ATTACHMENT 1

VOLUME 11

KEWAUNEE POWER STATION IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.6 CONTAINMENT SYSTEMS

Revision 0

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.6.1, CONTAINMENT

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.6.1

3.6 CONTAINMENT SYSTEM

~~**APPLICABILITY**~~

~~Applies to the integrity of the Containment System.~~

~~**OBJECTIVE**~~

~~To define the operating status of the Containment System.~~

SPECIFICATION

shall be OPERABLE

A02

LCO 3.6.1

a. CONTAINMENT ~~SYSTEM INTEGRITY shall not be violated~~ if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:

Applicability

1. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

M01

2. The reactor is in the REFUELING shutdown condition.

Add proposed ACTIONS A and B

b. Containment Isolation Valves

1. When CONTAINMENT SYSTEM INTEGRITY is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.b.2 and TS 3.6.b.3.

See ITS 3.6.3, 3.7.2, and 3.7.3

2. Containment Penetration flow paths can be unisolated intermittently under administrative controls. This TS does not apply to the 36" containment purge valves when they are required to be sealed closed.

See ITS 3.6.3

3. When CONTAINMENT SYSTEM INTEGRITY is required, the following conditions of inoperability may exist during the time interval specified. Separate entry is allowed into TS 3.6.b.3 for each penetration flowpath.

A. For one or more penetration flow paths with two containment isolation valves per penetration with one containment isolation valve inoperable:

1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one:

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange, or

See ITS 3.6.3, 3.7.2, and 3.7.3

A01

ITS 3.6.1

g. CONTAINMENT SYSTEM INTEGRITY

CONTAINMENT SYSTEM INTEGRITY is defined to exist when:

See ITS Chapter 1.0

1. The non-automatic Containment System isolation valves and blind flanges are closed, except as provided in TS 3.6.b.

2. The reactor containment vessel and shield building equipment hatches are properly closed.

LA01

See ITS 3.6.8

3. At least one door in both the personnel and the emergency airlocks is properly closed.

See ITS 3.6.2

4. The required automatic Containment System isolation valves are OPERABLE, except as provided in TS 3.6.b.

5. All requirements of TS 4.4 with regard to Containment System leakage and test frequency are satisfied.

LA01

6. The Shield Building Ventilation System and the Auxiliary Building Special Ventilation System satisfy the requirements of TS 3.6.c.

See ITS 3.6.10 and 3.7.12

h. PROTECTIVE INSTRUMENTATION LOGIC

1. PROTECTION SYSTEM CHANNEL

A PROTECTION SYSTEM CHANNEL is an arrangement of components and modules as required to generate a single protective action signal when required by a plant condition. The channel loses its identity where single action signals are combined.

2. LOGIC CHANNEL

A LOGIC CHANNEL is a matrix of relay contacts which operate in response to PROTECTIVE SYSTEM CHANNEL signals to generate a protective action signal.

See ITS Chapter 1.0

3. DEGREE OF REDUNDANCY

DEGREE OF REDUNDANCY is defined as the difference between the number of OPERATING channels and the minimum number of channels which, when tripped, will cause an automatic shutdown.

4. PROTECTION SYSTEM

The PROTECTION SYSTEM consists of both the Reactor PROTECTION SYSTEM and the Engineered Safety Features System. The PROTECTION SYSTEM encompasses all electric and mechanical devices and circuitry (from sensors through actuated device) which are required to operate in order to produce the required protective function. Tests of the PROTECTION SYSTEM will be considered acceptable when tests are run in part and it can be shown that all parts satisfy the requirements of the system.

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ITS

A01

ITS 3.6.1

4.4 CONTAINMENT TESTS

APPLICABILITY

Applies to integrity testing of the steel containment, shield building, auxiliary building special ventilation zone, and the associated systems including isolation valves.

OBJECTIVE

To verify that leakage from the containment system is maintained within allowable limits in accordance with 10 CFR Part 50, Appendix J.

SPECIFICATION

a. Integrated Leak Rate Tests (Type A)

SR 3.6.1.1 Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

As a one-time exception to the Containment Leakage Rate Testing Program, the first Type A test following the Type A test performed in April 1994 shall be required no later than October 2009. A03

SR 3.6.1.1 b. Local Leak Rate Tests (Type B and C)

Perform required air lock, penetration, and containment isolation valve leakage testing in accordance with the Containment Leakage Rate Testing Program. See ITS 3.6.2

c. Shield Building Ventilation System

1. At least once per operating cycle or once every 18 months, whichever occurs first, the following conditions shall be demonstrated:

a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is < 10 inches of water and the pressure drop across any HEPA filter bank is < 4 inches of water at the system design flow rate (±10%). See ITS 3.6.10, 3.7.12, and 5.5

b. Automatic initiation of each train of the system.

c. Deleted

Amendment No. 204
04/27/2009

d. Auxiliary Building Special Ventilation System

1. Periodic tests of the Auxiliary Building Special Ventilation System, including the door interlocks, shall be performed in accordance with TS 4.4.c.1 through TS 4.4.c.3, except for TS 4.4.c.2.d. See ITS 3.7.12 and 5.5.9

2. Each train of Auxiliary Building Special Ventilation System shall be operated at least 15 minutes every month.

3. Each system shall be determined to be operable at the time of periodic test if it starts with coincident isolation of the normal ventilation ducts and produces a measurable vacuum throughout the special ventilation zone with respect to the outside atmosphere. See ITS 3.7.12

e. Containment Vacuum Breaker System

The power-operated valve in each vent line shall be tested during each refueling outage to demonstrate that a simulated containment vacuum of 0.5 psig will open the valve and a simulated accident signal will close the valve. See ITS 3.6.3 and 3.6.9

SR 3.6.1.1 The check and butterfly valves will be leak tested in accordance with TS 4.4.b during each refueling, except that the pressure will be applied in a direction opposite to that which would occur post-LOCA. LA02

f. Containment Isolation Device Position Verification

1. When the reactor is greater than Cold Shutdown condition, verify each 36 inch containment purge and vent isolation valve is sealed closed every 31 days.

2. When the reactor is critical, verify each 2 inch containment vent isolation valve is closed every 31 days, except when the 2 inch containment vent isolation valves are open for pressure control, ALARA, or air quality considerations for personnel entry, or Surveillances that require the valves to be open. See ITS 3.6.3

3. Containment isolation manual valves and blind flanges shall be verified closed as specified in TS 4.4.f.3.a and TS 4.4.f.3.b, except as allowed by TS 4.4.f.3.c.

   a. When greater than COLD SHUTDOWN, verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed every 31 days, except for containment isolation valves that are locked, sealed, or otherwise secured closed or open as allowed by TS 3.6.b.2.

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ITS

A01

ITS 3.6.1

TABLE TS 4.1-3

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

LA03

EQUIPMENT TESTS[1]	TEST	FREQUENCY
1. Control Rods	Rod drop times of all full length rods Partial movement of all rods not fully inserted in the core	Each REFUELING outage Quarterly when at or above HOT STANDBY
1a. Reactor Trip Breakers	Independent test[2] shunt and undervoltage trip attachments	Monthly
1b. Reactor Coolant Pump Breakers-Open-Reactor Trip	OPERABILITY	Each REFUELING outage
1c. Manual Reactor Trip	Open trip reactor[3] trip and bypass breaker	Each REFUELING outage
2. Deleted		
3. Deleted		
4. Containment Isolation Trip	OPERABILITY	Each REFUELING outage
5. Refueling System Interlocks	OPERABILITY	Prior to fuel movement each REFUELING outage
6. Deleted		
7. Deleted		
8. RCS Leak Detection	OPERABILITY	Weekly[4]
9. Diesel Fuel Supply	Fuel Inventory[5]	Weekly
10. Deleted		
11. Fuel Assemblies	Visual Inspection	Each REFUELING outage
12. Guard Pipes	Visual Inspection	Each REFUELING outage
13. Pressurizer PORVs	OPERABILITY	Each REFUELING cycle
14. Pressurizer PORV Block Valves	OPERABILITY	Quarterly[6]
15. Pressurizer Heaters	OPERABILITY[7]	Each REFUELING cycle
16. Containment Purge and Vent Isolation Valves	OPERABILITY[8]	Each REFUELING cycle

See ITS 3.1.4

See ITS 3.3.1

See ITS 3.6.3

See CTS 3.8.a.11

See ITS 3.4.15

See ITS 3.8.1 and 3.8.3

See ITS 4.0

LA03

See ITS 3.4.11

See ITS 3.4.9

See ITS 3.6.3

(1) Following maintenance on equipment that could affect the operation of the equipment, tests should be performed to verify OPERABILITY.

LA03

(2) Verify OPERABILITY of the bypass breaker undervoltage trip attachment prior to placing breaker into service.

(3) Using the Control Room push-buttons, independently test the reactor trip breakers shunt trip and undervoltage trip attachments. The test shall also verify the undervoltage trip attachment on the reactor trip bypass breakers.

See ITS 3.3.1

(4) When reactor is at power or in HOT SHUTDOWN condition.

See ITS 3.4.15

(5) Inventory of fuel required in all plant modes.

See ITS 3.8.1 and 3.8.3

(6) Not required when valve is administratively closed.

See ITS 3.4.11

(7) Test will verify OPERABILITY of heaters and availability of an emergency power supply.

See ITS 3.4.9

(8) This test shall demonstrate that the valve(s) close in ≤ 5 seconds.

See ITS 3.6.3

Amendment No. 125
08/07/96

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.a states, in part, that "CONTAINMENT SYSTEM INTEGRITY shall not be violated." ITS 3.6.1 states "Containment shall be OPERABLE." This changes the CTS by deleting the specific CONTAINMENT SYSTEM INTEGRITY definition and all references to it and making a positive statement concerning the Containment OPERABILITY requirement.

The purpose of CTS 3.6.a is to provide requirements pertaining to containment OPERABILITY. The purpose of CTS 1.0.g is to clearly describe all aspects of CONTAINMENT SYSTEM INTEGRITY. The CTS 3.6.a reference to CONTAINMENT SYSTEM INTEGRITY has been deleted since the CTS definition of CONTAINMENT SYSTEM INTEGRITY in CTS 1.0.g is incorporated into ITS 3.6.1 and 3.6.2 and is no longer maintained as a separate definition in the ITS. ITS 3.6.1 requires that the containment shall be OPERABLE. The definition of OPERABLE and the subsequent ITS 3.6.1 LCO, ACTIONS, and Surveillance Requirements are sufficient to encompass the applicable requirements of the CTS definition. This change removes any confusion that may exist between the definition and the specific requirements of the LCO and is a presentation preference consistent with NUREG-1431, Rev. 3.1. Since all aspects of the CONTAINMENT SYSTEM INTEGRITY definition requirements are maintained in subsequent Specifications of ITS, this change is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.4.a provides a one-time change to the normal; 10 year Type A test frequency specified in NEI-94-01, Rev. 0. This change applies only to the interval following the Type A test performed in April 1994, and allows a one-time, 15 year frequency. ITS SR 3.6.1.1 does not include this one-time change to the test frequency. This changes the CTS by deleting this one-time test frequency change allowance.

The purpose of the CTS allowance is to provide a one-time change to the normal 10 year Type A test frequency specified in NEI-94-01, rev. 0. Since the KPS ITS will not be implemented until after the exception has expired (i.e., after 2009), this one-time exception is no longer needed to be maintained in the ITS. Therefore, the deletion of the one-time exception, which will have expired by the date of the KPS ITS implementation, is acceptable. This change is designated as administrative because it does not result in a technical change to the CTS.

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.a does not provide any ACTIONS to take when CONTAINMENT SYSTEM INTEGRITY is not maintained. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, to be in HOT SHUTDOWN (equivalent to ITS MODE 3) with the following 6 hours, and to be in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. When the Containment is inoperable, ITS 3.6.1 ACTION A allows 1 hour to restore the Containment to OPERABLE status, and if not restored, ITS 3.6.1 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by providing specific ACTIONS when the Containment is inoperable and by reducing the amount of time allowed to shutdown the unit to MODE 3 (from 12 hour to 6 hours) and MODE 5 (from 48 hours to 36 hours).

The purpose of CTS 3.6.a is to maintain the Containment OPERABLE, thus, when it is not OPERABLE, CTS 3.0.c results in placing the unit in a condition in which the Containment is not required. This change is acceptable because the Required Action is used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The proposed 1 hour Completion Time of Required Action A.1 provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment is inoperable is minimal. Since CTS 3.0.c provides one hour prior to the start of a unit shutdown, this proposed 1 hour allowance in ITS 3.6.1 ACTION A is considered an administrative change. ITS 3.6.1 ACTION B, which provides 6 hours to shutdown the unit to MODE 3 and 36 hours to shutdown the unit to MODE 5 if the containment is not restored is acceptable since the Completion Times are based on reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The requirement to be in MODE 2 is not required, since the ITS requires the unit to be in MODE 3 in the same time (i.e., 6 hours). This change is designated as more restrictive because the time to reach MODES 3 and 5 in the ITS is less than the time provided in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGE

LA01 *(Type 2 – Removing Descriptions of System Operation)* CTS 1.0.g states "CONTAINMENT SYSTEM INTEGRITY is defined to exist when: 1.0.g.1 The non-automatic Containment System isolation valves and blind flanges are closed, except as provided in TS 3.6.b; 1.0.g.2 The reactor containment vessel …equipment hatches are properly closed; 1.0.g.4 The required automatic

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

Containment System isolation valves are OPERABLE, except as provided in TS 3.6.b; and 1.0.g.5 All requirements of TS 4.4 with regard to Containment System leakage and test frequency are satisfied." ITS 3.6.1 states "Containment shall be OPERABLE." This changes the CTS by moving the reference to penetration and equipment hatch requirements to the Bases.

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the containment to be OPERABLE and the relocated material describes aspects of OPERABILITY. The ITS also still retains the requirement to perform required visual inspections and leakage rate testing in accordance with the Containment Leakage Rate Testing Program in accordance with 10 CFR 50 Appendix J, Option B, which would provide verification that the equipment hatch is closed. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, USAR, ODCM, NFQAPD, CLRT Program, IST Program, ISI Program, or Setpoint Control Program)* CTS 4.4.e states, in part, that the check and butterfly valves will be leak tested in accordance with TS 4.4.B during each refueling outage, "except that the pressure will be applied in a direction opposite to that which would occur post-LOCA." ITS SR 3.6.1.1, which is the Surveillance that requires Type C leak rate testing, does not include this specific allowance. This changes the CTS by moving the details of the manner in which the leak test is performed to the Containment Leakage Rate Testing Program.

The removal of these details, which are related to procedural details for meeting Technical Specification requirements, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.6.1.1 retains the requirement to perform Type C leakage rate testing. The removal of these details for performing the Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS still retains the requirement to perform Type C Leakage Rate Testing in accordance with the Containment Leakage Rate Testing Program. Also, this change is acceptable because these types of details will be adequately controlled by the Containment Leakage Rate Testing Program requirements in ITS Chapter 5. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirement are being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

LA03 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, USAR, ODCM, NFQAPD, CLRT Program, IST Program, ISI Program, or Setpoint Control Program)* CTS Table TS 4.1-3 Equipment Test 12 requires a visual inspection of the guard pipes each REFUELING outage. Note 1 to CTS Table TS 4.1-3 requires, in part, that the containment isolation trip (i.e., the containment isolation valves) be tested to verify OPERABILITY following maintenance on equipment that could affect the operation. ITS 3.6.1 does not include this requirement. This changes the CTS by moving the visual inspection of the guard pipes and post-maintenance testing for the guard pipes to the Technical Requirements Manual (TRM).

The purpose of guard pipes is to prevent jet impingement from directly impacting vulnerable needed equipment. A guard pipe is used to totally enclose either the main steam line or feedwater line to prevent steam or water from damaging equipment. The guard pipes are located on the main steam and feedwater lines. The removal of these Surveillance Requirements from the Technical Specification is acceptable because these tests are not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. This change is acceptable because the removed requirements will be adequately controlled in the TRM. Any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as less restrictive removal of detail because a Technical Specification Surveillance Requirement is being moved from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1

3.6.a LCO 3.6.1 Containment shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
DOC M01	A. Containment inoperable.	A.1	Restore containment to OPERABLE status.	1 hour
DOC M01	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.4.a, 4.4.b, 4.4.e	SR 3.6.1.1	Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	
	~~SR 3.6.1.2~~	~~[Verify containment structural integrity in accordance with the Containment Tendon Surveillance Program.~~	~~In accordance with the Containment Tendon Surveillance Program]~~	2

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1, CONTAINMENT

1. The headings for ISTS 3.6.1 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. This bracketed requirement regarding Containment Tendon Surveillance Program is deleted because it is not applicable to KPS. The KPS containment does not utilize pre-stressed concrete containment tendons.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

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B 3.6 CONTAINMENT SYSTEMS

B 3.6.1B Containment (Dual) 1

BASES

BACKGROUND

The containment is a free standing steel pressure vessel surrounded by a reinforced concrete shield building. The containment vessel, including all its penetrations, is a low leakage steel shell designed to contain radioactive material that may be released from the reactor core following a design basis loss of coolant accident (LOCA). Additionally, the containment and shield building provide shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment vessel is a vertical cylindrical steel pressure vessel with a hemispherical dome and ellipsoidal bottom, completely enclosed by a reinforced concrete shield building. A 4 ft wide annular space exists 5 2
between the walls and domes of the steel containment vessel and the concrete shield building to permit inservice inspection and collection of containment outleakage. Dual containments utilize an outer concrete building for shielding and an inner steel containment for leak tightness.

and a 7 ft wide annular space between the dome roof

Containment piping penetration assemblies provide for the passage of process, service, sampling and instrumentation pipelines into the containment vessel while maintaining containment OPERABILITY. The shield building provides shielding and allows controlled release of the annulus atmosphere under accident conditions, as well as environmental missile protection for the containment vessel and the Nuclear Steam Supply System.

The inner steel containment and its penetrations establish the leakage limiting boundary of the containment. Maintaining the containment OPERABLE limits the leakage of fission product radioactivity from the containment to the environment. SR 3.6.1.1 leakage rate requirements comply with 10 CFR 50, Appendix J, Option [A][B] (Ref. 1), as modified by approved exemptions. 3

The isolation devices for the penetrations in the containment boundary are a part of the containment leak tight barrier. To maintain this leak tight barrier:

 1

BASES

BACKGROUND (continued)

a. All penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE automatic containment isolation system or ; 4

2. Closed by manual valves, blind flanges, or de-activated automatic valves secured in their closed positions, except as provided in LCO 3.6.3, "Containment Isolation Valves," ; 4

b. Each air lock is OPERABLE, except as provided in LCO 3.6.2, "Containment Air Locks," ; 4

c. All equipment hatches are closed, and . 5

[d. The pressurized sealing mechanism associated with a penetration is OPERABLE, except as provided in LCO 3.6.[ ].] 5

APPLICABLE SAFETY ANALYSES

The safety design basis for the containment is that the containment must withstand the pressures and temperatures of the limiting Design Basis Accident (DBA) without exceeding the design leakage rate.

The DBAs that result in a challenge to containment OPERABILITY from high pressures and temperatures are a LOCA, a main steam line break, and a RCCA ejection rod ejection accident (REA) (Ref. 2). In addition, release of significant fission product radioactivity within containment can occur from a LOCA or RCCA ejection REA. In the DBA analyses, it is assumed that the containment is OPERABLE such that, for the DBAs involving release of fission product radioactivity, release to the environment is controlled by the rate of containment leakage. The containment has was designed with an allowable leakage rate of 0.2 [0.1]% of containment air weight per day (Ref. 3). This leakage rate, used in the evaluation of offsite doses resulting from accidents, is defined in 10 CFR 50, Appendix J, Option [A][B] (Ref. 1), as L_a: the maximum allowable containment leakage rate at the calculated peak containment internal pressure (P_a) resulting from the limiting design basis LOCA. The allowable leakage rate represented by L_a forms the basis for the acceptance criteria imposed on all containment leakage rate testing. L_a is assumed to be 0.2 [0.1]% per day in the safety analysis at P_a = 46 [46.3] psig (Ref. 3). 2 2 2 3 3 3

Satisfactory leakage rate test results are a requirement for the establishment of containment OPERABILITY.

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

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 1

BASES

LCO

Containment OPERABILITY is maintained by limiting leakage to ≤ 1.0 L_a, except prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test. At this time the applicable leakage limits must be met.

Compliance with this LCO will ensure a containment configuration, including equipment hatches, that is structurally sound and that will limit leakage to those leakage rates assumed in the safety analysis. 6

Note that while the Background section describes the Shield Building, the Shield Building requirements are not covered by this LCO; they are provided in LCO 3.6.8, "Shield Building."

Individual leakage rates specified for the containment air lock (LCO 3.6.2) [, purge valves with resilient seals, and secondary bypass leakage (LCO 3.6.3)] are not specifically part of the acceptance criteria of 10 CFR 50, Appendix J. Therefore, leakage rates exceeding these individual limits only result in the containment being inoperable when the leakage results in exceeding the overall acceptance criteria of 1.0 L_a. combined 9

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material into containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, containment is not required to be OPERABLE in MODE 5 to prevent leakage of radioactive material from containment. The requirements for containment during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations." 3 11

ACTIONS

A.1

In the event containment is inoperable, containment must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment is inoperable is minimal.

B.1 and B.2

If containment 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 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.

1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

Maintaining the containment OPERABLE requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program. The containment concrete visual examinations may be performed during either power operation, e.g., performed concurrently with other containment inspection-related activities such as tendon testing, or during a maintenance or refueling outage. The visual examinations of the steel liner plate inside containment are performed during maintenance or refueling outages since this is the only time the liner plate is fully accessible.

10

and combined rate

Failure to meet air lock [, secondary containment bypass leakage path and purge valve with resilient seal] leakage limits specified in LCO 3.6.2 [and LCO 3.6.3] does not invalidate the acceptability of these overall leakage determinations unless their contribution to overall Type A, B, and C leakage causes that to exceed limits. As left leakage prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test is required to be < 0.6 L_a for combined Type B and C leakage, and [< 0.75 L_a for Option A][≤ 0.75 L_a for Option B] for overall Type A leakage. At all other times between required Containment Leakage Rate Testing Program leakage rate tests, the acceptance criteria is based on an overall Type A leakage limit of ≤ 1.0 L_a. At ≤ 1.0 L_a the offsite dose consequences are bounded by the assumptions of the safety analysis.

9

3

B and C

< 0.6

As discussed in NEI-94-01 (Ref. 4), this method will ensure that the overall Type A limit (1.0 L_a) is met.

2

SR Frequencies are as required by the Containment Leakage Rate Testing Program. These periodic testing requirements verify that the containment leakage rate does not exceed the leakage rate assumed in the safety analysis.

---------------------------------REVIEWER'S NOTE-----------------------------------
Regulatory Guide 1.163 and NEI 94-01 include acceptance criteria for as-left and as-found Type A leakage rates and combined Type B and C leakage rates, which may be reflected in the Bases.

7

[SR 3.6.1.2

For ungrouted, post tensioned tendons, this SR ensures that the structural integrity of the containment will be maintained in accordance with the provisions of the Containment Tendon Surveillance Program. Testing and Frequency are in accordance with the ASME Code, Section XI, Subsection IWL (Ref. 4), and applicable addenda as required by 10 CFR 50.55a.]

8

Containment ~~(Dual)~~
B 3.6.1~~B~~ 1

BASES

REFERENCES

1. 10 CFR 50, Appendix J, Option ~~[A]~~[B~~]~~. 3

2. U ~~F~~SAR, Chapter 14 ~~[15]~~. 2 3

3. U ~~F~~SAR, Section 5.8 ~~[6.2]~~. 2 3

4. NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," July 26, 1995. ~~ASME Code, Section XI, Subsection IWL.~~ 8 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1 BASES, CONTAINMENT

1. The type of Containment (Dual) and the Specification designator "B" are deleted since they are unnecessary (only one Containment Specification is used in the Kewaunee Power Station (KPS) ITS). This information is provided in NUREG-1431, Rev. 3.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric, Ice Condenser, and Subatmospheric, Containment Specification Bases (ISTS B 3.6.1A, ISTS B 3.6.1C, and ISTS B 3.6.1D) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

5. This bracketed item has been deleted. KPS does not have pressurized sealing mechanisms for the containment penetrations. In addition, due to this deletion, the word "and" has been added to item b and a period has been added to item c.

6. Editorial change made for clarity. ITS LCO 3.6.8 provides the Shield Building requirements.

7. This Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet this requirement. This is not meant to be retained in the final version of the plant specific submittal.

8. Changes are made to reflect changes made to the Specification. The requirement is not applicable to KPS.

9. The brackets are removed and changes made to reflect changes made to ITS 3.6.3.

10. This description is for plants with a concrete reactor building and a steel liner (Atmospheric and Subatmospheric designs). As described in the ISTS B 3.6.1.B Background Section, Dual Containment designs (like KPS) have a free standing steel pressure vessel.

11. Change made to be consistent with actual Specification number.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.1, CONTAINMENT

There are no specific NSHC discussions for this Specification.

ATTACHMENT 2

ITS 3.6.2, CONTAINMENT AIR LOCKS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.6.2

3.6 CONTAINMENT SYSTEM

~~**APPLICABILITY**~~

~~Applies to the integrity of the Containment System.~~

~~**OBJECTIVE**~~

~~To define the operating status of the Containment System.~~

SPECIFICATION

Two containment air locks shall be OPERABLE

A02

LCO 3.6.2

a. ~~CONTAINMENT SYSTEM INTEGRITY shall not be violated~~ if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:

Applicability

L01

M01

1. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

Add proposed ACTIONS NOTES 1, 2, and 3 and ACTIONS A and C

Add proposed ACTIONS NOTE 2 and ACTIONS B and D (for interlock mechanism)

2. The reactor is in the REFUELING shutdown condition.

Add proposed ACTION D (for reasons other than interlock mechanism)

M02

b. Containment Isolation Valves

1. When CONTAINMENT SYSTEM INTEGRITY is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.b.2 and TS 3.6.b.3.

See ITS 3.6.3, 3.7.2, and 3.7.3

2. Containment Penetration flow paths can be unisolated intermittently under administrative controls. This TS does not apply to the 36" containment purge valves when they are required to be sealed closed.

See ITS 3.6.3

3. When CONTAINMENT SYSTEM INTEGRITY is required, the following conditions of inoperability may exist during the time interval specified. Separate entry is allowed into TS 3.6.b.3 for each penetration flowpath.

A. For one or more penetration flow paths with two containment isolation valves per penetration with one containment isolation valve inoperable:

1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one:

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange, or

See ITS 3.6.3, 3.7.2, and 3.7.3

A01

ITS 3.6.2

g. CONTAINMENT SYSTEM INTEGRITY

CONTAINMENT SYSTEM INTEGRITY is defined to exist when:

See ITS Chapter 1.0

1. The non-automatic Containment System isolation valves and blind flanges are closed, except as provided in TS 3.6.b.

2. The reactor containment vessel and shield building equipment hatches are properly closed.

See ITS 3.6.1 and ITS 3.6.8

3. ~~At least one door in both the personnel and the emergency airlocks is properly closed.~~

LA01

4. The required automatic Containment System isolation valves are OPERABLE, except as provided in TS 3.6.b.

5. All requirements of TS 4.4 with regard to Containment System leakage and test frequency are satisfied.

See ITS 3.6.1

6. The Shield Building Ventilation System and the Auxiliary Building Special Ventilation System satisfy the requirements of TS 3.6.c.

See ITS 3.6.10 and 3.7.12

h. PROTECTIVE INSTRUMENTATION LOGIC

1. PROTECTION SYSTEM CHANNEL

A PROTECTION SYSTEM CHANNEL is an arrangement of components and modules as required to generate a single protective action signal when required by a plant condition. The channel loses its identity where single action signals are combined.

2. LOGIC CHANNEL

A LOGIC CHANNEL is a matrix of relay contacts which operate in response to PROTECTIVE SYSTEM CHANNEL signals to generate a protective action signal.

See ITS Chapter 1.0

3. DEGREE OF REDUNDANCY

DEGREE OF REDUNDANCY is defined as the difference between the number of OPERATING channels and the minimum number of channels which, when tripped, will cause an automatic shutdown.

4. PROTECTION SYSTEM

The PROTECTION SYSTEM consists of both the Reactor PROTECTION SYSTEM and the Engineered Safety Features System. The PROTECTION SYSTEM encompasses all electric and mechanical devices and circuitry (from sensors through actuated device) which are required to operate in order to produce the required protective function. Tests of the PROTECTION SYSTEM will be considered acceptable when tests are run in part and it can be shown that all parts satisfy the requirements of the system.

ITS

A01

ITS 3.6.2

4.4 CONTAINMENT TESTS

APPLICABILITY

~~Applies to integrity testing of the steel containment, shield building, auxiliary building special ventilation zone, and the associated systems including isolation valves.~~

OBJECTIVE

~~To verify that leakage from the containment system is maintained within allowable limits in accordance with 10 CFR Part 50, Appendix J.~~

SPECIFICATION

a. Integrated Leak Rate Tests (Type A)

Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

As a one-time exception to the Containment Leakage Rate Testing Program, the first Type A test following the Type A test performed in April 1994 shall be required no later than October 2009.

See ITS 3.6.1

A03

SR 3.6.2.1 b. Local Leak Rate Tests (Type B and C)

Add proposed SR 3.6.2.1 Note 1

Add proposed SR 3.6.2.1 Note 2

A04

Perform required air lock, penetration, and containment isolation valve leakage testing in accordance with the Containment Leakage Rate Testing Program.

See ITS 3.6.1 and 3.6.3

c. Shield Building Ventilation System

1. At least once per operating cycle or once every 18 months, whichever occurs first, the following conditions shall be demonstrated:

a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is < 10 inches of water and the pressure drop across any HEPA filter bank is < 4 inches of water at the system design flow rate (±10%).

b. Automatic initiation of each train of the system.

c. ~~Deleted~~

See ITS 3.6.10, 3.7.12, and 5.5.9

Add proposed SR 3.6.2.2

M01

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.a states, in part, that "CONTAINMENT SYSTEM INTEGRITY shall not be violated." CTS 1.0.g provides the definition of CONTAINMENT SYSTEM INTEGRITY, and includes as part of CTS 1.0.g.3 that at least one door in both the personnel and the emergency air locks is properly closed. Furthermore, CTS 4.4.b requires air lock leakage rate testing to be performed, with the leakage rate limits provided in CTS 6.20. Thus, it can be concluded that the containment air locks are part of CONTAINMENT SYSTEM INTEGRITY. ITS 3.6.2 states "Two containment air locks shall be OPERABLE." This changes the CTS by placing the Containment air locks OPERABILITY requirements in a separate Technical Specification.

The purpose of CTS 3.6.a is to provide requirements pertaining to containment OPERABILITY. ITS 3.6.2 requires that both containment air locks be OPERABLE. The definition of OPERABLE and the subsequent ITS 3.6.2 LCO, ACTIONS, and Surveillance Requirements are sufficient to encompass the applicable requirements of the CTS definition as it relates to the containment air locks. This change removes any confusion that may exist between the definition and the specific requirements of the LCO and is a presentation preference consistent with NUREG-1431, Rev. 3.1. Since all aspects of the CONTAINMENT SYSTEM INTEGRITY definition requirements are maintained in various Specifications of ITS, this change is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.4.b requires air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. ITS SR 3.6.2.1 requires a similar test, but is modified by Note 1, which states "An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test." This changes the CTS by adding a Note stating that either air lock door is capable of providing a fission product barrier in the event of a DBA.

The purpose of CTS 4.4.b is to ensure that the structural integrity of the containment air locks will be maintained comparable to the original design standards for the life of the facility. This change is acceptable because it provides clarification that the previous overall containment air lock leakage test remains valid when one air lock door is found inoperable, consistent with current requirements and practices. One inoperable door does not invalidate the test for the overall air lock leakage test because the second door is still capable of performing the safety function. This change is designated as administrative because it does not result in technical changes to the CTS.

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

A04 CTS 4.4.b requires air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. ITS SR 3.6.2.1 requires a similar test, but is modified by Note 2, which states that results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. This changes the CTS by adding a Note as a reminder that the air lock leakage must be accounted for in determining the combined Type B and C containment leakage rate.

The purpose of CTS 4.4.b is to ensure that the structural integrity of the containment air locks will be maintained comparable to the original design standards for the life of the facility. This change is acceptable because it provides clarification that the containment air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate, consistent with current requirements and practices. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.a, which provides the requirements for the containment air locks, does not include any requirements for the interlock mechanisms. ITS LCO 3.6.2 states that two containment air locks shall be OPERABLE. One of the required aspects of containment air lock OPERABILITY is that the interlock mechanism, which ensures only one door in each air lock can be opened at a time, is OPERABLE. If the mechanism is inoperable, a new ACTION has been added (ITS 3.6.2 ACTION B), which requires: a) verifying an OPERABLE door is closed in the affected air lock within 1 hour; b) locking an OPERABLE door closed in the affected air lock within 24 hours; and c) verifying an OPERABLE door is locked closed in the affected air lock once per 31 days. A Note allows this specific Required Action to be met by administrative means if the air lock doors are in high radiation areas. Furthermore, ITS 3.6.2 ACTION B includes two Notes, one which states that the three Required Actions do not have to be met if both doors in the same air lock are inoperable and Condition C is entered and the second which allows entry and exit of containment under the control of a dedicated individual. Also, as Noted in ACTIONS Note 2, ITS 3.6.2 ACTION B allows separate Condition entry for each air lock (i.e., ACTION B is to be taken on a per air lock basis). If ITS 3.6.2 ACTION B is not met, then ITS 3.6.2 ACTION D must be entered, which requires a unit shutdown to MODE 3 within 6 hours and to MODE 5 within 36 hours. In addition, SR 3.6.2.2 has been added to ensure the interlock mechanism is tested every 18 months. This changes the CTS by requiring the interlock mechanism for each containment air lock to be OPERABLE, providing appropriate ACTIONS if not OPERABLE, and providing a Surveillance Requirement to periodically test the interlock mechanisms.

The purpose of ITS 3.6.2 is to ensure the containment air locks are maintained OPERABLE. Inherent in this requirement is that only one door of each air lock is open at a time. Ensuring the interlock mechanism for each air lock is OPERABLE will help ensure that both doors cannot be inadvertently opened at the same time. Therefore, this new requirement, including the associated ACTIONS and the Surveillance Requirement, is acceptable. This change is designated as more restrictive since a new requirement to maintain the air lock interlock mechanisms OPERABLE has been added.

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

M02 CTS 3.6.a does not provide any ACTIONS to take when one or more air locks are inoperable due to the leakage rate limits not met (door seal leakage or overall leakage) or at least one door not closed in each air lock. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) within the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. When one or more air locks are inoperable due to the leakage rate limits not met (door seal leakage or overall leakage) and not restored within the allowed Completion Time (see DOC L01), ITS 3.6.2 ACTION D requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by providing specific Shutdown ACTIONS when an air lock is not restored within the allowed Completion Time and by reducing the amount of time allowed to shutdown the unit to MODE 3 (from 12 hour to 6 hours) and MODE 5 (from 48 hours to 36 hours). The discussion of the change related to the 1 hour action required by LCO 3.0.c (ITS 3.6.2 ACTIONS A and C) is provided in DOC L01.

The purpose of CTS 3.6.a is to maintain the air locks OPERABLE, thus, when they are not OPERABLE, CTS 3.0.c results in placing the unit in a condition in which the air locks are not required. This change is acceptable because the Required Action is used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. ITS 3.6.2 ACTION D, which provides 6 hours to shut down the unit to MODE 3 and 36 hours to shut down the unit to MODE 5 if an air lock is not restored, is acceptable since the Completion Times are based on reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The requirement to be in MODE 2 is not required, since the ITS requires the unit to be in MODE 3 in the same time (i.e., 6 hours). This change is designated as more restrictive because the time to reach MODES 3 and 5 in the ITS is less than the time provided in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGE

LA01 *(Type 2 – Removing Descriptions of System Operation)* CTS 1.0.g states "CONTAINMENT SYSTEM INTEGRITY is defined to exist when: 1.0.g.3 At least one door in both the personnel and the emergency airlocks is properly closed." ITS 3.6.1 states "Two containment air locks shall be OPERABLE." This changes the CTS by moving the reference to the air lock door closure requirement to the Bases.

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

the containment air locks to be OPERABLE and the relocated material describes aspects of OPERABILITY. The ITS also contains the requirement to ensure only one door in the airlock can be opened at a time Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.a does not provide any ACTIONS to take when one or more air locks are inoperable due to the leakage rate limits not met (door seal leakage or overall leakage) or at least one door not closed in each air lock. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, to be in HOT SHUTDOWN (equivalent to ITS MODE 3) within the following 6 hours, and to be in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. In the ITS, ACTIONS are provided to allow inoperability of one or both air locks for longer than the current 1 hour provided in LCO 3.0.c. As Noted in ACTIONS Note 2, the ITS ACTIONS allow separate Condition entry for each air lock – the ACTIONS are to be taken on a per air lock basis. When one door in one or both air locks is inoperable (e.g., due to door leakage rate limits not being met), ITS 3.6.2 ACTION A requires: a) verifying the remaining OPERABLE door is closed in the affected air lock within 1 hour; b) locking the OPERABLE door closed in the affected air lock within 24 hours; and c) verifying the OPERABLE door is locked closed in the affected air lock once per 31 days. A Note allows this specific Required Action to be met by administrative means if the air lock doors are in high radiation areas. Furthermore, ITS 3.6.2 ACTION A includes two Notes, one which states that the three Required Actions do not have to be met if both doors in the same air lock are inoperable and Condition C is entered and the second which allows entry and exit through the OPERABLE door for 7 days under administrative controls if both air locks are inoperable. When one or more air locks are inoperable for reasons other than one door being inoperable or the interlock mechanism being inoperable (see DOC M01), ITS 3.6.2 ACTION C requires: a) action to be immediately initiated to evaluate overall containment leakage rate per LCO 3.6.1; b) verifying a door is closed in the affected air lock within 1 hour; and c) restoring the air lock to OPERABLE status within 24 hours. If any of the above actions are not met, then the ITS will require a unit shutdown as described in DOC M02. In addition, both ACTIONS are modified by two additional Notes. ACTIONS Note 1 states that entry and exit is permissible to perform repairs on the affected air lock components and ACTIONS Note 3 states to enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate. This changes the CTS by providing specific ACTIONS when either or both of the containment air locks are inoperable.

