such that the cooling capability equivalent to a single OPERABLE train is not available, the facility is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be immediately entered.

With one or more Control Complex Cooling trains inoperable and at least 100% cooling capability of a single OPERABLE train available, the inoperable components must be restored to OPERABLE status within 7 days. In this Condition, the remaining Control Complex Cooling System equipment is adequate to maintain the control complex temperature. Adequate cooling capability exists when the control complex air temperature is maintained within the limits for the contained equipment and components. However, the overall reliability is reduced because additional failures could result in a loss of Control Complex Cooling System function. The 7 day Completion Time is based on the low probability of an event occurring requiring the Control Complex Cooling System and the consideration that the remaining components can provide the required capabilities.

B.1 and B.2

If the inoperable Control Complex Cooling System component cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE in which the LCO does not apply. 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 without challenging unit systems.

(continued)

5.6 Procedures, Programs and Manuals

5.6.2.11 Secondary Water Chemistry Program

This program provides controls for monitoring secondary water chemistry to inhibit steam generator tube degradation and low pressure turbine disc stress corrosion cracking. The program shall include:

a. Identification of a sampling schedule for the critical variables and control points for these variables;

b. Identification of the procedures used to measure the values of the critical variables;

c. Identification of process sampling points, which shall include monitoring the discharge of the condensate pumps for evidence of condenser in leakage;

d. Procedures for the recording and management of data;

e. Procedures defining corrective actions for all off control point chemistry conditions; and

f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

5.6.2.12 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of the Control Room Emergency Ventilation System (CREVS) per the requirements specified in Regulatory Guide 1.52, Revision 2, 1978, and/or as specified herein, and in accordance with ANSI N510-1975 and ASTM D 3803-89 (Re-approved 1995).

a. Demonstrate for each train of the CREVS that an inplace test of the high efficiency particulate air (HEPA) filters shows a penetration < 0.05% when tested in accordance with Regulatory Guide 1.52, Revision 2, 1978, and in accordance with ANSI N510-1975 at the system flowrate of between 37,800 and 47,850 cfm.

b. Demonstrate for each train of the CREVS that an inplace test of the carbon adsorber shows a system bypass < 0.05% when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1975 at the system flowrate of between 37,800 and 47,850 cfm.

c. Demonstrate for each train of the CREVS that a laboratory test of a sample of the carbon adsorber, when obtained as described in Regulatory Guide 1.52, Revision 2, 1978, meets the laboratory testing criteria of ASTM D 3803-89 (Re-approved 1995) at a temperature of 30°C and relative humidity of 95% with methyl iodide penetration of less than 5.0%.

(continued)

5.6 Procedures, Programs and Manuals

5.6.2.12 VFTP (continued)

d. Demonstrate for each train of CREVS that the pressure drop across the combined roughing filters, HEPA filters and the carbon adsorbers is $\leq \Delta P=4"$ water gauge when tested in accordance with Regulatory Guide 1.52, Revision 2, 1978, and ANSI N510-1975 at the system flowrate of between 37,800 and 47,850 cfm.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

5.6.2.13 Explosive Gas and Storage Tank Radioactivity Monitoring Program

This program provides controls for potentially explosive gas mixtures contained in the Radioactive Waste Disposal (WD) System, the quantity of radioactivity contained in gas storage tanks or fed into the offgas treatment system. The gaseous radioactivity quantities shall be determined following the methodology in Branch Technical Position (BTP) ETSB 11-5, "Postulated Radioactive Release due to Waste Gas System Leak or Failure". The liquid radwaste quantities shall be determined in accordance with Standard Review Plan, Section 15.7.3, "Postulated Radioactive Release due to Tank Failures".

The program shall include:

a. The limits for concentrations of hydrogen and oxygen in the Radioactive Waste Disposal (WD) System and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria, (i.e., whether or not the system is designed to withstand a hydrogen explosion).

b. A surveillance program to ensure that the quantity of radioactivity contained in each gas storage tank and fed into the offgas treatment system is less than the amount that would result in a whole body exposure of ≥ 0.5 rem to any individual in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program surveillance frequencies.

(continued)

5.6 Procedures, Programs and Manuals

5.6.2.14 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and stored fuel oil shall be established. The program shall include sampling and testing requirements, and acceptance criteria, in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has the following properties within limits of ASTM D 975 for Grade No. 2-D fuel oil:

    1. Kinematic Viscosity,

    2. Water and Sediment,

    3. Flash Point,

    4. Specific Gravity API;

b. Other properties of ASTM D 975 for Grade No. 2-D fuel oil are within limits within 92 days following sampling and addition of new fuel to storage tanks.

c. Total particulate contamination of stored fuel oil is < 10 mg/L when tested once per 92 days in accordance with ASTM D 2276-91 (gravimetric method).

5.6.2.15 Not Used

(continued)

5.6 Procedures, Programs and Manuals

5.6.2.19 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) (continued)

c. The reactor vessel pressure and temperature limits, including those for heatup and cooldown rates, shall be determined so that all applicable limits (e.g., heatup limits, cooldown limits, and inservice leak and hydrostatic testing limits) of the analysis are met.

d. The PTLR, including revisions or supplements thereto, shall be provided upon issuance for each reactor vessel fluency period.

5.6.2.20 Containment Leakage Rate Testing Program

A program shall be established to implement the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak Test Program," dated September 1995, as modified by the following exception:

1. NEI 94-01-1995, Section 9.2.3: The first Type A test performed after the November 7, 1991 Type A test shall be performed no later than November 6, 2006.

The peak calculated containment internal pressure for the design basis loss of coolant accident, Pa, is 54.2 psig. The containment design pressure is 55 psig.

The maximum allowable primary containment leakage rate, L_a, at P_a, shall be 0.25% of primary containment air weight per day.

Leakage Rate acceptance criteria are:

1. Containment leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq 0.60\ L_a$ for the Type B and Type C Tests and $\leq 0.75\ L_a$ for Type A Tests.

2. Air lock testing acceptance criteria are:

   a. Overall air lock leakage range is $\leq 0.05\ L_a$ when tested at $\geq P_a$.

   b. For each door, leakage rate is $\leq 0.01\ L_a$ when tested at $\geq$ 8.0 psig.

The provisions of SR 3.0.2 do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program.

The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

(continued)

5.6 Procedures, Programs and Manuals

5.6.2.21 Control Complex Habitability Envelope Integrity Program

A program shall be established to maintain the integrity of the control complex habitability envelope to ensure the dose limits of 10 CFR 50 Appendix A General Design Criteria 19 are not exceeded. The program shall establish acceptable leakage limits, ensure maintenance activities are monitored and provide a preventive maintenance program for the control complex habitability envelope.

The Control Complex Habitability Envelope Integrity Program shall ensure that:

1. Breaches in the habitability envelope are managed to ensure that in-leakage remains below design basis analysis limits.
2. The preventive maintenance program includes doors, wall/roof/floor penetrations, dampers and floor drains that are part of the control complex habitability envelope.
3. Periodic evaluations of the systems, components and key analysis assumptions are performed.
4. Configuration control of the CCHE is maintained.