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TECHNICAL SPECIFICATIONS

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RECORD RETENTION: 698650

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MEMO DATED 5/3/2012	NA	--- 05/03/12	MADM-04B	V1	V1	V1	V1	T1	V1	V1	V2	V1	V1	V1	V1	V1	V1	V1	33
TSB LIST OF EFFECTIVE SECTIONS	NA	111 05/03/12																	
TSB 3.6.10	NA	120 05/03/12																	
TBS 3.7.9	NA	120 05/03/12																	

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R T REPKO
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MCGUIRE NUCLEAR STATION

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MEMO DATED 5/3/2012	NA	--- 05/03/12	MADM-04B	V1	V1	V1	V1	V1	X	V1	V1	V3	V1	V1	V1	V1	V1	V1	33
TSB LIST OF EFFECTIVE SECTIONS	NA	111 05/03/12																	
TSB 3.6.10	NA	120 05/03/12																	
TBS 3.7.9	NA	120 05/03/12																	

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VICE PRESIDENT
MCGUIRE NUCLEAR STATION

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R T REPKO
VICE PRESIDENT
MCGUIRE NUCLEAR STATION

BY:

B C BEAVER MG01RC BCB/TLC

May 3, 2012

MEMORANDUM

To: All McGuire Nuclear Station Technical Specification (TS) and Tech Spec Bases (TSB) Manual Holders

Subject: McGuire TSB Updates

REMOVE	INSERT
<u>TS Bases Manual</u>	
TSB LOES	TSB LOES (Revision 111)
TSB 3.6.10 (Entire Section)	TSB 3.6.10 (Entire Section) Rev 120
TSB 3.7.9 (Entire Section)	TSB 3.7.9 (Entire Section) Rev 120

Revision numbers may skip numbers due to Regulatory Compliance Filing System.

Please call me if you have questions.

Bonnie Beaver

Bonnie Beaver
Regulatory Compliance
875-4180

McGuire Nuclear Station Technical Specification Bases
LOES
TS Bases are revised by section

Page Number	Revision	Revision Date
	BASES	
	(Revised per section)	
i	Revision 87	8/15/07
ii	Revision 87	8/15/07
iii	Revision 87	8/15/07
B 2.1.1	Revision 51	01/14/04
B 2.1.2	Revision 109	9/20/10
B 3.0	Revision 81	3/29/07
B 3.1.1	Revision 115	3/29/11
B 3.1.2	Revision 115	3/29/11
B 3.1.3	Revision 10	9/22/00
B 3.1.4	Revision 115	3/29/11
B 3.1.5	Revision 115	3/29/11
B 3.1.6	Revision 115	3/29/11
B 3.1.7	Revision 58	06/23/04
B 3.1.8	Revision 115	3/29/11
B 3.2.1	Revision 115	3/29/11
B 3.2.2	Revision 115	3/29/11
B 3.2.3	Revision 115	3/29/11
B 3.2.4	Revision 115	3/29/11
B 3.3.1	Revision 119	11/9/11
B 3.3.2 (Unit 1)	Revision 119	11/9/11
B 3.3.2 (Unit 2)	Revision 119	11/9/11
B 3.3.3 (Unit 1)	Revision 117	9/12/11
B 3.3.3 (Unit 2)	Revision 115	3/29/11
B 3.3.4	Revision 115	3/29/11
B 3.3.5	Revision 115	3/29/11
B 3.3.6	Not Used - Revision 87	6/29/06
B 3.4.1	Revision 115	3/29/11
B 3.4.2	Revision 0	9/30/98
B 3.4.3	Revision 115	3/29/11

