DEFINITIONS

UNRESTRICTED AREA

1.39 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes. The definition of UNRESTRICTED AREA used in implementing the Radiological Effluent Technical Specifications has been expanded over that in 10 CFR 20.3(a)(17). The UNRESTRICTED AREA boundary may coincide with the exclusion (fenced) area boundary, as defined in 10 CFR 100.3(a), but the UNRESTRICTED AREA does not include areas over water bodies. The concept of UNRESTRICTED AREAS, established at or beyond the SITE BOUNDARY, is utilized in the LIMITING CONDITIONS FOR OPERATION to keep levels of radioactive materials in liquid and gaseous effluents as low as is reasonably achievable, pursuant to 10 CFR 50.36a.

1.40 Deleted

CORE OPERATING LIMITS REPORT

1.41 The CORE OPERATING LIMITS REPORT is the unit-specific document that provides core operating limits for the current reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.7. Plant operation within these core operating limits is addressed in individual specifications.

REFUELING INTERVAL

1.42 A REFUELING INTERVAL is a period of time ≤ 730 days.

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the BWST on a containment spray actuation signal and manually transferring suction to the containment emergency sump during the recirculation phase of operation.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable spray system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed or otherwise secured in position, is in its correct position.

b. At least once ~~per 18 months, during shutdown,~~ each REFUELING INTERVAL, by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a containment spray test signal.

2. Verifying that each spray pump starts automatically on a SFAS test signal.

Revised by NRC Letter Dated
June 6, 1995



SURVEILLANCE REQUIREMENTS (Continued)



c. Deleted

d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

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CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3.1 All containment isolation valves shall be OPERABLE with isolation times less than or equal to required isolation times.*

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more of the isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or

**b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or

**c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or

d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1.1 The isolation valves shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work that could affect the valve's performance is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test and verification of isolation time.

* Surveillance testing of valves MS100, MS101, ICS11A and ICS11B is not required prior to entering MODE 4 but shall be performed prior to entering MODE 3.

** The provisions of Specification 3.0.4 are not applicable. Selected valves may be opened on an intermittent basis under administrative controls.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.6.3.1.2 Each isolation valve shall be demonstrated OPERABLE ~~during the COLD SHUTDOWN or REFUELING MODE~~ at least once ~~per 18 months~~ each REFUELING INTERVAL, by:

a. Verifying that on a containment isolation test signal, each automatic isolation valve actuates to its isolation position.

b. Verifying that on a Containment Purge and Exhaust isolation test signal, each Purge and Exhaust automatic valve actuates to its isolation position.

4.6.3.1.3 The isolation time of each power operated or automatic valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

APPLICABILITY

BASES

4.0.1 This specification provides that surveillance activities necessary to insure the Limiting Conditions for Operation are met and will be performed during the OPERATIONAL MODES or other conditions for which the Limiting Conditions for Operation are applicable. Provisions for additional surveillance activities to be performed without regard to the applicable OPERATIONAL MODES or other conditions are provided in the individual Surveillance Requirements.

4.0.2 The provisions of this specification provide allowable tolerances for performing surveillance activities beyond those specified in the nominal surveillance interval. These tolerances are necessary to provide operational flexibility because of scheduling and performance considerations. The phrase "at least" associated with a surveillance frequency does not negate this allowable tolerance value and permits the performance of more frequent surveillance activities.

The allowable tolerance for performing surveillance activities is sufficiently restrictive to ensure that the reliability associated with the surveillance activity is not significantly degraded beyond that obtained from the nominal specified interval. it is not intended that the allowable tolerance be used as a convenience to repeatedly schedule the performance of surveillances at the allowable tolerance limit.

The allowable tolerance for performing surveillance activities also provides flexibility to accommodate the length of a fuel cycle for surveillances that are specified to be performed at least once each REFUELING INTERVAL. It is the intent that REFUELING INTERVAL surveillances be performed in an OPERATIONAL MODE consistent with safe plant operation.

