

Docket No. 50-423
B15196

Attachment 1

Millstone Nuclear Power Station, Unit No. 3

Proposed Revision to Technical Specifications
Ultimate Heat Sink
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April 1995

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PLANT SYSTEMS

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3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

(UHS)

3.7.5 The ultimate heat sink shall be OPERABLE with an average water temperature of less than or equal to 75°F. ~~at the Unit 3 intake structure~~

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

ACTION:

~~With the requirement of the above specification not satisfied, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

INSERT A

SURVEILLANCE REQUIREMENTS

UHS

4.7.5 The ~~ultimate heat sink~~ shall be determined OPERABLE:

- a. At least once per 24 hours by verifying the average water temperature ~~at the Unit 3 intake structure~~ to be within limits.
- b. At least once per 6 hours by verifying the average water temperature ~~at the Unit 3 intake structure~~ to be within limits when the average water temperature exceeds 70°F.

Insert A

If the UHS temperature is above 75°F, monitor the UHS temperature for 12 hours. If the UHS temperature does not drop below 75°F during this period, place the plant in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. During this period, if the UHS temperature increases above 77°F, place the plant in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. once per hour

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BASES3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to: (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure-induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.

3/4.7.3 REACTOR PLANT COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the Reactor Plant Component Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.4 SERVICE WATER SYSTEM

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

3/4.7.5 ULTIMATE HEAT SINK

~~The limitation on the ultimate heat sink temperature ensures that cooling water at less than the design temperature limit is available to either: (1) provide normal cooldown of the facility or (2) mitigate the effects of accident conditions within acceptable limits.~~

INSERT B

PLANT SYSTEMS

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BASESULTIMATE HEAT SINK (Continued)

~~The limitation on maximum temperature is based on providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," March 1974.~~

3/4.7.6 FLOOD PROTECTION

The limitation on flood protection ensures that the service water pump cubicle watertight doors will be closed before the water level reaches the critical elevation of 14.5 feet Mean Sea Level. Elevation 14.5 feet MSL is the level at which external flood waters could enter the service water pump cubicle.

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the Control Room Emergency Ventilation System ensures that: (1) the ambient air temperature does not exceed the allowable temperature for continuous-duty rating for the equipment and instrumentation cooled by this system, and (2) the control room will remain habitable for operations personnel during and following all credible accident conditions. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rems or less whole body, or its equivalent for the duration of the accident. This limitation is consistent with the requirements of General Design Criterion 19 of Appendix A, 10 CFR Part 50. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

3/4.7.8 CONTROL ROOM ENVELOPE PRESSURIZATION SYSTEM

The OPERABILITY of the two independent Control Room Envelope Pressurization Systems ensures that: (1) breathable air is supplied to the control room, instrumentation rack room, and computer room, and (2) a positive pressure is maintained within the control room envelope during control building isolation. Each system will provide air to the control room for 1 hour following an initiation of a control building isolation signal at which time, the Control Room Emergency Ventilation System would be started.

3/4.7.9 AUXILIARY BUILDING FILTER SYSTEM

The OPERABILITY of the Auxiliary Building Filter System ensures that radioactive materials leaking from the equipment within the charging pump,

INSERT B

Background

The ultimate heat sink (UHS) for Millstone Unit No. 3 is Long Island Sound. It serves as a heat sink for both safety and nonsafety-related cooling systems. Sensible heat is discharged to the UHS via the service water and circulating water systems.

Limiting Condition for Operation

The UHS is required to be OPERABLE and is considered OPERABLE if the average water temperature is less than or equal to 75°F. The limitation on the UHS temperature ensures that cooling water at less than the design temperature (75°F) is available to either (1) provide normal cooldown of the facility or (2) mitigate the effects of accident conditions within acceptable limits. It is based on providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," March 1974.

The UHS temperature is measured at the six circulating water system inlet waterboxes. The plant process computer samples the operating waterbox temperature measurements, excludes the highest and lowest measurements, and averages the remaining temperatures. An evaluation has determined that measuring at this location is representative of the UHS temperature. The only exception to this would be when a condenser thermal backwashing evolution is being conducted. During this evolution, there is a potential for significant intake structure temperature stratification. Therefore, during condenser thermal backwashing evolutions, the UHS temperature should be monitored by temperature instruments in the service water system to assure OPERABILITY of the UHS.

Applicability

In MODES 1, 2, 3, AND 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

Action Statement

When the UHS temperature is above 75°F, the Action Statement for the LCO requires that the UHS temperature be monitored for 12 hours, and the plant be placed in at least HOT STANDBY within the next six hours and in COLD SHUTDOWN within the following 30 hours in the event the UHS temperature does not drop below 5°F during the 12-hour monitoring period.