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B 3.4.4	Revision 115	3/29/11
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B 3.4.7	Revision 115	3/29/11
B 3.4.8	Revision 115	3/29/11
B 3.4.9	Revision 115	3/29/11
B 3.4.10	Revision 102	8/17/09
B 3.4.11	Revision 115	3/29/11
B 3.4.12	Revision 115	3/29/11
B 3.4.13	Revision 115	3/29/11
B 3.4.14	Revision 115	3/29/11
B 3.4.15	Revision 115	3/29/11
B 3.4.16	Revision 115	3/29/11
B 3.4.17	Revision 115	3/29/11
B 3.4.18	Revision 86	6/25/07
B 3.5.1	Revision 115	3/29/11
B 3.5.2	Revision 116	8/18/11
B 3.5.3	Revision 57	4/29/04
B 3.5.4 (Unit 1)	Revision 117	9/12/11
B 3.5.4 (Unit 2)	Revision 115	3/29/11
B 3.5.5	Revision 115	3/29/11
B 3.6.1	Revision 53	2/17/04
B 3.6.2	Revision 115	3/29/11
B 3.6.3	Revision 115	3/29/11
B 3.6.4	Revision 115	3/29/11
B 3.6.5	Revision 115	3/29/11
B 3.6.6 (Unit 1)	Revision 117	9/12/11
B 3.6.6 (Unit 2)	Revision 115	3/29/11
B 3.6.7	Not Used - Revision 63	4/4/05
B 3.6.8	Revision 115	3/29/11
B 3.6.9	Revision 115	3/29/11
B 3.6.10	Revision 120	4/26/12
B 3.6.11 (Unit 1)	Revision 117	9/12/11
B 3.6.11 (Unit 2)	Revision 115	3/29/11

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B 3.6.12	Revision 115	3/29/11
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B 3.6.15	Revision 115	3/29/11
B 3.6.16	Revision 115	3/29/11
B 3.7.1	Revision 102	8/17/09
B 3.7.2	Revision 105	2/22/10
B 3.7.3	Revision 102	8/17/09
B 3.7.4	Revision 115	3/29/11
B 3.7.5	Revision 115	3/29/11
B 3.7.6	Revision 115	3/29/11
B 3.7.7	Revision 115	3/29/11
B 3.7.8	Revision 115	3/29/11
B 3.7.9	Revision 120	4/26/12
B 3.7.10	Revision 115	3/29/11
B 3.7.11	Revision 115	3/29/11
B 3.7.12	Revision 115	3/29/11
B 3.7.13	Revision 115	3/29/11
B 3.7.14	Revision 115	3/29/11
B 3.7.15	Revision 66	6/30/05
B 3.7.16	Revision 115	3/29/11
B 3.8.1	Revision 115	3/29/11
B 3.8.2	Revision 92	1/28/08
B 3.8.3	Revision 115	3/29/11
B 3.8.4	Revision 115	3/29/11
B 3.8.5	Revision 41	7/29/03
B 3.8.6	Revision 115	3/29/11
B 3.8.7	Revision 115	3/29/11
B 3.8.8	Revision 115	3/29/11
B 3.8.9	Revision 115	3/29/11
B 3.8.10	Revision 115	3/29/11
B 3.9.1	Revision 115	3/29/11
B 3.9.2	Revision 115	3/29/11
B 3.9.3	Revision 115	3/29/11

Page Number	Amendment	Revision Date
B 3.9.4	Revision 115	3/29/11
B 3.9.5	Revision 115	3/29/11
B 3.9.6	Revision 115	3/29/11
B 3.9.7	Revision 115	3/29/11

B 3.6 CONTAINMENT SYSTEMS

B 3.6.10 Annulus Ventilation System (AVS)

BASES

BACKGROUND

The AVS is required by 10 CFR 50, Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 1), to ensure that radioactive materials that leak from the primary containment into the reactor building (secondary containment) following a Design Basis Accident (DBA) are filtered and adsorbed prior to exhausting to the environment.

The containment has a secondary containment called the reactor building, which is a concrete structure that surrounds the steel primary containment vessel. Between the containment vessel and the reactor building inner wall is an annulus that collects any containment leakage that may occur following a loss of coolant accident (LOCA) or rod ejection accident. This space also allows for periodic inspection of the outer surface of the steel containment vessel.