4.0.3 This specification establishes the failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by the provisions of Specification 4.0.2, as a condition that constitutes a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. Under the provisions of this specification, systems and components are assumed to be OPERABLE when Surveillance Requirements have been satisfactorily performed within the specified time interval. However, nothing in this provision is to be construed as implying that systems or components are OPERABLE when they are found or known to be inoperable although still meeting the Surveillance Requirements. This specification also clarifies that the ACTION requirements are applicable when Surveillance Requirements have not been completed within the allowed surveillance interval and that the time limits of the ACTION requirements apply from the point in time it is identified that a surveillance has not been performed and not at the time that

APPLICABILITY

BASES

the allowed surveillance interval was exceeded. Completion of the Surveillance Requirement within the allowable (equipment inoperability) outage time limits of the ACTION requirements restores compliance with the requirements of Specification 4.0.3. However, this does not negate the fact that the failure to have performed the surveillance within the allowed surveillance interval, defined by the provisions of Specification 4.0.2, was a violation of the OPERABILITY requirements of a Limiting Condition for Operation that is subject to enforcement action. Further, the failure to perform a surveillance within the provisions of Specification 4.0.2 is a violation of a Technical Specification requirement and is, therefore, a reportable event under the requirements of 10 CFR 50.73(a)(2)(i)(B) because it is a condition prohibited by the plant's Technical Specifications.

If the allowable (equipment inoperability) outage time limits of the ACTION requirements are less than 24 hours or a shutdown is required to comply with ACTION requirements, e.g., Specification 3.0.3, a 24-hour allowance is provided to permit a delay in implementing the ACTION requirements. This provides an adequate time limit to complete Surveillance Requirements that have not been performed. The purpose of this allowance is to permit the completion of a surveillance before a shutdown is required to comply with ACTION requirements or before other remedial measures would be required that may preclude completion of a surveillance. The basis for this allowance includes consideration for plant conditions, adequate planning, availability of personnel, the time required to perform the surveillance, and the safety significance of the delay in completing the required surveillance. If a surveillance is not completed within the 24-hour allowance, the time limits of the ACTION requirements are applicable at that time. When a surveillance is performed within the 24-hour allowance and the Surveillance Requirements are not met, the time limits of the ACTION requirements are applicable at the time that the surveillance is terminated.

Surveillance Requirements do not have to be performed on inoperable equipment because the ACTION requirements define the remedial measures that apply. However, the Surveillance Requirements have to be met to demonstrate that inoperable equipment has been restored to OPERABLE status.

4.0.4 This specification ensures that the surveillance activities associated with a Limiting Condition for Operation have been performed within the specified time interval prior to entry into an OPERATIONAL MODE or other applicable condition. The intent of this provision is to ensure that surveillance activities have been satisfactorily demonstrated on a current basis as required to meet the OPERABILITY requirements of the Limiting Condition for Operation.

Under the terms of this specification, for example, during initial plant startup or following extended plant outages, the applicable surveillance activities must be performed within the stated surveillance interval prior to placing or returning the system or equipment into OPERABLE status.

APPLICABILITY

BASES

4.0.5 This specification ensures that inservice inspection of ASME Code Class 1, 2 and 3 components and inservice testing of ASME Code Class 1, 2 and 3 pumps and valves will be performed in accordance with a periodically updated version of Section XI of the ASME Boiler and Pressure Vessel Code and Addenda as required by 10 CFR 50.55a.

This specification includes a clarification of the frequencies for performing the inservice inspection and testing activities required by Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. This clarification is provided to ensure consistency in surveillance intervals throughout these Technical Specifications and to remove any ambiguities relative to the frequencies for performing the required inservice inspection and testing activities.

Under the terms of this specification, the more restrictive requirements of the Technical Specifications take precedence over the ASME Boiler and Pressure Vessel Code and applicable Addenda. For example, the requirements of Specification 4.0.4 to perform surveillance activities prior to entry into an OPERATIONAL MODE or other specified applicability condition takes precedence over the ASME Boiler and Pressure Vessel Code provision which allows pumps to be tested up to one week after return to normal operation and for example, the Technical Specification definition of OPERABLE does not grant a grace period before a device that is not capable of performing its specified functions is declared inoperable and takes precedence over the ASME Boiler and Pressure Vessel provision, which allows a valve to be incapable of performing its specified function for up to 24 hours before being declared inoperable.

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3/4.6.1.4 INTERNAL PRESSURE

The limitations on containment internal pressure ensure that I) the containment structure is prevented from exceeding its design negative pressure differential with respect to the annulus atmosphere of 0.5 psi and 2) the containment peak pressure does not exceed the design pressure of 40 psig during LOCA conditions.

The maximum peak pressure obtained from a LOCA event is 37 psig. The limit of 1 psig for initial positive containment pressure will limit the total pressure to 38 psig which is less than the design pressure and is consistent with the safety analyses.