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

The purpose of the CTS 3.6.a is to ensure the plant is not allowed to operate indefinitely in a condition such that the containment cannot perform its safety function. The changes are acceptable because the proposed ACTIONS will still ensure the containment safety function is met. Since there are two redundant doors in each air lock, only one OPERABLE air lock door is needed to be maintained closed to ensure the leak tightness requirements are met. The leak tightness of each door is verified, as required by ITS SR 3.6.1.2.1, in accordance with the Containment Leakage Rate Testing Program. Thus, allowing unlimited operation with one door inoperable as provided in ITS 3.6.2 ACTION A is acceptable. With the air lock inoperable for other reasons (ITS 3.6.2 ACTION C), operation is only allowed for a short period of time (24 hours), and only if the overall Type A leakage limit continues to be met. Thus, this change is acceptable since during this 24 hour period the containment overall leakage limit is still met and the containment is still performing its safety function. The allowances to open the air lock doors to perform repairs or other reasons is acceptable since the time the door is opened is short and the opening is under administrative controls. Also, for the case where the air lock door is opened per ACTION A Note 2 for reasons other than to effect repairs, the time period (7 days) is short. Lastly, under all conditions, if the overall Type A leakage limit is exceeded, the actions of LCO 3.6.1 are required to be immediately entered. This ensures that if the containment function cannot be met, the proper actions of LCO 3.6.1 will be taken. These changes are designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks (Atmospheric, Subatmospheric, Ice Condenser, and Dual) 1

3.6.a LCO 3.6.2 [Two] containment air lock[s] shall be OPERABLE. 2

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

ACTIONS

---NOTES---

DOC L01 1. Entry and exit is permissible to perform repairs on the affected air lock components.

DOCs M01 and L01 2. Separate Condition entry is allowed for each air lock.

DOC L01 3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01	A. One or more containment air locks with one containment air lock door inoperable.	------------------NOTES---------------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls [if both air locks are inoperable]. --- A.1 Verify the OPERABLE door is closed in the affected air lock. <u>AND</u>	 1 hour	2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01		A.2 Lock the OPERABLE door closed in the affected air lock. AND A.3 --------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. ------------------------------------- Verify the OPERABLE door is locked closed in the affected air lock.	24 hours Once per 31 days
DOC M01	B. One or more containment air locks with containment air lock interlock mechanism inoperable.	-------------------NOTES------------------ 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under the control of a dedicated individual. --- B.1 Verify an OPERABLE door is closed in the affected air lock. AND	 1 hour

CTS

Containment Air Locks (Atmospheric, Subatmospheric, Ice Condenser, and Dual) 1
3.6.2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M01		B.2 Lock an OPERABLE door closed in the affected air lock. AND B.3 --------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. ------------------------------------- Verify an OPERABLE door is locked closed in the affected air lock.	24 hours Once per 31 days
DOC L01	C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1. AND C.2 Verify a door is closed in the affected air lock. AND C.3 Restore air lock to OPERABLE status.	Immediately 1 hour 24 hours
DOCs M01 and M02	D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.4.b	SR 3.6.2.1	------------------------------NOTES---------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	
DOC M01	SR 3.6.2.2	~~[~~ Verify only one door in the air lock can be opened at a time.	18 ~~24~~ months ~~]~~	3

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.2, CONTAINMENT AIR LOCKS

1. The headings for ISTS 3.6.2 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Kewaunee Power Station has two containment air locks; the personnel air lock and the emergency air lock. Therefore, the brackets have been deleted since the ISTS is written for a plant that has two air locks.

3. The brackets have been removed and the proper plant specific information has been provided. The Frequency for ITS SR 3.6.2.2 has been set at 18 months, consistent with the current refueling outage cycle. Currently, the test is performed at approximately 18 month intervals.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.2 Containment Air Locks ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1

BASES

BACKGROUND

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

approximately
for the personnel air lock and approximately 6 ft in diameter for the emergency air lock

Each air lock is nominally a right circular cylinder, 10 ft in diameter, with a door at each end. The doors are interlocked to prevent simultaneous opening. During periods when containment is not required to be OPERABLE, 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. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. To effect a leak tight seal, the air lock design uses pressure seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door). 2

Each ~~personnel~~ air lock is provided with limit switches on both doors that provide control room indication of door position. ~~Additionally, control room indication is provided to alert the operator whenever an air lock door interlock mechanism is defeated.~~ 2 3

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analyses.

APPLICABLE SAFETY ANALYSES

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident and a rod ejection accident (Ref. 2). In the analysis of each of these accidents, it is assumed that containment is OPERABLE such that release of fission products to the environment is controlled by the rate of containment leakage. The

0.2

has containment ~~was designed with~~ an allowable leakage rate of ~~[0.1]~~% of 2 4
containment air weight per day (Ref. ~~2~~). This leakage rate is defined in 2

3

BASES

APPLICABLE SAFETY ANALYSES (continued)

B

10 CFR 50, Appendix J, Option ~~A~~ (Ref. 1), as L_a ~~= [0.1]% of containment air weight per day~~, the maximum allowable containment leakage rate at the calculated peak containment internal pressure , P_a ~~= [14.4] psig~~ following a design basis LOCA. This allowable leakage rate forms the basis for the acceptance criteria imposed on the SRs associated with the air locks. 2 8 8

The containment air locks satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Each containment air lock forms part of the containment pressure boundary. As part of the containment pressure boundary, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event.

Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into or exit from containment.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.3, "Containment Penetrations."

ACTIONS

The ACTIONS are modified by a Note that allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. If the inner door is inoperable, then ~~I~~it is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the 5

BASES

ACTIONS (continued)

OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each air lock. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable air lock. Complying with the Required Actions may allow for continued operation, and a subsequent inoperable air lock is governed by subsequent Condition entry and application of associated Required Actions.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note 3 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1, "Containment."

A.1, A.2, and A.3

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (Required Action A.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This action must be completed within 1 hour. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires containment be restored to OPERABLE status within 1 hour.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour Completion Time. The 24 hour Completion Time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required Action A.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage boundary is maintained. The Completion Time of once per 31 days is based on engineering judgment and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls. Required Action A.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be

BASES

ACTIONS (continued)

verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is
, C.2, not available to be closed. Required Actions C.1 and C.2 are the 3 6
appropriate remedial actions. The exception of Note 1 does not affect tracking the Completion Time from the initial entry into Condition A; only the requirement to comply with the Required Actions. Note 2 allows use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7 day restriction begins when the second air lock is discovered inoperable. Containment entry may be required on a periodic basis to perform Technical Specifications (TS) Surveillances and Required Actions, as well as other activities on equipment inside containment that are required by TS or activities on equipment that support TS-required equipment. This Note is not intended to preclude performing other activities (i.e., non-TS required activities) if the containment is entered, using the inoperable air lock, to perform an allowed activity listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.

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

With an air lock interlock mechanism inoperable in one or more air locks, the Required Actions and associated Completion Times are consistent with those specified in Condition A.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is
, C.2, not available to be closed. Required Actions C.1 and C.2 are the 3 6
appropriate remedial actions. Note 2 allows entry into and exit from containment under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

BASES

ACTIONS (continued)

Required Action B.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

C.1, C.2, and C.3

With one or more air locks inoperable for reasons other than those described in Condition A or B, Required Action C.1 requires action to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal test or if the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

Required Action C.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2

any Required Action and associated Completion Time is not met

If ~~the inoperable containment air lock 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 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. 7

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining containment air locks OPERABLE requires compliance with the leakage rate test requirements of the Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria which is applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate.

~~[~~SR 3.6.2.2 4

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every
18 ~~24~~ months. The ~~24~~ month Frequency is based on the need to perform 9
this Surveillance under the conditions that apply during a plant outage, and the potential for loss of containment OPERABILITY if the 18
Surveillance were performed with the reactor at power. The ~~24~~ month 9
Frequency for the interlock is justified based on generic operating
18 experience. The ~~24~~ month Frequency is based on engineering judgment 9
and is considered adequate given that the interlock is not challenged during the use of the airlock.

BASES

REFERENCES 1. 10 CFR 50, Appendix J, Option ~~[A]~~[B]. 4

2. USAR, Chapter 14.

~~2~~ 3. ~~F~~ U SAR, ~~Section [6.2]~~ Table 14.3-8. 2 4

2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.2 BASES, CONTAINMENT AIR LOCKS

1. The type of Containment (Dual) and the Specification designator "B" are deleted since they are unnecessary (only one Containment Specification is used in the Kewaunee Power Station (KPS) ITS). This information is provided in NUREG-1431, Rev. 3.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The Kewaunee Power Station design does not include a control room indicator for the status of the interlock mechanisms.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Editorial change made for clarity.

6. Changes made to be consistent with the actual Specification. ISTS 3.6.2 ACTION C has three Required Actions; C.1, C.2, and C.3.

7. Changes made to be consistent with the actual Specification. ISTS 3.6.2 ACTION B does not require the interlock mechanism to be restored to OPERABLE status. Therefore, the words have been changed to be consistent with the actual words in ISTS 3.6.2 Condition D.

8. 10 CFR 50, Appendix J does not define the values for La and Pa. It only defines what La and Pa are. Therefore, the actual values have been deleted. The words as modified are consistent with similar words in the Applicable Safety Analyses Bases for ISTS 3.6.1.

9. Changes made to be consistent with changes made to SR 3.6.2.2.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.2, CONTAINMENT AIR LOCKS

There are no specific NSHC discussions for this Specification.

ATTACHMENT 3

ITS 3.6.3, CONTAINMENT ISOLATION VALVES

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS A01 ITS 3.6.3

3.6 CONTAINMENT SYSTEM

APPLICABILITY

Applies to the integrity of the Containment System.

OBJECTIVE

To define the operating status of the Containment System.

SPECIFICATION

a. CONTAINMENT SYSTEM INTEGRITY shall not be violated if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied: See ITS 3.6.1, 3.6.2, 3.6.8, and 3.6.9

1. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

2. The reactor is in the REFUELING shutdown condition.

b. Containment Isolation Valves A02

Applicability

LCO 3.6.3

1. When CONTAINMENT SYSTEM INTEGRITY is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.b.2 and TS 3.6.b.3.

ACTIONS Note 1

2. Containment Penetration flow paths can be unisolated intermittently under administrative controls. This TS does not apply to the 36" containment purge valves when they are required to be sealed closed.

ACTIONS

ACTIONS Note 2

3. When CONTAINMENT SYSTEM INTEGRITY is required, the following conditions of inoperability may exist during the time interval specified. Separate entry is allowed into TS 3.6.b.3 for each penetration flowpath.

Add proposed ACTIONS Note 3 A03

Add proposed ACTIONS Note 4 A04

ACTION A

A. For one or more penetration flow paths with two containment isolation valves per penetration with one containment isolation valve inoperable:

1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one: A05

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange, or

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A01

ITS 3.6.3

ACTION A

d) Check valve with flow through the valve secured

Add proposed Required Action A.2 Note 2

L01

2. Verify the affected flow path is isolated:

a) For isolation devices outside containment, at least once per 31 days, or

b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN if not performed within the previous 92 days.

ACTION B

B. For one or more penetration flow paths with two containment isolation valves per penetration with two containment isolation valves inoperable:

A05

1. ~~Return at least one isolation valve to an OPERABLE status~~ within 1 hour or isolate the affected flow path by use of at least one:

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange.

Add proposed Required Action A.2 Note 2

L01

Required Action A.2

2. Verify the affected flow path is isolated:

a) For isolation devices outside containment, at least once per 31 days, or

b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN if not performed within the previous 92 days.

ACTION C

C. For one or more penetration flow paths with one containment isolation valve and a closed system per penetration with one containment isolation valve inoperable:

A05

1. ~~Return the valve to OPERABLE status~~ within 72 hours or isolate the affected penetrations flow path by use of at least one:

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange.

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A01

ITS 3.6.3

Add proposed Required Action C.2 Note 2 L01

ACTION C

2. Verify the affected flow path is isolated:

   a) For isolation devices outside containment, at least once per 31 days, or

   b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN if not performed within the previous 92 days.

Required Actions A.2 and C.2 Note 1

D. Valves and blind flanges in high radiation areas may be verified, as required by TS 3.6.b.3.A.2, TS 3.6.b.3.B.2, and TS 3.6.b.3.C.2, by use of administrative means.

ACTION E

4. If CONTAINMENT SYSTEM INTEGRITY is required and the OPERABILITY requirements of TS 3.6.b.3 are not met within the times specified, then initiate action to:

M01

A. ~~Achieve~~ HOT STANDBY within ~~the~~ next 6 hours,

B. Achieve HOT SHUTDOWN within ~~the following~~ 6 hours, and

C. Achieve COLD SHUTDOWN within ~~the subsequent~~ 36 hours.

c. All of the following conditions shall be satisfied whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required: See ITS 3.6.10 and 3.7.12

1. Both trains of the Shield Building Ventilation System, including filters, shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days. See ITS 3.6.10

2. Both trains of the Auxiliary Building Special Ventilation System, including filters, shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days. See ITS 3.7.12

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ITS A01 ITS 3.6.3

4.4 CONTAINMENT TESTS

APPLICABILITY

Applies to integrity testing of the steel containment, shield building, auxiliary building special ventilation zone, and the associated systems including isolation valves.

OBJECTIVE

To verify that leakage from the containment system is maintained within allowable limits in accordance with 10 CFR Part 50, Appendix J.

SPECIFICATION

a. Integrated Leak Rate Tests (Type A)

Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

As a one-time exception to the Containment Leakage Rate Testing Program, the first Type A test following the Type A test performed in April 1994 shall be required no later than October 2009.

See ITS 3.6.1

b. Local Leak Rate Tests (Type B and C)

SR 3.6.3.7 Perform required air lock, penetration, and containment isolation valve leakage testing in accordance with the Containment Leakage Rate Testing Program.

See ITS 3.6.1 and ITS 3.6.2

c. Shield Building Ventilation System

1. At least once per operating cycle or once every 18 months, whichever occurs first, the following conditions shall be demonstrated:

a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is < 10 inches of water and the pressure drop across any HEPA filter bank is < 4 inches of water at the system design flow rate (±10%).

b. Automatic initiation of each train of the system.

c. ~~Deleted~~

See ITS 3.6.10, 3.7.12, and 5.5.9

d. Auxiliary Building Special Ventilation System

See ITS 3.7.12 and 5.5.9

1. Periodic tests of the Auxiliary Building Special Ventilation System, including the door interlocks, shall be performed in accordance with TS 4.4.c.1 through TS 4.4.c.3, except for TS 4.4.c.2.d.

2. Each train of Auxiliary Building Special Ventilation System shall be operated at least 15 minutes every month.

See ITS 3.7.12

3. Each system shall be determined to be operable at the time of periodic test if it starts with coincident isolation of the normal ventilation ducts and produces a measurable vacuum throughout the special ventilation zone with respect to the outside atmosphere.

e. Containment Vacuum Breaker System

See ITS 3.6.1 and ITS 3.6.9

SR 3.6.3.6 The power-operated valve in each vent line shall be tested during each refueling outage to demonstrate that a simulated containment vacuum of 0.5 psig will open the valve and a simulated or actual accident signal will close the valve. The check and butterfly valves will be leak tested in accordance with TS 4.4.b during each refueling, except that the pressure will be applied in a direction opposite to that which would occur post-LOCA.

L04

See ITS 3.6.1 and ITS 3.6.9

See ITS 3.6.9

f. Containment Isolation Device Position Verification

SR 3.6.3.1 1. When the reactor is greater than Cold Shutdown condition, verify each 36 inch containment purge and vent isolation valve is sealed closed every 31 days.

M03

SR 3.6.3.2 2. ~~When the reactor is critical,~~ verify each 2 inch containment vent isolation valve is closed every 31 days, except when the 2 inch containment vent isolation valves are open for pressure control, ALARA, or air quality considerations for personnel entry, or Surveillances that require the valves to be open.

SR 3.6.3.3, SR 3.6.3.4 3. Containment isolation manual valves and blind flanges shall be verified closed as specified in TS 4.4.f.3.a and TS 4.4.f.3.b, except as allowed by TS 4.4.f.3.c.

SR 3.6.3.3 a. When greater than COLD SHUTDOWN, verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed every 31 days, except for containment isolation valves that are locked, sealed, or otherwise secured closed or open as allowed by TS 3.6.b.2.

ITS

A01

ITS 3.6.3

SR 3.6.3.4

b. Prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN, if not performed in the previous 92 days, verify each containment isolation manual valve and blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are locked sealed or otherwise secured closed or open as allowed by TS 3.6.b.2.

Note to SR 3.6.3.3 and SR 3.6.3.4

c. Valves and blind flanges in high radiation areas may be verified by use of administrative means.

Add proposed SR 3.6.3.5

M02

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ITS

A01

ITS 3.6.3

TABLE TS 4.1-3

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

L02

EQUIPMENT TESTS[1]	TEST	FREQUENCY
1. Control Rods	Rod drop times of all full length rods Partial movement of all rods not fully inserted in the core	Each REFUELING outage Quarterly when at or above HOT STANDBY
1a. Reactor Trip Breakers	Independent test[2] shunt and undervoltage trip attachments	Monthly
1b. Reactor Coolant Pump Breakers-Open-Reactor Trip	OPERABILITY	Each REFUELING outage
1c. Manual Reactor Trip	Open trip reactor[3] trip and bypass breaker	Each REFUELING outage
2. ~~Deleted~~		
3. ~~Deleted~~		
4. Containment Isolation Trip	OPERABILITY	Each REFUELING outage
5. Refueling System Interlocks	OPERABILITY	Prior to fuel movement each REFUELING outage
6. ~~Deleted~~		
7. ~~Deleted~~		
8. RCS Leak Detection	OPERABILITY	Weekly[4]
9. Diesel Fuel Supply	Fuel Inventory[5]	Weekly
10. ~~Deleted~~		
11. Fuel Assemblies	Visual Inspection	Each REFUELING outage
12. Guard Pipes	Visual Inspection	Each REFUELING outage
13. Pressurizer PORVs	OPERABILITY	Each REFUELING cycle
14. Pressurizer PORV Block Valves	OPERABILITY	Quarterly[6]
15. Pressurizer Heaters	OPERABILITY[7]	Each REFUELING cycle
16. Containment Purge and Vent Isolation Valves	OPERABILITY[8]	Each REFUELING cycle

See ITS 3.1.4

See ITS 3.3.1

SR 3.6.3.6

L03

L04

See CTS 3.8.a.11

See ITS 3.4.15

See ITS 3.8.1 and 3.8.3

See ITS 4.0

See ITS 3.6.1

See ITS 3.4.11

SR 3.6.3.5

See ITS 3.4.9

LA02

(1) ~~Following maintenance on equipment that could affect the operation of the equipment, tests should be performed to verify OPERABILITY.~~

L02

(2) Verify OPERABILITY of the bypass breaker undervoltage trip attachment prior to placing breaker into service.

(3) Using the Control Room push-buttons, independently test the reactor trip breakers shunt trip and undervoltage trip attachments. The test shall also verify the undervoltage trip attachment on the reactor trip bypass breakers.

See ITS 3.3.1

(4) When reactor is at power or in HOT SHUTDOWN condition.

See ITS 3.4.15

(5) Inventory of fuel required in all plant modes.

See ITS 3.8.1 and 3.8.3

(6) Not required when valve is administratively closed.

See ITS 3.4.11

(7) Test will verify OPERABILITY of heaters and availability of an emergency power supply.

See ITS 3.4.9

SR 3.6.3.5

(8) This test shall demonstrate that the valve(s) close ~~in ≤ 5~~ seconds.

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08/07/96

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A01

ITS 3.6.3

6.20 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. The program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995. The provisions of TS 4.0.b do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program. The provisions of TS 4.0.c are applicable to the Containment Leakage Rate Testing Program.

See ITS 5.5.14

The peak calculated containment internal pressure for the design basis loss-of-coolant accident is less than the containment internal test pressure, P_a. The maximum allowable leakage rate (L_a) is 0.2 weight percent of the contained air per 24 hours at the peak test pressure (P_a) of 46 psig.

SR 3.6.3.7

For penetrations which extend into the auxiliary building special ventilation zone, the combined leak rate from these penetrations shall not exceed $0.10L_a$. For penetrations which are exterior to both the shield building and the auxiliary building special ventilation zone, the combined leak rate from these penetrations shall not exceed $0.01L_a$. If leak rates are exceeded, repairs and retest shall be performed to demonstrate reduction of the combined leak rate to these values.

ACTION D

L05

Leakage rate acceptance criteria:

a. The containment leakage rate acceptance criterion is $\leq 1.0L_a$.

b. Prior to unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $< 0.6L_a$ for Type B and C tests and $< 0.75L_a$ for the Type A test.

c. The personnel and emergency air lock leakage rates, when combined with the cumulative Type B and C leakage, shall be $< 0.6L_a$. For each air lock door seal, the leakage rate shall be $< 0.005L_a$ when tested to $\geq$ 10 psig.

See ITS 5.5.14

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.b.1 requires the containment isolation valves to be OPERABLE when CONTAINMENT SYSTEM INTEGRITY is required. ITS 3.6.3 requires the containment isolation valves to be OPERABLE in MODES 1, 2, 3, and 4. This changes the CTS by clearly specifying when the containment isolation valves are required to be OPERABLE, in lieu of referencing the applicability of another specification.

The purpose of the CTS 3.6.b.1 statement is to identify when the containment isolation valves are required to be OPERABLE. CTS 3.6.a requires CONTAINMENT SYSTEM INTEGRITY if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied: 1) the reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed (ITS equivalent MODE 5); or 2) the reactor is in the REFUELING shutdown condition (ITS equivalent MODE 6). This change is designated as administrative since the ITS MODES 1, 2, 3, and 4 Applicability is the same as the CTS 3.6.a Applicability.

A03 CTS 3.6.b.3 does not specifically require Conditions to be entered for systems supported by inoperable containment isolation valves. OPERABILITY of supported systems is addressed through the definition of OPERABILITY for each system, and appropriate LCO Actions are taken. ITS 3.6.3 ACTIONS Note 3 states "Enter applicable Conditions and Required Actions for system(s) made inoperable by containment isolation valves." ITS LCO 3.0.6 provides an exception to ITS LCO 3.0.2, stating "When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered." This changes the CTS by adding a specific statement to require supported system Conditions and Required Actions be entered, whereas in the CTS this would be done without the Note.

This change is acceptable because the addition of the ITS Note reflects the CTS requirement to take applicable Actions for inoperable systems. The ITS Note is required because of the addition of ITS LCO 3.0.6, and because the requirement to declare supported systems inoperable is being retained. This change is designated as administrative because it does not result in any technical changes to the CTS.

A04 CTS 3.6.b.3 does not include a reference to entering applicable Actions of the CONTAINMENT SYSTEM INTEGRITY LCO (CTS 3.6.a) (changed to containment OPERABILITY in the ITS). ITS 3.6.3 ACTIONS Note 4 states "Enter

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria." This changes the CTS by explicitly stating an existing requirement that the Containment Specification Actions be taken when the Containment LCO is not met as a result of containment isolation valve leakage exceeding limits.

This change is acceptable because it reinforces the existing CTS requirement to meet overall containment leakage limits. This change is designated as administrative because it does not result in any technical changes to the CTS.

A05 When a containment isolation valve is inoperable, CTS 3.6.b.3.A.1, 3.6.b.3.B.1, and 3.6.b.3.C.1 provide an option to return the inoperable containment isolation valves to OPERABLE status. ITS 3.6.3 ACTIONS A, B, and C do not include this explicit option to restore the valves to OPERABLE status. This changes the CTS by not explicitly stating the requirement to restore the valves to OPERABLE status.

The purpose of the CTS actions is to provide all of the acceptable options for inoperable containment isolation valves (i.e., restore or isolate). This change is acceptable because the requirements have not changed. ITS LCO 3.0.3 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. Therefore, it is not necessary to provide the option to restore the inoperable containment isolation valves to OPERABLE status. When they are restored LCO 3.0.2 allows exiting from the Condition. This change is designated as administrative as it allows a change required by the ITS usage rules that does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.b.4 provides the shutdown actions if the OPERABILITY requirements of CTS 3.6.b.3 are not met within the specified times, and requires action to be initiated to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) with the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. Under similar conditions, ITS 3.6.3 ACTION E requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by reducing the amount of time allowed to shutdown the unit to MODE 3 (from 12 hour to 6 hours) and MODE 5 (from 48 hours to 36 hours).

The purpose of CTS 3.6.b.4 is to provide the appropriate shutdown actions when containment isolation valves are inoperable and the required compensatory measures are not met. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. ITS 3.6.3 ACTION E, which provides 6 hours to shutdown the unit to MODE 3 and

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

36 hours to shutdown the unit to MODE 5 if the containment is not restored is acceptable since the Completion Times are based on reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The requirement to be in MODE 2 is not required, since the ITS requires the unit to be in MODE 3 in the same time (i.e., 6 hours). This change is designated as more restrictive because the time to reach MODES 3 and 5 in the ITS is less than the time provided in the CTS.

M02 CTS 4.4.f does not have a specific Surveillance to verify the isolation time of each containment isolation valve, except for the containment purge and vent valves (as shown in CTS Table 4.1-3 Equipment Test 16). ITS SR 3.6.3.5 requires verification that the isolation time of each automatic power operated containment isolation valve is within limits in accordance with the Inservice Testing (IST) Program. This changes the CTS by adding a specific Surveillance Requirement to verify the isolation time of each power operated automatic containment isolation valve.

The purpose of ITS SR 3.6.3.5 is to ensure the automatic containment isolation valves close within the time assumed in the accident analyses. Currently, CTS 4.2.a.2 requires ASME Code Class 1, 2, and 3 valves to be tested in accordance with the IST Program. At Kewaunee Power Station, the power operated automatic containment isolation valves are covered under CTS 4.2.a.2, and one of the requirements of the IST Program is to verify the closure (i.e., isolation) time of automatic power operated valves that are normally open. However, since not all automatic power operated valves are normally open (some are normally closed), and this new Surveillance requires all automatic power operated containment valves to be tested, this change is acceptable and is designated as more restrictive since the CTS does not currently require this test for all automatic valves.

M03 CTS 4.4.f.2 only require the 2 inch containment vent isolation valves to be closed (except when the 2 inch valves are open for pressure control, ALARA, or air quality considerations for personnel entry) when the reactor is critical. ITS SR 3.6.3.2 will require the valves to be closed (except the 2 inch valves which are allowed to be open for similar reasons as in CTS 4.4.f.2) in MODES 1, 2, 3, and 4. This changes the CTS by requiring the 2 inch containment vent isolation valves to be closed (except when the 2 inch valves are open for pressure control, ALARA, or air quality considerations for personnel entry) in MODES 1, 2, 3, and 4.

The purpose of maintaining the valves closed is to minimize leakage pathways through the containment vent and purge lines. This change is acceptable and designated as more restrictive since the valves will be maintained closed under more conditions (i.e., MODES 2 (subcritical), 3, and 4) in the ITS than in the CTS.

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ITS 3.6.3, CONTAINMENT ISOLATION VALVES

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGE

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, USAR, ODCM, NFQAPD, CLRT Program, IST Program, ISI Program, or Setpoint Control Program)* CTS Table TS 4.1-3 Equipment Test 16 requires an OPERABILITY test on the containment purge and vent isolation valves each REFUELING cycle. The test is modified by Note 8, which states that "this test shall demonstrate that the valve(s) close in ≤ 5 seconds. ITS SR 3.6.3.5 only requires verification that the isolation time of each containment purge and vent isolation valve is within limits. This changes the CTS by moving the time requirement (≤ 5 seconds) to the Technical Requirements Manual (TRM).

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify that the isolation time of each containment purge and vent isolation valve is within limits. Also, this change is acceptable because these types of details will be adequately controlled in the TRM. The TRM is incorporated by reference into the USAR and any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. Furthermore, the CTS does not specify the isolation times for the remainder of the containment isolation valves; they will be listed in the TRM. This change is designated as a less restrictive removal of requirement change because a requirement is being removed from the CTS.

LA02 *(Type 3 - Removing Procedural Detail for Meeting TS Requirements or Reporting Requirements)* CTS Table TS 4.1-3 Equipment Test 16 requires that the Containment Purge and Vent Isolation Valves are demonstrated OPERABLE each REFUELING cycle. ITS 3.6.3.5 requires a similar verification in accordance with the Inservice Testing Program. This changes the CTS by moving the specific Frequency for this test (each Refueling Outage) to the Inservice Testing (IST) Program.

The removal of this detail, for performing Surveillance Requirements, from the Technical Specifications is acceptable because the Frequency for the verification has not changed. The Kewaunee IST Program requires this verification each Refueling Outage. Therefore, this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement to verify each containment purge and vent isolation valve is within limits (as part of SR 3.6.3.5, which verifies the isolation time of all automatic containment isolation valves) at a Frequency of in accordance with the IST Program. Also, this change is acceptable because these types of details will be adequately controlled in the IST Program, which is controlled by 10 CFR 50.55a. This change is designated as a less restrictive removal of detail change because details for meeting Technical Specification requirements are being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation Of Required Action)* CTS 3.6.b.3.A.2, 3.6.b.3.B.2, and 3.6.b.3.C.2 require verification that specified containment penetrations are isolated. ITS 3.6.3 Required Actions A.2 and C.2 include similar requirements, but contain a Note (Note 2) that allows verification of isolation devices that are locked, sealed, or otherwise secured to be performed using administrative means. This changes the CTS by allowing certain valves and blind flanges to not require physical verification.

The purpose of CTS 3.6.b.3.A.2, 3.6.b.3.B.2, and 3.6.b.3.C.2 is to provide assurance that containment penetrations are closed when necessary. This change is acceptable because the relaxed Required Action verification criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. For those isolation devices that are locked, sealed, or otherwise secured, plant procedures control their operation. Therefore, the potential for inadvertent misalignment of these devices after locking, sealing, or securing is low. In addition, all the isolation devices are verified to be in the correct position (as required by ITS 3.6.3 Required Actions A.1, B.1, and C.1) prior to locking, sealing, or otherwise securing. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 5 – Deletion of Surveillance Requirement)* Note 1 to CTS Table TS 4.1-3 requires, in part, that the containment isolation trip (i.e., the containment isolation valves) be tested to verify OPERABILITY following maintenance on equipment that could affect the operation. ITS 3.6.3 does not include this requirement. This changes the CTS by eliminating a post-maintenance Surveillance Requirement.

This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform it required functions. Thus, appropriate equipment continues to be tested in a manner and frequency necessary to give confidence that the equipment can perform its assumed safety function. Whenever, the OPERABILITY of a system or component has been affected by repair, maintenance, modification, or replacement of a component, post maintenance testing is required to demonstrate the OPERABILITY of a system or component. This is described in the Bases for ITS SR 3.0.1 and required under SR 3.0.1. In addition, the requirement of 10 CFR 50, Appendix B, Section XI (Test Control), provides adequate controls for test programs to ensure that testing incorporates applicable acceptance criteria. Compliance with 10 CFR 50, Appendix B is required under the unit operating license. As a result, post-maintenance testing will continue to be performed and an explicit requirement in the Technical Specifications is not necessary. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be performed in the ITS.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table TS 4.1-3 Equipment Test 4 requires an OPERABILITY test on the Containment Isolation Trip each REFUELING cycle. This verification ensures that each automatic containment isolation valve that receives a containment isolation signal actuates

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

to its isolation position. ITS SR 3.6.3.6 requires verification that each automatic containment isolation valve "that is not locked, sealed, or otherwise secured in position" actuates to the isolation position on an actual or simulated actuation signal. This changes the CTS by excluding those automatic valves that are locked, sealed or otherwise secured in position from the verification. The change that adds the "actual" actuation signal allowance is discussed in DOC L04.

The purpose of CTS Table TS 4.1-3 Equipment Test 4 is to provide assurance that the automatic valves required to actuate in case of a design basis accident (DBA) isolate containment properly. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to provide confidence that the equipment can perform its assumed safety function. Those automatic containment isolation valves that are locked, sealed, or otherwise secured in position are not required to actuate on a containment isolation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves that are required to actuate will continue to be tested. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L04 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Table TS 4.1-3 Equipment Test 4 requires an OPERABILITY test on the Containment Isolation Trip each REFUELING cycle. This verification ensures that each automatic containment isolation valve that receives a containment isolation signal actuates to its isolation position. CTS 4.4.e requires the vacuum relief butterfly valves to be tested each refueling outage to ensure they close on a simulated accident signal. ITS SR 3.6.3.6 requires verification that each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position actuates to the isolation position on an actual or simulated actuation signal. This changes the CTS by allowing use of either an actual or simulated signal for the test. The change that excepts valves that are locked, sealed, or otherwise secured in position is discussed in DOC L03.

The purpose of CTS Table TS 4.1-3 Equipment Test 4 and CTS 4.4.e is to provide assurance that the automatic valves required to actuate in case of a design basis accident (DBA) isolate containment properly. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal, and therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirement acceptance criteria are being applied in the ITS than were applied in the CTS.

L05 *(Category 4 – Relaxation of Required Action)* CTS 6.20, which provides the Containment Leakage Rate Testing Program requirements, includes additional

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

leakage limits on penetrations which extend into the auxiliary building special ventilation zone and penetrations which are exterior to both the shield building and the auxiliary building special ventilation zone (i.e., combined bypass leakage rate limits). CTS 6.20 includes an additional requirement that if the leak rates are exceeded, repairs and retest shall be performed to demonstrate reduction of the combined leak rate to the limits, but no specific time is provided to perform the repairs and retest. However, since CTS 6.20 provides all the Containment Leakage Rate Testing Program limits, it can be concluded that these leakage rate limits are part of CONTAINMENT SYSTEM INTEGRITY. CTS 3.6.a, which provides the requirements for CONTAINMENT SYSTEM INTEGRITY, also does not provide any explicit time to restore the combined leakage rate limits prior to requiring a unit shutdown. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) within the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. Under similar conditions, ITS 3.6.3 ACTION D provides 4 hours to restore the combined bypass leakage rate to within limits prior to requiring a unit shutdown. This changes the CTS by providing an explicit ACTION to allow time to restore combined bypass leakage rate to within limits prior to requiring a unit shutdown, and changes the time from 1 hour (as provided in CTS 3.0.c) to 4 hours.

The purpose of CTS 3.6.a is to maintain the combined bypass leakage rate to within limits, thus, when it is not within limits, CTS 3.0.c results in placing the unit in a condition in which the combined bypass leakage rate limits are not required. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a Design Basis Accident (DBA) occurring during the repair period. This change provides an ACTION that allows 4 hours to restore combined bypass leakage rate to within limits. The 4 hour Completion Time is reasonable considering the relative importance of the combined bypass leakage to the overall containment function and the low probability of a DBA occurring during this period. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1
3.6.3

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1

3.6.b.1 LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

36 and vent

--------------------------------------NOTES--------------------------------------

3.6.b.2 1. Penetration flow path(s) ~~[~~except for ~~[42]~~ 36 inch purge and vent valve flow paths~~]~~ may be unisolated intermittently under administrative controls. 2

3.6.b.3 2. Separate Condition entry is allowed for each penetration flow path.

DOC A03 3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

DOC A04 4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.6.b.3.A, 3.6.b.3.A.1	A. ------------NOTE------------ Only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. -------------------------------- One or more penetration flow paths with one containment isolation valve inoperable ~~[~~for reasons other than Condition~~[s]~~ D ~~[and E]~~.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	~~4~~ 24 hours	6 3 4

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.6.b.3.D DOC L01	A.2 -------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. -------------------------------------	
3.6.b.3.A.2, 3.6.b.3.B.2	Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment <u>AND</u> Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment

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CTS Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1
3.6.3

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.6.b.3.B, 3.6.b.3.B.1	B. ------------NOTE------------ Only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. --------------------------------- One or more penetration flow paths with two ~~[or more]~~ containment isolation valves inoperable ~~[~~for reasons other than Condition~~[s]~~ D ~~[and E]~~.	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour	3 3 4
3.6.b.3.C, 3.6.b.3.C.1	C. ------------NOTE------------ Only applicable to penetration flow paths with only one containment isolation valve and a closed system. --------------------------------- One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	72 hours	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.6.b.3.D DOC L01 3.6.b.3.C.2		C.2 -------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment	6
6.20	D. ~~[One or more shield building bypass leakage [or purge valve leakage] not within limit.~~ Combined bypass leakage not within limits.	D.1 Restore leakage within limit.	4 hours ~~for shield building bypass leakage AND 24 hours for purge valve leakage]~~	5 4
	~~E. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.~~	~~E.1 Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange]. AND~~	~~24 hours~~	4

CTS Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1
3.6.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	E.2	-------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment 4
	AND		
	E.3	Perform SR 3.6.3.7 for the resilient seal purge valves closed to comply with Required Action E.1.	Once per [92] days]
3.6.b.3.B.4 ~~F~~ E. Required Action and associated Completion Time not met.	~~F~~ E.1	Be in MODE 3.	6 hours 4
	AND		
	~~F~~ E.2	Be in MODE 5.	36 hours

CTS Containment Isolation Valves (~~Atmospheric, Subatmospheric, Ice Condenser, and Dual~~) 1
3.6.3

SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY	
4.4.f.1	SR 3.6.3.1	~~[~~ Verify each ~~[42]~~ 36 inch purge and vent isolation valve is sealed closed~~, except for one purge valve in a penetration flow path while in Condition E of this LCO~~.	31 days ~~]~~	4
4.4.f.2	SR 3.6.3.2	~~[~~ Verify ~~each~~ ~~[8]~~ 2 inch ~~purge~~ containment vent isolation valve is closed, except when the ~~[8]~~ inch containment ~~purge~~ vent isolation valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	31 days ~~]~~	4
4.4.f.3, 4.4.f.3.a, 3.3.f.3.c	SR 3.6.3.3	------------------------------NOTE------------------------------ Valves and blind flanges in high radiation areas may be verified by use of administrative controls. -- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	31 days	
4.4.f.3, 4.4.f.3.b, 4.4.f.3.c	SR 3.6.3.4	------------------------------NOTE------------------------------ Valves and blind flanges in high radiation areas may be verified by use of administrative means. -- Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days	
DOC M02, Table 4.1-3 Equipment Test 16	SR 3.6.3.5	Verify the isolation time of each automatic power operated containment isolation valve is within limits.	~~[~~In accordance with the Inservice Testing Program ~~or 92 days]~~	7

CTS Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1
3.6.3

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
SR 3.6.3.6	~~[Cycle each weight or spring loaded check valve testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.~~	~~92 days]~~	8
SR 3.6.3.7	~~[Perform leakage rate testing for containment purge valves with resilient seals.~~	~~184 days AND Within 92 days after opening the valve]~~	4
Table TS 4.1-3 Equipment Test 4 — SR 3.6.3.~~8~~ 6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	~~[~~18~~]~~ months	4 7
SR 3.6.3.9	~~[Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.~~	~~18 months]~~	8
SR 3.6.3.10	~~[Verify each [ ] inch containment purge valve is blocked to restrict the valve from opening > [50]%.~~	~~[18] months]~~	4
4.4.b, 6.20 — SR 3.6.3.~~11~~ 7	~~[~~ Verify the combined bypass leakage rate for ~~all shield building bypass leakage paths is ≤ [L~~$_a$~~] when pressurized to ≥ [psig].~~ all penetrations: a) Which extend into the auxiliary building special ventilation zone is ≤ 0.10 L_a; and b) Which are exterior to both the shield building and the auxiliary building special ventilation zone is ≤ 0.01 L_a.	In accordance with the Containment Leakage Rate Testing Program ~~]~~	4 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

1. The headings for ISTS 3.6.3 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. The brackets have been deleted and the proper plant specific information has been provided, consistent with CTS 3.6.b.2.