The AVS establishes a negative pressure in the annulus between the reactor building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. Reactor building OPERABILITY is required to ensure retention of primary containment leakage and proper operation of the AVS.

The AVS consists of two separate and redundant trains. Each train includes a heater, mechanical demister, a prefilter/ moisture separator, upstream and downstream high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The heaters and mechanical demisters function to reduce the moisture content of the airstream to less than 70% relative humidity. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank. Only the upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates and maintains a negative air pressure in the reactor building annulus by means of filtered exhaust ventilation of the reactor building annulus following receipt of a Phase B isolation signal. The system is described in Reference 2.

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters are included

BACKGROUND (continued)

to reduce the relative humidity of the airstream. Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their HEPA filters and adsorbers. The mechanical demisters cool the air to keep the charcoal beds from becoming too hot due to absorption of fission product.

The AVS reduces the radioactive content in the annulus atmosphere following a DBA. Loss of the AVS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE SAFETY ANALYSES

The AVS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) assumes that only one train of the AVS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the remaining one train of this filtration system. The amount of fission products available for release from containment is determined for a LOCA.

The modeled AVS actuation in the safety analyses is based upon a worst case response time following a Phase B isolation signal initiated at the limiting setpoint. The total response time, from exceeding the signal setpoint to attaining the negative pressure of 0.5 inch water gauge in the reactor building annulus, is 22 seconds. The pressure then goes to -3.5 inches water within 48 seconds after the start signal is initiated. At this point the system switches into its recirculation mode of operation and pressure may increase to -0.5 inches water within 278 seconds but will not go above -0.5 inches water. This response time is composed of signal delay, diesel generator startup and sequencing time, system startup time, and time for the system to attain the required pressure after starting.

The AVS satisfies Criterion 3 of 10 CFR 50.36 (Ref. 4).

LCO

In the event of a DBA, one AVS train is required to provide the minimum particulate iodine removal assumed in the safety analysis. Two trains of the AVS must be OPERABLE to ensure that at least one train will operate, assuming that the other train is disabled by a single active failure.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could lead to fission product release to containment that leaks to the reactor building. The large break LOCA, on which this system's design is based, is a full power event. Less severe LOCAs and leakage still require the system to be OPERABLE throughout these MODES. The probability and severity of a LOCA decrease as core power and Reactor Coolant System pressure decrease. With the reactor shut down, the probability of release of radioactivity resulting from such an accident is low.

In MODES 5 and 6, the probability and consequences of a DBA are low due to the pressure and temperature limitations in these MODES. Under these conditions, the AVS is not required to be OPERABLE.

ACTIONS

A.1

With one AVS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant AVS train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

B.1 and B.2

With one or more AVS heaters inoperable, the heater must be restored to OPERABLE status within 7 days. Alternatively, a report must be initiated within 7 days in accordance with Specification 5.6.6, which details the reason for the heater's inoperability and the corrective action required to return the heater to OPERABLE status.

The heaters do not affect OPERABILITY of the AVS filter train because charcoal adsorber efficiency testing is performed at 30°C and 95% relative humidity. The accident analysis shows that site boundary radiation doses are within 10 CFR 50.67 (Ref. 6) limits during a DBA LOCA under these conditions.

C.1 and C.2

If the AVS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within

ACTIONS (continued)

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.

SURVEILLANCE REQUIREMENTS

SR 3.6.10.1

Operating each AVS train from the control room with flow through the HEPA filters and activated carbon adsorbers ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing at operating units indicates that the 10 hour period is adequate for moisture elimination on the adsorbers and HEPA filters.