3/4.6.1.5 AIR TEMPERATURE

The limitations on containment average air temperature ensure that the overall containment average air temperature does not exceed the initial temperature condition assumed in the accident analysis for a LOCA.

3/4.6.1.6 CONTAINMENT VESSEL STRUCTURAL INTEGRITY

Deleted

3/4.6.1.7 CONTAINMENT VENTILATION SYSTEM

The limitation on use of the Containment Purge and Exhaust System limits the time this system may be in operation with the reactor coolant system temperature above 200°F. This restriction minimizes the time that a direct open path would exist from the containment atmosphere to the outside atmosphere and consequently reduces the probability that an accident dose would exceed 10 CFR 100 guideline values in the event of a LOCA occurring coincident with purge system operation. The use of this system is therefore restricted to non-routine usage not to exceed 90 hours in any consecutive 365 day period which is equivalent to approximately 1% of the total possible yearly unit operating time.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment

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leakage rate are consistent with the assumptions used in the safety analyses.

Borated Water Storage Tank (BWST) outlet isolation valves DH-7A and DH-7B are de-energized during MODES 1, 2, 3, and 4 to preclude postulated inadvertent closure of the valves in the event of a fire, which could result in a loss of the availability of the BWST. Re-energization of valves DH-7A and DH-7B is permitted on an intermittent basis during MODES 1, 2, 3 and 4 under administrative controls. Station procedures identify the precautions which must be taken when re-energizing these valves under such controls.

Containment Emergency Sump Recirculation Valves DH-9A and DH-9B are de-energized during MODES 1, 2, 3, and 4 to preclude postulated inadvertent opening of the valves in the event of a fire, which could result in draining the Borated Water Storage Tank to the Containment Emergency Sump and the loss of this water source for normal plant shutdown. Re-energization of valves DH-9A and DH-9B is permitted on an intermittent basis during MODES 1, 2, 3, and 4 under administrative controls. Station procedures identify the precautions which must be taken when re-energizing these valves under such controls.

3/4.6.2.2 CONTAINMENT COOLING SYSTEM

The OPERABILITY of the containment cooling system ensures that 1) the containment air temperature will be maintained within limits during normal operation, and 2) adequate heat removal capacity is available when operated in conjunction with the containment spray systems during post-LOCA conditions.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the required time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA. Containment isolation valves and their required isolation times are addressed in the USAR. The opening of a closed inoperable containment isolation valve on an intermittent basis during plant operation is permitted under administrative control. Operating procedures identify those valves which may be opened under administrative control as well as the safety precautions which must be taken when opening valves under such controls.

Summary of Licensing Basis, Surveillance Data, and Maintenance Record Reviews for Surveillance Requirement 4.6.2.1.b

1. A. Technical Specification (TS) 3/4.6.2.1, "Containment Systems, Depressurization and Cooling Systems, Containment Spray System," Surveillance Requirements (SR):

4.6.2.1.b.1
4.6.2.1.b.2

Note:

The SFAS instrumentation and controls extend from the generating station variables to the input terminals of the safety features actuation control devices, such as motor controllers and solenoid valves. The subject surveillances cover actuated components which receive an SFAS signal. The surveillances do not include the SFAS instrumentation and controls. Applicable SFAS surveillances will be addressed under a separate License Amendment Request.

B. Component Name and Number:

Containment Spray System (CSS) Automatic Valves:

CS1530 (Containment Spray Auto Control Valve 1-1)
CS1531 (Containment Spray Auto Control Valve 1-2)
See Note Below

Containment Spray Pumps:

P56-1 (Containment Spray Pump 1-1)
P56-2 (Containment Spray Pump 1-2)

Note:

The Containment Spray Pumps take suction off a common header from the Borated Water Storage Tank or the Containment Emergency Sump. There are additional motor-operated valves in the suction flowpath (DH7A, DH7B, DH9A, and DH9B), however these valves are tested under a separate surveillance requirement, SR 4.5.2.e.1, which will be addressed under a separate License Amendment Request (LAR 95-0022).

C. Updated Safety Analysis Report (USAR) Sections:

6.2.2.2.2 Containment Spray System
6.2.2.4 Testing and Inspections

2. Licensing Basis Review:

A. Technical Specification SR 4.6.2.1.b requires that each CSS shall be demonstrated OPERABLE at least once per 18 months, during shutdown, by performing the activities listed in SR 4.6.2.1.b.1 and SR 4.6.2.1.b.2. Surveillance Requirement 4.6.2.1.b.1 requires that each automatic valve in the flow path be verified as actuating to its correct position on a containment spray test signal. Surveillance Requirement 4.6.2.1.b.2 requires that each spray pump be verified as starting automatically on an SFAS test signal. Technical Specification 4.0.2 is applicable which allows increasing the surveillance interval on a non-routine basis from 18 months to 22.5 months.