The 12-hour interval is based on operating experience related to trending of the parameter variations during the applicable modes. During this period, the UHS temperature will be monitored on an increased frequency. If the trend shows improvement, and if the trend of the UHS temperature gives reasonable expectations that the temperature will decrease below 75°F during the 12 hour monitoring period, the UHS temperature will be continued to be monitored

during the remaining portion of the 12-hour period. However, if it becomes apparent that the UHS temperature will remain above 75°F throughout the 12-hour monitoring period, conservative action regarding compliance with the Action Statement should be taken.

An evaluation was conducted to qualify the risk significance of various Chapter 15 initiating events and earthquakes during periods of elevated UHS temperature. It concluded that a seismic event was not credible for the time periods with elevated UHS temperature. Additionally, the risk significance of a Condition IV accident occurring during a period of elevated UHS temperature is considered to be negligibly small when compared to the risk significance of Chapter 15 events that are more likely to occur.

With respect to the service water loads, the limiting Condition II and III Chapter 15 event initiators are those that add additional heat loads to the service water system. A loss of offsite power event is limiting because of the added loads due to the diesel generator and the residual heat removal heat exchanger. A steam generator tube rupture event is limiting because of the addition of the safety injection and diesel generator loads without isolation of the turbine plant component cooling water loads (no loss of offsite power or containment depressurization actuation signal). Both of these scenarios have been evaluated with the additional consideration of a single failure. The evaluation investigated whether or not these events could be resolved with an elevated UHS temperature. It was determined that Millstone Unit No. 3 could recover from these events, even with an elevated temperature of 77°F.

This evaluation provides the basis for the action statement requirement to place the plant in HOT STANDBY with six hours and in COLD SHUTDOWN within the next 30 hours, if the UHS temperature goes above 77°F during the 12-hour monitoring period.

Surveillance Requirements

For the surveillance requirements, the UHS temperature is measured at the locations described in the LCO write-up provided in this section.

Surveillance Requirement 4.7.5.a verifies that the UHS is capable of providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature. The 24-hour frequency is based on operating experience related to trending of the parameter variations during the applicable modes. This surveillance requirement verifies that the average water temperature of the UHS is less than or equal to 75°F.

Surveillance Requirement 4.7.5.b requires that the UHS temperature be monitored on an increased frequency whenever the UHS temperature is greater than 70°F during the applicable modes. The intent of this Surveillance Requirement is to increase the awareness of plant personnel regarding UHS temperature trends above 70°F. The frequency is based on operating experience related to trending of the parameter variations during the applicable modes.

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Attachment 2

Millstone Nuclear Power Station, Unit No. 3
Proposed Revision to Technical Specifications
Ultimate Heat Sink
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3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.5 The ultimate heat sink (UHS) shall be OPERABLE with an average water temperature of less than or equal to 75°F.

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

ACTION:

If the UHS temperature is above 75°F, monitor the UHS temperature once per hour for 12 hours. If the UHS temperature does not drop below 75°F during this period, place the plant in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. During this period, if the UHS temperature increases above 77°F, place the plant in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.5 The UHS shall be determined OPERABLE:

- a. At least once per 24 hours by verifying the average water temperature to be within limits.
- b. At least once per 6 hours by verifying the average water temperature to be within limits when the average water temperature exceeds 70°F.

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3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to: (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure-induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.

3/4.7.3 REACTOR PLANT COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the Reactor Plant Component Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.4 SERVICE WATER SYSTEM

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

3/4.7.5 ULTIMATE HEAT SINK

Background

The ultimate heat sink (UHS) for Millstone Unit No. 3 is Long Island Sound. It serves as a heat sink for both safety and nonsafety-related cooling systems. Sensible heat is discharged to the UHS via the service water and circulating water systems.

Limiting Condition for Operation

The UHS is required to be OPERABLE and is considered OPERABLE if the average water temperature is less than or equal to 75°F. The limitation on the UHS temperature ensures that cooling water is less than the design temperature (75°F)

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Limiting Condition for Operation (Continued)

is available to either (1) provide normal cooldown of the facility or (2) mitigate the effects of accident conditions within acceptable limits. It is based on providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature and is consistent with the recommendations of Regulatory Guide 1.27, "Ultimate Heat Sink for Nuclear Plants," March 1974.