3. The bracketed words "or more" have been deleted from ISTS 3.6.3 Conditions A and B (and the Note to Condition B) since the KPS design only includes two containment isolation valves per penetration flow path. This is also consistent with CTS 3.6.b.3.A.

4. All ISTS requirements (ACTIONS and Surveillance Requirements) related to containment purge valve leakage have been deleted. While the 36 inch containment purge and vent valves at KPS do have resilient seats, the valves are required by ITS SR 3.6.3.1 to remain sealed closed in MODES 1, 2, 3, and 4. Thus, there is no reason to require a periodic leak test when operating. Furthermore, the valves are containment isolation valves, so they are Type C tested as part of ITS SR 3.6.1.1. Currently, these valves are required to be leak tested at a Frequency no longer than 30 months. Since the current KPS cycle is 18 months, the KPS Containment Leak Rate Testing Program requires the valves to be tested each refueling outage. If the leak rate through either of the two associated penetrations is unacceptable, it would be restored to within the required limit prior to starting up after the outage. Since the valves are sealed closed and not cycled during plant operations, then as long as they are within limits prior to sealing, there is no credible way the resilient seals could be damaged such that the valves could start leaking at a value greater than the Containment Leak Rate Testing Program limit. Also, ISTS SR 3.6.3.10, which the Reviewer's Note in the Bases for the SR is applicable to only those valves that have resilient seats, has also been deleted (since the valves are always sealed closed). These changes are consistent with the CTS, which do not require these Surveillances and associated ACTIONS. The remaining ACTIONS and Surveillances have been renumbered due to these deletions.

5. The brackets have been removed and the proper plant specific information has been provided for ISTS 3.6.3 ACTION D (ITS 3.6.3 ACTION D) and ISTS SR 3.6.3.11 (ITS SR 3.6.3.7). The bypass leakage consists of two components, as is currently required by CTS 6.20. Therefore, the words in ISTS 3.6.3 ACTION D and ISTS SR 3.6.3.11 have been modified. Furthermore, since the KPS requirements do not include special purge and vent valve leakage requirements (see JFD 4), the Completion Time has been modified since ITS 3.6.3 ACTION D only applies to the combined bypass leakage rate limits.

6. The following changes have been made to be consistent with the CTS allowances. These allowances were approved by the NRC in Amendment No. 155, as documented in the NRC Safety Evaluation, dated June 8, 2001:

    a. The Completion Time for ISTS 3.6.3 Required Action A.1 has been changed to 24 hours, consistent with CTS 3.6.b.3.A.1.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

b. The Completion Time for ISTS 3.6.3 Required Action C.2 has been changed to include a separate Completion Time for isolation devices inside containment, consistent with CTS 3.6.b.3.C.2.

7. The brackets have been removed and the proper plant specific information/value has been provided.

8. KPS has a dual containment design. Therefore, these SRs, which are for a subatmospheric design, have been deleted. The remaining Surveillances have been renumbered due to these deletions.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

All changes are 2 unless otherwise noted

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) 1

BASES

BACKGROUND

The containment isolation valves form part of the containment pressure boundary and provide a means for fluid penetrations not serving accident consequence limiting systems to be provided with two isolation barriers that are closed on a containment isolation signal. These isolation devices are either passive or active (automatic). For the purpose of compliance with LCO 3.6.3, Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system. These barriers (typically containment isolation valves) make up the Containment Isolation System.

INSERT 1

~~Automatic isolation signals are produced during accident conditions. Containment Phase "A" isolation occurs upon receipt of a safety injection signal. The Phase "A" isolation signal isolates nonessential process lines in order to minimize leakage of fission product radioactivity. Containment Phase "B" isolation occurs upon receipt of a containment pressure High-High signal and isolates the remaining process lines, except systems required for accident mitigation.~~ In addition to the isolation signals listed above, the purge and ~~exhaust~~ ventilation isolation valves receive an isolation signal on a containment high radiation condition and from a manual containment spray actuation signal. As a result, the containment isolation valves (and blind flanges) help ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the containment atmosphere as a result of a Design Basis Accident (DBA).

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

2 **INSERT 1**

Containment isolation is actuated automatically by a Safety Injection signal, or manually via the automatic isolation logic. All process lines penetrating containment (with remote operated containment isolation valves) are isolated, except systems required for accident mitigation.

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Containment Isolation Valves ~~(Atmosperic, Subatmospheric, Ice Condenser, and Dual)~~ 1
B 3.6.3

All changes are 2 unless otherwise noted

BASES

BACKGROUND (continued)

Containment Purge and Ventilation System

36

and vent isolation

~~Shutdown Purge System~~ (~~[42]~~ inch purge valves)

The ~~Shutdown Purge System~~ operates to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment prior to and during personnel access. The supply and exhaust lines each contain two isolation valves. Because of their large size, the ~~[42]~~ 36 inch purge valves ~~in some units~~ are not qualified for automatic closure from their open position under DBA conditions. Therefore, the ~~[42]~~ inch purge valves are ~~normally~~ maintained closed in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained. 3

and vent isolation

~~Minipurge System ([8] inch purge valves)~~

2 inch containment vent isolation valves

The ~~Minipurge System operates to~~:

a. Reduce the concentration of noble gases within containment prior to and during personnel access, ~~and~~ ; 4

b. Equalize internal and external pressures.

2 inch containment vent isolation valves

Since the ~~valves used in the Minipurge System~~ are designed to meet the requirements for automatic containment isolation valves, these valves may be opened as needed in MODES 1, 2, 3, and 4.

APPLICABLE SAFETY ANALYSES

The containment isolation valve LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during major accidents. As part of the containment boundary, containment isolation valve OPERABILITY supports leak tightness of the containment. Therefore, the safety analyses of any event requiring isolation of containment is applicable to this LCO.

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident (LOCA) and a rod ejection accident (Ref. 1). In the analyses for each of these accidents, it is assumed that containment isolation valves are either closed or function to close within the required isolation time following event initiation. This ensures that potential paths to the environment through containment isolation valves (including containment purge and vent isolation valves) are minimized. The safety analyses assume that the ~~[42]~~ 36 inch purge and vent isolation valves are closed at event initiation.

1

All changes are 2 unless otherwise noted

BASES

APPLICABLE SAFETY ANALYSES (continued)

will occur

will consist only of the design leakage rate following a design basis LOCA.

The DBA analysis assumes that, within 60 seconds after the accident, isolation of the containment ~~is complete~~ and leakage ~~terminated except for the design leakage rate, L_a. The containment isolation total response time of 60 seconds includes signal delay, diesel generator startup (for loss of offsite power), and containment isolation valve stroke times.~~

and vent isolation

active

The containment purge and vent isolation valves are air operated spring closed. The valves fail closed on a loss of power or instrument air.

~~[~~The single failure criterion required to be imposed in the conduct of plant safety analyses was considered in the original design of the containment purge valves. Two valves in series on each purge line provide assurance that both the supply and exhaust lines could be isolated even if a single failure occurred. ~~The inboard and outboard isolation valves on each line are provided with diverse power sources, motor operated and pneumatically operated spring closed, respectively. This arrangement was designed to preclude common mode failures from disabling both valves on a purge line.]~~

and vent isolation

~~[~~The purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain sealed closed during MODES 1, 2, 3, and 4. ~~In this case, the single failure criterion remains applicable to the containment purge valves due to failure in the control circuit associated with each valve. Again, the purge system valve design precludes a single failure from compromising the containment boundary as long as the system is operated in accordance with the subject LCO.]~~ 3

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

and vent isolation

36

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The ~~[42]~~ inch purge valves must be maintained sealed closed ~~[or have blocks installed to prevent full opening]~~. ~~[Blocked purge valves also actuate on an automatic signal.]~~ The valves covered by this LCO are listed ~~along with their associated stroke times~~ in the ~~F~~SAR (Ref. 2). 5

U

INSERT 2

and the associated valve stroke times are listed in the Technical Requirements Manual (TRM).

7

INSERT 2

However, the main steam isolation valves and main feedwater isolation valves are not covered by this LCO. Requirements for these valves are provided in LCO 3.7.2, "Main Steam Isolation Valves (MSIVs)," and LCO 3.7.3, "Main Feedwater Isolation Valves (MFIVs), Main Feedwater Regulating Valves (MFRVs), and MFRV Bypass Valves."

1

BASES

LCO (continued)

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 2.

and

3

Penetrations which extend into the auxiliary building special ventilation zone and penetrations which are exterior to both the shield building and the auxiliary building special ventilation zone

(i.e., combined bypass leakage rate limits)

Purge valves with resilient seals [and secondary containment bypass valves] must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing.

6

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

S

and 6

7

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow paths, except for [42] inch purge valve penetration flow paths, to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. Due to the size of the containment purge line penetration and the fact that those penetrations exhaust directly from the containment atmosphere to the environment, the penetration flow path containing these valves may not be opened under administrative controls. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.3.1.

36

and vent

2

and vent

2

7

BASES

ACTIONS (continued)

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

In the event the isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

<u>A.1 and A.2</u>

combined

In the event one containment isolation valve in one or more penetration flow paths is inoperable, [except for purge valve or shield building bypass leakage not within limit], the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

24 — 6, 7, 9

, perform maintenance,

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically

24 — 7

BASES

ACTIONS (continued)

isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Condition A has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two ~~[or more]~~ 7 containment isolation valves. For penetration flow paths with only one containment isolation valve and a closed system, Condition C provides the appropriate actions.

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small.

B.1

With two ~~[or more]~~ containment isolation valves in one or more 7
penetration flow paths inoperable, ~~[~~except for ~~purge~~ valve or ~~shield~~ 6
combined ~~building~~ bypass leakage not within limit,~~]~~ the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a

BASES

ACTIONS (continued)

closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. ~~In the event the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative control and the probability of their misalignment is low.~~ 8

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. Condition A of this LCO addresses the condition of one containment isolation valve inoperable in this type of penetration flow path. 7

C.1 and C.2

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve flow path must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration flow path. Required Action C.1 must be completed within the 72 hour Completion Time. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4. INSERT 3 In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. INSERT 4 The Completion Time of once per 31 days for isolation devices outside containment ~~verifying that each affected penetration flow path is isolated~~ is appropriate because the ~~valves~~ devices are operated under administrative controls and the probability of their misalignment is low. INSERT 5 9 11 12 13 12

9 **INSERT 3**

Furthermore, this longer outage time is acceptable since the closed system is subjected to leakage testing, is missile protected, and is seismic category I piping. Also, a closed system typically has flow through it during normal operation such that any loss of integrity could be observed through leakage detection system inside containment and system walkdowns outside containment.

11 **INSERT 4**

This Required Action does not require any testing or device manipulation. Rather, it involves verification that these devices outside containment and capable of being mispositioned are in the correct position.

12 **INSERT 5**

For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

BASES

ACTIONS (continued)

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. ~~The closed system must meet the requirements of Ref. 3.~~ This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system. 9

Required Action C.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

~~[~~D.1

With the combined ~~shield building~~ bypass leakage rate (SR 3.6.3.~~11~~7) ~~[or purge valve leakage rate (SR 3.6.3.7)]~~ not within limits, the assumptions of the safety analyses are not met. Therefore, the leakage must be restored to within limit. Restoration can be accomplished by isolating the penetration(s) that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time for combined ~~shield building~~ bypass leakage is reasonable considering the time required to restore the leakage by isolating the penetration(s) and the relative importance of secondary containment bypass leakage to the overall containment function. ~~[The 24 hour Completion time for purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of the containment does not exist.]~~ 6 7 6 6

BASES

ACTIONS (continued)

~~-----------------------------------REVIEWER'S NOTE------------------------------------~~
~~[The bracketed options provided in ACTION D reflect options in plant design and options in adopting the associated leakage rate Surveillances.~~ 10

~~The options (in both ACTION D and ACTION E) for purge valve leakage, are based primarily on the design - if leakage rates can be measured separately for each purge valve, ACTION E is intended to apply. This would be required to be able to implement Required Action E.3. Should the design allow only for leak testing both purge valves simultaneously, then the Completion Time for ACTION D should include the "24 hours for purge valve leakage" and ACTION E should be eliminated.]]~~
~~---~~

~~[E.1, E.2, and E.3~~

~~In the event one or more containment purge valves in one or more penetration flow paths are not within the purge valve leakage limits, purge valve leakage must be restored to within limits, or the affected penetration flow path must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a [closed and de-activated automatic valve, closed manual valve, or blind flange]. A purge valve with resilient seals utilized to satisfy Required Action E.1 must have been demonstrated to meet the leakage requirements of SR 3.6.3.7. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist.~~ 6

~~In accordance with Required Action E.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.~~

BASES

ACTIONS (continued)

~~For the containment purge valve with resilient seal that is isolated in accordance with Required Action E.1, SR 3.6.3.7 must be performed at least once every [92] days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.3.7, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 4). Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [92] days was chosen and has been shown to be acceptable based on operating experience.~~ 6

~~Required Action E.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned.]~~

E ~~F~~.1 and E ~~F~~.2 7

If the Required Actions and associated Completion Times are not met, 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 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 3.6.3.1 7

Each ~~[42]~~ 36 inch containment purge and vent isolation valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge and vent isolation valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A 2 2

BASES

SURVEILLANCE REQUIREMENTS (continued)

and vent isolation 2 9

be closed with its control switch sealed in the close position.

containment purge valve that is sealed closed must ~~have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator.~~ In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. ~~5~~ 3), related to containment purge valve use during plant operations. 2 ~~In the event purge valve leakage requires entry into Condition E, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.]~~ 6

~~[~~ SR 3.6.3.2 7

2 inch containment vent isolation 2

This SR ensures that the ~~minipurge~~ valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. ~~If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits.~~ The SR is not required to be met when the ~~minipurge~~ valves are open for the reasons stated. The valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The ~~minipurge~~ valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The 31 day Frequency is consistent with other containment isolation valve requirements discussed in SR 3.6.3.3. ~~]~~

6 7 7 7

2 inch containment vent isolation

SR 3.6.3.3

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. Since verification of valve position for containment isolation valves outside containment is relatively easy,

BASES

SURVEILLANCE REQUIREMENTS (continued)

the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.4

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4, for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.5

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses.

s are provided in the TRM and the

~~[~~The isolation time ~~and~~ Frequency of this SR ~~are~~ in accordance with the Inservice Testing Program ~~or 92 days~~.~~]~~ 2 7

is

~~[SR 3.6.3.6~~

~~In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere returns to subatmospheric conditions following a DBA. SR 3.6.3.6 requires verification of the operation of the check valves that are testable during unit operation. The Frequency of 92 days is consistent with the Inservice Testing Program requirement for valve testing on a 92 day Frequency.]~~ 14

~~[SR 3.6.3.7~~ 6

~~For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option [A][B], is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 4).~~

~~Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.]~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.8 6 7

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need 15 to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was 15 concluded to be acceptable from a reliability standpoint.

~~[SR 3.6.3.9~~ 14

~~In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere returns to subatmospheric conditions following a DBA. SR 3.6.3.9 verifies the operation of the check valves that are not testable during unit operation. The Frequency of 18 months is based on such factors as the inaccessibility of these valves, the fact that the unit must be shut down to perform the tests, and the successful results of the tests on an 18 month basis during past unit operation.]~~

~~[SR 3.6.3.10~~ 6

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~ 10
~~This SR is only required for those units with resilient seal purge valves allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices on the valves that are not permanently installed.~~
~~---~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~Verifying that each [42] inch containment purge valve is blocked to restrict opening to ≤ [50]% is required to ensure that the valves can close under DBA conditions within the times assumed in the analyses of References 1 and 2. If a LOCA occurs, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of [recently] irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. The 18 month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.]~~ 6

~~[~~ SR 3.6.3.~~11~~ 7 7

This SR ensures that the combined bypass leakage rate of all ~~shield building~~ s 6
INSERT 6 ~~bypass leakage paths~~ is less than or equal to the specified leakage rate. This provides assurance that the assumptions in the safety analysis are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria.

~~[~~Bypass leakage is ~~considered part of~~ included when determining if allowable leakage limits are met L_a. 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Unless specifically exempted.]]~~
~~---~~ 10

6 **INSERT 6**

penetrations which extend into the auxiliary building special ventilation zone and all penetrations which are exterior to both the shield building and the auxiliary building special ventilation zone

BASES

Chapter

REFERENCES

1. U ~~F~~SAR, ~~Section~~ ~~[15]~~ 14. 2 15
2. ~~F~~SAR, ~~Section [6.2]~~ Table 5.2-3. 2 15

~~3. Standard Review Plan 6.2.4.~~ 2

~~4. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration."~~

3 ~~5~~. Generic Issue B-24. 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3 BASES, CONTAINMENT ISOLATION VALVES

1. The headings for ISTS 3.6.3 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS LCO section of the Bases states "The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact." The phrase "closed systems are intact" is incorrect and has been deleted. The status of the closed system does not affect the ability of the containment isolation valve to perform its specified function. The condition of the closed system has no effect on the ability of the containment isolation valve to open, close, seal, or meet the Surveillance Requirements.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

5. Changes made to be consistent with changes made to the ISTS. The SR related to blocking the purge valves has not been included in the KPS ITS.

6. Changes made to be consistent with changes made to the ISTS. The KPS plant-specific bypass leakage description has been provided, consistent with CTS 6.20, and the purge valve leakage requirements are not included since the KPS purge and vent valves do not have resilient seals/seats.

7. Changes made to be consistent with changes made to the ISTS.

8. The words in the ISTS 3.6.3 ACTIONS B.1 Bases, concerning how Required Action A.2 works, have been deleted. This description is already in the ACTION A.1 and A.2 Bases, and does not need to be repeated. This is consistent with many other Bases descriptions of ACTIONS, which do not include a description of other Conditions' Required Actions that may also be required when in another ACTION. This is also consistent with the BWR ISTS Bases, NUREG-1433 and NUREG-1434.

9. These ITS 3.6.3 Bases words have been added/modified to be consistent with the CTS Bases. The words were added to the CTS Bases as part of Amendment No. 155, which added the CTS Actions for containment isolation valves (CTS 3.6.b). Furthermore, when the allowance consistent with ITS 3.6.3 ACTION C was added in Amendment 155, the definition of a closed system was not required to be added to the CTS Bases, since KPS was designed and built prior to the existence of the design requirements of Reference 3 (Standard Review Plan 6.2.4). Thus, the words in ACTION C.1 concerning the closed system requirements have been deleted.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3 BASES, CONTAINMENT ISOLATION VALVES

10. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This is not meant to be retained in the final version of the plant specific submittal.

11. Change made to be consistent with similar wording in ISTS 3.6.3 ACTIONS A.1 and A.2 Bases for a similar Required Action. The added phrase in ITS 3.6.3 ACTIONS C.1 and C.2 Bases clarifies how Required Action C.2 can be performed (i.e., it is a verification, not a test).

12. Changes made to be consistent with changes made to the ISTS. The wording added in the ITS 3.6.3 ACTIONS C.1 and C.2 Bases is also consistent with the wording in ISTS 3.6.3 ACTIONS A.1 and A.2 for a similar Completion Time.

13. The word in the ISTS 3.6.3 ACTIONS C.1 and C.2 Bases has been changed from "valves" to "devices" since the ISTS 3.6.3 Required Action C.2 allows use of a blind flange. The change is also consistent with the wording in ISTS 3.6.3 ACTIONS A.1 and A.2 Bases for a similar Required Action.

14. KPS has a dual containment design. Therefore, these SRs, which are for a subatmospheric design, have been deleted. The remaining Surveillances have been renumbered due to these deletions.

15. The brackets have been removed and the proper plant specific information has been provided.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

There are no specific NSHC discussions for this Specification.

ATTACHMENT 4

ITS 3.6.4, CONTAINMENT PRESSURE

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS A01 ITS 3.6.4

3. Performance Requirements

   A. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show ≥ 99% DOP removal and ≥ 99% halogenated hydrocarbon removal.

   B. The results of laboratory carbon sample analysis from the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System carbon shall show ≥ 97.5% radioactive methyl iodide removal when tested in accordance with ASTM D3803-89 at conditions of 30°C, 95% RH for the Shield Building Ventilation System and 30°C, 95% RH for the Auxiliary Building Special Ventilation System.

   C. Fans shall operate within ± 10% of design flow when tested.

See ITS 5.5.9

M03 1 M02 M04

ACTION A

ACTION B

d. If the internal pressure of the reactor containment vessel exceeds 2 psi, the condition shall be corrected within 8 hours or the reactor shall be placed in a subcritical condition.

e. The reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is > 40°F.

See ITS 3.6.5

Add proposed LCO 3.6.4 upper limit A02

Add proposed LCO 3.6.4 lower limit M01

Add proposed Applicability M02

Add proposed SR 3.6.4.1 M05

Amendment No. 190
03/08/2007

DISCUSSION OF CHANGES
ITS 3.6.4, CONTAINMENT PRESSURE

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.d provides actions to be taken if the internal pressure of the reactor containment vessel exceeds 2 psi, but does not provide an actual LCO type of statement. ITS LCO 3.6.4 requires the containment pressure to be $\geq$ 0.0 psig and $\leq$ 2.0 psig. This changes the CTS by clearly stating the limiting condition for operation in a separate statement. The change related to the minimum containment pressure is discussed in DOC M01.

The purpose of CTS 3.6.d is to provide an upper limit for the containment pressure. The proposed change is acceptable because it clearly presents the upper limit requirement that is currently required by the CTS. This change is designated as administrative since it does not result in any technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.d provides actions to be taken if the internal pressure of the reactor containment vessel exceeds 2 psi, but does not address or provide a specific minimum pressure limit. ITS LCO 3.6.4 requires the containment pressure to be $\geq$ 0.0 psig and $\leq$ 2.0 psig. This changes the CTS by requiring containment pressure be maintained greater than or equal to a minimum pressure limit.

The purpose of the ITS LCO 3.6.4 minimum pressure limit is to ensure that the containment will not exceed the design negative differential pressure (-0.8 psig) following the inadvertent simultaneous start of all four containment fan coil units and both trains of the Containment Spray System (the design criteria that KPS analyzes to determine the resulting reduction in containment pressure). The initial pressure condition used in this analysis is 0.0 psig, the value proposed as the ITS LCO 3.6.4 minimum pressure limit. Therefore, this change is considered acceptable. This change is designated as more restrictive because maintaining containment pressure $\geq$ 0.0 psig is not required in the CTS.

M02 CTS 3.6.d does not provide any Applicability requirements for the containment pressure limit, but does provide actions to be taken if the internal pressure of the reactor containment vessel exceeds 2 psig. If the internal pressure is not restored within the limit, then the unit must be placed in the subcritical condition (equivalent to ITS MODE 3). Thus, the effective Applicability for the containment pressure limit is when the reactor is critical. ITS 3.6.4 requires the containment pressure limits to be met in MODES 1, 2, 3, and 4. Consistent with the change in Applicability, the requirement to be in MODE 5 within 36 hours is added as

DISCUSSION OF CHANGES
ITS 3.6.4, CONTAINMENT PRESSURE

indicated in ITS 3.6.4 Required Action B.2. This changes the CTS by requiring the containment pressure to be within limits in MODES 3 and 4 and providing a Required Action to place the unit outside the Applicability.

The containment pressure limit is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure and to ensure that the containment design negative differential pressure is not exceeded. The addition of the MODES 3 and 4 Applicability is acceptable since a loss of coolant accident (LOCA) and main steam line break (MSLB) can both occur in MODES 3 and 4. This change is more restrictive because a new Applicability containing MODES 3 and 4 has been added.

M03 CTS 3.6.d provides the actions to be taken if the internal pressure of the reactor containment vessel exceeds 2 psig, and states, in part, that containment pressure must be returned to within limits within 8 hours. Under similar conditions, ITS 3.6.4 ACTION A requires that containment pressure be restored to within limits in one hour. This changes the CTS by decreasing the amount of time provided to restore containment pressure from 8 hours to 1 hour.

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a LOCA or MSLB. These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the annulus in the event of an inadvertent simultaneous start of all four containment fan coil units and both trains of the Containment Spray System. This change is acceptable because the new proposed 1 hour time is consistent with the time provided to restore an inoperable containment, in ITS 3.6.1, and is based on the importance of maintaining the containment function. This change is designated more restrictive since less time is provided to restore containment pressure to within limits in the ITS than is provided in the CTS.

M04 CTS 3.6.d provides the actions to be taken if the internal pressure of the reactor containment vessel exceeds 2 psig, and states, in part, that when a shutdown is required to place the reactor in a subcritical condition (equivalent to ITS MODE 3). However, no finite time to complete this action is provided. Under similar conditions, ITS 3.6.4 ACTION B requires the unit to be in MODE 3 within 6 hours (Required Action B.1). This changes the CTS by providing a specific time to reach MODE 3.

The purpose of CTS 3.6.d is to provide the actions when the containment pressure is not within limits. This change is acceptable because the Required Action is used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The 6 hour Completion Time to reach MODE 3 provided in ITS 3.6.4 ACTION B is acceptable since the Completion Time is based on reaching the required plant condition from full power conditions in an orderly manner and without challenging plant systems. This change is designated as more restrictive because the time to reach MODE 3 in the ITS is less than the time provided in the CTS.

DISCUSSION OF CHANGES
ITS 3.6.4, CONTAINMENT PRESSURE

M05 CTS 3.6.d does not provide any Surveillance Requirements for verifying containment pressure is within limits. ITS SR 3.6.4.1 requires verifying the containment pressure is within limits once per 12 hours. This changes the CTS by adding a specific Surveillance Requirement to verify the LCO limits are met.

The purpose of ITS SR 3.6.4.1 is to ensure that the containment pressure is periodically verified to be within specified limits. This helps ensure that, in the event of a DBA, the resultant peak containment accident pressure will remain below the maximum allowed containment internal pressure and the resultant minimum pressure will remain within the containment design negative differential pressure limit. Therefore, this change is considered acceptable and is more restrictive because a new Surveillance Requirement has been added.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.4A Containment Pressure (Atmospheric, Dual, and Ice Condenser) 1

DOCs A02 and M01 LCO 3.6.4A Containment pressure shall be ≥ ~~[-0.3]~~ 0.0 psig and ≤ ~~[+1.5]~~ 2.0 psig. 2

DOC M02 APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.6.d	A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
3.6.d, DOC M02	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
DOC M05	SR 3.6.4A.1 Verify containment pressure is within limits.	12 hours	1

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.4, CONTAINMENT PRESSURE

1. The type of Containment (Atmospheric, Dual, and Ice Condenser) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Specification is used in the Kewaunee Power Station (KPS) ITS). This information is provided in NUREG-1431, Rev. 3.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design. The maximum containment pressure limit for Kewaunee Power Station is 2 psig, as shown in CTS 3.6.d. The minimum pressure value assumed in the KPS accident analysis has also been provided. The analysis assumption related to this minimum value is discussed in the ITS 3.6.4 Bases.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

 1

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4A Containment Pressure (Atmospheric, Dual, and Ice Condenser) 1

BASES

and simultaneous start of all four containment fan-coil units and both trains

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the outside atmosphere in the event of inadvertent actuation of the Containment Spray System. 2

main M annulus

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment functional analyses and the containment structure external pressure analysis. Should operation occur outside these limits coincident with a Design Basis Accident (DBA), post accident containment pressures could exceed calculated values. 2

integrity analyses

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst case SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1). 2

M MSLB effects of those of LOCA are more severe MSLB LOCA

The initial pressure condition used in the containment analysis was [17.7] psia ([3.0] psig). This resulted in a maximum peak pressure from a LOCA of [53.9] psig. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure, P_a, results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA, [44.1] psig, does not exceed the containment design pressure, [55] psig. 3 2

2.15 16.85 44.4 MSLB 45.68 maximum allowed internal 46

The containment was also designed for an external pressure load equivalent to [-2.5] psig. The inadvertent actuation of the Containment Spray System was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was [-0.3] psig. This resulted in a minimum pressure inside containment of [-2.0] psig, which is less than the design load. 3 3 3 2

0.8 14.7 psia (0.0 psig) 13.917 psia (-0.783 psig) and simultaneous start of all four containment fan-coil units and both trains

BASES

APPLICABLE SAFETY ANALYSES (continued)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. Therefore, for the reflood phase, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the containment pressure response in accordance with 10 CFR 50, Appendix K (Ref. 2).

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Maintaining containment pressure at less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the maximum allowed containment ~~design~~ internal pressure. Maintaining containment pressure at greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative differential pressure following the inadvertent ~~actuation~~ and simultaneous start of all four containment fan-coil units and both trains of the Containment Spray System. 2 2

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3 and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

BASES

ACTIONS (continued)

B.1 and B.2

If containment pressure cannot be restored to within limits 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 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 3.6.4A.1 1

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.

REFERENCES

1. ~~FSAR, Section [6.2]~~. Calculation C11546, Revision 1 2

2. 10 CFR 50, Appendix K.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.4 BASES, CONTAINMENT PRESSURE

1. The type of Containment Pressure (Atmospheric, Dual, and Ice Condenser) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Pressure Specification is used in the Kewaunee Power Station (KPS) ITS. This information is provided in NUREG-1431, Rev. 3.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Containment Pressure Specification Bases for Subatmospheric Containment (ISTS B 3.6.4B) is not used and is not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.4, CONTAINMENT PRESSURE

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.6.5

3. Performance Requirements

A. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show ≥ 99% DOP removal and ≥ 99% halogenated hydrocarbon removal.

B. The results of laboratory carbon sample analysis from the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System carbon shall show ≥ 97.5% radioactive methyl iodide removal when tested in accordance with ASTM D3803-89 at conditions of 30°C, 95% RH for the Shield Building Ventilation System and 30°C, 95% RH for the Auxiliary Building Special Ventilation System.

C. Fans shall operate within ± 10% of design flow when tested.

See ITS 5.5.9

d. If the internal pressure of the reactor containment vessel exceeds 2 psi, the condition shall be corrected within 8 hours or the reactor shall be placed in a subcritical condition.

See ITS 3.6.4

Applicability

LCO 3.6.5

e. The reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is > ~~40°F~~.

≤ 120°F

M01

LA01

Add proposed ACTION A

L01

Add proposed ACTION B

M02

Add proposed SR 3.6.5.1

M03

Amendment No. 190
03/08/2007

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DISCUSSION OF CHANGES
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.e states that the reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is > 40°F, but does not address or provide a specific maximum temperature limit. ITS LCO 3.6.5 requires the containment temperature to be ≤ 120°F. This changes the CTS by requiring containment temperature to be maintained less than or equal to a maximum temperature limit. The change to the minimum temperature limit is discussed in DOC LA01.

The purpose of the ITS LCO 3.6.5 maximum temperature limit is to ensure that, in the event of a DBA, the resultant peak containment accident pressure and temperature will remain below the containment design limits. The initial temperature condition used in this analysis is 120°F, the value proposed as the ITS LCO 3.6.5 maximum temperature limit. Therefore, this change is considered acceptable. This change is designated as more restrictive because maintaining containment temperature ≤ 120°F is not required in the CTS.

M02 CTS 3.6.e does not provide any ACTIONS to take when containment temperature is not within the specified limit. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) with the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. When the containment temperature is not within limit and not restored to within limits within the allowed Completion Time (See DOC L01), ITS 3.6.5 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by providing specific shutdown ACTIONS when the containment air temperature is not restored to within limit and by reducing the amount of time allowed to shutdown the unit to MODE 3 (from 12 hours to 6 hours) and MODE 5 (from 48 hours to 36 hours). The discussion of the change from 1 hour to 8 hours (ITS 3.6.5 ACTION A) to restore the containment air temperature to within limit is provided in DOC L01.

The purpose of CTS 3.6.e. is to maintain containment air temperature within the limit, thus, when it is not within the limit, CTS 3.0.c results in placing the unit in a condition in which the containment air temperature limits are not applicable. This change is acceptable because the Required Actions are used to establish

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DISCUSSION OF CHANGES
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. ITS 3.6.5 ACTION B, which provides 6 hours to shut down the unit to MODE 3 and 36 hours to shut down the unit to MODE 5 if the containment air temperature is not restored to within limit, is acceptable since the Completion Times are based on reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The requirement to be in MODE 2 is not required, since the ITS requires the unit to be in MODE 3 in the same time (i.e., 6 hours). This change is designated as more restrictive because the time to reach MODES 3 and 5 in the ITS is less than the time provided in the CTS.

M03 CTS 3.6.e does not provide any Surveillance Requirements for verifying containment temperature is within limit. ITS SR 3.6.5.1 requires verifying the containment temperature is within limit once per 24 hours. This changes the CTS by adding a specific Surveillance Requirement to verify the LCO limit is met.

The purpose of ITS SR 3.6.5.1 is to ensure that the containment temperature is periodically verified to be within specified limit. This helps ensure that, in the event of a DBA, the resultant peak containment accident pressure and temperature will remain below the containment design values. Therefore, this change is considered acceptable and is more restrictive because a new Surveillance Requirement has been added.

<u>RELOCATED SPECIFICATIONS</u>

None

<u>REMOVED DETAIL CHANGES</u>

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, USAR, ODCM, NFQAPD, CLRT Program, IST Program, ISI Program, or Setpoint Control Program)* CTS 3.6.e states that the reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is > 40°F. ITS 3.6.5 does not maintain this minimum containment temperature limit. This changes the CTS by moving the minimum containment temperature limit to the USAR.

The removal of this requirement related to the design of the containment is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. As stated in the CTS Bases, the requirement of a 40°F minimum containment ambient temperature is to assure that the minimum containment vessel metal temperature is well above Nil Ductility Transition Temperature (NDTT) + 30° criterion for the shell material. As stated in the USAR, the minimum temperature assumed in this analysis (38°F) is not considered credible. Furthermore, the CTS value does not relate to the purpose of the ISTS LCO 3.6.5 requirement, which is to ensure the initial condition of the DBA analyses is met. The DBA analyses ensure that the maximum containment design

DISCUSSION OF CHANGES
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

temperature and pressure will not be exceeded in the event of loss of coolant accident and a main steam line break. Removing this requirement from the Technical Specifications is also consistent with the ISTS, since other similar pressure-temperature requirements for the pressurizer were allowed to be removed from the Technical Specifications, as described in the NRC Staff Review of NSSS Vendor Owners Groups Application of The Commission's Interim Policy Statement Criteria To Standard Technical Specifications, letter from T. E. Murley to W. S. Wilgus, dated May 9, 1988. Also, this change is acceptable because the removed information will be adequately controlled in the USAR. Any changes to the USAR are made under 10 CFR 50.59 or 10 CFR 50.71(e), which ensures changes are properly evaluated. This change is designated as a less restrictive removal of requirement change because a requirement is being removed from the CTS.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.e does not provide any explicit time to restore the containment ambient temperature to within limit when containment ambient temperature is not maintained within limit prior to requiring a unit shutdown. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) with the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. Under similar conditions, ITS 3.6.5 ACTION A provides 8 hours to restore the containment temperature to within the limit prior to requiring a unit shutdown. This changes the CTS by providing an explicit ACTION to allow time to restore the containment air temperature to within the limit prior to requiring a unit shutdown, and changes the time from 1 hour (as provided in CTS 3.0.c) to 8 hours. The discussion of change if the Required Action and associated Completion Time are not met (ITS 3.6.5 ACTION B) is provided in DOC M02.

The purpose of CTS 3.6.e is to maintain the containment ambient temperature within the limit, thus, when it is not within the limit, CTS 3.0.c results in placing the unit in a condition in which the Specification is not applicable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a Design Basis Accident (DBA) occurring during the repair period. This change provides an ACTION that allows 8 hours to restore the containment air temperature to within limit. The 8 hour Completion Time is reasonable since it provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment ambient temperature is not within limit is minimal. This change is designated as less

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DISCUSSION OF CHANGES
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.5A Containment Air Temperature (Atmospheric and Dual) 1

3.6.e LCO 3.6.5A Containment average air temperature shall be ≤ [120]°F. 2

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
DOC L01	A. Containment average air temperature not within limit.	A.1	Restore containment average air temperature to within limit.	8 hours
DOC M02	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M03	SR 3.6.5A.1	Verify containment average air temperature is within limit.	24 hours	1

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

1. The type of Containment (Atmospheric and Dual) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Specification is used in the Kewaunee Power Station (KPS) ITS). This information is provided in NUREG-1431, Rev. 3.1, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design. The maximum initial containment average air temperature value assumed in the Kewaunee Power Station accident analysis (120°F) has been provided. The analysis assumption related to this maximum value is discussed in the ITS 3.6.5 Bases.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5~~A~~ Containment Air Temperature ~~(Atmospheric and Dual)~~ 1

BASES

BACKGROUND

The containment structure serves to contain radioactive material that may be released from the reactor core following a Design Basis Accident (DBA). The containment average air temperature is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or main steam line break (SLB). M 2

The containment average air temperature limit is derived from the input conditions used in the containment functional analyses and the containment structure external pressure analyses. This LCO ensures that initial conditions assumed in the analysis of containment response to a DBA are not violated during unit operations. The total amount of energy to be removed from containment by the Containment Spray and Cooling systems during post accident conditions is dependent upon the energy released to the containment due to the event, as well as the initial containment temperature and pressure. The higher the initial temperature, the more energy that must be removed, resulting in higher peak containment pressure and temperature. Exceeding the maximum allowed containment internal ~~design~~ pressure may result in leakage greater than that assumed in the accident analysis. Operation with containment temperature in excess of the LCO limit violates an initial condition assumed in the accident analysis. 2

APPLICABLE SAFETY ANALYSES

Containment average air temperature is an initial condition used in the DBA analyses that establishes the containment environmental qualification operating envelope for both pressure and temperature. The limit for containment average air temperature ensures that operation is maintained within the assumptions used in the DBA analyses for containment (Ref. 1).