It is proposed that in SR 4.6.2.1.b, the words "at least once per 18 months, during shutdown" be replaced with "at least once each REFUELING INTERVAL." "REFUELING INTERVAL" is defined as "a period of time ≤ 730 days." This is consistent with the guidance provided by Generic Letter 91-04. Technical Specification 4.0.2 would continue to apply which would allow increasing the new surveillance interval on a non-routine basis from 24 months to 30 months.

B. The CSS is an engineered safety feature which has the dual function of removing heat and fission product iodine from the post-accident containment atmosphere. Removal of heat is accomplished by directing borated water spray into the containment, ensuring containment depressurization. The absorption of iodine by the containment sprays is accomplished mostly due to the large amount of surface area continuously available for mass transfer between the spray solution and the containment atmosphere. The removal of the airborne iodine from the containment atmosphere serves to limit the potential dose to receptors located at the site boundary and outer boundary of the low population zone to within 10 CFR Part 100 guideline values.

The CSS consists of two redundant pumps and spray headers, and associated isolation valves, piping, instrumentation and controls.

High containment vessel pressure or low Reactor Coolant System (RCS) pressure will actuate the Safety Features Actuation System (SFAS) Level 2 trip to open spray isolation valves CS1530 and CS1531. High-high containment pressure will actuate the SFAS Level 4 trip to start the two containment spray pumps. These pumps initially take suction from the Borated Water Storage Tank (BWST). After the water in the BWST reaches a low level, the spray pump suction is manually transferred to the Containment Vessel Emergency Sump for reactor coolant recirculation.

The CSS is not an initiator nor a contributor to the initiation of an accident described in the USAR. The CSS is designed so that a single active failure during the injection phase, or a single active or passive failure during the recirculation phase, cannot impair the ability of the CSS to comply with its safety design basis. It is also designed to remain functional after a design basis earthquake.

C. The current surveillance intervals of 18 months were based on the guidance of NUREG-0103, Revision 0, June 1, 1976, "Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," during the initial licensing of the DBNPS. The proposed changes, including removal of the requirement to perform the surveillances in a specific plant condition (ie., during shutdown), follow the guidance of Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-month Fuel Cycle," dated April 2, 1991.

D. As a result of the above review, it is concluded that the licensing basis of the CSS will not be invalidated by increasing the surveillance intervals for SR 4.6.2.1.b.1 and SR 4.6.2.1.b.2 from 18 months to 24 months and by continuing to allow the application of TS 4.0.2 on a non-routine basis.

E. References:

i. Davis-Besse Nuclear Power Station (DBNPS) Unit No. 1, Operating License NPF-3, Appendix A, Technical Specifications, through Amendment 211.

ii. Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

iii. "Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," NUREG-0103, Revision 0, dated June 1, 1976.

iv. USAR Section 6.2.2.2.2, "Containment Spray System," through Revision 19.

v. USAR Section 6.2.2.4, "Testing and Inspections," through Revision 19.

3. Surveillance Data Review:

A. The 18 month TS surveillance test results data for CSS automatic valves CS 1530 and CS 1531, and pumps CS 1-1 and CS 1-2 were reviewed for the period of the Fifth Refueling Outage (5RFO) through 9RFO. This time period was selected because it reflects the major plant improvements after June 1985, and covers five refueling outages and four operating cycles of test results.

B. The test results indicate that no failures occurred over the review period for these components.

Although not required to satisfy this Surveillance Requirement 4.6.2.1.b, during performance of testing it was noted that the CSS Train 1 manual actuation push button (HIS2020A) failed to operate when depressed during the performance of Procedure DB-SC-03114, "SFAS Integrated Response Time Test," dated October 28, 1988 (5RFO). The root cause of the switch failure was attributed to the switch contact assembly separating from the push button, apparently due to the switch assembly not being properly locked into place. The switch was properly reassembled and successfully retested. HIS2020A has subsequently demonstrated reliable operation during the subsequent tests performed during 6RFO through 9RFO.

The inoperability of the manual actuation push button would not have prevented the automatic actuation of the components by SFAS. Further, the subject manual actuation push button is part of the SFAS instrumentation and controls and therefore not part of the subject surveillances. Acceptable performance of HIS2020A as a component within the SFAS will be evaluated in conjunction with the license amendment application prepared for TS 3/4.3.2.1, SFAS Instrumentation.