The UHS temperature is measured at the six circulating water system inlet waterboxes. The plant process computer samples the operating waterbox temperature measurements, excludes the highest and lowest measurements, and averages the remaining temperatures. An evaluation has determined that measuring at this location is representative of the UHS temperature. The only exception to this would be when a condenser thermal backwashing evolution is being conducted. During this evolution, there is a potential for significant intake structure temperature stratification. Therefore, during condenser thermal backwashing evolutions, the UHS temperature should be monitored by temperature instruments in the service water system to assure OPERABILITY of the UHS.

Applicability

In MODES 1, 2, 3, AND 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

Action Statement

When the UHS temperature is above 75°F, the Action Statement for the LCO requires that the UHS temperature be monitored for 12 hours, and the plant be placed in at least HOT STANDBY within the next six hours and in COLD SHUTDOWN within the following 30 hours in the event the UHS temperature does not drop below 75°F during the 12-hour monitoring period.

The 12-hour interval is based on operating experience related to trending of the parameter variations during the applicable modes. During this period, the UHS temperature will be monitored on an increased frequency. If the trend shows improvement, and if the trend of the UHS temperature gives reasonable expectations that the temperature will decrease below 75°F during the 12 hour monitoring period, the UHS temperature will be continued to be monitored during the remaining portion of the 12-hour period. However, if it becomes apparent that the UHS temperature will remain above 75°F throughout the 12-hour monitoring period, conservative action regarding compliance with the Action Statement should be taken.

An evaluation was conducted to qualify the risk significance of various Chapter 15 initiating events and earthquakes during periods of elevated UHS temperature. It concluded that a seismic event was not credible for the time periods with elevated UHS temperature. Additionally, the risk significance of a Condition IV accident occurring during a period of elevated UHS temperature is considered to be negligibly small when compared to the risk significance of Chapter 15 events that are more likely to occur.

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Action Statement (Continued)

With respect to the service water loads, the limiting Condition II and III Chapter 15 event initiators are those that add additional heat loads to the service water system. A loss of offsite power event is limiting because of the added loads due to the diesel generator and the residual heat removal heat exchanger. A steam generator tube rupture event is limiting because of the addition of the safety injection and diesel generator loads without isolation of the turbine plant component cooling water loads (no loss of offsite power or containment depressurization actuation signal). Both of these scenarios have been evaluated with the additional consideration of a single failure. The evaluation investigated whether or not these events could be resolved with an elevated UHS temperature. It was determined that Millstone Unit No. 3 could recover from these events, even with an elevated temperature of 77°F.

This evaluation provides the basis for the action statement requirement to place the plant in HOT STANDBY with six hours and in COLD SHUTDOWN within the next 30 hours, if the UHS temperature goes above 77°F during the 12-hour monitoring period.

Surveillance Requirements

For the surveillance requirements, the UHS temperature is measured at the locations described in the LCO write-up provided in this section.

Surveillance Requirement 4.7.5.a verifies that the UHS is capable of providing a 30-day cooling water supply to safety-related equipment without exceeding its design basis temperature. The 24-hour frequency is based on operating experience related to trending of the parameter variations during the applicable modes. This surveillance requirement verifies that the average water temperature of the UHS is less than or equal to 75°F.

Surveillance Requirement 4.7.5.b requires that the UHS temperature be monitored on an increased frequency whenever the UHS temperature is greater than 70°F during the applicable modes. The intent of this Surveillance Requirement is to increase the awareness of plant personnel regarding UHS temperature trends above 70°F. The frequency is based on operating experience related to trending of the parameter variations during the applicable modes.

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3/4.7.6 FLOOD PROTECTION

The limitation on flood protection ensures that the service water pump cubicle watertight doors will be closed before the water level reaches the critical elevation of 14.5 feet Mean Sea Level. Elevation 14.5 feet MSL is the level at which external flood waters could enter the service water pump cubicle.

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

The OPERABILITY of the Control Room Emergency Ventilation System ensures that: (1) the ambient air temperature does not exceed the allowable temperature for continuous-duty rating for the equipment and instrumentation cooled by this system, and (2) the control room will remain habitable for operations personnel during and following all credible accident conditions. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system in conjunction with control room design provisions is based on limiting the radiation exposure to personnel occupying the control room to 5 rems or less whole body, or its equivalent for the duration of the accident. This limitation is consistent with the requirements of General Design Criterion 19 of Appendix A, 10 CFR Part 50. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

3/4.7.8 CONTROL ROOM ENVELOPE PRESSURIZATION SYSTEM

The OPERABILITY of the two independent Control Room Envelope Pressurization Systems ensures that: (1) breathable air is supplied to the control room, instrumentation rack room, and computer room, and (2) a positive pressure is maintained within the control room envelope during control building isolation. Each system will provide air to the control room for 1 hour following an initiation of a control building isolation signal at which time, the Control Room Emergency Ventilation System would be started.