M The limiting DBAs considered relative to containment OPERABILITY are the LOCA and SLB. The DBA LOCA and SLB are analyzed using M computer codes designed to predict the resultant containment pressure transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to Engineered Safety Feature (ESF) systems, assuming the loss of one ~~ESF bus~~ emergency diesel generator, which is the worst case single active failure, resulting in one train each of the Containment Spray System, Residual Heat Removal System, and Containment Cooling System being rendered inoperable. 2

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BASES

APPLICABLE SAFETY ANALYSES (continued)

The limiting DBA for the maximum peak containment air temperature is an M SLB. The initial containment average air temperature assumed in the design basis analyses (Ref. ~~1~~ 2) is ~~[~~120~~]~~°F. This resulted in a maximum containment air temperature of ~~[384.9]~~ 266.6 °F. The design temperature is ~~[320]~~ 268 °F. 2 3

~~The temperature limit is used to establish the environmental qualification operating envelope for containment. The maximum peak containment air temperature was calculated to exceed the containment design temperature for only a few seconds during the transient. The basis of the containment design temperature, however, is to ensure the performance of safety related equipment inside containment (Ref. 2). Thermal analyses showed that the time interval during which the containment air temperature exceeded the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment air temperature is acceptable for the DBA SLB.~~ 4

The temperature limit is also used in the depressurization analyses to ensure that the minimum pressure limit is maintained following an inadvertent ~~actuation~~ and simultaneous start of all four containment fan-coil units and both trains of the Containment Spray System (Ref. ~~1~~ 3). 2

The containment pressure transient is sensitive to the initial air mass in containment and, therefore, to the initial containment air temperature. The limiting DBA for establishing the maximum peak containment internal pressure is a ~~LOCA~~ MSLB. The temperature limit is used in this analysis to ensure that in the event of an accident the maximum containment internal pressure will not be exceeded. 2

Containment average air temperature satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, with an initial containment average air temperature less than or equal to the LCO temperature limit, the resultant accident temperature profile assures that the containment structural temperature is maintained below its design temperature and that required safety related equipment will continue to perform its function.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment average air temperature within the limit is not required in MODE 5 or 6.

1

BASES

ACTIONS

A.1

When containment average air temperature is not within the limit of the LCO, it must be restored to within limit within 8 hours. This Required Action is necessary to return operation to within the bounds of the containment analysis. The 8 hour Completion Time is acceptable considering the sensitivity of the analysis to variations in this parameter and provides sufficient time to correct minor problems.

B.1 and B.2

If the containment average air temperature cannot be restored to within its limit 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 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 3.6.5A.1

1

Verifying that containment average air temperature is within the LCO limit ensures that containment operation remains within the limit assumed for the containment analyses. In order to determine the containment average air temperature, an arithmetic weighted average is calculated using measurements taken at locations within the containment selected to provide a representative sample of the overall containment atmosphere. The 24 hour Frequency of this SR is considered acceptable based on observed slow rates of temperature increase within containment as a result of environmental heat sources (due to the large volume of containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment temperature condition.

2

REFERENCES

U

1. ~~F~~SAR, Section ~~[6.2]~~ 5.2.

2. ~~10 CFR 50.49~~ Calculation CN-CRA-02-59 Revision 0.

3. USAR Table 5.4-2

3

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.5 BASES, CONTAINMENT AIR TEMPERATURE

1. The type of Containment Air Temperature (Atmospheric and Dual) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Air Temperature Specification is used in the Kewaunee Power Station (KPS) ITS. This information is provided in NUREG-1431, Rev. 3.1, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Containment Air Temperature Specification Bases for Ice Condenser Containment (ISTS B 3.6.5B) and Subatmospheric Containment (ISTS B 3.6.5C) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

4. The ISTS B 3.6.5 Applicable Safety Analyses section contains a discussion relative to the temperature limit being used to establish the environmental qualification operating envelope for safety related equipment inside containment. The discussion is based on the fact that the maximum containment air temperature briefly exceeds the design temperature. This fact is shown in the ISTS bracketed temperature values (i.e., 384.9 and 320). The ISTS goes on to state that the time period in which the design temperature is exceeded is short enough that the equipment surface temperatures remained below the design temperatures. This discussion is not relative to KPS since analyses (USAR Table 5.4-2) show that the maximum air temperature does not exceed the design temperature.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 6

ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS A01 ITS 3.6.6

c. Containment Cooling Systems

Cooling System

1. Containment Spray and Containment ~~Fancoil Units~~

M01

Applicability

A. The reactor shall not be made critical unless the following conditions are satisfied, ~~except for LOW POWER PHYSICS TESTS~~ and except as provided by TS 3.3.c.1.A.3.

M02

LCO 3.6.6

1. Two containment spray trains are OPERABLE ~~with each train comprised of:~~

~~(i) ONE containment spray pump.~~

~~(ii) An OPERABLE flow path consisting of all valves and piping associated with the above train of components and required to function during accident conditions. This flow path shall be capable of taking suction from the Refueling Water Storage Tank.~~

LA01

LCO 3.6.6

cooling system

2. TWO trains of containment ~~fancoil units~~ are OPERABLE ~~with two fancoil units in each train.~~

LA01

M01

ACTIONS A and C

3. During power operation or recovery from inadvertent trip, any one of the following conditions of inoperability may exist during the time intervals specified. If OPERABILITY is not restored within the time specified, then within 1 hour action shall be initiated to:

ACTION B ACTION E

M03

- Achieve HOT STANDBY within the next 6 hours.
- Achieve HOT SHUTDOWN within the following 6 hours.
- Achieve COLD SHUTDOWN within ~~an additional~~ ~~36~~ hours.

cooling system

84 (for Containment Spray)

L04

ACTION C

(i) One containment ~~fancoil unit~~ train may be out of service for 7 days provided ~~the opposite containment fancoil unit train remains OPERABLE.~~

A02

ACTION A

(ii) One containment spray train may be out of service for 72 hours ~~provided the opposite containment spray train remains OPERABLE.~~

A02

~~(iii) The same containment fancoil unit and containment spray trains may be out of service for 72 hours provided their opposite containment fancoil unit and containment spray trains remain OPERABLE.~~

A03

Add proposed ACTION D

L01

Add proposed ACTION F

A04

ITS

A01

ITS 3.6.6

4.5 EMERGENCY CORE COOLING SYSTEM AND CONTAINMENT AIR COOLING SYSTEM TESTS

APPLICABILITY

Applies to testing of the Emergency Core Cooling System and the Containment Air Cooling System.

OBJECTIVE

To verify that the subject systems will respond promptly and perform their design functions, if required.

SPECIFICATION

a. System Tests

1. Safety Injection System

A. System tests shall be performed once per operating cycle or once every 18 months, whichever occurs first. With the Reactor Coolant System pressure ≤ 350 psig and temperature ≤ 350°F, a test safety injection signal will be applied to initiate operation of the system.

See ITS 3.5.2

B. The test will be considered satisfactory if control board indication or visual observations indicate that all components have received the safety injection signal in the proper sequence and timing. That is, the appropriate pump motor breakers shall have opened and closed, and all valves shall have completed their travel.

L03

2. Containment Vessel Internal Spray System

starts automatically on an actual or simulated actuation signal

L02

A05

SR 3.6.6.5, SR 3.6.6.6

A. System tests shall be performed once every operating cycle or once every 18 months, whichever occurs first. The test shall be performed with the isolation valves in the supply lines at the containment blocked closed.

LA02

LA01

SR 3.6.6.8

B. Verify a minimum of 76 spray nozzles per train are functioning properly by using an air or smoke test at a test interval not to exceed 10 years.

LA02

C. The test will be considered satisfactory if control board indications or visual observations indicate all components have operated satisfactorily.

A06

ITS A01 ITS 3.6.6

Cooling System

starts automatically on an actual or simulated actuation signal L02

3. Containment Fancoil Units

A05

SR 3.6.6.7 Each fancoil unit shall be tested once every operating cycle or once every 18 months, whichever occurs first, to verify proper operation of the motor-operated service water outlet valves and the fancoil emergency discharge and associated backdraft dampers. LA02

b. Component Tests

See ITS 3.5.2

1. Pumps

SR 3.6.6.4 A. The safety injection pumps, residual heat removal pumps, and containment spray pumps shall be started and operated quarterly during power operation and within 1 week after the plant is returned to power operation, if the test was not performed during plant shutdown. LA03 L05

SR 3.6.6.4 B. Acceptable levels of performance are demonstrated by the pumps' ability to start and develop head within an acceptable range.

at the flow test point is greater than or equal to the required developed head M04

2. Valves

A. The containment sump outlet valves shall be tested during the pump tests. See ITS 3.5.2

B. The accumulator check valves shall be checked for OPERABILITY during each major REFUELING outage. The accumulator block valves shall be checked to assure "valve open" requirements during each major REFUELING outage. See ITS 3.5.1

C. Deleted

D. Spray additive tank valves shall be tested during each major REFUELING outage. See ITS 3.6.7

E. Deleted

F. Residual Heat Removal System valve interlocks shall be tested once per operating cycle. See ITS 3.4.14

Add proposed SR 3.6.6.1, SR 3.6.6.2, and SR 3.6.6.3 M05

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DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.3.c.1.A.3.(i) states, in part, one containment fancoil unit train may be out of service for 7 days provided the opposite containment fancoil unit train remains OPERABLE. CTS 3.3.c.1.A.3.(ii) states, in part, one containment spray train may be out of service for 72 hours provided the opposite containment spray train remains OPERABLE. ITS 3.6.6 does not maintain the requirement that the opposite containment cooling train (equivalent to CTS containment fancoil unit trains) and/or the containment spray train remain OPERABLE. This changes the CTS by deleting the explicit statement that the opposite train must remain OPERABLE.

This change is acceptable because the technical requirements have not changed. In the ITS, there is a separate ACTION if two containment spray trains (ACTION F) or if two containment cooling trains (ACTION D) are inoperable. Therefore, there is no need to state that the opposite train must remain OPERABLE. If the opposite train becomes inoperable, the appropriate ACTION for two containment spray trains (ACTION F) or two containment cooling trains (ACTION D) would be entered. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 3.3.c.1.A.3.(iii) states, in part, one containment fancoil unit train and one containment spray train may be out of service for 72 hours provided the opposite containment fancoil unit and containment spray train remains OPERABLE. ITS 3.6.6 does not maintain this Action. This changes the CTS by not requiring the action to verify the opposite train is OPERABLE.

This change is acceptable because the technical requirements have not changed. The purpose of CTS 3.3.c.1.A.3.(iii) is to ensure one complete train (one spray and two fan coil units) remain OPERABLE. In ITS 3.6.6 contains specific ACTIONS for one containment cooling train (equivalent to CTS containment fancoil unit trains) inoperable (ACTION C) and one containment spray train inoperable (ACTION A). Therefore, if one containment spray train and one containment fancoil unit train (equivalent to ITS containment cooling train) were to become inoperable at the same time, then ITS 3.6.6 ACTION A and ACTION C would both be entered and the appropriate Completion Times would have to be met. Since the shortest Completion Time provided in ITS 3.6.6 ACTIONS A and C is 72 hours already, there is no need for a separate ACTION covering the two inoperabilities. Furthermore, there is no need to state that the opposite train must remain OPERABLE. If the opposite train becomes inoperable, the appropriate ACTION for two containment spray trains (ACTION F) and/or two containment cooling trains (ACTION D) would be

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

entered. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.3.c.1 does not provide an Action for two containment spray trains inoperable or for two containment cooling trains inoperable. Thus, CTS 3.0.c would be required to be entered. ITS 3.6.6 ACTION F requires immediate entry into ITS LCO 3.0.3 when two containment spray trains are inoperable or two containment cooling trains are inoperable for reasons other than Condition D. This changes the CTS by providing an explicit ACTION for two inoperable containment spray trains and for certain conditions with two containment cooling trains inoperable.

The purpose of ITS 3.6.6 ACTION F is to require immediate entry into ITS LCO 3.0.3 when two containment spray trains are inoperable or two containment cooling trains are inoperable for reasons other than one inoperable fan-coil unit in each train. This change is acceptable because this same action is required in the CTS. This change is designated as administrative because it does not result in technical changes to the CTS. Note that DOC L01 provides changes related to one inoperable fan-coil unit in each train.

A05 CTS 4.5.a.2.A states, in part, that the containment spray system test shall be performed once per operating cycle or once every 18 months, whichever occurs first. ITS SR 3.6.6.6 requires verification that each containment spray pump starts automatically on an actual or simulated actuation signal every 18 months and ITS SR 3.6.6.5 requires verification that each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. CTS 4.5.a.3 states, in part, that the containment fancoil units shall be tested once per operating cycle or once every 18 months, whichever occurs first. ITS SR 3.6.6.7 requires verification that each containment cooling train starts automatically on an actual or simulated actuation signal every 18 months. This changes the CTS by deleting the "once per operating cycle" terminology. The change discussion regarding the use of an actual or simulated test signal is located in DOC L02.

This change is acceptable since the terms "operating cycle" and "18 months" are synonymous. The Surveillance Frequency remains essentially unchanged since the KPS refueling outage occurs every 18 months. The technical requirements of both the CTS and ITS remain unchanged in that a test is required to ensure that the system will perform its intended function. This change is designated as administrative because it does not result in technical changes to the CTS.

A06 CTS 4.5.a.2.C states, in part, that the Containment Vessel Internal Spray System test will be considered satisfactory if control board indication or visual observations indicate all components have operated satisfactorily. ITS SR 3.6.6.5 and SR 3.6.6.6 do not include this statement. This changes the CTS by deleting the specific method of verifying Surveillances.

This change is acceptable because this type of information is not needed in the Technical Specifications. This information is found in the individual Surveillance procedures used to perform the testing. ITS SR 3.6.6.5 and SR 3.6.6.6 continue

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

to require verification of proper pump and valve actuation. Therefore, stating it in the Technical Specifications is unnecessary. Additionally, 10 CFR 50 Appendix B requires "Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Thus, this CTS requirement is already covered by 10 CFR 50 Appendix B requirements. This change is considered administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 The CTS 3.3.c.1.A Applicability of the containment spray and containment fancoil units is that the reactor shall not be made critical unless both trains of containment spray and both trains of containment fan coil units are OPERABLE. In the ITS, this is MODES 1 and 2. In addition, CTS 3.3.c.1.A.3 provides actions when the containment spray and fan coil units are inoperable during power operation or recovery from an inadvertent trip. ITS 3.6.6 requires the Containment Spray and Cooling Systems to be OPERABLE in MODES 1, 2, 3, and 4. Thus, ITS 3.6.6 ACTION A or C must be entered if a containment spray or fan coil unit is inoperable in MODES 1, 2, 3, and 4. This changes the CTS by requiring the Containment Spray and Cooling Systems to be OPERABLE in MODES 3 and 4 and adding commensurate ACTIONS to cover this new Applicability.

The Containment Spray and Cooling Systems provide containment atmospheric cooling to limit post accident pressure and temperature in containment to less than the design values. The addition of MODES 3 and 4 are acceptable since a LOCA or MSLB could occur that could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray and cooling trains during these MODES. This change is designated as more restrictive because the Containment Spray and Cooling Systems are required to be OPERABLE in additional MODES.

M02 CTS 3.3.c.1.A states, in part, that the containment spray and containment fancoil units are not required to be OPERABLE during LOW POWER PHYSICS TESTS. ITS 3.6.6 does not include this exception; the Containment Spray and Cooling Systems are required during PHYSICS TESTS. This changes the CTS by requiring the containment spray and containment fancoil units to be OPERABLE during PHYSICS TESTS.

The purpose of 3.3.c.1.A is to ensure the containment spray and containment fancoil units provide containment atmospheric cooling to limit post accident pressure and temperature in containment to less than the design values. Since Physics Tests do not require the containment spray and containment fan coil units to be inoperable to perform the tests, there is no reason to maintain this current allowance. Therefore, this change is acceptable and is more restrictive because the containment spray and containment fancoil units is now required to be OPERABLE under more conditions in the ITS than in the CTS.

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

M03 CTS 3.3.c.1.A.3 requires, in part, that if the containment spray and containment fancoil units are not returned to OPERABILITY within the time specified in CTS 3.3.c.1.A.3.(i), 3.3.c.1.A.3.(ii), or 3.3.c.1.A.3.(iii), then, within 1 hour, initiate action to achieve HOT STANDBY within 6 hours, achieve HOT SHUTDOWN within the following 6 hours, and achieve COLD SHUTDOWN within an additional 36 hours. For Containment Spray System inoperabilities, ITS 3.6.6 Required Action B.1 requires the unit be in MODE 3 (equivalent to CTS HOT SHUTDOWN) within 6 hours and Required Action B.2 requires the unit to be in MODE 5 (equivalent to COLD SHUTDOWN) within 84 hours. For Containment Cooling train inoperabilities, ITS 3.6.6 Required Action E.1 requires the unit be in MODE 3 (equivalent to CTS HOT SHUTDOWN) within 6 hours and Required Action E.2 requires the unit to be in MODE 5 (equivalent to CTS COLD SHUTDOWN) within 36 hours. This change deletes the requirement to be in HOT STANDBY (equivalent to ITS MODE 2) within 7 hours, changes the time required to be in MODE 3 from 13 hours to 6 hours, and changes the time required to be in MODE 5 (for containment fan coil units) from 48 hours to 36 hours. The change in the time to be in MODE 5 for the containment spray trains is discussed in DOC L04.

The purpose of 3.3.c.1.A.3 is to place the unit in a condition in which the LCO does not apply. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. Allowing 6 hours to be in MODE 3 in lieu of the current 13 hours ensures a unit shutdown is commenced and completed within a reasonable period of time upon failure to restore the containment spray and containment fancoil units to OPERABLE status within the allowed Completion Time. Additionally, since ITS 3.6.6 Required Actions B.1 and E.1 requires the unit to be in MODE 3 within 6 hours, there is no need to maintain the requirement to be MODE 2 within the same 6 hours. This change is designated as more restrictive because less time is allowed for the unit to reach MODE 3 than was allowed in the CTS.

M04 CTS 4.5.b.1.A requires the containment spray pumps be started and operated quarterly during power operation and within 1 week after the plant is returned to power operation, if the test was not performed during plant shutdown. CTS 4.5.b.1.B states, in part, that an acceptable level of performance is demonstrated by the pumps ability to develop a head within an acceptable range. ITS SR 3.6.6.4 requires verification that each containment spray pump's developed head at the test flow point is greater than or equal to the required developed head. This changes the CTS by requiring that the developed head is greater than or equal to the required developed head. The change in test Frequency is discussed in DOC LA03 and DOC L05.

The purpose of CTS 4.5.b.1 is to demonstrate that the containment spray pumps are able to perform their design functions. ITS SR 3.6.6.4 confirms the pump OPERABILITY, trends the performance, and detects incipient failure by indicating abnormal performance. This change is designated as more restrictive because a

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

more specific test of the ECCS pumps will be performed than was required in the CTS.

M05 CTS 4.5 does not provide a Surveillance Requirement to verify that each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in placed is in the correct position. The ITS adds a Surveillance Requirement (SR 3.6.6.1) to verify that each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in placed is in the correct position every 31 days. CTS 4.5 does not provide a Surveillance Requirement to operate each containment cooling train fan unit for greater than or equal to 15 minutes. The ITS adds Surveillance Requirement (SR 3.6.6.2) to operate each containment cooling train fan unit for greater than or equal to 15 minutes every 31 days. CTS 4.5 does not provide a Surveillance Requirement to verify that the containment cooling train cooling water flow rate is sufficient to remove the assumed accident heat load. The ITS adds a Surveillance Requirement (SR 3.6.6.3) to verify that the containment cooling train cooling water flow rate is sufficient to remove the assumed accident heat load every 92 days. This changes the CTS by adding new Surveillance Requirements to the Technical Specifications.

This change is acceptable because the added Surveillance Requirements provide additional assurance that the Containment Spray and Cooling Systems are capable of providing containment atmospheric cooling to limit post accident pressure and temperature in containment to less than the design values. This change is designated as more restrictive because new Surveillance Requirements are added.

<u>RELOCATED SPECIFICATIONS</u>

None

<u>REMOVED DETAIL CHANGES</u>

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.c.1.A.1 requires, in part, that two containment spray trains are OPERABLE with each train comprised of one containment spray pump and an OPERABLE flow path consisting of all valves and piping required to function during accident conditions. It also requires that there is a flow path that is capable of taking suction from the Refueling Water Storage Tank. CTS 3.3.c.1.A.2 requires that two trains of containment fancoil units are OPERABLE with two fancoils units in each train. CTS 4.5.a.2.B also requires a minimum of 76 spray nozzles per containment spray train to be OPERABLE. ITS LCO 3.6.6 requires that two containment spray trains and two containment cooling trains shall be OPERABLE, but does not include the details of what comprises an OPERABLE containment spray or cooling train. This changes the CTS by moving the description of containment spray and containment fancoil unit trains to the Bases.

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

The removal of these details which are related to system design from the Technical Specification is acceptable because this type of information is not necessary to be included to provide adequate protection of public health and safety. The ITS still retains the requirement that the containment spray and containment cooling trains shall be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because the information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.5.a.2.A states, in part, that the Containment Vessel Internal Spray System test shall be performed "with the isolation valves in the supply lines at the containment blocked closed." ITS SR 3.6.6.6 requires verification that the containment spray pump starts, but does not contain the requirement that the isolation valves in the supply line are blocked closed (which is performed to ensure that actual spraying of the containment does not occur). CTS 4.5.a.2.B states, in part, that the Containment Spray Header test be performed by "using an air or smoke test." ITS SR 3.6.6.8 only requires verification that the spray nozzles are unobstructed. CTS 4.5.a.3 states, in part, that the fancoil units are to be tested to "verify proper operation of the motor-operated service water outlet valves and the fancoil emergency discharge and associated backdraft dampers." ITS SR 3.6.6.7 only requires verification that the containment cooling train starts, but does not contain the specific details listed in the CTS. This changes the CTS by moving the details of how the Containment Spray System test, the spray nozzle test, and the containment cooling train tests are performed to the Bases.

The removal of this detail, for performing Surveillance Requirements, from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS still retains the requirement to perform the Containment Spray and Cooling Systems tests and the spray nozzle test. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA03 *(Type 3 - Removing Procedural Detail for Meeting TS Requirements or Reporting Requirements)* CTS 4.5.b.1.A requires that the containment spray pumps are demonstrated OPERABLE quarterly during power operation. ITS 3.6.6.4 requires a similar verification in accordance with the Inservice Testing Program. This changes the CTS by moving the specific Frequency for this test (quarterly) to the Inservice Testing (IST) Program.

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

The removal of this detail, for performing Surveillance Requirements, from the Technical Specifications is acceptable because the Frequency for the verification has not changed. The Kewaunee IST Program requires this verification every quarter (92 days). Therefore, this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement to verify each ECCS pump's developed head at the flow test point is greater than or equal to the required developed head at a Frequency of in accordance with the IST Program. Also, this change is acceptable because these types of details will be adequately controlled in the IST Program, which is controlled by 10 CFR 50.55a. This change is designated as a less restrictive removal of detail change because details for meeting Technical Specification requirements are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.3.c.1 does not provide an Action when two containment cooling trains are inoperable. Thus, CTS 3.0.c would be required to be entered, and a unit shutdown commenced. When one fan-coil unit in both containment air cooling trains are inoperable, ITS 3.6.6 ACTION D will allow 72 hours to restore one inoperable containment air cooling train to OPERABLE status prior to requiring a unit shutdown. This changes the CTS by allowing 72 hours to restore an inoperable containment air cooling train when both trains are inoperable prior to requiring a unit shutdown.

The purpose of CTS 3.3.c.1 is to require sufficient containment cooling to ensure the containment temperature conditions for the safety analyses are met. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, and reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. When one fan-coil unit in both trains of containment air cooling are inoperable, the remaining fan-coil units (one per train) can still provide the required peak cooling capacity during the post accident conditions. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.5.a.2.A states, in part, that a Containment Vessel Internal Spray System test "shall be performed" every 18 months. CTS 4.5.a.3 states, in part, that each containment fancoil unit "shall be tested" every 18 months. ITS SR 3.6.6.5, SR 3.6.6.6, and SR 3.6.6.7 require verification that the containment spray valves, containment spray pumps, and containment cooling trains, respectively, actuate or start automatically on an actual or simulated (i.e., test signal) actuation signal. This changes the CTS by allowing use of either an actual or simulated signal for the test.

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

The purpose of CTS 4.5.a.2.A and 4.5.a.3 is to ensure that the Containment Vessel Internal Spray System pumps and valves and containment fancoil units and valves operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the current Surveillance Requirement acceptance criteria are not the only method that can be used for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal, and therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.5.a.2.A requires a System test of the Containment Spray System, which includes verification that each automatic containment spray valve in the flow path actuates to its correct position. ITS SR 3.6.6.5 requires verification that each automatic containment spray valve in the flow path "that is not locked, sealed, or otherwise secured in position" actuates to the correct position. This changes the CTS by excluding those automatic valves that are locked, sealed, or otherwise secured in position from the verification.

The purpose of CTS 4.5.a.2.A is to provide assurance that if an event occurred requiring containment spray valves to be in their correct position, then those requiring automatic actuation would actuate to their correct position. This change is acceptable because the deleted Surveillance is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to provide confidence that the equipment can perform its assumed safety function. Those automatic valves that are locked, sealed, or otherwise secured in position are not required to actuate on a containment spray actuation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves that are required to actuate will continue to be tested. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L04 *(Category 3 – Relaxation of Completion Time)* CTS 3.3.c.1.A.3 requires, in part, that if the containment spray train is not returned to OPERABILITY within the time specified in CTS 3.3.c.1.A.3.(i), then, within 1 hour, initiate action to achieve HOT STANDBY within 6 hours, achieve HOT SHUTDOWN within the following 6 hours, and achieve COLD SHUTDOWN (equivalent to ITS MODE 5) within an additional 36 hours. For Containment Spray System inoperabilities, ITS 3.6.6 ACTION B requires the unit to be in MODE 3 within 6 hours and in MODE 5 within 84 hours. This change extends the time to be in MODE 5 from 48 hours to 84 hours. The change in the requirements to be in HOT STANDBY and HOT SHUTDOWN is discussed in DOC M03.

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

The purpose of the CTS action is to place the unit in a MODE where the equipment is not required. The extended interval to reach MODE 5 allows additional time for attempting restoration of the containment spray train and is acceptable because the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3. Furthermore, during this additional time at least one train of containment cooling is OPERABLE. This change is designated as less restrictive since more time is provided to reach MODE 5 in the ITS than is allowed in the CTS.

L05 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.5.b.1.A requires the containment spray pumps to be started and operated every quarter during power operation and "within 1 week after the plant is returned to power operation, if the test was not performed during plant shutdown." This implies that even if the test were performed just prior to a unit shutdown, that it must be re-performed within one week after the plant startup if not performed during the plant shutdown, even if the test is still current (i.e., has been performed within the previous quarter). ITS SR 3.6.6.4 only requires this test to be performed every 92 days. This changes the CTS by reducing the Frequency for performing the containment spray pump tests by allowing the test to not be performed within 1 week after a unit startup if the Surveillance is still current (i.e., it has been performed within the previous 92 days).

The purpose of CTS 4.5.b.1.A is to ensure that the containment spray pumps are OPERABLE. This change is acceptable because the new Surveillance Frequency provides an acceptable level of equipment reliability. The change is acceptable since the Frequency of 92 days has been determined to be sufficient during power operation, thus it is sufficient if the unit has been shutdown and then restarted within the 92 day Frequency. Shutting down the unit in and of itself does not affect the OPERABILITY of the containment spray pumps. Furthermore, ITS SR 3.0.1 requires the SR to be met during the MODES or other specified conditions in the Applicability and ITS SR 3.0.4 requires the Surveillance to be met within the specified Frequency prior to entering the Applicability of the LCO and prior to changing MODES. Thus, ITS SR 3.6.6.4 for the containment spray pumps must be current prior to restarting the unit (i.e., a MODE change). This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.6~~A~~ Containment Spray and Cooling Systems ~~(Atmospheric and Dual)~~ ~~(Credit taken for iodine removal by the Containment Spray System)~~ 1

3.3.c.1.A.1, 3.3.c.1.A.2 LCO 3.6.6~~A~~ Two containment spray trains and [two] containment cooling trains shall be OPERABLE. 2

3.3.c.1.A APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.3.c.1.A.3.(ii)	A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours	
3.3.c.1.A.3	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 84 hours	
3.3.c.1.A.3.(i)	C. One ~~[required]~~ containment cooling train inoperable.	C.1 Restore ~~[required]~~ containment cooling train to OPERABLE status.	7 days	2
One fan coil unit in both DOC L01	D. ~~Two~~ ~~[required]~~ containment cooling trains inoperable.	D.1 Restore one ~~[required]~~ containment cooling train to OPERABLE status.	72 hours	6 2
3.3.c.1.A.3	E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	6 hours 36 hours	

CTS

Containment Spray and Cooling Systems ~~(Atmospheric and Dual)~~ 1
3.6.6~~A~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC A04 F. Two containment spray trains inoperable. OR ~~Any combination of three or more trains inoperable.~~ Two containment cooling trains inoperable for reasons other than Condition D. 6	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M05	SR 3.6.6~~A~~.1	Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days	1
DOC M05	SR 3.6.6~~A~~.2	Operate each ~~[required]~~ containment cooling train fan unit for ≥ 15 minutes.	31 days	1 2
DOC M05	SR 3.6.6~~A~~.3	Verify each ~~[required]~~ containment cooling train cooling water flow rate is ~~≥ [700] gpm~~ sufficient to remove the assumed accident heat load.	~~31~~ 92 days	1 2 8 3
4.5.b.1.A, 4.5.b.1.B	SR 3.6.6~~A~~.4	Verify each containment spray 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	1
4.5.a.2.A	SR 3.6.6~~A~~.5	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[~~18~~]~~ months	1 4

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.5.a.2.A	SR 3.6.6~~A~~.6	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	~~[~~18~~]~~ months	1 4
4.5.a.3	SR 3.6.6~~A~~.7	Verify each ~~[required]~~ containment cooling train starts automatically on an actual or simulated actuation signal.	~~[~~18~~]~~ months	1 4
4.5.a.2.B	SR 3.6.6~~A~~.8	Verify each required spray nozzle is unobstructed.	~~[At first refueling]~~ ~~AND~~ 10 years	1 5 7

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

1. The type of Containment Spray and Cooling Systems (Atmospheric and Dual) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Spray and Cooling Systems Specification is used in the Kewaunee Power Station (KPS) ITS. This information is provided in NUREG-1431, Rev. 3.1, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Containment Spray and Cooling Systems Specification for Atmospheric and Dual Containments with credit not taken for iodine removal by the Containment Spray System (ISTS 3.6.6B), Containment Spray Specification for Ice Condenser Containments (ISTS 3.6.6C), Quench Spray System Specification for Subatmospheric Containment (ISTS 3.6.6D) and Recirculation Spray Specification for Subatmospheric Containment (ISTS 3.6.6E) are not used and are not shown.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect that KPS has two containment cooling trains. Additionally, the word "required" has been deleted throughout the Specification when discussing the containment cooling trains, since all KPS installed containment cooling trains are required to be OPERABLE.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised and the current plant design for the containment cooling water flow rate is given.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant refueling outage cycle length (18 months).

5. Kewaunee Power Station has completed the first refueling outage. Therefore, the ISTS SR 3.6.6.8 bracketed frequency of "At first refueling" is not needed and is deleted.

6. ISTS 3.6.6 ACTION D provides Required Actions when both trains of containment cooling are inoperable, and requires restoration of one train within 72 hours. The ISTS Bases for the ACTIONS states it is allowed because the two containment spray trains can provide 100% of the assumed cooling capacity. The KPS safety analysis does not support this assumption. Both trains of containment spray cannot provide 100% of the containment cooling requirements following a DBA LOCA. However, each train of containment cooling consists of two fan-coil units, as described in the KPS ITS Bases. The KPS design is consistent with the design described in the ISTS Bases. The KPS safety analysis requires two fan-coil units to be OPERABLE to provide the necessary cooling capacity. Thus, when one fan-coil unit in each train is inoperable, the remaining fan-coil units (one per train) can provide the necessary cooling capacity. Therefore, KPS has modified ISTS 3.6.6 Condition D to limit the condition to one fan-coil unit inoperable in each train (in lieu of up to all four fan-coil

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

units as allowed by the ISTS). Furthermore, the second Condition in ISTS 3.6.6 Condition F has also been modified consistent with this change.

7. ISTS SR 3.6.6A.8 requires verification that "each" spray nozzle is unobstructed. The KPS design includes 84 spray nozzles per containment cooling train. However, CTS 4.5.a.2.B only requires that a minimum of 76 (of the 84 installed) nozzles per train are functioning properly (i.e., unobstructed). Therefore, the SR has been modified to verify each "required" spray nozzle is unobstructed. This is consistent with the use of the word "required" throughout the ISTS.

8. ISTS SR 3.6.6A.3 requires a verification that the containment cooling train cooling water flow rate is $\geq$ [700] gpm every 31 days. ITS SR 3.6.6.3 includes a similar Surveillance, but the value for the flow rate is not included and the Frequency is specified as 92 days.

   The SR acceptance criteria is specified as "is sufficient to remove the assumed accident heat load." The CTS does not include the flow rate value. This value is currently controlled outside of the Technical Specifications. Each containment cooling train consists of two fan-coil units. Thus, the flow rate is on a fan-coil unit basis, not a train basis. Furthermore, the flow rate for a fan-coil unit depends upon whether or not there are any plugged tubes. Currently, one of the four fan-coil units is operating with tubing plugged, thus the necessary flow to remove the assumed accident heat load is higher for this fan-coil unit than it is for the other three fan-coil units. Therefore, since this value is currently controlled by KPS outside of the Technical Specifications, the KPS ITS will maintain this allowance, but clearly specify the criteria the fan-coil units must meet. The values for the fan-coil unit flow will be specified in the ITS Bases.

   The proposed 92 day Frequency is consistent with the current Inservice Test Program Frequency for the Service Water (SW) System pump and valve tests required as part of ITS 5.5.6, the IST Program. The SW tests provide the valve alignments necessary to establish the conditions for conducting the flow test for the containment fan coil units.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.6~~A~~ Containment Spray and Cooling Systems ~~(Atmospheric and Dual)~~ ~~(Credit taken for iodine removal by the Containment Spray System)~~ 1

BASES

BACKGROUND

The Containment Spray and Containment Cooling systems provide containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. Reduction of containment pressure and the iodine removal capability of the spray reduces the release of fission product radioactivity from containment to the environment, in the event of a Design Basis Accident (DBA), to within limits. The Containment Spray and Containment Cooling systems are designed to meet the requirements of ~~10 CFR 50, Appendix A, GDC 38, "Containment Heat Removal," GDC 39, "Inspection of Containment Heat Removal Systems," GDC 40, "Testing of Containment Heat Removal Systems," GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems" (Ref. 1), or other documents that were appropriate at the time of licensing (identified on a unit specific basis)~~. INSERT 1 2

The Containment Cooling System and Containment Spray System are Engineered Safety Feature (ESF) systems. They are designed to ensure that the heat removal capability required during the post accident period can be attained. ~~The Containment Spray System and the Containment Cooling System provide redundant methods to limit and maintain post accident conditions to less than the containment design values.~~ 7

Containment Spray System

The Containment Spray System consists of two separate trains of equal capacity, each capable of meeting the design bases. Each train includes a containment spray pump, two spray headers, (i.e., an outer ring and an inner ring) with a total of 84 nozzles, valves, and piping. 2 2
Each train is powered from a separate ESF bus. The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of operation. ~~In the recirculation mode of operation, containment spray pump suction is transferred from the RWST to the containment sump(s).~~ 3

The Containment Spray System provides a spray of cold borated water mixed with sodium hydroxide (NaOH) from the ~~spray additive tank~~ caustic additive standpipe into the upper regions of containment to reduce the containment pressure and temperature and to reduce fission products from the containment atmosphere during a DBA. The RWST solution temperature is an 2

2

INSERT 1

USAR, General Design Criteria (GDC) 52, "Containment Heat Removal Systems," GDC 58, "Inspection of Containment Pressure-Reducing Systems," GDC 59, "Testing of Containment Pressure-Reducing Systems Components," GDC 60, "Testing of Internal Containment Spray System," and GDC 61, "Testing of Operational Sequence of Containment Pressure-Reducing Systems" (Ref. 1)

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1

BASES

BACKGROUND (continued)

important factor in determining the heat removal capability of the Containment Spray System during the injection phase. In the recirculation mode of operation, heat is removed from the containment sump water by the residual heat removal coolers. Each train of the Containment Spray System provides adequate spray coverage to meet the system design requirements for containment heat removal. 3 7

The Spray Additive System injects an NaOH solution into the spray. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge fission products from the containment atmosphere. The NaOH added in the spray also ensures an alkaline pH for the solution recirculated in the containment sump. The alkaline pH of the containment sump water minimizes the evolution of iodine and minimizes the corrosion on mechanical systems and components exposed to the fluid.

High – High

The Containment Spray System is actuated either automatically by a containment High-3 pressure signal or manually. An automatic actuation opens the containment spray pump discharge valves, starts the two containment spray pumps, and begins the injection phase. A manual actuation of the Containment Spray System requires the operator to actuate two separate switches on the main control board to begin the same sequence. The injection phase continues until an RWST level Low-Low alarm is received. The Low-Low level alarm for the RWST actuates valves to align the Containment Spray System pump suction with the containment sump and/or signals the operator to manually align the system to the recirculation mode. The Containment Spray System in the recirculation mode maintains an equilibrium temperature between the containment atmosphere and the recirculated sump water. Operation of the Containment Spray System in the recirculation mode is controlled by the operator in accordance with the emergency operating procedures. 2 2

pushbuttons

Containment Cooling System

Two trains of containment cooling, each of sufficient capacity to supply 100% of the design cooling requirement, are provided. Each train of two fan units is supplied with cooling water from a separate train of essential service water (ESW). Air is drawn into the coolers through the fan and discharged to the steam generator compartments, pressurizer compartment, and instrument tunnel, and outside the secondary shield in the lower areas of containment. 2

-coil

upward from the lower primary compartments through the steam generator compartments to the operating floor level

1

 1

BASES

BACKGROUND (continued)

up to -coil service water Reactor Building

During normal operation, all four fan units are operating. The fans are normally operated at high speed with ESW supplied to the cooling coils. The Containment Cooling System, operating in conjunction with the Containment Ventilation and Air Conditioning systems, is designed to limit the ambient containment air temperature during normal unit operation to less than the limit specified in LCO 3.6.5A, "Containment Air Temperature." This temperature limitation ensures that the containment temperature does not exceed the initial temperature conditions assumed for the DBAs. 2 2 2 1

and emergency discharge dampers open

The vane-axial fan is driven by a single speed motor and is capable of delivering the required quantity of air-steam mixture under post accident conditions.