C. Based on a review of the 18 month surveillance test results data, no additional actions are necessary or recommended to support this increase in the present surveillance interval.

These pumps and valves are tested quarterly under the Second Interval Inservice Test Program while the plant is on-line. These tests include pump flow and pressure, and valve stroke time.

D. Based on the historical good performance of these components, the low potential for significant increases in failure rates of these components under a longer test interval, the introduction of no new failure modes and inclusion in the Inservice Test Program, it is concluded that it is acceptable to increase the surveillance interval for TS 4.6.2.1.b.1 and TS 4.6.2.1.b.2 from 18 to 24 months and that there is no adverse effect on nuclear safety. Furthermore, it remains acceptable to allow the continued application of TS 4.0.2 on a non-routine basis.

E. References:

i. DBNPS Second Interval Inservice Test Program, Volume 1, Revision 02.

ii. DBNPS Procedure DB-SC-03114, "SFAS Integrated Response Time Test."

4. Maintenance Records Review:

A. A maintenance records summary was developed from the Davis-Besse Records Management System for CSS automatic valves CS 1530 and CS 1531, and CS pumps 1-1 and 1-2. The record summary was reviewed for the period of 5RFO through 9RFO. This time period was selected because it reflects the major plant improvements after June 1985, and covers five refueling outages and four operating cycles of maintenance activities.

B. Review of the current planned maintenance activities for these components indicates that there are no planned maintenance activities which are required to be performed on an 18 month refueling interval basis.

These components have preventive maintenance activities which are scheduled on an 18 month, 36 month, or greater frequency. However, these activities are scheduled to be performed on-line during an operating cycle and are, therefore, not restricted to being performed in a refueling outage. Therefore, extending the fuel cycle duration will not adversely impact these activities.

Additionally, review of the maintenance record summary for 5RFO through 9RFO indicates that the preventive and corrective activities for 5RFO through 9RFO would not have adversely impacted the CSS if a longer duration fuel cycle (24 months) was in effect.

Review of the maintenance record summary for 5RFO through 9RFO indicated one minor degradation case and one failure. The minor degradation concerned the motor outboard bearings of the CS pumps. During Cycle 7, the CS Pump 1 motor outboard bearing displayed temperature perturbations during the performance of quarterly surveillance testing. The bearing was inspected during 7RFO and replaced after discovering minor wear. The pump was successfully retested and performed satisfactorily until February 16, 1994, when a temperature anomaly again occurred during Cycle 9 surveillance testing. The motor outboard bearing was inspected while the plant was in Mode 1, and the bearing was replaced due to signs of minor wear. The root cause was attributed to slight axial misalignment of the pump/motor coupling hubs. This condition was corrected and the motor successfully retested. CS Pump 2 Motor Bearing - During Cycle 8, the CS Pump 2 motor outboard bearing displayed temperature and vibration anomalies during performance of quarterly surveillance testing. In August, 1992, the coupling spacer was replaced with one of a different size and the motor was successfully retested.

A plant modification was implemented during Cycle 10 to make further modifications to the coupling hubs on CS Pump 1 and CS Pump 2 to ensure proper long-term reliability. It should be noted that in these instances of the slight bearing wear, the degradation did not render the component inoperable.

The one failure concerned CS Pump 1 Motor Breaker BE111. On October 28, 1993, while in Mode 1, Operations personnel observed that the BE111 breaker racking shaft tube was not properly reset at the conclusion of a training evolution. The deficiency caused the breaker to be temporarily inoperable until the mechanism was restored to its proper position.

Subsequent inspection of the breaker discovered that binding was being caused by a misaligned mounting plate. The misalignment was repaired. The breaker performed properly through 9RFO following the referenced repair.

C. Based on a review of the 18 month maintenance records, no additional actions are necessary or recommended to support this increase in the present surveillance interval.

D. Based on the historical good performance of these components, the low potential for significant increases in failure rates of these components under a longer test interval, and the introduction of no new failure modes, it is concluded that it is acceptable to increase the surveillance interval of TS 4.6.2.1.b.1 and TS 4.6.2.1.b.2 from 18 to 24 months and that there is no adverse effect on safety. Furthermore, it is acceptable to allow the continued application of TS 4.0.2 on a non-routine basis.

E. References:

i. DBNPS Maintenance Work Order Records.