Inoperable heaters are addressed by Required Actions B.1 and B.2. The inoperability of heaters between required performances of this surveillance does not affect OPERABILITY of each AVS train. Operability of the heaters is demonstrated by the heater power dissipation test per SR 3.6.10.2.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.6.10.2

This SR verifies that the required AVS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The AVS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 5) with exceptions as noted in the UFSAR. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, heater power dissipation, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.10.3

The automatic startup on a Containment Phase B Isolation signal ensures that each AVS train responds properly. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.10.4

The AVS filter cooling electric motor-operated bypass valves are tested to verify OPERABILITY. The valves are normally closed and may need to be opened to initiate miniflow cooling through a filter unit that has been shutdown following a DBA LOCA. Miniflow cooling may be necessary to limit temperature increase in the idle filter train due to decay heat from captured fission products. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.6.10.5

The proper functioning of the fans, dampers, filters, adsorbers, etc., as a system is verified by the ability of each train to produce the required system flow rate. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41.
2. UFSAR, Section 6.2.
3. UFSAR, Chapter 15.
4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).
5. Regulatory Guide 1.52, Revision 2.
6. 10 CFR 50.67, "Accident Source Term."

B 3.7 PLANT SYSTEMS

B 3.7.9 Control Room Area Ventilation System (CRAVS)

BASES

BACKGROUND

The CRAVS provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity, hazardous chemicals, or smoke.

The CRAVS consists of two independent, redundant trains that draw in filtered outside air and mix this air with conditioned air recirculating through the Control Room Envelope (CRE). Each outside air pressure filter train consists of a prefilter, a high efficiency particulate air (HEPA) filter, an activated charcoal absorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system, as well as prefilters to remove water droplets from the air stream. A second bank of HEPA filters follows the absorber section to collect carbon fines and provides backup in case of failure of the main HEPA filter bank.

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. 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 unfltered 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 CRAVS is an emergency system. During normal operation the CRE is provided with 100% recirculated air and the outside air pressure filter train is in the standby mode. Upon receipt of the actuating signal(s), the CRE is provided with fresh air through outside air intakes and is circulated through the system filter trains. The prefilters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers. Continuous operation of each train for at least 10 hours per month, with the heaters on, reduces moisture buildup on the HEPA filters and adsorbers. The heater is important to the effectiveness of the charcoal adsorbers.

BASES

BACKGROUND (continued)

Actuation of the CRAVS places the system in the emergency mode of operation, depending on the initiation signal. The emergency radiation state initiates pressurization and filtered ventilation of the air supply to the CRE. Pressurization of the CRE minimizes infiltration of unfiltered air from the surrounding areas adjacent to the CRE boundary.

The air entering the outside air intakes is continuously monitored by radiation detectors. The detector output above the setpoint will alarm in the Control Room.

A single CRAVS train can adequately pressurize the CRE relative to atmospheric pressure. The CRAVS operation in maintaining the CRE habitable is discussed in the UFSAR, Section 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 outside air intake isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation. The CRAVS is designed in accordance with Seismic Category I requirements.

The CRAVS is designed to maintain a habitable environment in the CRE for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 rem Total Effective Dose Equivalent (TEDE).

There are components that have nomenclature associated with the CRAVS but do not perform any function that impacts the control room. These components include the Control Room Area Air Handling units, the Switchgear Air Handling units, the Battery Room Exhaust Fans and the associated ductwork, dampers, and instrumentation. These components share the CRACWS with the CRAVS but are not governed by LCO 3.7.9.

APPLICABLE SAFETY ANALYSES

The CRAVS components are arranged in redundant, safety related ventilation trains. The CRAVS provides airborne radiological protection for the CRE occupants, as demonstrated by the CRE occupant dose analyses for the most limiting design basis accident - fission product release presented in the UFSAR, Chapter 15 (Ref. 2).

The CRAVS 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. 1). The evaluation of a

BASES

APPLICABLE SAFETY ANALYSES (continued)

smoke challenge 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 safe shutdown facility (Ref. 3).

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

The CRAVS satisfies Criterion 3 of 10 CFR 50.36.

LCO

Two independent and redundant CRAVS trains are required to be OPERABLE to ensure that at least one is available 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 CRE occupants in the event of a large radioactive release.