In post accident operation following an actuation signal, the Containment Cooling System fans are designed to start automatically in slow speed if not already running. If running in high (normal) speed, the fans automatically shift to slow speed. The fans are operated at the lower speed during accident conditions to prevent motor overload from the higher mass atmosphere. The temperature of the ESW is an important factor in the heat removal capability of the fan units. 2 2

APPLICABLE SAFETY ANALYSES

main M

The Containment Spray System and Containment Cooling System limit the temperature and pressure that could be experienced following a DBA. The limiting DBAs considered are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train of the Containment Spray System and Containment Cooling System being rendered inoperable. 2 2

45.68 MSLB 266.6 M limiting

0.0% for the MSLB and 100.6% for the LOCA

any combination of two of the four trains of containment spray and containment cooling operating

2.15

The analysis and evaluation show that under the worst case scenario, the highest peak containment pressure is [44.1] psig (experienced during a LOCA). The analysis shows that the peak containment temperature is [384.5]°F (experienced during an SLB). Both results meet the intent of the design basis. (See the Bases for LCO 3.6.4A, "Containment Pressure," and LCO 3.6.5A for a detailed discussion.) The analyses and evaluations assume a unit specific power level of [100]%, one containment spray train and one containment cooling train operating, and initial (pre-accident) containment conditions of [120]°F and [1.5] psig. The analyses also assume a response time delayed initiation to provide conservative peak calculated containment pressure and temperature responses. 4 2 4 1 1 4 2

 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K (Ref. 2). 2

and simultaneous operation of all four containment fan-coil units and both trains of the Containment Spray System

The effect of an inadvertent ~~containment spray actuation~~ has been analyzed. An inadvertent ~~spray~~ actuation results in a ~~[2.0]~~ -0.783 psig containment pressure and is associated with the sudden cooling effect in the interior of the leak tight containment. Additional discussion is provided in the Bases for LCO 3.6.4~~A~~. 4 2 2

The modeled Containment Spray System actuation from the containment analysis is based on a response time associated with exceeding the containment ~~High-3~~ High-High pressure setpoint to achieving full flow through the containment spray nozzles. The Containment Spray System total response time of ~~[60]~~ 135 seconds includes diesel generator (DG) startup (for loss of offsite power), block loading of equipment, containment spray pump startup, and spray line filling (Ref. 3). 2 4

Containment cooling train performance for post accident conditions is given in Reference 4. The result of the analysis is that each train can provide 100% of the required peak cooling capacity during the post accident condition. ~~The train post accident cooling capacity under varying containment ambient conditions, required to perform the accident analyses, is also shown in Reference 5.~~ 2

The modeled Containment Cooling System actuation from the containment analysis is based upon a response time associated with exceeding the containment ~~High-3~~ High-High pressure setpoint to achieving full Containment Cooling System air and safety grade cooling water flow. The Containment Cooling System total response time of ~~[60]~~ 135 seconds, includes signal delay, DG startup (for loss of offsite power), and service water pump startup times (Ref. ~~6~~ 3). 2 4 5

The Containment Spray System and the Containment Cooling System satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

During a DBA, a minimum of one containment cooling train and one containment spray train are required to maintain the containment ~~peak~~ 2 pressure and temperature below the design limits (Ref. ~~7~~ 5). Additionally, 5 one containment spray train is also required to remove iodine from the containment atmosphere and maintain concentrations below those assumed in the safety analysis. To ensure that these requirements are met, two containment spray trains and two containment cooling trains must be OPERABLE. Therefore, in the event of an accident, at least one train in each system operates, assuming the worst case single active failure occurs.

Each ~~C~~ontainment ~~S~~pray ~~System typically~~ train includes a containment spray pump, two spray headers ~~,~~ (i.e., an outer ring and an inner ring) with a minimum of 76 nozzles, valves, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal ~~and automatically transferring suction to the containment sump~~. 2

Each ~~C~~ontainment ~~C~~ooling ~~System typically~~ train includes ~~demisters, cooling coils,~~ two fan-coil units, dampers, ~~fans~~ ductwork, instruments, and controls to ensure an OPERABLE flow path.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray System and the Containment Cooling System are not required to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1

With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE spray and cooling trains are adequate to perform the iodine removal and containment cooling functions. The 72 hour Completion Time takes into account the redundant heat removal capability afforded by the Containment Spray System, reasonable time for repairs, and low probability of a DBA occurring during this period.

BASES

ACTIONS (continued)

B.1 and B.2

If the inoperable containment spray 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 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows additional time for attempting restoration of the containment spray train and is reasonable when considering the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

C.1

With one of the ~~required~~ containment cooling trains inoperable, the inoperable required containment cooling train must be restored to OPERABLE status within 7 days. The components in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of DBA occurring during this period. 6

D.1

one fan-coil unit in both

With ~~two~~ ~~required~~ containment cooling trains inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. The ~~components~~ in this degraded condition provide ~~iodine removal capabilities and are~~ capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System, the iodine removal function of the Containment Spray System, and the low probability of DBA occurring during this period. 6 6

remaining fan-coil units (one per train)

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BASES

ACTIONS (continued)

E.1 and E.2

If the Required Action and associated Completion Time of Condition C or D of this LCO are not met, 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 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.

F.1

inoperable or two containment cooling trains inoperable for reasons other than Condition D

With two containment spray trains ~~or any combination of three or more containment spray and cooling trains inoperable~~, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately. 6

SURVEILLANCE REQUIREMENTS

SR 3.6.6A.1 1

Verifying the correct alignment for manual, power operated, and automatic valves in the containment spray flow path provides assurance that the proper flow paths will exist for Containment Spray System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification that those valves outside containment (only check valves are inside containment) and capable of potentially being mispositioned are in the correct position.

SR 3.6.6A.2 1

Operating each ~~[required]~~ containment cooling train fan unit for ≥ 15 minutes 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. The 31 day Frequency was developed considering the known reliability of the fan units and controls, the two train redundancy available, and the low probability of significant degradation of the containment cooling train occurring between surveillances. It has also been shown to be acceptable through operating experience. 6 8

1

BASES

The assumed flow rate for the fan-coil units B, C, and D is 800 gpm and for fan-coil unit A is 850 gpm. The flow rate is higher for fan-coil unit A since the fan-coil unit is operating with plugged tubes

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6~~A~~.3 1

service water

Verifying that each ~~[required]~~ containment cooling train ~~ESW~~ cooling flow rate to each cooling unit is ~~≥ [700] gpm~~ provides assurance that the ~~design flow rate assumed in the safety analyses will be achieved~~ (Ref. ~~3~~). 6 2 5 6

assumed post-accident heat load can be removed

The Frequency was developed considering the known reliability of the Cooling Water System, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances.

For the flow test to be performed at power, test alignment will only address closing one of the Service Water System header isolation valves (cross-connect valves SW-3A or SW-3B), bypass shroud cooling and not establish post-accident cooling flows to other ESF components.

SR 3.6.6~~A~~.4 1

Verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by the ASME Code (Ref. ~~8~~). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program. 7 5

SR 3.6.6~~A~~.5 and SR 3.6.6~~A~~.6 1

These SRs require verification that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation of a containment ~~High-3~~ pressure signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The ~~[~~18~~]~~ month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at the ~~[~~18~~]~~ month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. 2 4 4

High – High

The Manual pushbuttons can be used as a simulated actuation signal since the Manual pushbuttons inject a signal into the automatic actuation logic.

~~The surveillance of containment sump isolation valves is also required by SR 3.5.2.5.~~ A single surveillance may be used to satisfy both requirements. 3

INSERT 2 2

 1

2

INSERT 2

However, the tests do not require actually spraying the containment. During the performance of the containment spray pump test, the manual isolation valves in the supply line at the containment shall be blocked closed to prevent spraying the containment.

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 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6A.7 1

This SR requires verification that each [required] containment cooling train actuates upon receipt of an actual or simulated safety injection signal. The [18] month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6A.5 and SR 3.6.6A.6, above, for further discussion of the basis for the [18] month Frequency. 4 4 1 4

This test includes verifying the proper operation of the motor-operated service water outlet valves and the fan coil emergency discharge and associated backdraft dampers. 2

SR 3.6.6A.8 1

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at [the first refueling and at] 10 year intervals is considered adequate to detect obstruction of the nozzles. 6 4

required

(76 per train)

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 38, GDC 39, GDC 40, GDC 41, GDC 42, and GDC 43.~~ 2

USAR, Sections 6.3.1.1, 6.3.1.2, 6.3.1.3, 6.4.1.3, and 6.3.1.4.

2. 10 CFR 50, Appendix K.

3. ~~F~~SAR, Section ~~[ ]~~. 6.4.1 2 4

U

4. ~~F~~SAR, Section ~~[ ]~~. 6.3 2 4

5. ~~FSAR, Section [ ].~~ 5

6. ~~FSAR, Section [ ].~~ 2

U

5 ~~7~~. ~~F~~SAR, Section ~~[ ]~~. 6.3.1 5 2 4

6. USAR, Table 6.3-3 5

7 ~~8~~. ASME Code for Operation and Maintenance of Nuclear Power Plants. 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6 BASES, CONTAINMENT SPRAY AND COOLING SYSTEMS

1. The type of Containment Spray and Cooling Systems (Atmospheric and Dual) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Spray and Cooling Systems Specification is used in the Kewaunee Power Station (KPS) ITS. This information is provided in NUREG-1431, Rev. 3.1, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Containment Spray and Cooling Systems Specification Bases for Atmospheric and Dual Containments with credit not taken for iodine removal by the Containment Spray System (ISTS B 3.6.6B), Containment Spray Specification Bases for Ice Condenser Containments (ISTS B 3.6.6C), Quench Spray System Specification Bases for Subatmospheric Containment (ISTS B 3.6.6D) and Recirculation Spray Specification Bases for Subatmospheric Containment (ISTS B 3.6.6E) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.6.6 Bases background describes a recirculation mode of operation for the Containment Spray System. ITS 3.6.6 does not contain this description since the KPS does not credit the Containment Spray recirculation mode of operation in any design basis accident evaluation.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

5. References in the ISTS Bases for 3.6.6 have been deleted since they are not applicable to KPS and the subsequent references have been renumbered.

6. Changes made to be consistent with changes made to the ISTS.

7. The Containment Spray and Containment Cooling Systems are not redundant with respect to containment cooling requirements. Containment Spray does not provide the necessary cooling capacity following a DBA LOCA.

8. The monthly run test (SR 3.6.6.2) states that the test, in part, ensures excessive vibration can be detected. The fan coil units are inside containment and are not routinely monitored to visually detect excessive vibration. Therefore, this statement has been deleted.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.6, CONTAINMENT SPRAY AND COOLING SYSTEMS

There are no specific NSHC discussions for this Specification.

ATTACHMENT 7

ITS 3.6.7, SPRAY ADDITIVE SYSTEM

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS A01 ITS 3.6.7

2. Spray Additive System

Applicability M01

A. The reactor shall not be made critical unless the following conditions are satisfied, except for LOW POWER PHYSICS TESTS and except as provided by TS 3.3.c.2.A.3. M02

SR 3.6.7.3
SR 3.6.7.2 and ≤ 38% M04
LCO 3.6.7

1. A minimum of 300 gallons of not less than 30% by weight of NaOH solution is available as a containment spray system additive.

2. Valves and piping are capable of adding NaOH solution from the additive tank to a containment spray system. LA01

M01

ACTION A

3. During power operation or recovery from inadvertent trip, the spray additive system may be out of service for 72 hours. If OPERABILITY is not restored within 72 hours, then within 1 hour action shall be initiated to: M03

ACTION B

- Achieve HOT STANDBY within the next 6 hours.
- Achieve HOT SHUTDOWN within the following 6 hours.
- Achieve COLD SHUTDOWN within an additional 36 hours.

84 L02

ITS

A01

ITS 3.6.7

3. Containment Fancoil Units

Each fancoil unit shall be tested once every operating cycle or once every 18 months, whichever occurs first, to verify proper operation of the motor-operated service water outlet valves and the fancoil emergency discharge and associated backdraft dampers.

See ITS 3.6.6

b. Component Tests

1. Pumps

A. The safety injection pumps, residual heat removal pumps, and containment spray pumps shall be started and operated quarterly during power operation and within 1 week after the plant is returned to power operation, if the test was not performed during plant shutdown.

B. Acceptable levels of performance are demonstrated by the pumps' ability to start and develop head within an acceptable range.

See ITS 3.5.2 and 3.6.6

2. Valves

A. The containment sump outlet valves shall be tested during the pump tests.

See ITS 3.5.2

B. The accumulator check valves shall be checked for OPERABILITY during each major REFUELING outage. The accumulator block valves shall be checked to assure "valve open" requirements during each major REFUELING outage.

See ITS 3.5.1

C. ~~Deleted~~

actuates to the correct position on an actual or simulated actuation signal

L01

SR 3.6.7.4

D. Spray additive tank valves shall be tested ~~during each major REFUELING outage~~.

A02

E. ~~Deleted~~

F. Residual Heat Removal System valve interlocks shall be tested once per operating cycle.

See ITS 3.4.14

Add proposed SR 3.6.7.1, SR 3.6.7.2 and SR 3.6.7.3

M04

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 4.5.b.2.D requires the spray additive tank valves shall be tested during each major REFUELING outage. ITS SR 3.6.7.4 requires verification that each spray additive automatic valve in the flow path that is not locked sealed or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. This changes the CTS by changing the statement "major REFUELING outage" to 18 months.

This change is acceptable since the terms "major REFUELING outage" and "18 months" are synonymous. The surveillance frequency remains essentially unchanged since the KPS refueling outage occurs every 18 months. The technical requirements of both the CTS and ITS remain unchanged in that a test is required to ensure that the system will perform its intended function. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 The CTS 3.3.c.2.A Applicability of the Spray Additive System is that the reactor shall not be made critical unless the system is OPERABLE. In the ITS, this is MODES 1 and 2. In addition, CTS 3.3.c.2.A.3 provides actions when the spray additive system is inoperable during power operation or recovery from an inadvertent trip. ITS 3.6.7 requires the Spray Additive System to be OPERABLE in MODES 1, 2, 3, and 4. Thus, ITS 3.6.7 ACTION A must be entered if the spray additive system is inoperable in MODES 1, 2, 3, and 4. This changes the CTS by requiring the Spray Additive System to be OPERABLE in MODES 3 and 4 and adding commensurate ACTIONS to cover the new Applicability.

The Spray Additive System assists in reducing the iodine fission product inventory prior to release to the environment. The addition of MODES 3 and 4 are acceptable since a LOCA or MSLB could occur that could cause a release of radioactive material to containment requiring the operation of the Spray Additive System during these MODES. This change is designated as more restrictive because the Spray Additive System is required to be OPERABLE in additional MODES.

M02 CTS 3.3.c.2.A states, in part, that the Spray Additive System is not required to be OPERABLE during LOW POWER PHYSICS TESTS. ITS 3.6.7 does not include this exception; the Spray Additive System is required during PHYSICS TESTS.

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

This changes the CTS by requiring the Spray Additive System to be OPERABLE during PHYSICS TESTS.

The purpose of 3.3.c.2.A is to ensure the Spray Additive System can assist in the reduction of the iodine fission product inventory prior to release to the environment. Since PHYSICS TESTS do not require, the Spray Additive System to be inoperable to perform the tests, there is no reason to maintain this current allowance. Therefore, this change is acceptable and is more restrictive because the Spray Additive System is now required to be OPERABLE under more conditions in the ITS than in the CTS.

M03 CTS 3.3.c.2.A.3 requires, in part, that if the Spray Additive System is not returned to OPERABILITY within the 72 hours, then, within 1 hour, initiate action to achieve HOT STANDBY within 6 hours, achieve HOT SHUTDOWN within the following 6 hours, and achieve COLD SHUTDOWN within an additional 36 hours. ITS 3.6.7 Required Action B.1 requires the unit be in MODE 3 (equivalent to CTS HOT SHUTDOWN) within 6 hours and Required Action B.2 requires the unit to be in MODE 5 (equivalent to COLD SHUTDOWN) within 84 hours. This change deletes the requirement to be in HOT STANDBY (equivalent to ITS MODE 2) within 7 hours and changes the time required to be in MODE 3 from 13 hours to 6 hours. The change in the time to be in MODE 5 is discussed in DOC L02.

The purpose of 3.3.c.2.A.3 is to place the unit in a condition in which the LCO does not apply. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. Allowing 6 hours to be in MODE 3 in lieu of the current 13 hours ensures a unit shutdown is commenced and completed within a reasonable period of time upon failure to restore the Spray Additive System to OPERABLE status within the allowed Completion Time. Additionally, since ITS 3.6.7 Required Action B.1 requires the unit to be in MODE 3 within 6 hours, there is no need to maintain the requirement to be in MODE 2 within the same 6 hours. This change is designated as more restrictive because less time is allowed for the unit to reach MODE 3 than was allowed in the CTS.

M04 CTS 4.5 does not provide a Surveillance Requirement to verify that each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in placed is in the correct position. The ITS adds a Surveillance Requirement (SR 3.6.7.1) to verify that each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in placed is in the correct position every 31 days. CTS 4.5 does not provide a Surveillance Requirement to verify the spray additive tank solution is greater than or equal to 300 gallons. The ITS adds Surveillance Requirement (SR 3.6.7.2) to verify the spray additive tank solution is greater than or equal to 300 gallons every 184 days. CTS 4.5 does not provide a Surveillance Requirement to verify that the caustic additive standpipe NaOH solution concentration is greater than or equal to 30% and less than or equal to 38% by weight. The ITS adds a Surveillance Requirement (SR 3.6.7.3) to verify that the caustic additive standpipe NaOH solution concentration is greater than or equal

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

to 30% and less than or equal to 38% by weight every 184 days. This changes the CTS by adding new Surveillance Requirements to the Technical Specifications. Furthermore, it changes the CTS by adding an upper limit for the weight % of NaOH.

This change is acceptable because the added Surveillance Requirements provide additional assurance that the Spray Additive System is capable of ensuring that the Spray Additive System can assist in the reduction of the iodine fission product inventory prior to release to the environment. The maximum weight % of NaOH in solution (38%) ensures the sump pH is maintained within the maximum limit (≤ 9.5). This change is designated as more restrictive because new Surveillance Requirements and an upper limit on NaOH are added.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.c.2.A.2 states that the spray additive system "Valves and piping are capable of adding NaOH solution from the additive tank to a containment spray system." ITS LCO 3.6.7 requires the Spray Additive System shall be OPERABLE, but the details of what constitutes an OPERABLE system are moved to the Bases. This changes the CTS by moving the details of what constitutes an OPERABLE Spray Additive System to the Bases.

The removal of these details, which relate to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the Spray Additive System shall be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. Furthermore, a new Surveillance has been added, as described in DOC M04, which requires verification of valve position. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the CTS.

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.5.a.2.D states, in part, that the spray additive tank valves shall be tested during each major REFUELING outage. ITS SR 3.6.7.4 requires verification that spray additive actuates to the correct position on an actual or simulated (i.e., test)

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

actuation signal. This changes the CTS by allowing use of either an actual or simulated signal for the test.

The purpose of CTS 4.5.a.2.D is to ensure that the spray additive tank valves operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the current Surveillance Requirement acceptance criteria are not the only method that can be used for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, and therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulate signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 3 – Relaxation of Completion Time)* CTS 3.3.c.2.A.3 requires, in part, that if the spray additive system is not returned to OPERABILITY within 72 hours, then, within 1 hour, initiate action to achieve HOT STANDBY within 6 hours, achieve HOT SHUTDOWN within the following 6 hours, and achieve COLD SHUTDOWN (equivalent to ITS MODE 5) within an additional 36 hours. ITS 3.6.7 ACTION B requires the unit to be in MODE 3 within 6 hours and in MODE 5 within 84 hours. This change extends the time to be in MODE 5 from 48 hours to 84 hours. The change in the requirements to be in HOT STANDBY and HOT SHUTDOWN is discussed in DOC M03.

The purpose of the CTS action is to place the unit in a MODE where the equipment is not required. The extended interval to reach MODE 5 allows additional time for attempting restoration of the Spray Additive System and is acceptable due to the reduced pressure and temperature conditions in MODE 3 for the release of radioactive material from the Reactor Coolant System. This change is designated as less restrictive since more time is provided to reach MODE 5 in the ITS than is allowed in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.7 Spray Additive System ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ 1

3.3.c.2.A LCO 3.6.7 The Spray Additive System shall be OPERABLE.

3.3.c.2.A APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.3.c.2.A.3	A. Spray Additive System inoperable.	A.1 Restore Spray Additive System to OPERABLE status.	72 hours
3.3.c.2.A.3	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M04	SR 3.6.7.1	Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days	
3.3.c.2.A.1, DOC M04	SR 3.6.7.2	Verify ~~spray additive tank~~ caustic additive standpipe solution volume is ≥ ~~[2568]~~ 300 gal and ≤ ~~[4000]~~ gal.	184 days	3 2
3.3.c.2.A.1, DOC M04	SR 3.6.7.3	Verify ~~spray additive tank~~ caustic additive standpipe [NaOH] solution concentration is ≥ [30]% and ≤ ~~[32]~~ 38% by weight.	184 days	3 2

CTS

Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) 1
3.6.7

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.5.b.2.D	SR 3.6.7.4 Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	[18] months	2
	~~SR 3.6.7.5 Verify spray additive flow [rate] from each solution's flow path.~~	~~5 years~~	4

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

1. The type of Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary (only one Spray Additive System Specification is used in the Kewaunee Power Station (KPS) ITS. This information is provided in NUREG-1431, Rev. 3.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect that the plant specific information.

3. The KPS name for the spray additive tank (caustic additive standpipe) has been provided.

4. ISTS SR 3.6.7.5 requires a verification of the spray additive flow rate from each solution's flow path every 5 years. The Bases for this SR states that the SR provides assurance that the correct amount of NaOH will be metered into the flow path upon Containment Spray System initiation. The KPS design does not allow this Surveillance to be performed without actually injecting the NaOH into either the containment or the RWST. The KPS design does not include a test flow path where either the NaOH solution is recirculated through a test line in lieu of injecting into the containment or RWST or where a test tank can be used for the water supply in lieu of the NaOH tank (the caustic additive standpipe). Furthermore, the spray additive flow path does not include a flow rate metering device. Therefore, KPS has not adopted this Surveillance in the ITS. Testing of the containment spray pumps is required in the ITS (ITS 3.6.6) and the spray additive automatic valves are tested by SR 3.6.7.4. This testing should be adequate to ensure the spray additive system will initiate and operate when required.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) 1

BASES

BACKGROUND

The Spray Additive System is a subsystem of the Containment Spray System that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA).

Radioiodine in its various forms is the fission product of primary concern in the evaluation of a DBA. It is absorbed by the spray from the containment atmosphere. To enhance the iodine absorption capacity of the spray, the spray solution is adjusted to an alkaline pH that promotes iodine hydrolysis, in which iodine is converted to nonvolatile forms. Because of its stability when exposed to radiation and elevated temperature, sodium hydroxide (NaOH) is the preferred spray additive. The NaOH added to the spray also ensures a pH value of between ~~8.5~~ 7.0 and ~~11.0~~ 9.5 of the solution recirculated from the containment sump. This pH band minimizes the evolution of iodine as well as the occurrence of chloride and caustic stress corrosion on mechanical systems and components. 4

~~Eductor Feed Systems Only~~

~~The Spray Additive System consists of one spray additive tank that is shared by the two trains of spray additive equipment. Each train of equipment provides a flow path from the spray additive tank to a containment spray pump and consists of an eductor for each containment spray pump, valves, instrumentation, and connecting piping. Each eductor draws the NaOH spray solution from the common tank using a portion of the borated water discharged by the containment spray pump as the motive flow. The eductor mixes the NaOH solution and the borated water and discharges the mixture into the spray pump suction line. The eductors are designed to ensure that the pH of the spray mixture is between 8.5 and 11.0.~~ 3

~~Gravity Feed Systems Only~~

The Spray Additive System consists of one ~~spray additive tank~~ caustic additive standpipe, two parallel redundant ~~motor~~ air operated valves in the line between the ~~additive tank~~ caustic additive standpipe and the refueling water storage tank (RWST), instrumentation, and recirculation pump~~s~~ a. The NaOH solution is added to the spray water by a balanced gravity feed from the ~~additive tank through the connecting piping into a weir within the RWST~~ caustic additive standpipe into the RWST supply line to the Containment Spray System pumps. There, it mixes with the borated 3

BASES

BACKGROUND (continued)

containment

volumes water flowing to the spray pump suction. Because of the hydrostatic balance between the two tanks, the flow rate of the NaOH is controlled by the volume per foot of height ratio of the two tanks. This ensures a spray mixture pH that is ≥ 8.5 and ≤ 11.0. 3 4

volumes 7.0 9.5

caustic additive standpipe The Containment Spray System actuation signal opens the valves from the spray additive tank to the spray pump suctions or the containment spray pump start signal opens the valves from the spray additive tank after a 5 minute delay. The 28% to 31% NaOH solution is drawn into the spray pump suctions. The spray additive tank capacity provides for the addition of NaOH solution to all of the water sprayed from the RWST into containment. The percent solution and volume of solution sprayed into containment ensures a long term containment sump pH of ≥ 9.0 and ≤ 9.5. This ensures the continued iodine retention effectiveness of the sump water during the recirculation phase of spray operation and also minimizes the occurrence of chloride induced stress corrosion cracking of the stainless steel recirculation piping.

containment 3 30 38 4 containment 3 caustic additive standpipe 7.0 4

APPLICABLE SAFETY ANALYSES

The Spray Additive System is essential to the removal of airborne iodine within containment following a DBA.

L_a for the first 24 hours Following the assumed release of radioactive materials into containment, the containment is assumed to leak at its design value volume following the accident. The analysis assumes that 100% of containment is covered by the spray (Ref. 1). 3

the Containment Spray System provides adequate spray coverage to meet the system design requirements

The DBA response time assumed for the Spray Additive System is the same as for the Containment Spray System and is discussed in the Bases for LCO 3.6.6, "Containment Spray and Cooling Systems."

caustic additive standpipe The DBA analyses assume that one train of the Containment Spray System/Spray Additive System is inoperable and that the entire spray additive tank volume is added to the remaining Containment Spray System flow path. 3

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

LCO

The Spray Additive System is necessary to reduce the release of radioactive material to the environment in the event of a DBA. To be considered OPERABLE, the volume and concentration of the spray additive solution must be sufficient to provide NaOH injection into the

BASES

LCO (continued)

spray flow until the Containment Spray System ~~suction path~~ is ~~switched~~ 3
~~from~~ secured (at the RWST ~~to the containment sump~~ Level - Low Low alarm point), and to raise the average spray solution pH to a level conducive to iodine removal, namely, to between ~~[7.2~~ 7.0 and ~~11.0]~~ 9.5. This pH range maximizes the effectiveness of 4
the iodine removal mechanism without introducing conditions that may induce caustic stress corrosion cracking of mechanical system components. The actual values in SR 3.6.7.3 (NaOH solution concentration ≥ 30% and ≤ 38% by weight) will maintain pH between 7.5 and 8.6. In addition, it is essential that valves in the Spray Additive 4
System flow paths are properly positioned and that automatic valves are capable of activating to their correct positions.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment requiring the operation of the Spray Additive System. The Spray Additive System assists in reducing the iodine fission product inventory prior to release to the environment.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Thus, the Spray Additive System is not required to be OPERABLE in MODE 5 or 6.

ACTIONS

A.1

If the Spray Additive System is inoperable, it must be restored to OPERABLE within 72 hours. The pH adjustment of the Containment Spray System flow for corrosion protection and iodine removal enhancement is reduced in this condition. The Containment Spray System would still be available and would remove some iodine from the containment atmosphere in the event of a DBA. The 72 hour Completion Time takes into account the redundant flow path capabilities and the low probability of the worst case DBA occurring during this period.

B.1 and B.2

If the Spray Additive System 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 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows 48 hours for restoration of the Spray

BASES

ACTIONS (continued)

Additive System in MODE 3 and 36 hours to reach MODE 5. This is reasonable when considering the reduced pressure and temperature conditions in MODE 3 for the release of radioactive material from the Reactor Coolant System.

SURVEILLANCE REQUIREMENTS

SR 3.6.7.1

Verifying the correct alignment of Spray Additive System manual, power operated, and automatic valves in the spray additive flow path provides assurance that the system is able to provide additive to the Containment Spray System in the event of a DBA. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification that those valves outside containment and capable of potentially being mispositioned are in the correct position.

SR 3.6.7.2

To provide effective iodine removal, the containment spray must be an alkaline solution. Since the RWST contents are normally acidic, the volume of the caustic additive standpipe ~~spray additive tank~~ must provide a sufficient volume of spray additive to adjust pH for all water injected. This SR is performed to verify the availability of sufficient NaOH solution in the Spray Additive System. The 184 day Frequency was developed based on the low probability of an undetected change in tank volume occurring during the SR interval (the tank is isolated during normal unit operations). Tank level is also indicated and alarmed in the control room, so that there is high confidence that a substantial change in level would be detected. 3

SR 3.6.7.3

This SR provides verification of the NaOH concentration in the caustic additive standpipe ~~spray additive tank~~ and is sufficient to ensure that the spray solution being injected into containment is at the correct pH level. The 184 day Frequency is sufficient to ensure that the concentration level of NaOH in the spray additive tank remains within the established limits. This is based on the low likelihood of an uncontrolled change in concentration (the tank is normally isolated) and the probability that any substantial variance in tank volume will be detected. 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.7.4

This SR provides verification that each automatic valve in the Spray Additive System flow path actuates to its correct position. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The ~~[~~18~~]~~ month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. 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. 2 2

~~SR 3.6.7.5~~

~~To ensure that the correct pH level is established in the borated water solution provided by the Containment Spray System, the flow rate in the Spray Additive System is verified once every 5 years. This SR provides assurance that the correct amount of NaOH will be metered into the flow path upon Containment Spray System initiation. Due to the passive nature of the spray additive flow controls, the 5 year Frequency is sufficient to identify component degradation that may affect flow rate.~~ 5

REFERENCES U 1. ~~F~~SAR, ~~Chapter [15]~~ Section 14.3 3 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7 BASES, SPRAY ADDITIVE SYSTEM

1. The type of Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary (only one Spray Additive Systems Specification is used in the Kewaunee Power Station (KPS) ITS. This information is provided in NUREG-1431, Rev. 3.1, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect that the plant specific information.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. Changes are made to the ISTS Bases which reflect the plant specific value for the spray mixture pH and percent NaOH solution.

5. Change made to be consistent with changes made to the Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

There are no specific NSHC discussions for this Specification.

ATTACHMENT 8

ITS 3.6.8, SHIELD BUILDING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

ITS 3.6.8

3.6 CONTAINMENT SYSTEM

APPLICABILITY

~~Applies to the integrity of the Containment System.~~

OBJECTIVE

~~To define the operating status of the Containment System.~~

SPECIFICATION

The shield building shall be OPERABLE

A02

LCO 3.6.8

a. ~~CONTAINMENT SYSTEM INTEGRITY shall not be violated~~ if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:

Applicability

1. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

2. The reactor is in the REFUELING shutdown condition.

Add proposed ACTION A

L01

Add proposed ACTION B

M01

b. Containment Isolation Valves

1. When CONTAINMENT SYSTEM INTEGRITY is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.b.2 and TS 3.6.b.3.

See ITS 3.6.3, 3.7.2, and 3.7.3

2. Containment Penetration flow paths can be unisolated intermittently under administrative controls. This TS does not apply to the 36" containment purge valves when they are required to be sealed closed.

See ITS 3.6.3

3. When CONTAINMENT SYSTEM INTEGRITY is required, the following conditions of inoperability may exist during the time interval specified. Separate entry is allowed into TS 3.6.b.3 for each penetration flowpath.

A. For one or more penetration flow paths with two containment isolation valves per penetration with one containment isolation valve inoperable:

1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one:

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange, or

See ITS 3.6.3, 3.7.2, and 3.7.3

Add proposed SR 3.6.8.1

M02

g. CONTAINMENT SYSTEM INTEGRITY

CONTAINMENT SYSTEM INTEGRITY is defined to exist when: See ITS Chapter 1.0

1. The non-automatic Containment System isolation valves and blind flanges are closed, except as provided in TS 3.6.b. See ITS 3.6.1

2. ~~The~~ reactor containment vessel and shield ~~building~~ equipment ~~hatches~~ are ~~properly~~ closed. LA01

3. At least one door in both the personnel and the emergency airlocks is properly closed. See ITS 3.6.2

4. The required automatic Containment System isolation valves are OPERABLE, except as provided in TS 3.6.b.

5. All requirements of TS 4.4 with regard to Containment System leakage and test frequency are satisfied. See ITS 3.6.1

6. The Shield Building Ventilation System and the Auxiliary Building Special Ventilation System satisfy the requirements of TS 3.6.c. See ITS 3.6.10 and 3.7.12

h. PROTECTIVE INSTRUMENTATION LOGIC

1. PROTECTION SYSTEM CHANNEL

A PROTECTION SYSTEM CHANNEL is an arrangement of components and modules as required to generate a single protective action signal when required by a plant condition. The channel loses its identity where single action signals are combined.

2. LOGIC CHANNEL

A LOGIC CHANNEL is a matrix of relay contacts which operate in response to PROTECTIVE SYSTEM CHANNEL signals to generate a protective action signal. See ITS Chapter 1.0

3. DEGREE OF REDUNDANCY

DEGREE OF REDUNDANCY is defined as the difference between the number of OPERATING channels and the minimum number of channels which, when tripped, will cause an automatic shutdown.

4. PROTECTION SYSTEM

The PROTECTION SYSTEM consists of both the Reactor PROTECTION SYSTEM and the Engineered Safety Features System. The PROTECTION SYSTEM encompasses all electric and mechanical devices and circuitry (from sensors through actuated device) which are required to operate in order to produce the required protective function. Tests of the PROTECTION SYSTEM will be considered acceptable when tests are run in part and it can be shown that all parts satisfy the requirements of the system.

ITS A01 ITS 3.6.8

2. Shield Building Ventilation System Filter Testing

   a. The in-place DOP test for HEPA filters shall be performed (1) at least once per 18 months and (2) after each complete or partial replacement of a HEPA filter bank or after any maintenance on the system that could affect the HEPA bank bypass leakage.

   b. The laboratory tests for activated carbon in the charcoal filters shall be performed (1) at least once per 18 months for filters in a standby status or after 720 hours of filter operation, and (2) following painting, fire, or chemical release in any ventilation zone communicating with the system.

   c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any maintenance on the system that could affect the charcoal adsorber bank bypass leakage.

See ITS 5.5.9

   d. Each train shall be operated at least 15 minutes every month.

See ITS 3.6.10

3. An air distribution test on these HEPA filter banks will be performed after any maintenance or testing that could affect the air distribution within the systems. The test shall be performed at design flow rate (±10%). The results of the test shall show the air distribution is uniform within ±20%.[1]

See ITS 5.5.9

L02

SR 3.6.8.2

4. Each train shall be determined to be operable at the time of its periodic test if it produces measurable indicated vacuum in the annulus within 2 minutes after initiation of a simulated safety injection signal and obtains equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits.

a start

M04

LA02

≥ 0.25 inches water gauge

M03

[1] In WPS letter of August 25, 1976 to Mr. Al Schwencer (NRC) from Mr. E. W. James, we relayed test results for flow distribution for tests performed in accordance with ANSI N510-1975. This standard refers to flow distribution tests performed upstream of filter assemblies. Since the test results upstream of filters were inconclusive due to high degree of turbulence, tests for flow distribution were performed downstream of filter assemblies with acceptable results (within 20%). The safety evaluation attached to Amendment 12 references our letter of August 25, 1976 and acknowledges acceptance of the test results.

See ITS 5.5.9

DISCUSSION OF CHANGES
ITS 3.6.8, SHIELD BUILDING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.a states, in part, that "CONTAINMENT SYSTEM INTEGRITY shall not be violated." CTS 1.0.g provides the definition of CONTAINMENT SYSTEM INTEGRITY, and includes as part of CTS 1.0.g.2 that the shield building equipment hatches must be closed. CTS 5.2.a.2 also states that the Containment System includes a concrete shield building (CTS 5.2.a.2.B). Thus, it can be concluded that the shield building is part of CONTAINMENT SYSTEM INTEGRITY. ITS 3.6.8 states "The shield building shall be OPERABLE." This changes the CTS by placing the Shield Building OPERABILITY requirements in a separate Technical Specification. See also ITS 3.6.1 and ITS 3.6.2 for further discussions of the CONTAINMENT SYSTEM INTEGRITY.

The purpose of CTS 3.6.a is to provide requirements pertaining to containment OPERABILITY. ITS 3.6.8 requires that the shield building be OPERABLE. The definition of OPERABLE and the subsequent ITS 3.6.8 LCO, ACTIONS, and Surveillance Requirements are sufficient to encompass the applicable requirements of the CTS definition as it relates to the shield building. This change removes any confusion that may exist between the definition and the specific requirements of the LCO and is a presentation preference consistent with NUREG-1431, Rev. 3.1. Since all aspects of the CONTAINMENT SYSTEM INTEGRITY definition requirements are maintained in various Specifications of ITS, this change is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.a does not provide any ACTIONS to take when the Shield Building is inoperable. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) with the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. When the Shield Building is inoperable and not restored within the allowed Completion Time (see DOC L01), ITS 3.6.8 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by providing specific shutdown ACTIONS when the shield building is not restored to OPERABLE status and by reducing the amount of time allowed to shutdown the unit to MODE 3 (from 12 hour to 6 hours) and MODE 5 (from 48 hours to 36 hours). The discussion of the change from 1 hour to 24 hours (ITS 3.6.8 ACTION A) to restore the shield building to OPERABLE status is provided in DOC L01.

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DISCUSSION OF CHANGES
ITS 3.6.8, SHIELD BUILDING

The purpose of CTS 3.6.a is to maintain the Shield Building OPERABLE, thus, when it is not OPERABLE, CTS 3.0.c results in placing the unit in a condition in which the Shield Building is not required. This change is acceptable because the Required Action is used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. ITS 3.6.8 ACTION B, which provides 6 hours to shut down the unit to MODE 3 and 36 hours to shut down the unit to MODE 5 if the shield building is not restored, is acceptable since the Completion Times are based on reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The requirement to be in MODE 2 is not required, since the ITS requires the unit to be in MODE 3 in the same time (i.e., 6 hours). This change is designated as more restrictive because the time to reach MODES 3 and 5 in the ITS is less than the time provided in the CTS.

M02 The CTS does not contain a Surveillance Requirement to verify one shield building access door in each access opening is closed. ITS SR 3.6.8.1 requires verification that one shield building access door in each access opening is closed every 31 days. This changes the CTS by adding a new Surveillance Requirement to the Technical Specifications.

The purpose of CTS 3.6.a is to ensure the shield building is OPERABLE when in MODES 1, 2, 3, and 4. Maintaining shield building OPERABILITY requires verifying one door in the access opening is closed. The intent is not to breach the shield building boundary at any time when the shield building boundary is required. The 31 day frequency for the proposed Surveillance is based on engineering judgment and is considered adequate in view of the other indications of door status that are available to the operator. This change is designated as more restrictive because a new Surveillance Requirement has been added to ensure the shield building OPERABILITY is maintained.

M03 CTS 4.4.c.4 states, in part, that the presence of a "measurable indicated vacuum" in the annulus serves as indication that the train under test is OPERABLE. ITS SR 3.6.8.2 requires that the shield building be maintained at a pressure ≥ 0.25 inches vacuum water gauge in the annulus. This changes the CTS by specifically stating the value for the annulus pressure (≥ 0.25 inches vacuum water gauge).

The purpose of the negative pressure (vacuum) in the annulus is to ensure shield building boundary OPERABILITY. Shield building OPERABILITY must be retained to ensure proper operation of the shield building ventilation system and to limit radioactive leakage from the containment to those paths and leakage rates assumed in the accident analyses. This change is designated as more restrictive since a specific negative pressure (vacuum) is being added to the CTS.