5. Other Information:

CS Pump 2 was disassembled during 8RFO and inspected to resolve a VT-2 visual observation of minor boric acid residue on the pump casing. There was no indication of any active leakage. The inspection revealed that there was no degradation of the casing studs. The pump was reassembled with new gaskets and has performed satisfactorily following the maintenance. The scheduling of this maintenance activity could have been postponed or deferred to accommodate any increase in a fuel cycle duration without any adverse consequences or impact to the CSS.

Summary of Licensing Basis, Surveillance Data, and Maintenance Record Reviews for Surveillance Requirement 4.6.3.1.2

1. A. Technical Specification (TS) 3/4.6.3.1, "Containment Systems, Containment Isolation Valves," Surveillance Requirements (SR):

4.6.3.1.2.a
4.6.3.1.2.b

Note:

The SFAS instrumentation and controls extend from the generating station variables to the input terminals of the safety features actuation control devices, such as motor controllers and solenoid valves. The subject surveillances cover actuated components which receive an SFAS signal. The surveillances do not include the SFAS instrumentation and controls. Applicable SFAS surveillances will be addressed under a separate License Amendment Request.

B. Component Name and Number:

Containment Isolation Automatic Valves:

CC1407A (Component Cooling Water Outlet from Containment)
CC1407B (Component Cooling Water Outlet from Containment)
CC1411A (Component Cooling Water Inlet to Containment)
CC1411B (Component Cooling Water Inlet to Containment)
CC1567A (Component Cooling Water to Control Rod Drive Cooler)
CC1567B (Component Cooling Water to Control Rod Drive Cooler)
CF1541 (Core Flood Tank Fill and Pressurization)
CF1542 (Core Flood Tank Vent Line)
CF1544 (Core Flood Tank Fill And Pressurization)
CF1545 (Core Flood Tank Sample Line)
CS1530 (Containment Spray Line)
CS1531 (Containment Spray Line)
CV5005 (Containment Purge Inlet)
CV5006 (Containment Purge Inlet)
CV5007 (Containment Purge Outlet)
CV5008 (Containment Purge Outlet)
CV5010A (Containment Hydroger Analyzer Sample Line Inlet)
CV5010B (Containment Hydrogen Analyzer Sample Line Inlet)
CV5010C (Containment Hydrogen Analyzer Sample Line Inlet)
CV5010D (Containment Hydrogen Analyzer Sample Line Inlet)
CV5010E (Containment Hydrogen Analyzer Sample Return Line)
CV5011A (Containment Hydrogen Analyzer Sample Line Inlet)
CV5011B (Containment Hydrogen Analyzer Sample Line Inlet)
CV5011C (Containment Hydrogen Analyzer Sample Line Inlet)
CV5011D (Containment Hydrogen Analyzer Sample Line Inlet)
CV5011E (Containment Hydrogen Analyzer Sample Return Line)
CV5037 (Hydrogen Purge System Exhaust)

Containment Isolation Automatic Valves: (continued)

CV5038 (Hydrogen Purge System Exhaust)
CV5065 (Hydrogen Dilution System Supply)
CV5070 (Containment Vessel Vacuum Relief)
CV5071 (Containment Vessel Vacuum Relief)
CV5072 (Containment Vessel Vacuum Relief)
CV5073 (Containment Vessel Vacuum Relief)
CV5074 (Containment Vessel Vacuum Relief)
CV5075 (Containment Vessel Vacuum Relief)
CV5076 (Containment Vessel Vacuum Relief)
CV5077 (Containment Vessel Vacuum Relief)
CV5078 (Containment Vessel Vacuum Relief)
CV5079 (Containment Vessel Vacuum Relief)
CV5090 (Hydrogen Dilution System Supply)
DH9A (Containment Vessel Emergency Sump Recirculation Line)
DH9B (Containment Vessel Emergency Sump Recirculation Line)
DR2012A (Containment Sump Pumps Discharge)
DR2012B (Containment Sump Pumps Discharge)
DW6831A (Demineralized Water Supply)
DW6831B (Demineralized Water Supply)
HP2A (High Pressure Injection Line)
HP2B (High Pressure Injection and Normal Makeup Line)
HP2C (High Pressure Injection and Alternate Makeup Line)
HP2D (High Pressure Injection Line)
IA2011 (Instrument Air Supply Line)
MU2A (Letdown Cooler Outlet)
MU3 (Letdown Stop)
MU38 (Reactor Coolant Pump Seal Return)
MU59A (Reactor Coolant Pump Seal Return)
MU59B (Reactor Coolant Pump Seal Return)
MU59C (Reactor Coolant Pump Seal Return)
MU59D (Reactor Coolant Pump Seal Return)
MU66A (Reactor Coolant Pump Seal Injection)
MU66B (Reactor Coolant Pump Seal Injection)
MU66C (Reactor Coolant Pump Seal Injection)
MU66D (Reactor Coolant Pump Seal Injection)
NN236 (Pressurizer Quench Tank Nitrogen Supply)
RC229A (Pressurizer Quench Tank Outlet)
RC229B (Pressurizer Quench Tank Outlet)
RC232 (Pressurizer Quench Tank Inlet)
RC240A (Pressurizer Sample Line)
RC240B (Pressurizer Sample Line)
RC1719A (Containment Vessel Vent Header)
RC1719B (Containment Vessel Vent Header)
RC1773A (Containment Vessel Drain Header)
RC1773B (Containment Vessel Drain Header)
SA2010 (Station Air Supply)
SS235A (Pressurizer Quench Tank Sample)
SS235B (Pressurizer Quench Tank Sample)
SS598 (Steam Generator Sample Line)
SS607 (Steam Generator Sample Line)