3/4.7.9 AUXILIARY BUILDING FILTER SYSTEM

The OPERABILITY of the Auxiliary Building Filter System ensures that radioactive materials leaking from the equipment within the charging pump,

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3/4.7.9 AUXILIARY BUILDING FILTER SYSTEM (Continued)

component cooling water pump and heat exchanger areas following a LOCA are filtered prior to reaching the environment. The charging pump/reactor plant component cooling water pump ventilation system must be operational to ensure operability of the auxiliary building filter system and the supplementary leak collection and release system. Operation of the system with the heaters operating for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

3/4.7.10 SNUBBERS

All snubbers are required OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety-related systems is maintained during and following a seismic or other event initiating dynamic loads. For the purpose of declaring the affected system OPERABLE with the inoperable snubber(s), an engineering evaluation may be performed, in accordance with Section 50.59 of 10 CFR Part 50.

Snubbers are classified and grouped by design and manufacturer but not by size. Snubbers of the same manufacturer but having different internal mechanisms are classified as different types. For example, mechanical snubbers utilizing the same design features of the 2-kip, 10-kip and 100-kip capacity manufactured by Company "A" are of the same type. The same design mechanical snubbers manufactured by Company "B" for the purposes of this Technical Specification would be of a different type, as would hydraulic snubbers from either manufacturer.

A list of individual snubbers with detailed information of snubber location and size and of system affected shall be available at the plant in accordance with Section 50.71(c) of 10 CFR Part 50. The accessibility of each snubber shall be determined and approved by the Plant Operations Review Committee. The determination shall be based upon the existing radiation levels and the expected time to perform a visual inspection in each snubber location as well as other factors associated with accessibility during plant operations (e.g., temperature, atmosphere, location, etc.), and the recommendations of Regulatory Guides 8.8 and 8.10. The addition or deletion of any hydraulic or mechanical snubber shall be made in accordance with Section 50.59 of 10 CFR Part 50.

The visual inspection frequency is based upon maintaining a constant level of snubber protection to each safety-related system during an earthquake or severe transient. Therefore, the required inspection interval varies inversely with the observed snubber failures on a given system and is determined by the number of inoperable snubbers found during an inspection of each system. In order to establish the inspection frequency for each type of snubber on a

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3/4.7.10 SNUBBERS (Continued)

safety-related system, it was assumed that the frequency of snubber failures and initiating events is constant with time and that the failure of any snubber on that system could cause the system to be unprotected and to result in failure during an assumed initiating event. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

The acceptance criteria are to be used in the visual inspection to determine OPERABILITY of the snubbers. For example, if a fluid port of a hydraulic snubber is found to be uncovered, the snubber shall be declared inoperable and shall not be determined OPERABLE via functional testing.

To provide assurance of snubber functional reliability, one of three functional testing methods is used with the stated acceptance criteria:

1. Functionally test 10% of a type of snubber with an additional 5% tested for each functional testing failure, or
2. Functionally test a sample size and determine sample acceptance or rejection using Figure 4.7-1, or
3. Functionally test a representative sample size and determine sample acceptance or rejection using the stated equation.

Figure 4.7-1 was developed using "Wald's Sequential Probability Ratio Plan" as described in "Quality Control and Industrial Statistics" by Acheson J. Duncan.

Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubbers for the applicable design conditions at either the completion of their fabrication or at a subsequent date. Snubbers so exempted shall be listed in the list of individual snubbers indicating the extent of the exemptions.

The service life of a snubber is established via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubbers, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life.

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3/4.7.11 SEALED SOURCE CONTAMINATION

The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(a)(3) limits for plutonium. This limitation will ensure that leakage from Byproduct, Source, and Special Nuclear Material sources will not exceed allowable intake values.

Sealed sources are classified into three groups according to their use, with Surveillance Requirements commensurate with the probability of damage to a source in that group. Those sources which are frequently handled are required to be tested more often than those which are not. Sealed sources which are continuously enclosed within a shielded mechanism (i.e., sealed sources within radiation monitoring or boron measuring devices) are considered to be stored and need not be tested unless they are removed from the shielded mechanism.

3/4.7.14 AREA TEMPERATURE MONITORING

The area temperature limitations ensure that safety-related equipment will not be subjected to temperatures in excess of their environmental qualification temperatures. Exposure to excessive temperatures may degrade equipment and can cause a loss of its OPERABILITY. The temperature limits include an allowance for instrument error of $\pm 2.2^{\circ}\text{F}$.