M04 CTS 4.4.c.4 states, in part, that the shield building ventilation train must obtain equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits. ITS SR 3.6.8.2 requires a final flow within the limits of Figure 3.6.8-1 after the proper vacuum has been reached within the drawdown

DISCUSSION OF CHANGES
ITS 3.6.8, SHIELD BUILDING

time limit (120 seconds). This changes the CTS by specifying the actual maximum flow rate indicative of equilibrium discharge conditions.

The purpose of the test is to ensure the shield building leakage is within that assumed in the accident analysis. The final flow rate specified in ITS SR 3.6.8.2 ensures this requirement is met. Figure 3.6.8-1 is the flow rate figure currently provided in the USAR. Therefore, this change is acceptable and is designated as more restrictive because it adds the actual acceptance limit to the CTS in lieu of the current description of the acceptance limit.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 1.0.g states, in part, "CONTAINMENT SYSTEM INTEGRITY is defined to exist when: 1.0.g.2 The … shield building equipment hatches are properly closed." ITS 3.6.8 states "The shield building shall be OPERABLE." This changes the CTS by moving the reference to equipment hatch requirements to the Bases.

The removal of these details, which are related to system design and description, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the shield building to be OPERABLE and the relocated material describes aspects of OPERABILITY. The ITS also still retains the requirement to perform required surveillance testing which would provide verification that the equipment hatch is closed. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design and description is being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.c.4 states, in part, that a "simulated safety injection signal" is used as a start signal for testing of each shield building ventilation system train. ITS SR 3.6.8.2 states, in part, that the Surveillance uses a "start" signal with no implication of a specific type of signal. This changes the CTS by moving the details of the type of initiation signal used during Surveillance testing to the Bases.

The removal of these details, which are related to procedural details for meeting Technical Specification requirements, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the

DISCUSSION OF CHANGES
ITS 3.6.8, SHIELD BUILDING

Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.6.8.2 retains the requirement for a start signal to be utilized in the testing of the Shield Building Ventilation System; however, the type of start signal is not specified. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to procedural details for meeting Technical Specification requirements is being removed from the Technical Specifications

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.a does not provide any explicit time to restore the shield building portion of the containment to OPERABLE status when it is found inoperable prior to requiring a unit shutdown. As a result, LCO 3.0.c would be entered, which requires action to be initiated within 1 hour, and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) with the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. Under similar conditions, ITS 3.6.8 ACTION A provides 24 hours to restore the shield building to OPERABLE status prior to requiring a unit shutdown. This changes the CTS by providing an explicit ACTION to allow time to restore an inoperable shield building to OPERABLE status prior to requiring a unit shutdown, and changes the time from 1 hour (as provided in CTS 3.0.c) to 24 hours. The discussion of change if the Required Action and associated Completion Time are not met (ITS 3.6.8 ACTION B) is provided in DOC M01.

The purpose of CTS 3.6.a is to maintain the Shield Building OPERABLE, thus, when it is not OPERABLE, CTS 3.0.c results in placing the unit in a condition in which the Shield Building is not required. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a Design Basis Accident (DBA) occurring during the repair period. This change provides an ACTION that allows 24 hours to restore an inoperable shield building to OPERABLE status. The 24 hour Completion Time is reasonable considering the limited leakage design of containment and the low probability of a DBA occurring during this period. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.4.c.4 requires each Shield Building Ventilation System train to be determined OPERABLE at the time of its periodic test by producing a measurable vacuum in the annulus within 2

DISCUSSION OF CHANGES
ITS 3.6.8, SHIELD BUILDING

minutes after the train is started. CTS 4.4.c.1 specifies that the normal periodic test of the Shield Building Ventilation System trains is once per operating cycle (which is defined as 18 months) or 18 months, whichever comes first. ITS SR 3.6.8.2 requires a similar test (as modified by DOCs A03, M03, and LA02), however it is required to be performed using one Shield Building Ventilation System train every 18 months "on a STAGGERED TEST BASIS." This changes the CTS by requiring the test to be performed using each Shield Building Ventilation System train at least once per 36 months.

The purpose of the CTS 4.4.c.4 is to ensure the integrity of the shield building negative pressure boundary. This change is acceptable because the new Surveillance Frequency provides an acceptable level of equipment reliability. The change is acceptable since the proposed Surveillance Frequency will continue to require performance of the test every 18 months. This will ensure the shield building negative pressure boundary is maintained. The status of the shield building negative pressure boundary can be determined with either Shield Building Ventilation System train. ITS SR 3.6.10.3 requires the performance of a test to ensure each Shield Building Ventilation System train actuates on an actual or simulated initiation signal. Therefore, each subsystem will continue to be tested to ensure it can be automatically aligned to the correct mode of operation, however the verification that the shield building negative pressure boundary can be maintained at the proper negative pressure will only be required with one train in operation per operating cycle (i.e., 18 months). This change is designated as less restrictive because the Surveillance will only be required to be performed on one Shield Building Ventilation System train each Surveillance interval instead of on both Shield Building Ventilation System trains.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.8 Shield Building (Dual and Ice Condenser) 2

3.6.a LCO 3.6.8 The shield building shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A. Shield building inoperable.	A.1 Restore shield building to OPERABLE status.	24 hours
DOC M01	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
	SR 3.6.8.1	[Verify annulus negative pressure is > [5] inches water gauge.	12 hours]	3
DOC M02	SR 3.6.8.2 1	Verify one shield building access door in each access opening is closed.	31 days	3
	SR 3.6.8.3	[Verify shield building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the shield building.	During shutdown for SR 3.6.1.1 Type A tests]	4

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.4.c.4 SR 3.6.8.~~4~~ 2	Verify the shield building can be maintained at a pressure ~~equal to or more negative than [-0.5] inch~~ ≥ 0.25 water gauge vacuum in the annulus by one Shield Building ~~Air Cleanup~~ Ventilation System train with final flow ~~≤ [ ] cfm~~ with the limits of Figure 3.6.8-1 within ~~[22]~~ 120 seconds after a start signal.	5 4 1 ~~[~~18~~]~~ months ~~on a STAGGERED TEST BASIS for each Shield Building Air Cleanup System train~~ 1

INSERT 1

4

INSERT 1

Figure 3.6.8-1
Shield Building Ventilation Performance Requirement

CTS

3.6.8

4

INSERT 1

4.4.c.4

Figure 3.6.8-1
Shield Building Ventilation Performance Requirement

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8, SHIELD BUILDING

1. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

2. The headings for ISTS 3.6.8 include the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

3. The ISTS contains a Surveillance Requirement (SR 3.6.8.1) to verify the annulus negative pressure every 12 hours. Per USAR Section 5.2.1.4.2, the annulus at KPS is maintained at ambient barometric pressure during normal operations. As a result, ISTS SR 3.6.8.1 has been deleted and the subsequent Surveillance Requirements have been renumbered.

4. ISTS SR 3.6.8.3, which is a bracketed Surveillance that requires a visual inspection of the exposed interior and exterior surfaces of the shield building, has not been adopted into the KPS ITS. The KPS containment is a free standing steel pressure vessel, as described in the Bases for ITS 3.6.1. This is the structure that 10 CFR 50, Appendix J requires a visual inspection. Neither the KPS Containment Leak Rate Testing Program (which implements the 10 CFR 50 Appendix J requirements) nor the KPS Inservice Testing Program (which is required by 10 CFR 50.55a(g)) requires this visual inspection. Furthermore, the requirement is not in the KPS CTS. As a result of the deletion, the subsequent Surveillance Requirement has been renumbered.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.8 Shield Building ~~(Dual and Ice Condenser)~~ 1

BASES

BACKGROUND

The shield building is a concrete structure that surrounds the steel containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

Ventilation System (SBVS) 2

The Shield Building ~~Air Cleanup System (SBACS)~~ establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. The shield building is required to be OPERABLE to ensure retention of containment leakage and proper operation of the ~~SBACS~~ SBVS. 2

APPLICABLE SAFETY ANALYSES

The design basis for shield building OPERABILITY is a LOCA. Maintaining shield building OPERABILITY ensures that the release of radioactive material from the containment atmosphere is restricted to those leakage paths and associated leakage rates assumed in the accident analyses.

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

LCO

Shield building OPERABILITY must be maintained to ensure proper operation of the ~~SBACS~~ SBVS and to limit radioactive leakage from the containment to those paths and leakage rates assumed in the accident analyses. 2

Compliance with this LCO will ensure a Shield Building configuration that is structurally sound. This includes ensuring the equipment hatches are properly closed and one door in each access opening is properly closed. 3

APPLICABILITY

Maintaining shield building OPERABILITY prevents leakage of radioactive material from the shield building. Radioactive material may enter the shield building from the containment following a LOCA. Therefore, shield building OPERABILITY is required in MODES 1, 2, 3, and 4 when a steam line break, LOCA, or rod ejection accident could release radioactive material to the containment atmosphere.

In MODES 5 and 6, the probability and consequences of these events are low due to the Reactor Coolant System temperature and pressure limitations in these MODES. Therefore, shield building OPERABILITY is not required in MODE 5 or 6.

 1

BASES

ACTIONS

A.1

In the event shield building OPERABILITY is not maintained, shield building OPERABILITY must be restored within 24 hours. Twenty-four hours is a reasonable Completion Time considering the limited leakage design of containment and the low probability of a Design Basis Accident occurring during this time period.

B.1 and B.2

If the shield building 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 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 3.6.8.1

Verifying that shield building annulus negative pressure is within limit ensures that operation remains within the limit assumed in the containment analysis. The 12 hour Frequency of this SR was developed considering operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES.] 4

SR 3.6.8.2 1 4

Maintaining shield building OPERABILITY requires verifying one door in the access opening closed. [An access opening may contain one inner and one outer door, or in some cases, shield building access openings are shared such that a shield building barrier may have multiple inner or multiple outer doors. The intent is to not breach the shield building boundary at any time when the shield building boundary is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times.] However, all shield building access doors are normally kept closed, except when the access opening is being used for entry and exit or when maintenance is being performed on an access opening. The 31 day Frequency of this SR is based on engineering judgment and is considered adequate in view of the other indications of door status that are available to the operator. 5

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.8.3

This SR would give advance indication of gross deterioration of the concrete structural integrity of the shield building. The Frequency of this SR is the same as that of SR 3.6.1.1. The verification is done during shutdown.]

SR 3.6.8.4 2

Ventilation

The Shield Building Air Cleanup System produces a negative pressure to prevent leakage from the building. SR 3.6.8.4 verifies that the shield building can be rapidly drawn down to [-0.5] inch water gauge in the annulus. This test is used to ensure shield building boundary integrity. Establishment of this pressure is confirmed by SR 3.6.8.4, which demonstrates that the shield building can be drawn down to ≤ [-0.5] inches of vacuum water gauge in the annulus ≤ [22] seconds using one Shield Building Air Cleanup System train. The time limit ensures that no significant quantity of radioactive material leaks from the shield building prior to developing the negative pressure. Since this SR is a shield building boundary integrity test, it does not need to be performed with each Shield Building Air Cleanup System train. The Shield Building Air Cleanup System train used for this Surveillance is staggered to ensure that in addition to the requirements of LCO 3.6.8.4, either train will perform this test. The primary purpose of this SR is to ensure shield building integrity. The secondary purpose of this SR is to ensure that the Shield Building Air Cleanup System being tested functions as designed. The inoperability of the Shield Building Air Cleanup System train does not necessarily constitute a failure of this Surveillance relative to the shield building OPERABILITY. The 18 month Frequency is based on the need to perform this Surveillance under conditions that apply during a plant outage.

2 of vacuum ≥ 0.25 2 ≥ 0.25 ≤ 120 with final flow within the limits of Figure 3.6.8-1 in Ventilation Ventilation 2 SR

Testing of the shield building boundary integrity entails the use of a signal (i.e., simulated safety injection signal) to start the Shield Building Ventilation System.

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8 BASES, SHIELD BUILDING

1. The headings for ISTS 3.6.8 Bases include the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The relocation of the proper closure of the shield building equipment hatches from the CTS definition of CONTAINMENT SYSTEM INTEGRITY to the ITS Bases is included as part of the added LCO compliance statement. In addition, the statement that one door in each access opening of the shield building as reflected in ITS SR 3.6.8.1 is also included. The reason for adding this information is to ensure the ITS LCO contains all parameters required for maintaining shield building OPERABILITY.

4. The ISTS contains a Surveillance Requirement (SR 3.6.8.1) to verify the annulus negative pressure every 12 hours. Per USAR Section 5.2.1.4.2, the annulus at KPS is maintained at ambient barometric pressure during normal operations. As a result, ISTS SR 3.6.8.1 has been deleted and the subsequent Surveillance Requirements have been renumbered.

5. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

6. ISTS SR 3.6.8.4 states, in part, that the surveillance verifies that the shield building can be drawn down to a specific negative pressure value in the annulus. The phrase "of vacuum" is added to the second sentence of the ITS SR 3.6.8.2 discussion for consistency to provide a similar statement to that found in the fourth sentence of the discussion, which already contains the added phrase. Adding the phrase "of vacuum" to the second sentence also eliminates any potential confusion as to whether the pressure inside the annulus is a positive pressure or a vacuum when the Shield Building Ventilation System is in operation.

7. ISTS SR 3.6.8.4 requires verification that the shield building can be drawn down to a specific negative pressure value in the annulus within a certain amount of time after the start signal is received. CTS 4.4.a.4 utilizes "initiation of a simulated start signal" as the beginning of the test. ITS SR 3.6.8.2 utilizes a "start" signal as the beginning of the test. Additional information has been added to the Bases to reflect that a simulated safety injection signal will initiate the testing time period.

8. Typographical error corrected.

9. ISTS SR 3.6.8.3, which is a bracketed Surveillance that requires a visual inspection of the exposed interior and exterior surfaces of the shield building, has not been adopted into the KPS ITS. The KPS containment is a free standing steel pressure vessel, as described in the Bases for ITS 3.6.1. This is the structure that 10 CFR 50, Appendix J requires a visual inspection. Neither the KPS Containment Leak Rate

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8 BASES, SHIELD BUILDING

Testing Program (which implements the 10 CFR 50 Appendix J requirements) nor the KPS Inservice Testing Program (which is required by 10 CFR 50.55a(g)) requires this visual inspection. Furthermore, the requirement is not in the KPS CTS. As a result of the deletion, the subsequent Surveillance Requirement has been renumbered.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.8, SHIELD BUILDING

There are no specific NSHC discussions for this Specification.

ATTACHMENT 9

ITS 3.6.9, VACUUM RELIEF VALVES

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

3.6 CONTAINMENT SYSTEM

~~**APPLICABILITY**~~

~~Applies to the integrity of the Containment System.~~

~~**OBJECTIVE**~~

~~To define the operating status of the Containment System.~~

SPECIFICATION

LCO 3.6.9

Two vacuum relief lines shall be OPERABLE. A02

a. ~~CONTAINMENT SYSTEM INTEGRITY shall not be violated~~ if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:

Applicability

1. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

2. The reactor is in the REFUELING shutdown condition.

Add proposed ACTION A L01

Add proposed ACTION B M01

b. Containment Isolation Valves

1. When CONTAINMENT SYSTEM INTEGRITY is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.b.2 and TS 3.6.b.3.

See ITS 3.6.3, 3.7.2, and 3.7.3

2. Containment Penetration flow paths can be unisolated intermittently under administrative controls. This TS does not apply to the 36" containment purge valves when they are required to be sealed closed.

See ITS 3.6.3

3. When CONTAINMENT SYSTEM INTEGRITY is required, the following conditions of inoperability may exist during the time interval specified. Separate entry is allowed into TS 3.6.b.3 for each penetration flowpath.

A. For one or more penetration flow paths with two containment isolation valves per penetration with one containment isolation valve inoperable:

1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one:

a) Closed and de-activated automatic valve, or

b) Closed manual valve, or

c) Blind flange, or

See ITS 3.6.3, 3.7.2, and 3.7.3

ITS

A01

ITS 3.6.9

d. Auxiliary Building Special Ventilation System

1. Periodic tests of the Auxiliary Building Special Ventilation System, including the door interlocks, shall be performed in accordance with TS 4.4.c.1 through TS 4.4.c.3, except for TS 4.4.c.2.d. See ITS 3.7.12 and 5.5.9

2. Each train of Auxiliary Building Special Ventilation System shall be operated at least 15 minutes every month.

3. Each system shall be determined to be operable at the time of periodic test if it starts with coincident isolation of the normal ventilation ducts and produces a measurable vacuum throughout the special ventilation zone with respect to the outside atmosphere. See ITS 3.7.12

e. Containment Vacuum Breaker System

A03

SR 3.6.9.1 The power-operated valve in each vent line shall be tested during each refueling outage to demonstrate that a simulated containment vacuum of 0.5 psig will open the valve and a simulated accident signal will close the valve. The check and butterfly valves will be leak tested in accordance with TS 4.4.b during each refueling, except that the pressure will be applied in a direction opposite to that which would occur post-LOCA. See ITS 3.6.3 See ITS 3.6.1

f. Containment Isolation Device Position Verification

1. When the reactor is greater than Cold Shutdown condition, verify each 36 inch containment purge and vent isolation valve is sealed closed every 31 days.

2. When the reactor is critical, verify each 2 inch containment vent isolation valve is closed every 31 days, except when the 2 inch containment vent isolation valves are open for pressure control, ALARA, or air quality considerations for personnel entry, or Surveillances that require the valves to be open.

3. Containment isolation manual valves and blind flanges shall be verified closed as specified in TS 4.4.f.3.a and TS 4.4.f.3.b, except as allowed by TS 4.4.f.3.c.

   a. When greater than COLD SHUTDOWN, verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed every 31 days, except for containment isolation valves that are locked, sealed, or otherwise secured closed or open as allowed by TS 3.6.b.2.

See ITS 3.6.3

ITS

A01

ITS 3.6.9

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

See ITS 3.3.2

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
18. a. Containment Pressure (SIS signal)	Each shift	Each refueling cycle	Monthly(a)	(a) Isolation Valve Signal
b. Containment Pressure (Steamline Isolation)	Each shift(a)	Each refueling cycle(a)	Monthly(a)	(a) Narrow range containment pressure (-3.0, +3.0 psig excluded)
c. Containment Pressure (Containment Spray Act)	Each shift	Each refueling cycle	Monthly	
d. Annulus Pressure (Vacuum Breaker)	Not applicable	Each refueling cycle SR 3.6.9.2	Each refueling cycle	SR 3.6.9.1
19. Radiation Monitoring System	Daily (a,b)	Each refueling cycle (a)	Quarterly (a)	(a) Includes only channels R11 thru R15, R19, R21, and R23 (b) Channel check required in all plant modes
20. Deleted				
21. Containment Sump Level	Not applicable	Not applicable	Each refueling cycle	
22. Accumulator Level and Pressure	Each shift	Deleted	Not applicable	
23. Steam Generator Pressure	Each shift	Each refueling cycle	Monthly	

See ITS 3.3.2

See ITS 3.5.1

See ITS 3.4.15

See ITS 3.3.2, 3.3.6, 3.3.7, 3.4.15, and CTS 3.8.a.9

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DISCUSSION OF CHANGES
ITS 3.6.9, VACUUM RELIEF VALVES

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.a states, in part, that "CONTAINMENT SYSTEM INTEGRITY shall not be violated." CTS 5.2.a.2 states that the Containment System includes the steel reactor containment vessel (CTS 5.2.a.2.A). CTS 5.2.b.1 further states that the reactor containment vessel is designed to withstand an external pressure 0.8 psi greater than the internal pressure. Furthermore, CTS Section 4.4, which provides the Surveillances for the Containment Systems, includes a Surveillance on the Containment Vacuum Breaker System (CTS 4.4.e). Since the vacuum relief lines and associated valves are the design feature that ensures this pressure limitation is met, it can be concluded that the vacuum relief lines are part of CONTAINMENT SYSTEM INTEGRITY. ITS 3.6.9 states "Two vacuum relief lines shall be OPERABLE." This changes the CTS by placing the vacuum relief lines OPERABILITY requirements in a separate Technical Specification. See also ITS 3.6.1 and ITS 3.6.2 for further discussion of CONTAINMENT SYSTEM INTEGRITY.

The purpose of CTS 3.6.a is to provide requirements pertaining to containment OPERABILITY. ITS 3.6.9 requires that the vacuum relief lines be OPERABLE. The definition of OPERABILITY and the subsequent LCO, ACTIONS, and Surveillance Requirements are sufficient to encompass the applicable requirements of the CTS definition, as it relates to the vacuum relief lines. This change removes any confusion that may exist between the definition and the specific requirements of the LCO and is a presentation preference consistent with NUREG-1431, Rev. 3.1. Since all aspects of the CONTAINMENT SYSTEM INTEGRITY definition requirements are maintained in various Specifications of the ITS, this change is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.4.e requires, in part, that the power-operated valve (i.e., the butterfly valve) in each vent line to be tested during each refueling outage. ITS SR 3.6.9.1 requires a similar test once each refueling outage. This changes the CTS by changing the Frequency from each refueling outage to 18 months.

This change is acceptable since the KPS refueling outage cycle is every 18 months. The technical requirements of both the CTS and ITS remain unchanged in that a test is required to ensure that the power-operated valves will perform their intended function every 18 months. This change is designated as administrative because it does not result in technical changes to the CTS.

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DISCUSSION OF CHANGES
ITS 3.6.9, VACUUM RELIEF VALVES

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.a does not provide any ACTIONS to take when the vacuum relief lines are inoperable. As a result, LCO 3.0.c would be entered, which requires action to be in initiated within 1 hour and to be in HOT STANDBY (equivalent to ITS MODE 2) within 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) within the following 6 hours, and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. When one vacuum relief line is inoperable and not restored within the allowed Completion Time (See DOC L01), ITS 3.6.9 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by providing specific shutdown ACTIONS when one vacuum relief line is not restored within the allowed Completion Time and by reducing the amount of time allowed to shutdown the unit to MODE 3 (from 12 hour to 6 hours) and MODE 5 (from 48 hours to 36 hours). The discussion of the change from 1 hour to 72 hours (ITS ACTION A) to restore the vacuum relief lines to OPERABLE status is provided in ITS 3.6.9 DOC L01. Note that when both vacuum relief lines are inoperable, ITS LCO 3.0.3, which is equivalent to CTS 3.0.c, would apply.

The purpose of CTS 3.6.a is to maintain the vacuum relief lines OPERABLE, thus, when it is not OPERABLE, CTS 3.0.c results in placing the unit in a condition in which the vacuum relief lines are not required. This change is acceptable because the Required Action is used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. ITS 3.6.9 ACTION B provides 6 hours to shut down the unit to MODE 3 and 36 hours to shut down the unit to MODE 5 if the vacuum relief lines are not restored is acceptable since the Completion Times are based on reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The requirement to be in MODE 2 is not required, since the ITS requires the unit to be in MODE 3 in the same time (i.e., 6 hours). This change is designated as more restrictive because the time to reach MODES 3 and 5 in the ITS is less than the time provided in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.a does not provide any explicit time to restore the vacuum relief lines portion of the containment to OPERABLE status when one vacuum relief line is found inoperable prior to requiring a unit shutdown. As a result, LCO 3.0.c would be entered, which

DISCUSSION OF CHANGES
ITS 3.6.9, VACUUM RELIEF VALVES

requires action to be initiated within 1 hour and to be in HOT STANDBY (equivalent to ITS MODE 2) within the next 6 hours, in HOT SHUTDOWN (equivalent to ITS MODE 3) within the following 6 hours and in COLD SHUTDOWN (equivalent to ITS MODE 5) within the subsequent 36 hours. Under similar conditions, ITS 3.6.9 ACTION A provides 72 hours to restore one vacuum relief line to OPERABLE status prior to requiring a unit shutdown. This changes the CTS by providing an explicit ACTION to allow time to restore an inoperable vacuum breaker line to OPERABLE status prior to requiring a unit shutdown and changes the time from 1 hour (as provided in CTS 3.0.c) to 72 hours. The discussion of the change if the Required Action and associated Completion Time are not met (ITS 3.6.9 ACTION B) is provided in DOC M01. Note that when both vacuum relief lines are inoperable, ITS LCO 3.0.3, which is equivalent to CTS 3.0.c, would apply.

The purpose of CTS 3.6.a is to maintain vacuum relief lines OPERABLE, thus, when one or both lines are not OPERABLE, CTS 3.0.c results in placing the unit in a condition in which the vacuum breakers are not required. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Conditions, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a Design Basis Accident (DBA) occurring during the repair period. This change provides an ACTION that allows 72 hours to restore one inoperable vacuum relief line to OPERABLE status. The 72 hour Completion Time is reasonable considering the limited leakage design of containment, the low probability of DBA occurring during this period, and that there is a redundant vacuum relief line remaining OPERABLE. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.~~12~~ 9 Vacuum Relief Valves ~~(Atmospheric and Ice Condenser)~~ 1

3.6.a LCO 3.6.~~12~~ 9 [Two] vacuum relief lines shall be OPERABLE. 1 2

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A. One vacuum relief line inoperable.	A.1 Restore vacuum relief line to OPERABLE status.	72 hours
DOC M01	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.4.e INSERT 1	~~SR 3.6.12.1 Verify each vacuum relief line is OPERABLE in accordance with the Inservice Testing Program.~~	In accordance with the Inservice Testing Program	3

3

INSERT 1

4.4.e	SR 3.6.9.1	Perform a functional test of each vacuum relief valve and verify the valve opens at a simulated containment vacuum of $\leq$ 0.5 psig vacuum.	18 months
Table TS 4.4-1 Channel Description 18.d	SR 3.6.9.2	Perform a CHANNEL CALIBRATION on the containment vacuum breaker differential pressure channels.	18 months

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9, VACUUM RELIEF VALVES

1. The headings for ISTS 3.6.12 include the parenthetical expression (Atmospheric and Ice Condenser). The identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the KPS ITS due to design differences. Therefore, ISTS 3.6.12 is renumbered as ITS 3.6.9. In addition, the SRs have been put in the proper order, based on the Frequency.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect that the plant specific information.

3. The ISTS Surveillance has been deleted and replaced with Surveillances consistent with the CTS requirements. The ISTS Surveillance requires testing in accordance with the Inservice Testing Program. The CTS Surveillances are not part of the KPS IST Program. The CTS requires each butterfly valve to be functionally tested to ensure it opens and closes as required, and requires a Calibration and Test on the instruments that open the vacuum relief valves. The current manner in which the Test of the instruments is performed includes verifying the valves (butterfly and check) open. ITS SR 3.6.9.1 requires a functional test of the butterfly and check valves in the relief lines to ensure they open as required. ITS SR 3.6.9.2 requires performing a CHANNEL CALIBRATION on the actuation instrumentation.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~12~~ Vacuum Relief Valves ~~(Atmospheric and Ice Condenser)~~ 1

9

BASES

BACKGROUND

The purpose of the vacuum relief lines is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems.

The containment pressure vessel contains two 100% vacuum relief lines that protect the containment from excessive external loading.

INSERT 1

~~[For this facility, the characteristics of the vacuum relief valves and their locations in the containment pressure vessel are as follows:]~~ 2

APPLICABLE SAFETY ANALYSES

Design of the vacuum relief lines involves calculating the effect of inadvertent actuation of containment cooling features, which can reduce the atmospheric temperature (and hence pressure) inside containment (Ref. 1). Conservative assumptions are used for all the relevant parameters in the calculation; for example, for the Containment Spray System, the minimum spray water temperature, maximum initial containment temperature, maximum spray flow, all spray trains operating, etc. The resulting containment pressure versus time is calculated, including the effect of the opening of the vacuum relief lines when their negative pressure setpoint is reached. It is also assumed that one valve fails to open.

The containment was designed for an external pressure load equivalent to 0.8 ~~[-2.5]~~ psig. The inadvertent actuation of the containment cooling features was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was 14.7 psia (0.0 psig) ~~[-0.3] psig~~. This resulted in a minimum pressure inside containment of 13.917 psia (-0.783 psig) ~~[-2.0] psig~~, which is less than the design load. 2

The vacuum relief valves must also perform the containment isolation function in a containment high pressure event. For this reason, the system is designed to take the full containment positive design pressure and the environmental conditions (temperature, pressure, humidity, radiation, chemical attack, etc.) associated with the containment DBA.

The vacuum relief valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

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2

INSERT 1

The vacuum relief lines consist of two valves in series in each of two large containment penetrations, which permit air to flow from the Shield Building annulus into the containment vessel. Only one vacuum line is required to operate to protect the vessel. The two redundant vacuum relief lines are located at different elevations in the annulus and separated by 72 feet around the containment vessel.

The valves in each line consist of an air-to-open, spring-to-close, butterfly valve and a self-actuated, horizontally installed, swing disc check valve. Individual accumulators are provided for each vacuum relief isolation butterfly valve to provide one complete cycle of the valve. Each air-operated vacuum relief butterfly valve has a piston-type actuator with a three-way solenoid pilot valve. The air-operated vacuum relief valve will fail closed on loss of instrument air or solenoid power to assure containment isolation.

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BASES

LCO	The LCO establishes the minimum equipment required to accomplish the vacuum relief function following the inadvertent actuation of containment cooling features. Two 100% vacuum relief lines are required to be OPERABLE to ensure that at least one is available, assuming one or both valves in the other line fail to open.
APPLICABILITY	In MODES 1, 2, 3, and 4, the containment cooling features, such as the Containment Spray System, are required to be OPERABLE to mitigate the effects of a DBA. Excessive negative pressure inside containment could occur whenever these systems are required to be OPERABLE due to inadvertent actuation of these systems. Therefore, the vacuum relief lines are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System~~,~~ ~~Quench Spray (QS) System,~~ or Containment Cooling System. 3 In MODES 5 and 6, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations of these MODES. The Containment Spray System~~, QS System,~~ and Containment Cooling System are not required to be OPERABLE in MODES 5 and 6. Therefore, maintaining OPERABLE vacuum relief valves is not required in MODE 5 or 6. 3
ACTIONS	<u>A.1</u> When one of the required vacuum relief lines is inoperable, the inoperable line must be restored to OPERABLE status within 72 hours. The specified time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA. <u>B.1 and B.2</u> If the vacuum relief line 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 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.

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1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.~~12~~.1 9 1

INSERT 2

~~This SR cites the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with the ASME Code (Ref. 2). Therefore, SR Frequency is governed by the Inservice Testing Program.~~ 5

REFERENCES

1. ~~F~~SAR, Section ~~[6.2]~~. U 5.2.4 4 2

~~2. ASME Code for Operation and Maintenance of Nuclear Power Plants.~~ 5

5 **INSERT 2**

Each vacuum relief valve (butterfly valves and check valves) must be tested to ensure they open properly to perform their design function. The valves are designed to open fully when a 0.5 psi pressure differential is sustained across the valve and is sufficient to prevent the Reactor Containment Vessel from exceeding the maximum permissible external/internal pressure differential (0.8 psi). The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.9.2

A CHANNEL CALIBRATION is performed every 18 months. 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 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9 BASES, VACUUM RELIEF VALVES

1. The headings for ISTS B 3.6.12 include the parenthetical expression (Atmospheric and Ice Condenser). The identifying information is not included in the Kewaunee Power Station (KPS) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the KPS ITS due to design differences. Therefore, ISTS 3.6.12 is renumbered as ITS 3.6.9.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect that the plant specific information.

3. ISTS B 3.6.12 Applicability, states, in part, that vacuum relief lines are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System, Quench Spray (QS) System, or Containment Cooling System. Additionally, it states, in part, that the Containment Spray, QS System, and Containment Cooling System are not required to be OPERABLE in MODES 5 and 6. KPS does not contain a Specification for the Quench Spray (QS) System. Therefore, all references to the Quench Spray (QS) System are deleted.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. Changes made to be consistent with changes made to the actual Specification.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.9, VACUUM RELIEF VALVES

There are no specific NSHC discussions for this Specification.

ATTACHMENT 1

ITS 3.6.10, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS A01 ITS 3.6.10

2. Verify the affected flow path is isolated:

a) For isolation devices outside containment, at least once per 31 days, or

See ITS 3.6.3 and 3.7.2

b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN if not performed within the previous 92 days.

D. Valves and blind flanges in high radiation areas may be verified, as required by TS 3.6.b.3.A.2, TS 3.6.b.3.B.2, and TS 3.6.b.3.C.2, by use of administrative means.

See ITS 3.6.3

4. If CONTAINMENT SYSTEM INTEGRITY is required and the OPERABILITY requirements of TS 3.6.b.3 are not met within the times specified, then initiate action to:

A. Achieve HOT STANDBY within the next 6 hours,

B. Achieve HOT SHUTDOWN within the following 6 hours, and

C. Achieve COLD SHUTDOWN within the subsequent 36 hours.

See ITS 3.6.3, 3.7.2, and 3.7.3

Applicability c. All of the following conditions shall be satisfied whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required: A02

LA01

LCO 3.6.10 1. Both trains of the Shield Building Ventilation System, ~~including filters,~~ shall be

ACTION B OPERABLE or the reactor shall be shut down within 12 hours, except that when one M01

ACTION A of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

2. Both trains of the Auxiliary Building Special Ventilation System, including filters, shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

See ITS 3.7.12

ITS | A01 | ITS 3.6.10

g. CONTAINMENT SYSTEM INTEGRITY

CONTAINMENT SYSTEM INTEGRITY is defined to exist when: See ITS Chapter 1.0

1. The non-automatic Containment System isolation valves and blind flanges are closed, except as provided in TS 3.6.b.

2. The reactor containment vessel and shield building equipment hatches are properly closed. See ITS 3.6.1 and 3.6.8

3. At least one door in both the personnel and the emergency airlocks is properly closed. See ITS 3.6.2

4. The required automatic Containment System isolation valves are OPERABLE, except as provided in TS 3.6.b.

5. All requirements of TS 4.4 with regard to Containment System leakage and test frequency are satisfied. See ITS 3.6.1

LCO 3.6.10 6. The Shield Building Ventilation System and the Auxiliary Building Special Ventilation System satisfy the requirements of TS 3.6.c. See ITS 3.7.12

h. PROTECTIVE INSTRUMENTATION LOGIC

1. PROTECTION SYSTEM CHANNEL

A PROTECTION SYSTEM CHANNEL is an arrangement of components and modules as required to generate a single protective action signal when required by a plant condition. The channel loses its identity where single action signals are combined.

2. LOGIC CHANNEL

A LOGIC CHANNEL is a matrix of relay contacts which operate in response to PROTECTIVE SYSTEM CHANNEL signals to generate a protective action signal.

3. DEGREE OF REDUNDANCY

DEGREE OF REDUNDANCY is defined as the difference between the number of OPERATING channels and the minimum number of channels which, when tripped, will cause an automatic shutdown. See ITS Chapter 1.0

4. PROTECTION SYSTEM

The PROTECTION SYSTEM consists of both the Reactor PROTECTION SYSTEM and the Engineered Safety Features System. The PROTECTION SYSTEM encompasses all electric and mechanical devices and circuitry (from sensors through actuated device) which are required to operate in order to produce the required protective function. Tests of the PROTECTION SYSTEM will be considered acceptable when tests are run in part and it can be shown that all parts satisfy the requirements of the system.

4.4 CONTAINMENT TESTS

APPLICABILITY

Applies to integrity testing of the steel containment, shield building, auxiliary building special ventilation zone, and the associated systems including isolation valves.

OBJECTIVE

To verify that leakage from the containment system is maintained within allowable limits in accordance with 10 CFR Part 50, Appendix J.

SPECIFICATION

a. Integrated Leak Rate Tests (Type A)

Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

As a one-time exception to the Containment Leakage Rate Testing Program, the first Type A test following the Type A test performed in April 1994 shall be required no later than October 2009. See ITS 3.6.1

b. Local Leak Rate Tests (Type B and C) See ITS 3.6.1, 3.6.2, and 3.6.3

Perform required air lock, penetration, and containment isolation valve leakage testing in accordance with the Containment Leakage Rate Testing Program.

c. Shield Building Ventilation System

SR 3.6.10.3 1. ~~At least once per operating cycle or~~ once every 18 months, ~~whichever occurs first,~~ the following conditions shall be demonstrated: A03

a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is < 10 inches of water and the pressure drop across any HEPA filter bank is < 4 inches of water at the system design flow rate (±10%). See ITS 5.5.9

SR 3.6.10.3 b. Automatic actual or simulated initiation of each train of the system. L01

c. Deleted

2. Shield Building Ventilation System Filter Testing

Add proposed SR 3.6.10.2 A04

a. The in-place DOP test for HEPA filters shall be performed (1) at least once per 18 months and (2) after each complete or partial replacement of a HEPA filter bank or after any maintenance on the system that could affect the HEPA bank bypass leakage.

b. The laboratory tests for activated carbon in the charcoal filters shall be performed (1) at least once per 18 months for filters in a standby status or after 720 hours of filter operation, and (2) following painting, fire, or chemical release in any ventilation zone communicating with the system.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any maintenance on the system that could affect the charcoal adsorber bank bypass leakage.

See ITS 5.5.9

SR 3.6.10.1 d. Each train shall be operated at least 15 minutes every month.

3. An air distribution test on these HEPA filter banks will be performed after any maintenance or testing that could affect the air distribution within the systems. The test shall be performed at design flow rate (±10%). The results of the test shall show the air distribution is uniform within ±20%.(1)

See ITS 5.5.9

4. Each train shall be determined to be operable at the time of its periodic test if it produces measurable indicated vacuum in the annulus within 2 minutes after initiation of a simulated safety injection signal and obtains equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits.

See ITS 3.6.8

(1) In WPS letter of August 25, 1976 to Mr. Al Schwencer (NRC) from Mr. E. W. James, we relayed test results for flow distribution for tests performed in accordance with ANSI N510-1975. This standard refers to flow distribution tests performed upstream of filter assemblies. Since the test results upstream of filters were inconclusive due to high degree of turbulence, tests for flow distribution were performed downstream of filter assemblies with acceptable results (within 20%). The safety evaluation attached to Amendment 12 references our letter of August 25, 1976 and acknowledges acceptance of the test results.

See ITS 5.5.9

DISCUSSION OF CHANGES
ITS 3.6.10, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Kewaunee Power Station (KPS) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 3.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.c states, in part, that both trains of the Shield Building Ventilation System (SBVS) shall be OPERABLE whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required. The ITS 3.6.10 Applicability for the SBVS is MODES 1, 2, 3, and 4. This changes the CTS by stating the specific MODE of Applicability.