Containment Purge and Exhaust Isolation Automatic Valves:

CV5005 (Containment Purge Inlet)
CV5006 (Containment Purge Inlet)
CV5007 (Containment Purge Outlet)
CV5008 (Containment Purge Outlet)

C. Updated Safety Analysis Report (USAR) Sections:

6.2.3 Containment Vessel Air Purification and Cleanup Systems
6.2.4 Containment Vessel Isolation Systems

2. Licensing Basis Review:

A. Technical Specification SR 4.6.3.1.2 requires that each isolation valve shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE, at least once per 18 months, by performing the activities listed in SR 4.6.3.1.2.a and SR 4.6.3.1.2.b. Surveillance Requirement 4.6.3.1.2.a requires verification that on a containment isolation test signal, each automatic isolation valve actuates to its isolation position. Surveillance Requirement 4.6.3.1.2.b requires verification that each Purge and Exhaust automatic valve actuates to its isolation position on a Containment Purge and Exhaust isolation test signal. Technical Specification 4.0.2, which allows increasing the surveillance interval on a non-routine basis from 18 months to 22.5 months, is applicable.

It is proposed that SR 4.6.3.1.2, which presently states "Each isolation valve shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 18 months ..." be replaced with "Each isolation valve shall be demonstrated OPERABLE each REFUELING INTERVAL ...", where "REFUELING INTERVAL" is defined as "a period of time $\leq$ 730 days." This is consistent with the guidance provided by Generic Letter 91-04. Technical Specification 4.0.2 would continue to apply which would allow increasing the new surveillance interval on a non-routine basis from 24 months to 30 months.

B. The operability of the containment isolation valves, including the Containment Purge and Exhaust automatic isolation valves, ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment Vessel isolation occurs on a safety features actuation signal. The isolation valves protect against an uncontrolled release of radioactivity from the containment by closing all penetrations of the Containment Vessel not required for the operation of the engineered safety features systems.

Due to generic concerns regarding the ability of the containment purge isolation valves to close against the dynamic forces of a design basis loss-of-coolant accident (LOCA), these valves are maintained closed with control power off in Modes 1 through 4.

The containment isolation valves are not initiators nor contributors to the initiation of an accident described in the USAR. The system is designed to prevent outleakage of the containment atmosphere following postulated accidents by automatically isolating the piping systems that penetrate the containment. Double barrier protection in the form of closed systems and isolation valves is provided to assure that no single active failure will result in the loss of containment integrity.

C. The current surveillance intervals of 18 months were based on the guidance of NUREG-0103, Revision 0, June 1, 1976, "Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," during the initial licensing of the DBNPS. As discussed above, the proposed changes, including removal of the requirement to perform surveillances in a specific plant operating mode, follow the guidance of Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-month Fuel Cycle," dated April 2, 1991.

D. As a result of the above review, it is concluded that the licensing basis for the Containment Isolation Valves and the Containment Purge and Exhaust Isolation Valves will not be invalidated by increasing the surveillance intervals for SR 4.6.3.1.2.a and SR 4.6.3.1.2.b from 18 months to 24 months and by continuing to allow the application of TS 4.0.2 on a non-routine basis.