Each CRAVS train is considered OPERABLE when the individual components necessary to limit CRE occupant exposure are OPERABLE. A CRAVS train is OPERABLE when the associated:

a. An Outside Air Pressure Filter Train fan and a Control Room Air Handling unit are 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 order for the CRAVS 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 CRAVS is shared between the two units. The system must be OPERABLE for each unit when that unit is in the MODE of Applicability. Additionally, both normal and emergency power must also be OPERABLE because the system is shared. If a CRAVS component becomes inoperable, or normal or emergency power to a CRAVS component becomes inoperable, then the Required Actions of this LCO

BASES

LOC (continued)

must be entered independently for each unit that is in the MODE of applicability of the LCO.

The LCO is modified by a Note allowing the CRE 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, 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 CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, 4, 5, and 6, and during movement of irradiated fuel assemblies and during CORE ALTERATIONS, the CRAVS must be OPERABLE to ensure that the CRE will remain habitable during and following a DBA.

During movement of irradiated fuel assemblies and CORE ALTERATIONS, the CRAVS must be OPERABLE to cope with the release from a fuel handling accident.

ACTIONS

A.1

When one CRAVS 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 CRAVS train is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE CRAVS train could result in loss of CRAVS 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.

BASES

ACTIONS (Continued)

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 exposure will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and the 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.

C.1 and C.2

In MODE 1, 2, 3, or 4, if the inoperable CRAVS train or 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.

BASES

ACTIONS (Continued)

D.1, D.2.1, and D.2.2

In MODE 5 or 6, or during movement of irradiated fuel assemblies, or during CORE ALTERATIONS, if the inoperable CRAVS train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE CRAVS train in the emergency mode. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure would be readily detected. An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the 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 and E.2

In MODE 5 or 6, or during movement of irradiated fuel assemblies, or during CORE ALTERATIONS, with two CRAVS trains inoperable or with one or more CRAVS 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 the 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.

F.1

If both CRAVS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable CRE boundary (i.e., Condition B), the CRAVS 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.

G.1 and G.2

Action G.1 allows one or more CRAVS heater inoperable, with the heater restored to OPERABLE status within 7 days. Alternatively, Action G.2 requires if the heater is not returned to OPERABLE within the 7 days, a report to be initiated per Specification 5.6.6, which details the reason for the heater's inoperability and the corrective action required to return the heater to OPERABLE status.

The heaters do not affect OPERABILITY of the CRAVS filter train because charcoal absorber efficiency testing is performed at 30°C and 90 % relative humidity. The accident analysis shows that control room

BASES

ACTIONS (Continued)

radiation doses are within 10 CFR 50.67 (Ref. 8) limits during a DBA LOCA under these conditions.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

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. Monthly heater operations dry out any moisture accumulated in the charcoal from humidity in the ambient air. Systems with heaters must be operated from the control room for ≥ 10 continuous hours with the heaters energized and flow through the HEPA filters and charcoal adsorbers.

Inoperable heaters are addressed by Required Actions G.1 and G.2. The inoperability of heaters between required performances of this surveillance does not affect OPERABILITY of each CRAVS train. Operability of the heaters is demonstrated by the heater power dissipation test per SR 3.7.9.2.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.7.9.2

This SR verifies that the required CRAVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CRAVS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, heater power dissipation, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.9.3

This SR verifies that each CRAVS train starts and operates with flow through the HEPA filters and charcoal adsorbers on an actual or simulated actuation signal. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.7.9.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE.

BASES

The SURVEILLANCE REQUIREMENTS (continued)

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 that 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 Acton 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. 5) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 6). 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. 7). 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. UFSAR, Section 6.4.
2. UFSAR, Chapter 15.
3. UFSAR, Section 9.5.
4. Regulatory Guide 1.52, Rev. 2.
5. Regulatory Guide 1.196, Rev. 1.
6. NEI 99-03, June 2001, “Control Room Habitability Assessment Guidance”.
7. Letter from Eric Leeds (NRC) to James Davis (NEI) dated January 30, 2004, “NEI Draft White Paper, Use of GL 91-18 Process and Alternate Source Terms in the Context of Control Room Habitability.”
8. 10 CFR 50.67, "Accident Source Term."