The purpose of the CTS 3.6.c statement is to identify when the SBVS is required to be OPERABLE. CTS 3.6.a requires CONTAINMENT SYSTEM INTEGRITY if there is fuel in the reactor vessel which has been used for power operation, except whenever either the reactor is in COLD SHUTDOWN with the reactor vessel head installed (ITS equivalent MODE 5) or REFUELING (ITS equivalent MODE 6). This change is acceptable since the proposed Applicability is the same as the current Applicability. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.4.c.1.b requires demonstration of automatic initiation of each train of the system at least once per operating cycle or once every 18 months, whichever occurs first. ITS SR 3.6.10.3 requires verification that each SBVS train actuates on an actual or simulated actuation signal every 18 months. This changes the CTS by deleting the "once per operating cycle" terminology. The change discussion regarding the use of an actual or simulated test signal is located in DOC L01.

This change is acceptable since the terms "operating cycle" and "18 months" are synonymous. The Surveillance Frequency remains essentially unchanged since the KPS refueling outage occurs every 18 months. The requirements in both the CTS and ITS remain unchanged in that a test is required to ensure the system will perform its intended function. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 4.4.c.1.a, CTS 4.4.c.2, and CTS 4.4.c.3 provide filter testing requirements for the SBVS. ITS SR 3.6.10.2 requires performance of SBVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP) at a frequency in accordance with the VFTP. CTS 4.4.c does not include a VFTP, but the requirements that make up the VFTP are being moved to ITS 5.5. This changes the CTS by requiring testing in accordance with the VFTP, whose requirements are being moved to ITS 5.5.

This change is acceptable because filter testing requirements are being moved to the VFTP as part of ITS 5.5, and ITS SR 3.6.10.2 references the VFTP for

DISCUSSION OF CHANGES
ITS 3.6.10, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

performing these tests. This change is designated as administrative because it does not result in a technical change the CTS.

MORE RESTRICTIVE CHANGES

M01 If one SBVS train is not restored to OPERABLE status within 7 days, CTS 3.6.c.1 requires that the reactor must be "shut down within 12 hours." Under similar conditions, ITS 3.6.10 ACTION B requires the unit be in MODE 3 within 6 hours and in MODE 5 within 36 hours. This changes the CTS by allowing 6 hours to reach MODE 3 instead of the 12 hours allowed in the CTS. Additionally, it adds a new requirement to be in MODE 5 within 36 hours that was not required in the CTS.

The purpose of CTS 3.6.c.1 is to provide appropriate compensatory measures when a train of SBVS is not restored within 7 days. The reactor is considered "shut down" when it is subcritical (i.e., when in HOT SHUTDOWN - ITS equivalent MODE 3). Since the Applicability of the SBVS is MODES 1, 2, 3, and 4, the appropriate shutdown action would be to place the unit outside this Applicability - i.e., into MODE 5. Therefore, this change is acceptable because it places the unit in MODE 5, which is outside the Applicability of the ITS LCO 3.6.10. This change is designated as more restrictive because a shorter amount of time is allowed to place the unit in MODE 3 (6 hours) than is currently allowed (12 hours) and a new action to be in MODE 5 has been added.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.c.1 states, in part, that both trains of the Shield Building Ventilation System (SBVS), "including filters," shall be OPERABLE. ITS 3.6.10 states that two SBVS trains shall be OPERABLE. This changes the CTS by moving the requirement for the filters to the Bases.

The removal of these details, which are related to system operation, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the SBVS to be OPERABLE and the relocated material describes an aspect of OPERABILITY. This change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.10, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.4.c.1.b requires the automatic initiation of each train of the Shield Building Ventilation System (SBVS) at least once per operating cycles or once every 18 months, whichever occurs first. ITS 3.6.10.3 requires verification that each SBVS train actuates on an actual or simulated actuation signal every 18 months. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test. The change discussion regarding the use of every 18 months is provided in DOC A03.

The purpose of CTS 4.4.c.1.b is to ensure the SBVS actuates upon receipt of an SI input. This change is acceptable because it has been determined that the current Surveillance Requirement acceptance criteria are not the only method that can be used for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual" or "simulated" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

SBACS (Dual and Ice Condenser) SBVS 1
3.6.13 10

3.6 CONTAINMENT SYSTEMS

3.6.13 Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser) 1

Ventilation SBVS 10

3.6.c.1, 1.0.g.6 LCO 3.6.13 Two SBACS trains shall be OPERABLE. SBVS 10 1

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.6.c.1	A. One SBACS train inoperable. SBVS	A.1 Restore SBACS train to OPERABLE status. SBVS	7 days	1
3.6.c.1	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.4.c.2.d	SR 3.6.13.1 10	Operate each SBACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes]. SBVS	31 days	1 2
DOC A04	SR 3.6.13.2 10	Perform required SBACS filter testing in accordance with the Ventilation Filter Testing Program (VFTP). SBVS	In accordance with the VFTP	1
4.4.c.1, 4.4.c.1.b	SR 3.6.13.3 10	Verify each SBACS train actuates on an actual or simulated actuation signal. SBVS	[18] months	1 2

CTS

SBACS (Dual and Ice Condenser) SBVS
3.6.13 10

1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
SR 3.6.13.4	[Verify each SBACS filter bypass damper can be opened.	[18] months]	3
SR 3.6.13.5	Verify each SBACS train flow rate is ≥ [ ] cfm.	[18] months on a STAGGERED TEST BASIS	4

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.10, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

1. The ISTS 3.6.13 title, "Shield Building Air Cleanup System (SBACS)" has been changed to "Shield Building Ventilation System (SBVS)" consistent with the Kewaunee Power Station (KPS) site specific terminology. The heading for ITS 3.6.13, includes the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the KPS ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the KPS ITS due to design differences. Therefore, ISTS 3.6.13 is renumbered as ITS 3.6.10.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design/ Technical Specifications.

3. ISTS SR 3.6.13.4 contains bracketed information and/or values that are generic to all Westinghouse vintage plants. KPS does not have filter bypass dampers, therefore, this Surveillance Requirement was deleted and the subsequent Surveillance was renumbered. This is also consistent with the KPS current Technical Specifications.

4. ISTS SR 3.6.13.5 requires a verification of the flow rate of each SBACS train every 18 months on a STAGGERED TEST BASIS. The KPS ITS does not include this SR. The flow rate of each train is already verified every 18 months as required by ISTS 5.5.11 (ITS 5.5.9), the Ventilation Filter Test Program (VFTP). ISTS SR 3.6.13.2 (ITS 3.6.10.2) requires performance of filter testing in accordance with the VFTP. Therefore, this duplicative SR is not required and has not been adopted into the KPS ITS.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

All changes are 2 unless otherwise noted

~~SBACS~~ SBVS ~~(Dual and Ice Condenser)~~
B 3.6.~~13~~ 10

1

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~13~~ 10 Shield Building ~~Air Cleanup~~ Ventilation System (~~SBACS~~ SBVS) ~~(Dual and Ice Condenser)~~

1

BASES

BACKGROUND

~~The SBACS 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 shield building (secondary containment) following a Design Basis Accident (DBA) are filtered and adsorbed prior to exhausting to the environment.~~ 5

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

The ~~SBACS~~ SBVS establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. Shield building OPERABILITY is required to ensure retention of primary containment leakage and proper operation of the ~~SBACS~~ SBVS. 1 1

The ~~SBACS~~ SBVS consists of two demister, separate and redundant trains. Each train includes a ~~heater, [cooling coils,]~~ a prefilter, ~~moisture separators,~~ a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, a second HEPA filter, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The ~~moisture~~ demister ~~separators~~ function s to reduce the moisture content of the airstream. 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 s and the charcoal adsorber section are credited in the analysis and are assumed to be 99% efficient for removal of particulates and 95% efficient for the removal of elemental and organic iodine. The system initiates and maintains a negative air pressure in the shield building by means of filtered exhaust ventilation of the shield building following receipt of a safety injection (SI) signal. The system is described in Reference ~~2~~ 1. 1 5

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

The prefilters remove large particles in the air, and the ~~moisture separators~~ demisters remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. ~~Heaters may be included to reduce the relative humidity of the airstream on systems that operate in high humidity. 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 cooling coils cool the air to keep the charcoal beds from becoming too hot due to absorption of fission product.]~~ 2

~~During normal operation, the Shield Building Cooling System is aligned to bypass the SBACS's HEPA filters and charcoal adsorbers. For SBACS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.~~ 2

The ~~SBACS~~ SBVS reduces the radioactive content in the shield building atmosphere following a design basis accident (DBA). Loss of the ~~SBACS~~ SBVS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis. 2

APPLICABLE SAFETY ANALYSES

The ~~SBACS~~ SBVS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. ~~3~~ 2) assumes that only one train of the ~~SBACS~~ SBVS 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. 5

The modeled ~~SBACS~~ SBVS actuation in the safety analyses is based upon a worst case response time following an SI initiated at the limiting setpoint. The total response time, from exceeding the signal setpoint to attaining ~~the~~ a negative pressure ~~of [0.5] inch water gauge~~ in the shield building, is ~~[22 seconds]~~ 6 minutes. 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. 3

The ~~SBACS~~ SBVS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

All changes are 1 unless otherwise noted

BASES

LCO

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

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could lead to fission product release to containment that leaks to the shield 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 Filtration System is not required to be OPERABLE ~~(although one or more trains may be operating for other reasons, such as habitability during maintenance in the shield building annulus)~~.

ACTIONS

A.1

With one SBVS ~~SBACS~~ train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant SBVS ~~SBACS~~ 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

If the SBVS ~~SBACS~~ 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 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.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.13.1 10

Operating each SBACS SBVS train for ≥ 15 minutes 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. For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) 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. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System. 3

SR 3.6.13.2 10

This SR verifies that the required SBACS SBVS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, 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 3.6.13.3 10

The automatic startup ensures that each SBACS SBVS train responds properly. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. 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. Furthermore, the SR interval was developed considering that the SBACS SBVS equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.13.1. 10 3 3

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.13.4

The SBACS filter bypass dampers are tested to verify OPERABILITY. The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters. The [18] month Frequency is considered to be acceptable based on damper reliability and design, mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.] 4

SR 3.6.13.5

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 [18] month Frequency on a STAGGERED TEST BASIS is consistent with Regulatory Guide 1.52 (Ref. 4) guidance for functional testing. 4

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41. 5
2. FSAR, Section [6.5]. (1, U, Section 5.5) 2 3
3. FSAR, Chapter [15]. (2, U, 14) 2 3
4. Regulatory Guide 1.52, Revision [2]. 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.10 BASES, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

1. The ISTS B 3.6.13 title, "Shield Building Air Cleanup System (SBACS)" has been changed to "Shield Building Ventilation System (SBVS)" consistent with the Kewaunee Power Station (KPS) site specific terminology. The heading for ITS B 3.6.13 includes the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the KPS ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the KPS ITS due to design differences. Therefore, ISTS B 3.6.13 is renumbered as ITS B 3.6.10.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.

4. Changes are made to reflect those changes made to the Specification.

5. The ISTS lists GDC 41 of Appendix A to 10 CFR 50 as the reference document for the requirement that radioactive materials that leak from the primary containment into the shield building (secondary containment) following a design basis accident are filtered and adsorbed prior to exhausting to the environment. Per the information contained in USAR Section 1.8, KPS was designed, constructed, and is being operated to comply with the Atomic Energy Commission (AEC) General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967. This specific GDC was not included in the proposed GDCs of July 10, 1967, nor is there a plant specific GDC that includes similar requirements. Therefore, this paragraph has been deleted. In addition, due to this deletion, the subsequent References have been renumbered.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.10, SHIELD BUILDING VENTILATION SYSTEM (SBVS)

There are no specific NSHC discussions for this Specification.

ATTACHMENT 11

Improved Standard Technical Specifications (ISTS) not used in the Kewaunee Power Station ITS

ISTS 3.6.9, HYDROGEN MIXING SYSTEM (HMS) (ATMOSPHERIC, ICE CONDENSER, AND DUAL)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)

LCO 3.6.9 [Two] HMS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One HMS train inoperable.	A.1 Restore HMS train to OPERABLE status.	30 days
B. Two HMS trains inoperable.	B.1 Verify by administrative means that the hydrogen control function is maintained. <u>AND</u> B.2 Restore one HMS train to OPERABLE status.	1 hour <u>AND</u> Once per 12 hours thereafter 7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Operate each HMS train for ≥ 15 minutes.	92 days
SR 3.6.9.2	Verify each HMS train flow rate on slow speed is ≥ [4000] cfm.	[18] months
SR 3.6.9.3	Verify each HMS train starts on an actual or simulated actuation signal.	[18] months

1

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.9, HYDROGEN MIXING SYSTEM (HMS) (ATMOSPHERIC, ICE CONDENSER, AND DUAL

1. ISTS 3.6.9, "Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)" is not included in the Kewaunee Power Station (KPS) ITS. KPS does not have a specific hydrogen mixing system as described in ISTS 3.6.9. In 2003 the NRC revised 10 CFR 50.44, “Combustible Gas Control for Nuclear Power Reactors." This revision was based on studies which provided an improved understanding of combustible gas behavior during severe accidents and confirmation that the hydrogen release postulated from a design-basis LOCA was not risk significant because it was not large enough to lead to early containment failure, and that the risk associated with hydrogen combustion was from beyond design-basis (e.g., severe) accidents (68 FR 54123 dated September 16, 2003). However, the NRC retained existing requirements for ensuring a mixed atmosphere, inerting Mark I and II containments, and hydrogen control systems capable of accommodating an amount of hydrogen generated from a metal-water reaction involving 75 percent of the fuel cladding surrounding the active fuel region in Mark III and ice condenser containments. Thus, the final rule retained the 10 CFR 50.44(b)(2) requirement that containments for all currently-licensed nuclear power plants ensure a mixed atmosphere because a mixed containment atmosphere prevents local accumulation of combustible or detonable gases that could threaten containment integrity or equipment operating in a local compartment. As stated in the 10 CFR 50.44 change, at KPS, Post-LOCA hydrogen generation is not considered large enough to lead to early containment failure because the large dry containment at KPS has a large volume, high failure pressures, and the likelihood of random ignition to prevent the buildup of detonable hydrogen concentrations. Because the potential exists for a beyond design-basis accident to occur and the long period of time available to take actions to minimize this potential, there are several features that are relied upon to mitigate this potential. They include maintaining the ability to ensure a mixed atmosphere; maintaining the ability to purge and vent the containment; diagnosing the course of the beyond design-basis accident by use of the hydrogen monitors; and, identification of and limiting the use of materials in containment that would produce combustible gas during interaction with emergency cooling or containment spray fluids under post-LOCA conditions. It is recognized by KPS that NUREG-1431 includes the Hydrogen Mixing System in the Technical Specifications to provide the capability for reducing the local hydrogen concentration to approximately the bulk average concentration. For KPS, two reactor building ventilation (RBV) system subsystems/components could be used to support hydrogen mixing, the containment cooling subsystem and the containment dome fans. A general diagram of the containment dome fans and ductwork is included in the KPS USAR on Figure 5.8-5, “Reactor Building Ventilation System Post LOCA-H2 Control Flow Diagram,” while the containment cooling subsystem is found on USAR Figure 5.4-1, “Containment Vessel Air Handling System Flow Diagram.” 10 CFR 50.44(b)(1) requires that all containments have the capability for ensuring a mixed atmosphere. This requirement has been captured in KPS USAR Section 5.8.2, “Generation and Disposition of Hydrogen,” which identifies the containment dome fans, containment fan coil units (containment cooling subsystem) and containment spray as providing this feature. The Hydrogen Mixing System specification was reviewed against the four criteria specified in 10 CFR 50.36(c)(2)(ii). This review determined the KPS Hydrogen Mixing System (i.e., the containment cooling subsystem and the containment dome fans) did not meet any of the criteria. Therefore, it is not necessary to include a separate Hydrogen Mixing System Specification in the KPS ITS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)

BASES

BACKGROUND

The HMS reduces the potential for breach of containment due to a hydrogen oxygen reaction by providing a uniformly mixed post accident containment atmosphere, thereby minimizing the potential for local hydrogen burns due to a pocket of hydrogen above the flammable concentration. Maintaining a uniformly mixed containment atmosphere also ensures that the hydrogen monitors will give an accurate measure of the bulk hydrogen concentration and give the operator the capability of preventing the occurrence of a bulk hydrogen burn inside containment per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and 10 CFR 50, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2).

The post accident HMS is an Engineered Safety Feature (ESF) and is designed to withstand a loss of coolant accident (LOCA) without loss of function. The System has two independent trains, each consisting of two fans with their own motors and controls. Each train is sized for [4000] cfm. The two trains are initiated automatically on a Phase A containment isolation signal. The automatic action is to start the nonoperating hydrogen mixing fans on slow speed and shift the operating hydrogen mixing fans (if any) to slow speed. Each train is powered from a separate emergency power supply. Since each train fan can provide 100% of the mixing requirements, the System will provide its design function with a limiting single active failure. 1

Air is drawn from the steam generator compartments by the locally mounted mixing fans and is discharged toward the upper regions of the containment. This complements the air patterns established by the containment air coolers, which take suction from the operating floor level and discharge to the lower regions of the containment, and the containment spray, which cools the air and causes it to drop to lower elevations. The systems work together such that potentially stagnant areas where hydrogen pockets could develop are eliminated.

When performing their post accident hydrogen mixing function, the hydrogen mixing fans operate on slow speed to prevent motor overload in a post accident high pressure environment. The design flow rate on slow speed is based on the minimum air distribution requirements to eliminate stagnant hydrogen pockets. Each train is redundant (full capacity) and is powered from an independent ESF bus. The hydrogen mixing fans may

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BASES

BACKGROUND (continued)

be operated on fast speed during normal operation when a containment air cooler is taken out of service. As such, the design flow rate of the hydrogen mixing fans for high speed operation is based on air distribution requirements during such normal operation.

APPLICABLE SAFETY ANALYSES

The HMS provides the capability for reducing the local hydrogen concentration to approximately the bulk average concentration. The limiting DBA relative to hydrogen concentration is a LOCA.

Hydrogen may accumulate in containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant,

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump,

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space), or 1

d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.

To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 3 are used to maximize the amount of hydrogen calculated.

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

LCO

Two HMS trains must be OPERABLE, with power to each from an independent, safety related power supply. Each train typically consists of two fans with their own motors and controls and is automatically initiated by a Phase A containment isolation signal.

Operation with at least one HMS train provides the mixing necessary to ensure uniform hydrogen concentration throughout containment.

BASES

APPLICABILITY

In MODES 1 and 2, the two HMS trains ensure the capability to prevent localized hydrogen concentrations above the flammability limit of 4.1 volume percent in containment assuming a worst case single active failure.

In MODE 3 or 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the HMS is low. Therefore, the HMS is not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA or steam line break (SLB) are reduced due to the pressure and temperature limitations in these MODES. Therefore, the HMS is not required in these MODES.

ACTIONS

A.1

With one HMS train inoperable, the inoperable train must be restored to OPERABLE status within 30 days. In this Condition, the remaining OPERABLE HMS train is adequate to perform the hydrogen mixing function. However, the overall reliability is reduced because a single failure in the OPERABLE train could result in reduced hydrogen mixing capability. The 30 day Completion Time is based on the availability of the other HMS train, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit, and the availability of the Containment Spray System and Hydrogen Purge System. 1

B.1 and B.2

-----------------------------------REVIEWER'S NOTE-----------------------------------
This Condition is only allowed for units with an alternate hydrogen control system acceptable to the technical staff.

With two HMS trains inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by [the containment Hydrogen Purge System/ Hydrogen Ignitor System/ HMS/ Containment Air Dilution System/ Containment Inerting System]. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist.

BASES

ACTIONS (continued)

-----------------------------------REVIEWER'S NOTE-----------------------------------
The following is to be used if a non-Technical Specification alternate hydrogen control function is used to justify this Condition: In addition, the alternate hydrogen control system capability must be verified once per 12 hours thereafter to ensure its continued availability.

[Both] the [initial] verification [and all subsequent verifications] may be performed as an administrative check, by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the Surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two HMS trains inoperable for up to 7 days. Seven days is a reasonable time to allow two HMS trains to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit.

1

C.1

If an inoperable HMS 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. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

Operating each HMS train for ≥ 15 minutes ensures that each train is OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. The 92 day Frequency is consistent with Inservice Testing Program Surveillance Frequencies, operating experience, the known reliability of the fan motors and controls, and the two train redundancy available.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.9.2

Verifying that each HMS train flow rate on slow speed is ≥ [4000] cfm ensures that each train is capable of maintaining localized hydrogen concentrations below the flammability limit. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. 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 3.6.9.3

This SR ensures that each HMS train responds properly to a containment cooling actuation signal. The Surveillance verifies that each fan starts on slow speed from the nonoperating condition and that each fan shifts to slow speed from fast operating condition. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown 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. 1

REFERENCES

1. 10 CFR 50.44.

2. 10 CFR 50, Appendix A, GDC 41.

3. Regulatory Guide 1.7, Revision [1].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.9 BASES, HYDROGEN MIXING SYSTEM (HMS) (ATMOSPHERIC, ICE CONDENSER, AND DUAL)

1. ISTS 3.6.9 Bases, "Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual) are not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

ISTS 3.6.10, HYDROGEN IGNITION SYSTEM (HIS) (ICE CONDENSER)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.10 Hydrogen Ignition System (HIS) (Ice Condenser)

LCO 3.6.10 Two HIS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One HIS train inoperable.	A.1 Restore HIS train to OPERABLE status. OR A.2 Perform SR 3.6.10.1 on the OPERABLE train.	7 days Once per 7 days
B. One containment region with no OPERABLE hydrogen ignitor.	B.1 Restore one hydrogen ignitor in the affected containment region to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.10.1	Energize each HIS train power supply breaker and verify ≥ [32] ignitors are energized in each train.	92 days

1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.10.2	Verify at least one hydrogen ignitor is OPERABLE in each containment region.	92 days
SR 3.6.10.3	Energize each hydrogen ignitor and verify temperature is ≥ [1700]°F.	[18] months

1

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.10, HYDROGEN IGNITION SYSTEM (HIS) (ICE CONDENSER)

1. ISTS 3.6.10, "Hydrogen Ignition System (HIS) (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an ice condenser containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.10 Hydrogen Ignition System (HIS) (Ice Condenser)

BASES

BACKGROUND

The HIS reduces the potential for breach of primary containment due to a hydrogen oxygen reaction in post accident environments. The HIS is required by 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2), to reduce the hydrogen concentration in the primary containment following a degraded core accident. The HIS must be capable of handling an amount of hydrogen equivalent to that generated from a metal water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the plenum volume).

10 CFR 50.44 (Ref. 1) requires units with ice condenser containments to install suitable hydrogen control systems that would accommodate an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water. The HIS provides this required capability. This requirement was placed on ice condenser units because of their small containment volume and low design pressure (compared with pressurized water reactor dry containments). Calculations indicate that if hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water were to collect in the primary containment, the resulting hydrogen concentration would be far above the lower flammability limit such that, if ignited from a random ignition source, the resulting hydrogen burn would seriously challenge the containment and safety systems in the containment. 1

The HIS is based on the concept of controlled ignition using thermal ignitors, designed to be capable of functioning in a post accident environment, seismically supported, and capable of actuation from the control room. A total of [64] ignitors are distributed throughout the various regions of containment in which hydrogen could be released or to which it could flow in significant quantities. The ignitors are arranged in two independent trains such that each containment region has at least two ignitors, one from each train, controlled and powered redundantly so that ignition would occur in each region even if one train failed to energize.

BASES

BACKGROUND (continued)

When the HIS is initiated, the ignitor elements are energized and heat up to a surface temperature ≥ [1700]°F. At this temperature, they ignite the hydrogen gas that is present in the airspace in the vicinity of the ignitor. The HIS depends on the dispersed location of the ignitors so that local pockets of hydrogen at increased concentrations would burn before reaching a hydrogen concentration significantly higher than the lower flammability limit. Hydrogen ignition in the vicinity of the ignitors is assumed to occur when the local hydrogen concentration reaches [8.0] volume percent (v/o) and results in [85]% of the hydrogen present being consumed.

APPLICABLE SAFETY ANALYSES

The HIS causes hydrogen in containment to burn in a controlled manner as it accumulates following a degraded core accident (Ref. 3). Burning occurs at the lower flammability concentration, where the resulting temperatures and pressures are relatively benign. Without the system, hydrogen could build up to higher concentrations that could result in a violent reaction if ignited by a random ignition source after such a buildup.

The hydrogen ignitors are not included for mitigation of a Design Basis Accident (DBA) because an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water is far in excess of the hydrogen calculated for the limiting DBA loss of coolant accident (LOCA). The hydrogen ignitors have been shown by probabilistic risk analysis to be a significant contributor to limiting the severity of accident sequences that are commonly found to dominate risk for units with ice condenser containments. The hydrogen ignitors satisfy Criterion 4 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two HIS trains must be OPERABLE with power from two independent, safety related power supplies.

For this unit, an OPERABLE HIS train consists of 32 of 33 ignitors energized on the train.

Operation with at least one HIS train ensures that the hydrogen in containment can be burned in a controlled manner. Unavailability of both HIS trains could lead to hydrogen buildup to higher concentrations, which could result in a violent reaction if ignited. The reaction could take place fast enough to lead to high temperatures and overpressurization of containment and, as a result, breach containment or cause containment leakage rates above those assumed in the safety analyses. Damage to safety related equipment located in containment could also occur.

BASES

APPLICABILITY

Requiring OPERABILITY in MODES 1 and 2 for the HIS ensures its immediate availability after safety injection and scram actuated on a LOCA initiation. In the post accident environment, the two HIS subsystems are required to control the hydrogen concentration within containment to near its flammability limit of 4.1 v/o assuming a worst case single failure. This prevents overpressurization of containment and damage to safety related equipment and instruments located within containment.

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen production after a LOCA would be significantly less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the HIS is low. Therefore, the HIS is not required in MODES 3 and 4.

In MODES 5 and 6, the probability and consequences of a LOCA are reduced due to the pressure and temperature limitations of these MODES. Therefore, the HIS is not required to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1 and A.2

With one HIS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days or the OPERABLE train must be verified OPERABLE frequently by performance of SR 3.6.10.1. The 7 day Completion Time is based on the low probability of the occurrence of a degraded core event that would generate hydrogen in amounts equivalent to a metal water reaction of 75% of the core cladding, the length of time after the event that operator action would be required to prevent hydrogen accumulation from exceeding this limit, and the low probability of failure of the OPERABLE HIS train. Alternative Required Action A.2, by frequent surveillances, provides assurance that the OPERABLE train continues to be OPERABLE. 1

B.1

Condition B is one containment region with no OPERABLE hydrogen ignitor. Thus, while in Condition B, or in Conditions A and B simultaneously, there would always be ignition capability in the adjacent containment regions that would provide redundant capability by flame propagation to the region with no OPERABLE ignitors.

Required Action B.1 calls for the restoration of one hydrogen ignitor in each region to OPERABLE status within 7 days. The 7 day Completion Time is based on the same reasons given under Required Action A.1.

BASES

ACTIONS (continued)

C.1

The unit must be placed in a MODE in which the LCO does not apply if the HIS subsystem(s) cannot be restored to OPERABLE status within the associated Completion Time. This is done by placing the unit in at least MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.10.1

This SR confirms that ≥ [32] of 33 hydrogen ignitors can be successfully energized in each train. The ignitors are simple resistance elements. Therefore, energizing provides assurance of OPERABILITY. The allowance of one inoperable hydrogen ignitor is acceptable because, although one inoperable hydrogen ignitor in a region would compromise redundancy in that region, the containment regions are interconnected so that ignition in one region would cause burning to progress to the others (i.e., there is overlap in each hydrogen ignitor's effectiveness between regions). The Frequency of 92 days has been shown to be acceptable through operating experience. 1

SR 3.6.10.2

This SR confirms that the two inoperable hydrogen ignitors allowed by SR 3.6.10.1 (i.e., one in each train) are not in the same containment region. The Frequency of 92 days is acceptable based on the Frequency of SR 3.6.10.1, which provides the information for performing this SR.

SR 3.6.10.3

A more detailed functional test is performed every 18 months to verify system OPERABILITY. Each glow plug is visually examined to ensure that it is clean and that the electrical circuitry is energized. All ignitors (glow plugs), including normally inaccessible ignitors, are visually checked for a glow to verify that they are energized. Additionally, the surface temperature of each glow plug is measured to be ≥ [1700]°F to demonstrate that a temperature sufficient for ignition is achieved. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the

BASES

SURVEILLANCE REQUIREMENTS (continued)

reactor at power. Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. FSAR, Section [6.2].

1

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.10 BASES, HYDROGEN IGNITION SYSTEM (HIS) (ICE CONDENSER)

1. ISTS 3.6.10 Bases, "Hydrogen Ignition System (HIS) (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

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ISTS 3.6.11, IODINE CLEANUP SYSTEM (ICS) (ATMOSPHERIC AND SUBATMOSPHERIC)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)

LCO 3.6.11 Two ICS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ICS train inoperable.	A.1 Restore ICS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.11.1	Operate each ICS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.6.11.2	Perform required ICS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.11.3	Verify each ICS train actuates on an actual or simulated actuation signal.	[18] months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.11.4	[Verify each ICS filter bypass damper can be opened.	[18] months]

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.11, IODINE CLEANUP SYSTEM
(ICS) (ATMOSPHERIC AND SUBATMOSPHERIC)

1. ISTS 3.6.11, "Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an atmospheric or subatmospheric containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)

BASES

BACKGROUND

The ICS is provided per GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems" (Ref. 1), to reduce the concentration of fission products released to the containment atmosphere following a postulated accident. The ICS would function together with the Containment Spray and Cooling systems following a Design Basis Accident (DBA) to reduce the potential release of radioactive material, principally iodine, from the containment to the environment.

The ICS consists of two 100% capacity, separate, independent, and redundant trains. Each train includes a heater, [cooling coils,] a prefilter, a demister, a 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 demisters function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure in sections of the main HEPA filter bank. The upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates filtered recirculation of the containment atmosphere following receipt of a safety injection signal. The system design is described in Reference 2. 1

The demister is included for moisture (free water) removal from the gas stream. Heaters are used to heat the gas stream, which lowers the relative humidity. 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. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.

The primary purpose of the heaters is to ensure that the relative humidity of the airstream entering the charcoal adsorbers is maintained below 70%, which is consistent with the assigned iodine and iodide removal efficiencies as per Regulatory Guide 1.52 (Ref. 3).

Two ICS trains are provided to meet the requirement for separation, independence, and redundancy. Each ICS train is powered from a separate Engineered Safety Features bus and is provided with a separate power panel and control panel. [Essential service water is required to supply cooling water to the cooling coils.]

BASES

BACKGROUND (continued)

During normal operation, the Containment Cooling System is aligned to bypass the ICS HEPA filters and charcoal adsorbers. For ICS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.

APPLICABLE SAFETY ANALYSES

The DBAs that result in a release of radioactive iodine within containment are a loss of coolant accident (LOCA) or a rod ejection accident (REA). In the analysis for each of these accidents, it is assumed that adequate containment leak tightness is intact at event initiation to limit potential leakage to the environment. Additionally, it is assumed that the amount of radioactive iodine released is limited by reducing the iodine concentration present in the containment atmosphere.

The ICS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 4) assume that only one train of the ICS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive iodine provided by the remaining one train of this filtration system.

The ICS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

Two separate, independent, and redundant trains of the ICS are required to ensure that at least one is available, assuming a single failure coincident with a loss of offsite power.

APPLICABILITY

In MODES 1, 2, 3, and 4, iodine is a fission product that can be released from the fuel to the reactor coolant as a result of a DBA. The DBAs that can cause a failure of the fuel cladding are a LOCA, SLB, and REA. Because these accidents are considered credible accidents in MODES 1, 2, 3, and 4, the ICS must be operable to ensure the reduction in iodine concentration assumed in the accident analyses.

In MODES 5 and 6, the probability and consequences of a LOCA are low due to the pressure and temperature limitations of these MODES. The ICS is not required in these MODES to remove iodine from the containment atmosphere.

BASES

ACTIONS

A.1

With one ICS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as:

a. The availability of the OPERABLE redundant ICS train,

b. The fact that, even with no ICS train in operation, almost the same amount of iodine would be removed from the containment atmosphere through absorption by the Containment Spray System, and

c. The fact that the Completion Time is adequate to make most repairs.

B.1 and B.2

If the ICS 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 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 without challenging plant systems. 1

SURVEILLANCE REQUIREMENTS

SR 3.6.11.1

Operating each ICS train for ≥ 15 minutes 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. For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) 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. The 31 day Frequency was developed considering the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System independent of the ICS.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.11.2

This SR verifies that the required ICS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, 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 3.6.11.3

The automatic startup test verifies that both trains of equipment start upon receipt of an actual or simulated test signal. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. 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. Furthermore, the Frequency was developed considering that the system equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.11.1. 1

[SR 3.6.11.4

The ICS filter bypass dampers are tested to verify OPERABILITY. The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters. The [18] month Frequency is considered to be acceptable based on the damper reliability and design, the mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.]

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41, GDC 42, and GDC 43.
2. FSAR, Section [6.5].
3. Regulatory Guide 1.52, Revision [2].
4. FSAR, Chapter [15].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.11 BASES, IODINE CLEANUP SYSTEM (ICS) (ATMOSPHERIC AND SUBATMOSPHERIC)

1. ISTS 3.6.11 Bases, "Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

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ISTS 3.6.14, AIR RETURN SYSTEM (ARS) (ICE CONDENSER)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.14 Air Return System (ARS) (Ice Condenser)

LCO 3.6.14 Two ARS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ARS train inoperable.	A.1 Restore ARS train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.14.1	Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of ≥ [9.0] minutes and ≤ [11.0] minutes, and operates for ≥ 15 minutes.	[92] days
SR 3.6.14.2	Verify, with the ARS fan dampers closed, each ARS fan motor current is ≥ [20.5] amps and ≤ [35.5] amps [when the fan speed is ≥ [840] rpm and ≤ [900] rpm].	92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.14.3	Verify, with the ARS fan not operating, each ARS fan damper opens when ≤ [11.0] lb is applied to the counterweight.	92 days
SR 3.6.14.4	[Verify each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens on an actual or simulated actuation signal after a delay of ≥ [9.0] minutes and ≤ [11.0] minutes.	92 days]

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.14, AIR RETURN SYSTEM (ARS) (ICE CONDENSER)

1. ISTS 3.6.14, "Air Return System (ARS) (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an ice condenser containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.14 Air Return System (ARS) (Ice Condenser)

BASES

BACKGROUND

The ARS is designed to assure the rapid return of air from the upper to the lower containment compartment after the initial blowdown following a Design Basis Accident (DBA). The return of this air to the lower compartment and subsequent recirculation back up through the ice condenser assists in cooling the containment atmosphere and limiting post accident pressure and temperature in containment to less than design values. Limiting pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The ARS provides post accident hydrogen mixing in selected areas of containment. The associated Hydrogen Skimmer System consists of hydrogen collection headers routed to potential hydrogen pockets in containment, terminating on the suction side of either of the two ARS fans at the header isolation valves. The minimum design flow from each potential hydrogen pocket is sufficient to limit the local concentration of hydrogen. 1

The ARS consists of two separate trains of equal capacity, each capable of meeting the design bases. Each train includes a 100% capacity air return fan, associated damper, and hydrogen collection headers with isolation valves. Each train is powered from a separate Engineered Safety Features (ESF) bus.

The ARS fans are automatically started and the hydrogen collection header isolation valves are opened by the containment pressure High-High signal 10 minutes after the containment pressure reaches the pressure setpoint. The time delay ensures that no energy released during the initial phase of a DBA will bypass the ice bed through the ARS fans or Hydrogen Skimmer System.

After starting, the fans displace air from the upper compartment to the lower compartment, thereby returning the air that was displaced by the high energy line break blowdown from the lower compartment and equalizing pressures throughout containment. After discharge into the lower compartment, air flows with steam produced by residual heat

BASES

BACKGROUND (continued)

through the ice condenser doors into the ice condenser compartment where the steam portion of the flow is condensed. The air flow returns to the upper compartment through the top deck doors in the upper portion of the ice condenser compartment. The ARS fans operate continuously after actuation, circulating air through the containment volume and purging all potential hydrogen pockets in containment. When the containment pressure falls below a predetermined value, the ARS fans are automatically de-energized. Thereafter, the fans are automatically cycled on and off if necessary to control any additional containment pressure transients.

The ARS also functions, after all the ice has melted, to circulate any steam still entering the lower compartment to the upper compartment where the Containment Spray System can cool it.

The ARS is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained. The operation of the ARS, in conjunction with the ice bed, the Containment Spray System, and the Residual Heat Removal (RHR) System spray, provides the required heat removal capability to limit post accident conditions to less than the containment design values. 1

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train each of the Containment Spray System, RHR System, and ARS being inoperable (Ref. 1). The DBA analyses show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure.

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

BASES

APPLICABLE SAFETY ANALYSES (continued)

The analysis for minimum internal containment pressure (i.e., maximum external differential containment pressure) assumes inadvertent simultaneous actuation of both the ARS and the Containment Spray System. The containment vacuum relief valves are designed to accommodate inadvertent actuation of either or both systems.

The modeled ARS actuation from the containment analysis is based upon a response time associated with exceeding the containment pressure High-High signal setpoint to achieving full ARS air flow. A delayed response time initiation provides conservative analyses of peak calculated containment temperature and pressure responses. The ARS total response time of 600 seconds consists of the built in signal delay.

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

LCO

In the event of a DBA, one train of the ARS with the Hydrogen Skimmer System is required to provide the minimum air recirculation for heat removal and hydrogen mixing assumed in the safety analyses. To ensure this requirement is met, two trains of the ARS with the Hydrogen Skimmer System must be OPERABLE. This will ensure that at least one train will operate, assuming the worst case single failure occurs, which is in the ESF power supply. 1

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ARS. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ARS is not required to be OPERABLE in these MODES.

ACTIONS

A.1

If one of the required trains of the ARS is inoperable, it must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the flow and hydrogen skimming needs after an accident. The 72 hour Completion Time was developed taking into account the redundant flow and hydrogen skimming capability of the OPERABLE ARS train and the low probability of a DBA occurring in this period.

BASES

ACTIONS (continued)

B.1 and B.2

If the ARS 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 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 3.6.14.1

Verifying that each ARS fan starts on an actual or simulated actuation signal, after a delay ≥ [9.0] minutes and ≤ [11.0] minutes, and operates for ≥ 15 minutes is sufficient to ensure that all fans are OPERABLE and that all associated controls and time delays are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. The [92] day Frequency was developed considering the known reliability of fan motors and controls and the two train redundancy available. 1

SR 3.6.14.2

Verifying ARS fan motor current to be at rated speed with the return air dampers closed confirms one operating condition of the fan. This test is indicative of overall fan motor performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of 92 days conforms with the testing requirements for similar ESF equipment and considers the known reliability of fan motors and controls and the two train redundancy available.