E. References:

i. Davis-Besse Nuclear Power Station (DBNPS) Unit No. 1, Operating License NPF-3, Appendix A, Technical Specifications, through Amendment 211.

ii. Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

iii. "Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors," NUREG-0103, Revision 0, dated June 1, 1976.

iv. USAR Section 6.2.3, "Containment Vessel Air Purification and Clean Up Systems," through Revision 19.

v. USAR Section 6.2.4, "Containment Vessel Isolation Systems," through Revision 19.

3. Surveillance Data Review:

A. The 18 month TS surveillance test results data for the containment isolation automatic valves and the containment purge and exhaust isolation automatic valves were reviewed for the period of the Fifth Refueling Outage (5RFO) through 9RFO. This time period was selected

because it reflects the major plant improvements after June 1985, and covers five refueling outages and four operating cycles of test results. ASME Section XI Inservice Testing Program records for valve quarterly stroke testing were also reviewed.

B. The test results indicated several test deficiencies regarding proper operation or indication for affected circuits. In four cases the deficiencies resulted in the failure of an isolation valve to close:

- During 5RFO, containment isolation valve DR2012B did not actuate due to inadequate preload to the fingerboard providing the actuation signal to the rotor contacts in the actuator. This problem was corrected and the valve was satisfactorily re-tested.

- During 8RFO, containment isolation valves CV5010C and CV5011E did not actuate. During troubleshooting, the problem could not be duplicated. The valves were satisfactorily re-tested, and no repeat occurrences have been observed. These valves are in separate penetrations; the redundant isolation valves functioned properly assuring that containment integrity was maintained, as discussed in Section 3.C below.

- During 9RFO, containment isolation valve SA2010 did not actuate due to being held open by the actuator hand jack. This problem was corrected and the valve was satisfactorily re-tested.

C. Based on a review of the 18 month surveillance test results data, no additional actions are necessary or recommended to support this increase in the present surveillance interval.

Containment penetrations are provided with redundancy (double barriers in the form of closed systems and isolation valves) so that an active failure of any single valve or component does not result in the loss of containment integrity. For each of the above-mentioned failures, the associated redundant valve in the penetration was satisfactorily tested.

In general, unless plant conditions or other circumstances prohibit valve stroking at power, containment isolation automatic valves are stroked quarterly under the ASME Section XI Inservice Testing Program to ensure valve operability. Such testing would discover problems such as the above-mentioned actuator hand jack problem which occurred with containment isolation valve SA2010.

D. Based on the historical good performance of these components, the low potential for significant increases in failure rates of these components under a longer test interval, the introduction of no new failure modes, and the inclusion in the Inservice Testing Program, it is concluded that it is acceptable to increase the surveillance interval for SR 4.6.3.1.2.a and SR 4.6.3.1.2.b from 18 to 24 months and that there is no adverse impact on safety. Furthermore, it remains acceptable to allow the continued application of TS 4.0.2 on a non-routine basis.

E. References:

i. DBNPS Second Interval Inservice Test Program, Volume 1, Revision 02.

ii. DBNPS Procedure DB-SC-03114, "SFAS Integrated Response Time Test."

iii. DBNPS Procedure DB-SC-03261, "Integrated Test of SFRCS Actuation Channel 1."

iv. DBNPS Procedure DB-SC-03262, "Integrated Test of SFRCS Actuation Channel 2."

4. Maintenance Records Review:

A. The maintenance records for the containment isolation automatic valves and the containment purge and exhaust isolation automatic valves were reviewed for the period of the Fifth Refueling Outage (5RFO) through 9RFO. This time period was selected because it reflects the major plant improvements after June 1985, and covers five refueling outages and four operating cycles of maintenance activities. All current and historical Maintenance Work Orders (MWOs) were examined at a summary level based on the work scope, then any MWOs that appeared to have been generated in response to equipment failure were individually reviewed.

B. No failures that would have resulted in the component being TS inoperable were noted.

C. Based on a review of the maintenance records, no additional actions are necessary or recommended to support this increase in the present surveillance interval.

D. Based on the historical good performance of these components, the low potential for significant increases in failure rates of these valves under a longer test interval, and the introduction of no new failure modes, it is concluded that it is acceptable to increase the surveillance interval of SR 4.6.3.1.2.a and SR 4.6.3.1.2.b from 18 to 24 months and that there is no adverse impact on safety. Furthermore, it remains acceptable to allow the continued application of TS 4.0.2 on a non-routine basis.

E. References:

i. DBNPS Maintenance Work Order Records.