SR 3.6.14.3

Verifying the OPERABILITY of the return air damper provides assurance that the proper flow path will exist when the fan is started. By applying the correct counterweight, the damper operation can be confirmed. The Frequency of 92 days was developed considering the importance of the dampers, their location, physical environment, and probability of failure. Operating experience has also shown this Frequency to be acceptable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.14.4

Verifying the OPERABILITY of the motor operated valve in the Hydrogen Skimmer System hydrogen collection header to the lower containment compartment provides assurance that the proper flow path will exist when the valve receives an actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. This Surveillance also confirms that the time delay to open is within specified tolerances. The 92 day Frequency was developed considering the known reliability of the motor operated valves and controls and the two train redundancy available. Operating experience has also shown this Frequency to be acceptable.]

REFERENCES

1. FSAR, Section [6.2].
2. 10 CFR 50, Appendix K.

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.14 BASES, AIR RETURN SYSTEM (ARS) (ICE CONDENSER)

1. ISTS 3.6.14 Bases, "Air Return System (ARS) (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

ISTS 3.6.15, ICE BED (ICE CONDENSER)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.15 Ice Bed (Ice Condenser)

LCO 3.6.15 The ice bed shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Ice bed inoperable.	A.1 Restore ice bed to OPERABLE status.	48 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 5.	6 hours 36 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.15.1	Verify maximum ice bed temperature is ≤ [27]°F.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.15.2	Verify total mass of stored ice is ≥ [2,200,000] lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of ≥ 30 ice baskets in each Radial Zone, and Verify: 1. Zone A (radial rows [7,8,9]), has a total mass of ≥ [733,400] lbs. 2. Zone B (radial rows [4,5,6]), has a total mass of ≥ [733,400] lbs. 3. Zone C (radial rows [1,2,3]), has a total mass of ≥ [733,400] lbs.	18 months
SR 3.6.15.3	Verify that the ice mass of each basket sampled in SR 3.6.15.2 is ≥ 600 lbs.	18 months
SR 3.6.15.4	Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.	18 months

1

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.15.5	-----------------------------NOTE----------------------------- The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below. --- Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed: a. Boron concentration is a ≥ [1800] ppm and ≤ [2000] ppm and b. pH is ≥ [9.0] and ≤ [9.5].	[54] months
SR 3.6.15.6	Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays as defined below: a. Group 1 - bays 1 through 8; b. Group 2 - bays 9 through 16; and c. Group 3 - bays 17 through 24.	40 months
SR 3.6.15.7	-----------------------------NOTE----------------------------- The chemical analysis may be performed on either the liquid solution or on the resulting ice. --- Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.15.5.	Each ice addition

1

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.15, ICE BED (ICE CONDENSER)

1. ISTS 3.6.15, "Ice Bed (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an ice condenser containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.15 Ice Bed (Ice Condenser)

BASES

BACKGROUND

The ice bed consists of a minimum of [2,200,000] lb of ice stored within the ice condenser. The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a Design Basis Accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The ice condenser is an annular compartment enclosing approximately 300° of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The lower portion has a series of hinged doors exposed to the atmosphere of the lower containment compartment, which, for normal unit operation, are designed to remain closed. At the top of the ice condenser is another set of doors exposed to the atmosphere of the upper compartment, which also remain closed during normal unit operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. These doors also remain closed during normal unit operation. The upper plenum area is used to facilitate surveillance and maintenance of the ice bed. 1

The ice baskets contain the ice within the ice condenser. The ice bed is considered to consist of the total volume from the bottom elevation of the ice baskets to the top elevation of the ice baskets. The ice baskets position the ice within the ice bed in an arrangement to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment. A divider barrier (i.e., operating deck and extensions thereof) separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

BACKGROUND (continued)

The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA and the additional heat loads that would enter containment during several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam from the lower compartment through the ice condenser where the heat is removed by the remaining ice.

As ice melts, the water passes through the ice condenser floor drains into the lower compartment. Thus, a second function of the ice bed is to be a large source of borated water (via the containment sump) for long term Emergency Core Cooling System (ECCS) and Containment Spray System heat removal functions in the recirculation mode. 1

A third function of the ice bed and melted ice is to remove fission product iodine that may be released from the core during a DBA. Iodine removal occurs during the ice melt phase of the accident and continues as the melted ice is sprayed into the containment atmosphere by the Containment Spray System. The ice is adjusted to an alkaline pH that facilitates removal of radioactive iodine from the containment atmosphere. The alkaline pH also minimizes the occurrence of the chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation.

It is important for ice to exist in the ice baskets, the ice to be appropriately distributed around the 24 ice condenser bays, and for open flow paths to exist around ice baskets. This is especially important during the initial blowdown so that the steam and water mixture entering the lower compartment do not pass through only part of the ice condenser, depleting the ice there while bypassing the ice in other bays.

Two phenomena that can degrade the ice bed during the long service period are:

a. Loss of ice by melting or sublimation and

b. Obstruction of flow passages through the ice bed due to buildup of ice.

BASES

BACKGROUND (continued)

Both of these degrading phenomena are reduced by minimizing air leakage into and out of the ice condenser.

The ice bed limits the temperature and pressure that could be expected following a DBA, thus limiting leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are not assumed to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed in regards to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train each of the Containment Spray System and ARS being inoperable. 1

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of the transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature."

BASES

APPLICABLE SAFETY ANALYSES (continued)

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

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

LCO

The ice bed LCO requires the existence of the required quantity of stored ice, appropriate distribution of the ice and the ice bed, open flow paths through the ice bed, and appropriate chemical content and pH of the stored ice. The stored ice functions to absorb heat during the blowdown phase and long term phase of a DBA, thereby limiting containment air temperature and pressure. The chemical content and pH of the stored ice provide core SDM (boron content) and remove radioactive iodine from the containment atmosphere when the melted ice is recirculated through the ECCS and the Containment Spray System, respectively. 1

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice bed. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice bed is not required to be OPERABLE in these MODES.

ACTIONS

A.1

If the ice bed is inoperable, it must be restored to OPERABLE status within 48 hours. The Completion Time was developed based on operating experience, which confirms that due to the very large mass of stored ice, the parameters comprising OPERABILITY do not change appreciably in this time period. Because of this fact, the Surveillance Frequencies are long (months), except for the ice bed temperature, which is checked every 12 hours. If a degraded condition is identified, even for temperature, with such a large mass of ice it is not possible for the degraded condition to significantly degrade further in a 48 hour period. Therefore, 48 hours is a reasonable amount of time to correct a degraded condition before initiating a shutdown.

BASES

ACTIONS (continued)

B.1 and B.2

If the ice bed 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 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 3.6.15.1

Verifying that the maximum temperature of the ice bed is ≤ [27]°F ensures that the ice is kept well below the melting point. The 12 hour Frequency was based on operating experience, which confirmed that, due to the large mass of stored ice, it is not possible for the ice bed temperature to degrade significantly within a 12 hour period and was also based on assessing the proximity of the LCO limit to the melting temperature. 1

Furthermore, the 12 hour Frequency is considered adequate in view of indications in the control room, including the alarm, to alert the operator to an abnormal ice bed temperature condition. This SR may be satisfied by use of the Ice Bed Temperature Monitoring System.

SR 3.6.15.2

Ice mass determination methodology is designed to verify the total as-found (pre-maintenance) mass of ice in the ice bed, and the appropriate distribution of that mass, using a random sampling of individual baskets. The random sample will include at least 30 baskets from each of three defined Radial Zones (at least 90 baskets total). Radial Zone A consists of baskets located in rows [7, 8, and 9] (innermost rows adjacent to the crane wall), Radial Zone B consists of baskets located in rows [4, 5, and 6] (middle rows of the ice bed), and Radial Zone C consists of baskets located in rows [1, 2, and 3] (outermost rows adjacent to the containment vessel).

The Radial Zones chosen include the row groupings nearest the inside and outside walls of the ice bed and the middle rows of the ice bed. These groupings facilitate the statistical sampling plan by creating sub-populations of ice baskets that have similar mean mass and sublimation characteristics.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Methodology for determining sample ice basket mass will be either by direct lifting or by alternative techniques. Any method chosen will include procedural allowances for the accuracy of the method used. [The number of sample baskets in any Radial Zone may be increased one by adding 20 or more randomly selected baskets to verify the total mass of that Radial Zone.]

In the event the mass of a selected basket in a sample population (initial or expanded) cannot be determined by any available means (e.g., due to surface ice accumulation or obstruction), a randomly selected representative alternate basket may be used to replace the original selection in that sample population. If employed, the representative alternate must meet the following criteria:

a. Alternate selection must be from the same bay-Zone (i.e., same bay, same Radial Zone) as the original selection, and

b. Alternate selection cannot be a repeated selection (original or alternate) in the current Surveillance, and cannot have been used as an analyzed alternate selection in the three most recent Surveillances. 1

The complete basis for the methodology used in establishing the 95% confidence level in the total ice bed mass is documented in Reference 4 and approved in Reference 5.

The total ice mass and individual Radial Zone ice mass requirements defined in this Surveillance, and the minimum ice mass per basket requirement defined by SR 3.6.15.3, are the minimum requirements for OPERABILITY. Additional ice mass beyond the SRs is maintained to address sublimation. This sublimation allowance is generally applied to baskets in each Radial Zone, as appropriate, at the beginning of an operating cycle to ensure sufficient ice is available at the end of the operating cycle for the ice condenser to perform its intended design function.

The Frequency of 18 months was based on ice storage tests, and the typical sublimation allowance maintained in the ice mass over and above the minimum ice mass assumed in the safety analyses. Operating and maintenance experience has verified that, with the 18 month Frequency, the minimum mass and distribution requirements in the ice bed are maintained.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.15.3

Verifying that each selected sample basket from SR 3.6.15.2 contains at least 600 lbs of ice in the as-found (pre-maintenance) condition ensures that a significant localized degraded mass condition is avoided.

This SR establishes a per basket limit to ensure any ice mass degradation is consistent with the initial conditions of the DBA by not significantly affecting the containment pressure response. Reference 4 provides insights through sensitivity runs that demonstrate that the containment peak pressure during a DBA is not significantly affected by the ice mass in a large localized region of baskets being degraded below the required safety analysis mean, when the Radial Zone and total ice mass requirements of SR 3.6.15.2 are satisfied. Any basket identified as containing less than 600 lbs of ice requires appropriately entering the TS Required Action for an inoperable ice bed due to the potential that it may represent a significant condition adverse to quality.

As documented in Reference 4, maintenance practices actively manage individual ice basket mass above the required safety analysis mean for each Radial Zone. Specifically, each basket is serviced to keep its ice mass above [1132] lbs for Radial Zone A, [1132] lbs for Radial Zone B, and [1132] lbs for Radial Zone C. If a basket sublimates below the safety analysis mean value, this instance is identified within the plant's corrective action program, including evaluating maintenance practices to identify the cause and correct any deficiencies. These maintenance practices provide defense in depth beyond compliance with the ice bed Surveillance Requirements by limiting the occurrence of individual baskets with ice mass less than the required safety analysis mean. 1

SR 3.6.15.4

This SR ensures that the flow channels through the ice bed have not accumulated ice blockage that exceeds 15 percent of the total flow area through the ice bed region. The allowable 15 percent buildup of ice is based on the analysis of the sub-compartment response to a design basis LOCA with partial blockage of the ice condenser flow channels. The analysis did not perform detailed flow area modeling, but lumped the ice condenser bays into six sections ranging from 2.75 bays to 6.5 bays. Individual bays are acceptable with greater than 15 percent blockage, as long as 15 percent blockage is not exceeded for any analysis section.

BASES

SURVEILLANCE REQUIREMENTS (continued)

To provide a 95 percent confidence that flow blockage does not exceed the allowed 15 percent, the visual inspection must be made for at least 54 (33 percent) of the 162 flow channels per ice condenser bay. The visual inspection of the ice bed flow channels is to inspect the flow area, by looking down from the top of the ice bed, and where view is achievable up from the bottom of the ice bed. Flow channels to be inspected are determined by random sample. As the most restrictive ice bed flow passage is found at a lattice frame elevation, the 15 percent blockage criteria only applies to "flow channels" that comprise the area:

a. between ice baskets, and

b. past lattice frames and wall panels.

Due to a significantly larger flow area in the regions of the upper deck grating and the lower inlet plenum support structures and turning vanes, a gross buildup of ice on these structures would be required to degrade air and steam flow. Therefore, these structures are excluded as part of a flow channel for application of the 15 percent blockage criteria. Industry experience has shown that removal of ice from the excluded structures during the refueling outage is sufficient to ensure they remain OPERABLE throughout the operating cycle. Removal of any gross ice buildup on the excluded structures is performed following outage maintenance activities. 1

Operating experience has demonstrated that the ice bed is the region that is the most flow restrictive, due to the normal presence of ice accumulation on lattice frames and wall panels. The flow area through the ice basket support platform is not a more restrictive flow area because it is easily accessible from the lower plenum and is maintained clear of ice accumulation. There is no mechanistically credible method for ice to accumulate on the ice basket support platform during plant operation. Plant and industry experience has shown that the vertical flow area through the ice basket support platform remains clear of ice accumulation that could produce blockage. Normally only a glaze may develop or exist on the ice basket support platform which is not significant to blockage of flow area. Additionally, outage maintenance practices provide measures to clear the ice basket support platform following maintenance activities of any accumulation of ice that could block flow areas.

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, and can be brushed off with the open hand.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.15.5

Verifying the chemical composition of the stored ice ensures that the stored ice has a boron concentration ≥ [1800] ppm and ≤ [2000] ppm as sodium tetraborate and a high pH, ≥ [9.0] and ≤ [9.5], in order to meet the requirement for borated water when the melted ice is used in the ECCS recirculation mode of operation. Additionally, the minimum boron concentration value is used to assure reactor subcriticality in a post LOCA environment, while the maximum boron concentration is used as the bounding value in the hot leg switchover timing calculation (Ref. 3). This is accomplished by obtaining at least 24 ice samples. Each sample is taken approximately one foot from the top of the ice of each randomly selected ice basket in each ice condenser bay. The SR is modified by a Note that allows the boron concentration and pH value obtained from averaging the individual samples' analysis results to satisfy the requirements of the SR. If either the average boron concentration or average pH value is outside their prescribed limit, then entry into Condition A is required. Sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. The high pH is required to enhance the effectiveness of the ice and the melted ice in removing iodine from the containment atmosphere. This pH range also minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. The Frequency of [54] months is intended to be consistent with the expected length of three fuel cycles, and was developed considering these facts: 1

a. Long term ice storage tests have determined that the chemical composition of the stored ice is extremely stable,

b. There are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0-9.5 range when boron concentrations are above approximately 1200 ppm,

c. Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem, and

d. Someone would have to enter the containment to take the sample, and, if the unit is at power, that person would receive a radiation dose.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.15.6

This SR ensures that a representative sampling of ice baskets, which are relatively thin walled, perforated cylinders, have not been degraded by wear, cracks, corrosion, or other damage. The SR is designed around a full-length inspection of a sample of baskets, and is intended to monitor the effect of the ice condenser environment on ice baskets. The groupings defined in the SR (two baskets in each azimuthal third of the ice bed) ensure that the sampling of baskets is reasonably distributed. The Frequency of 40 months for a visual inspection of the structural soundness of the ice baskets is based on engineering judgment and considers such factors as the thickness of the basket walls relative to corrosion rates expected in their service environment and the results of the long term ice storage testing.

SR 3.6.15.7

This SR ensures that initial ice fill and any subsequent ice additions meet the boron concentration and pH requirements of SR 3.6.15.5. The SR is modified by a Note that allows the chemical analysis to be performed on either the liquid or resulting ice of each sodium tetraborate solution prepared. If ice is obtained from offsite sources, then chemical analysis data must be obtained for the ice supplied. 1

REFERENCES

1. FSAR, Section [6.2].

2. 10 CFR 50, Appendix K.

3. [Westinghouse letter, WAT-D-10686, "Upper Limit Ice Boron Concentration In Safety Analysis."]

4. Topical Report ICUG-001, "Application of the Active Ice Mass Management (AIMM) Concept to the Ice Condenser Ice Mass Technical Specifications," Revision 3, September 2003.

5. NRC Letter dated September 11, 2003, "Safety Evaluation for Ice Condenser Utility Group Topical Report No. ICUG-001, Revision 2 RE: Application of the Active Ice Mass Management Concept to the Ice Condenser Ice Mass Technical Specification (TAC No. MB3379)."

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.15 BASES, ICE BED (ICE CONDENSER)

1. ISTS 3.6.15 Bases, "Ice Bed (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

ISTS 3.6.16, ICE CONDENSER DOORS (ICE CONDENSER)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.16 Ice Condenser Doors (Ice Condenser)

LCO 3.6.16 The ice condenser inlet doors, intermediate deck doors, and top deck [doors] shall be OPERABLE and closed.

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

ACTIONS

--NOTE--

Separate Condition entry is allowed for each ice condenser door.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ice condenser inlet doors inoperable due to being physically restrained from opening.	A.1 Restore inlet door to OPERABLE status.	1 hour
B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.	B.1 Verify maximum ice bed temperature is ≤ [27]°F.	Once per 4 hours
	AND	
	B.2 Restore ice condenser door to OPERABLE status and closed positions.	14 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Restore ice condenser door to OPERABLE status and closed positions.	48 hours
D. Required Action and associated Completion Time of Condition A or C not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Be in MODE 5.	36 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.16.1	Verify all inlet doors indicate closed by the Inlet Door Position Monitoring System.	12 hours
SR 3.6.16.2	Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	7 days
SR 3.6.16.3	Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris.	[3 months during first year after receipt of license] <u>AND</u> [18] months
SR 3.6.16.4	Verify torque required to cause each inlet door to begin to open is ≤ [675] in-lb.	[3 months during first year after receipt of license] <u>AND</u> [18] months
SR 3.6.16.5	Perform a torque test on [a sampling of ≥ 25% of the] inlet doors.	[3 months during first year after receipt of license] <u>AND</u> [18] months
SR 3.6.16.6	Verify for each intermediate deck door: a. No visual evidence of structural deterioration, b. Free movement of the vent assemblies, and c. Free movement of the door.	[3 months during first year after receipt of license] <u>AND</u> [18] months

1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.16.7	Verify, by visual inspection, each top deck [door]: a. Is in place; and b. Has no condensation, frost, or ice formed on the [door] that would restrict its opening.	92 days

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.16, ICE CONDENSER DOORS (ICE CONDENSER)

1. ISTS 3.6.16, "Ice Condenser Doors (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an ice condenser containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.16 Ice Condenser Doors (Ice Condenser)

BASES

BACKGROUND

The ice condenser doors consist of the inlet doors, the intermediate deck doors, and the top deck doors. The functions of the doors are to:

a. Seal the ice condenser from air leakage during the lifetime of the unit and

b. Open in the event of a Design Basis Accident (DBA) to direct the hot steam air mixture from the DBA into the ice bed, where the ice would absorb energy and limit containment peak pressure and temperature during the accident transient.

Limiting the pressure and temperature following a DBA reduces the release of fission product radioactivity from containment to the environment.

The ice condenser is an annular compartment enclosing approximately 300° of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The inlet doors separate the atmosphere of the lower compartment from the ice bed inside the ice condenser. The top deck doors are above the ice bed and exposed to the atmosphere of the upper compartment. The intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. This plenum area is used to facilitate surveillance and maintenance of the ice bed. 1

The ice baskets held in the ice bed within the ice condenser are arranged to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper

BASES

BACKGROUND (continued)

compartment. Steam condensation within the ice condensers limits the pressure and temperature buildup in containment. A divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

The ice, together with the containment spray, serves as a containment heat removal system and is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment during the several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice.

The water from the melted ice drains into the lower compartment where it serves as a source of borated water (via the containment sump) for the Emergency Core Cooling System (ECCS) and the Containment Spray System heat removal functions in the recirculation mode. The ice (via the Containment Spray System) and the recirculated ice melt also serve to clean up the containment atmosphere. 1

The ice condenser doors ensure that the ice stored in the ice bed is preserved during normal operation (doors closed) and that the ice condenser functions as designed if called upon to act as a passive heat sink following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment pressure and temperature are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed with respect to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train each of the Containment Spray System and the ARS being rendered inoperable.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5B, "Containment Air Temperature."

An additional design requirement was imposed on the ice condenser door design for a small break accident in which the flow of heated air and steam is not sufficient to fully open the doors. 1

For this situation, the doors are designed so that all of the doors would partially open by approximately the same amount. Thus, the partially opened doors would modulate the flow so that each ice bay would receive an approximately equal fraction of the total flow.

This design feature ensures that the heated air and steam will not flow preferentially to some ice bays and deplete the ice there without utilizing the ice in the other bays.

In addition to calculating the overall peak containment pressures, the DBA analyses include the calculation of the transient differential pressures that would occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand the local transient pressure differentials for the limiting DBAs.

The ice condenser doors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum equipment requirements to assure that the ice condenser doors perform their safety function. The ice condenser inlet doors, intermediate deck doors, and top deck doors must be closed to minimize air leakage into and out of the ice condenser, with its attendant leakage of heat into the ice condenser and loss of ice

BASES

LCO (continued)

through melting and sublimation. The doors must be OPERABLE to ensure the proper opening of the ice condenser in the event of a DBA. OPERABILITY includes being free of any obstructions that would limit their opening, and for the inlet doors, being adjusted such that the opening and closing torques are within limits. The ice condenser doors function with the ice condenser to limit the pressure and temperature that could be expected following a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice condenser doors. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice condenser doors are not required to be OPERABLE in these MODES.

ACTIONS

A Note provides clarification that, for this LCO, separate Condition entry is allowed for each ice condenser door. 1

A.1

If one or more ice condenser inlet doors are inoperable due to being physically restrained from opening, the door(s) must be restored to OPERABLE status within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires containment to be restored to OPERABLE status within 1 hour.

B.1 and B.2

If one or more ice condenser doors are determined to be partially open or otherwise inoperable for reasons other than Condition A or if a door is found that is not closed, it is acceptable to continue unit operation for up to 14 days, provided the ice bed temperature instrumentation is monitored once per 4 hours to ensure that the open or inoperable door is not allowing enough air leakage to cause the maximum ice bed temperature to approach the melting point. The Frequency of 4 hours is based on the fact that temperature changes cannot occur rapidly in the ice bed

BASES

ACTIONS (continued)

because of the large mass of ice involved. The 14 day Completion Time is based on long term ice storage tests that indicate that if the temperature is maintained below [27]°F, there would not be a significant loss of ice from sublimation. If the maximum ice bed temperature is > [27]°F at any time, the situation reverts to Condition C and a Completion Time of 48 hours is allowed to restore the inoperable door to OPERABLE status or enter into Required Actions D.1 and D.2. Ice bed temperature must be verified to be within the specified Frequency as augmented by the provisions of SR 3.0.2. If this verification is not made, Required Actions D.1 and D.2, not Required Action C.1, must be taken. Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.

C.1

If Required Actions B.1 or B.2 are not met, the doors must be restored to OPERABLE status and closed positions within 48 hours. The 48 hour Completion Time is based on the fact that, with the very large mass of ice involved, it would not be possible for the temperature to decrease to the melting point and a significant amount of ice to melt in a 48 hour period. Condition C is entered from Condition B only when the Completion Time of Required Action B.2 is not met or when the ice bed temperature has not been verified at the required frequency. 1

D.1 and D.2

If the ice condenser doors 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 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.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.16.1

Verifying, by means of the Inlet Door Position Monitoring System, that the inlet doors are in their closed positions makes the operator aware of an inadvertent opening of one or more doors. The Frequency of 12 hours ensures that operators on each shift are aware of the status of the doors.

SR 3.6.16.2

Verifying, by visual inspection, that each intermediate deck door is closed and not impaired by ice, frost, or debris provides assurance that the intermediate deck doors (which form the floor of the upper plenum where frequent maintenance on the ice bed is performed) have not been left open or obstructed. The Frequency of 7 days is based on engineering judgment and takes into consideration such factors as the frequency of entry into the intermediate ice condenser deck, the time required for significant frost buildup, and the probability that a DBA will occur.

SR 3.6.16.3

Verifying, by visual inspection, that the ice condenser inlet doors are not impaired by ice, frost, or debris provides assurance that the doors are free to open in the event of a DBA. For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on door design, which does not allow water condensation to freeze, and operating experience, which indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown. 1

SR 3.6.16.4

Verifying the opening torque of the inlet doors provides assurance that no doors have become stuck in the closed position. The value of [675] in-lb is based on the design opening pressure on the doors of 1.0 lb/ft^2. For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not

BASES

SURVEILLANCE REQUIREMENTS (continued)

likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors usually meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.

SR 3.6.16.5

The torque test Surveillance ensures that the inlet doors have not developed excessive friction and that the return springs are producing a door return torque within limits. The torque test consists of the following:

1. Verify that the torque, T(OPEN), required to cause opening motion at the [40]° open position is ≤ [195] in-lb,

2. Verify that the torque, T(CLOSE), required to hold the door stationary (i.e., keep it from closing) at the [40]° open position is ≥ [78] in-lb, and 1

3. Calculate the frictional torque, T(FRICT) = 0.5 {T(OPEN) - T(CLOSE)}, and verify that the T(FRICT) is ≤ [40] in-lb.

The purpose of the friction and return torque Specifications is to ensure that, in the event of a small break LOCA or SLB, all of the 24 door pairs open uniformly. This assures that, during the initial blowdown phase, the steam and water mixture entering the lower compartment does not pass through part of the ice condenser, depleting the ice there, while bypassing the ice in other bays. The Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.16.6

Verifying the OPERABILITY of the intermediate deck doors provides assurance that the intermediate deck doors are free to open in the event of a DBA. The verification consists of visually inspecting the intermediate doors for structural deterioration, verifying free movement of the vent assemblies, and ascertaining free movement of each door when lifted with the applicable force shown below:

	Door	Lifting Force
a.	Adjacent to crane wall	< 37.4 lb
b.	Paired with door adjacent to crane wall	≤ 33.8 lb
c.	Adjacent to containment wall	≤ 31.8 lb
d.	Paired with door adjacent to containment wall	≤ 31.0 lb

1

The 18 month Frequency [3 months during the first year after receipt of license] is based on the passive design of the intermediate deck doors, the frequency of personnel entry into the intermediate deck, and the fact that SR 3.6.16.2 confirms on a 7 day Frequency that the doors are not impaired by ice, frost, or debris, which are ways a door would fail the opening force test (i.e., by sticking or from increased door weight).

SR 3.6.16.7

Verifying, by visual inspection, that the top deck doors are in place and not obstructed provides assurance that the doors are performing their function of keeping warm air out of the ice condenser during normal operation, and would not be obstructed if called upon to open in response to a DBA. The Frequency of 92 days is based on engineering judgment, which considered such factors as the following:

a. The relative inaccessibility and lack of traffic in the vicinity of the doors make it unlikely that a door would be inadvertently left open,

b. Excessive air leakage would be detected by temperature monitoring in the ice condenser, and

BASES

SURVEILLANCE REQUIREMENTS (continued)

c. The light construction of the doors would ensure that, in the event of a DBA, air and gases passing through the ice condenser would find a flow path, even if a door were obstructed.

REFERENCES

1. FSAR, Chapter [15].

2. 10 CFR 50, Appendix K.

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.16 BASES, ICE CONDENSER DOORS (ICE CONDENSER)

1. ISTS 3.6.16 Bases, "Ice Condenser Doors (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

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ISTS 3.6.17, DIVIDER BARRIER INTEGRITY (ICE CONDENSER)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.17 Divider Barrier Integrity (Ice Condenser)

LCO 3.6.17 Divider barrier integrity shall be maintained.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------NOTE------------ For this action, separate Condition entry is allowed for each personnel access door or equipment hatch. -------------------------------- One or more personnel access doors or equipment hatches open or inoperable, other than for personnel transit entry.	A.1 Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.	1 hour
B. Divider barrier seal inoperable.	B.1 Restore seal to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.17.1	Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed.	Prior to entering MODE 4 from MODE 5
SR 3.6.17.2	Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have: a. No detrimental misalignments, b. No cracks or defects in the sealing surfaces, and c. No apparent deterioration of the seal material.	Prior to final closure after each opening <u>AND</u> --------NOTE-------- Only required for seals made of resilient materials ------------------------ 10 years
SR 3.6.17.3	Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed.	After each opening
SR 3.6.17.4	Remove two divider barrier seal test coupons and verify: a. Both test coupons' tensile strength is ≥ [120] psi and [b. Both test coupons' elongation is ≥ [100]%.]	[18] months
SR 3.6.17.5	Visually inspect ≥ [95]% of the divider barrier seal length, and verify: a. Seal and seal mounting bolts are properly installed and b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.	[18] months

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.17, DIVIDER BARRIER INTEGRITY (ICE CONDENSER)

1. ISTS 3.6.17, "Divider Barrier Integrity (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an ice condenser containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.17 Divider Barrier Integrity (Ice Condenser)

BASES

BACKGROUND

The divider barrier consists of the operating deck and associated seals, personnel access doors, and equipment hatches that separate the upper and lower containment compartments. Divider barrier integrity is necessary to minimize bypassing of the ice condenser by the hot steam and air mixture released into the lower compartment during a Design Basis Accident (DBA). This ensures that most of the gases pass through the ice bed, which condenses the steam and limits pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the door panels at the top of the condenser to open, which allows the air to flow out of the ice condenser into the upper compartment. The ice condenses the steam as it enters, thus limiting the pressure and temperature buildup in containment. The divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser. The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment over several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. 1

Divider barrier integrity ensures that the high energy fluids released during a DBA would be directed through the ice condenser and that the ice condenser would function as designed if called upon to act as a passive heat sink following a DBA.

BASES

APPLICABLE SAFETY ANALYSES

Divider barrier integrity ensures the functioning of the ice condenser to the limiting containment pressure and temperature that could be experienced following a DBA. The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed, with respect to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in the inoperability of one train in both the Containment Spray System and the ARS.

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5B, "Containment Air Temperature." 1

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

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

LCO

This LCO establishes the minimum equipment requirements to ensure that the divider barrier performs its safety function of ensuring that bypass leakage, in the event of a DBA, does not exceed the bypass leakage assumed in the accident analysis. Included are the requirements that the personnel access doors and equipment hatches in the divider barrier are OPERABLE and closed and that the divider barrier seal is properly installed and has not degraded with time. An exception to the

BASES

LCO (continued)

requirement that the doors be closed is made to allow personnel transit entry through the divider barrier. The basis of this exception is the assumption that, for personnel transit, the time during which a door is open will be short (i.e., shorter than the Completion Time of 1 hour for Condition A). The divider barrier functions with the ice condenser to limit the pressure and temperature that could be expected following a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the integrity of the divider barrier. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, divider barrier integrity is not required in these MODES.

ACTIONS

A.1

If one or more personnel access doors or equipment hatches are inoperable or open, except for personnel transit entry, 1 hour is allowed to restore the door(s) and equipment hatches to OPERABLE status and the closed position. The 1 hour Completion Time is consistent with LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour. 1

Condition A has been modified by a Note to provide clarification that, for this LCO, separate Condition entry is allowed for each personnel access door or equipment hatch.

B.1

If the divider barrier seal is inoperable, 1 hour is allowed to restore the seal to OPERABLE status. The 1 hour Completion Time is consistent with LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

BASES

ACTIONS (continued)

C.1 and C.2

If divider barrier integrity 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 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 3.6.17.1

Verification, by visual inspection, that all personnel access doors and equipment hatches between the upper and lower containment compartments are closed provides assurance that divider barrier integrity is maintained prior to the reactor being taken from MODE 5 to MODE 4. This SR is necessary because many of the doors and hatches may have been opened for maintenance during the shutdown. 1

SR 3.6.17.2

Verification, by visual inspection, that the personnel access door and equipment hatch seals, sealing surfaces, and alignments are acceptable provides assurance that divider barrier integrity is maintained. This inspection cannot be made when the door or hatch is closed. Therefore, SR 3.6.17.2 is required for each door or hatch that has been opened, prior to the final closure. Some doors and hatches may not be opened for long periods of time. Those that use resilient materials in the seals must be opened and inspected at least once every 10 years to provide assurance that the seal material has not aged to the point of degraded performance. The Frequency of 10 years is based on the known resiliency of the materials used for seals, the fact that the openings have not been opened (to cause wear), and operating experience that confirms that the seals inspected at this Frequency have been found to be acceptable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.17.3

Verification, by visual inspection, after each opening of a personnel access door or equipment hatch that it has been closed makes the operator aware of the importance of closing it and thereby provides additional assurance that divider barrier integrity is maintained while in applicable MODES.

SR 3.6.17.4

Conducting periodic physical property tests on divider barrier seal test coupons provides assurance that the seal material has not degraded in the containment environment, including the effects of irradiation with the reactor at power. The required tests include a tensile strength test [and a test for elongation]. The Frequency of [18] months was developed considering such factors as the known resiliency of the seal material used, the inaccessibility of the seals and absence of traffic in their vicinity, and the unit conditions needed to perform the SR. 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. 1

SR 3.6.17.5

Visual inspection of the seal around the perimeter provides assurance that the seal is properly secured in place. The Frequency of [18] months was developed considering such factors as the inaccessibility of the seals and absence of traffic in their vicinity, the strength of the bolts and mechanisms used to secure the seal, and the unit conditions needed to perform the SR. 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.

REFERENCES 1. FSAR, Section [6.2].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.17 BASES, DIVIDER BARRIER INTEGRITY (ICE CONDENSER)

1. ISTS 3.6.17 Bases, "Divider Barrier Integrity (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.

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ISTS 3.6.18, CONTAINMENT RECIRCULATION DRAINS (ICE CONDENSER)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.18 Containment Recirculation Drains (Ice Condenser)

LCO 3.6.18 The ice condenser floor drains and the refueling canal drains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ice condenser floor drain inoperable.	A.1 Restore ice condenser floor drain to OPERABLE status.	1 hour
B. One refueling canal drain inoperable.	B.1 Restore refueling canal drain to OPERABLE status.	1 hour
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.18.1	Verify, by visual inspection, that: a. Each refueling canal drain plug is removed, b. Each refueling canal drain is not obstructed by debris, and c. No debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.	92 days <u>AND</u> Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal
SR 3.6.18.2	Verify for each ice condenser floor drain that the: a. Valve opening is not impaired by ice, frost, or debris, b. Valve seat shows no evidence of damage, c. Valve opening force is ≤ [66] lb, and d. Drain line from the ice condenser floor to the lower compartment is unrestricted.	[18] months

1

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.18, CONTAINMENT RECIRCULATION DRAINS (ICE CONDENSER)

1. ISTS 3.6.18, "Containment Recirculation Drains (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS. KPS is a dual containment design, not an ice condenser containment design.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.18 Containment Recirculation Drains (Ice Condenser)

BASES

BACKGROUND

The containment recirculation drains consist of the ice condenser drains and the refueling canal drains. The ice condenser is partitioned into 24 bays, each having a pair of inlet doors that open from the bottom plenum to allow the hot steam-air mixture from a Design Basis Accident (DBA) to enter the ice condenser. Twenty of the 24 bays have an ice condenser floor drain at the bottom to drain the melted ice into the lower compartment (in the 4 bays that do not have drains, the water drains through the floor drains in the adjacent bays). Each drain leads to a drain pipe that drops down several feet, then makes one or more 90° bends and exits into the lower compartment. A check (flapper) valve at the end of each pipe keeps warm air from entering during normal operation, but when the water exerts pressure, it opens to allow the water to spill into the lower compartment. This prevents water from backing up and interfering with the ice condenser inlet doors. The water delivered to the lower containment serves to cool the atmosphere as it falls through to the floor and provides a source of borated water at the containment sump for long term use by the Emergency Core Cooling System (ECCS) and the Containment Spray System during the recirculation mode of operation. 1

The two refueling canal drains are at low points in the refueling canal. During a refueling, plugs are installed in the drains and the canal is flooded to facilitate the refueling process. The water acts to shield and cool the spent fuel as it is transferred from the reactor vessel to storage. After refueling, the canal is drained and the plugs removed. In the event of a DBA, the refueling canal drains are the main return path to the lower compartment for Containment Spray System water sprayed into the upper compartment.

The ice condenser drains and the refueling canal drains function with the ice bed, the Containment Spray System, and the ECCS to limit the pressure and temperature that could be expected following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or

BASES

APPLICABLE SAFETY ANALYSES (continued)

consecutively. Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the Air Return System (ARS) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the analysis of the postulated DBAs, with respect to Engineered Safety Feature (ESF) systems, assumes the loss of one ESF bus, which is the worst case single active failure and results in one train of the Containment Spray System and one train of the ARS being rendered inoperable.

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs. 1

The containment recirculation drains satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum requirements to ensure that the containment recirculation drains perform their safety functions. The ice condenser floor drain valve disks must be closed to minimize air leakage into and out of the ice condenser during normal operation and must open in the event of a DBA when water begins to drain out. The refueling canal drains must have their plugs removed and remain clear to ensure the return of Containment Spray System water to the lower containment in the event of a DBA. The containment recirculation drains function with the ice condenser, ECCS, and Containment Spray System to limit the pressure and temperature that could be expected following a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature, which would require the operation of the containment recirculation drains. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

BASES

APPLICABILITY (continued)

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, the containment recirculation drains are not required to be OPERABLE in these MODES.

ACTIONS

A.1

If one ice condenser floor drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1

If one refueling canal drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status in 1 hour. 1

C.1 and C.2

If the affected drain(s) 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 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.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.18.1

Verifying the OPERABILITY of the refueling canal drains ensures that they will be able to perform their functions in the event of a DBA. This Surveillance confirms that the refueling canal drain plugs have been removed and that the drains are clear of any obstructions that could impair their functioning. In addition to debris near the drains, attention must be given to any debris that is located where it could be moved to the drains in the event that the Containment Spray System is in operation and water is flowing to the drains. SR 3.6.18.1 must be performed before entering MODE 4 from MODE 5 after every filling of the canal to ensure that the plugs have been removed and that no debris that could impair the drains was deposited during the time the canal was filled. The 92 day Frequency was developed considering such factors as the inaccessibility of the drains, the absence of traffic in the vicinity of the drains, and the redundancy of the drains.

SR 3.6.18.2

Verifying the OPERABILITY of the ice condenser floor drains ensures that they will be able to perform their functions in the event of a DBA. Inspecting the drain valve disk ensures that the valve is performing its function of sealing the drain line from warm air leakage into the ice condenser during normal operation, yet will open if melted ice fills the line following a DBA. Verifying that the drain lines are not obstructed ensures their readiness to drain water from the ice condenser. The [18] month Frequency was developed considering such factors as the inaccessibility of the drains during power operation; the design of the ice condenser, which precludes melting and refreezing of the ice; and operating experience that has confirmed that the drains are found to be acceptable when the Surveillance is performed at an [18] month Frequency. Because of high radiation in the vicinity of the drains during power operation, this Surveillance is normally done during a shutdown. 1

REFERENCES

1. FSAR, Section [6.2].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.18 BASES, CONTAINMENT RECIRCULATION DRAINS (ICE CONDENSER)

1. ISTS 3.6.18 Bases, "Containment Recirculation Drains (Ice Condenser)," is not included in the Kewaunee Power Station (KPS) ITS since the Specification has not been included in the KPS ITS.