50-255 CE PALISADES

ACTIONS TAKEN IN RESPONSE TO NRC SER OF IST PROGRAM

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ATTACHMENT 1

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEMS 3.1.a AND 3.1.b

6 Pages

ACTIONS TAKEN IN RESPONSE TO
NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEMS 3.1.a AND 3.1.b

NRC SAFETY EVALUATION, RELIEF REQUEST NUMBER 7

3.1 Relief Request Number 7

For Engineering Safeguards Class 2 check valves CK-ES-3239/3240, safety injection refueling water tank discharge valves, relief from valve exercising requirements is requested.

The first paragraph of Item 3.1.3 of the NRC's Safety Evaluation (SE) identifies Action Item 3.1.a, as follows:

The check valves in the discharge lines from the refueling water tank (1) open to supply suction to the safety injection pumps and the containment spray pumps, and (2) close to prevent back flow of containment sump water into the tank when operating the safety injection system in the recirculation mode during post-accident conditions. As noted in the April 1995 NRC SE, the valves were indicated as Category C; however, they were the subject of NRC Information Notice 91-56, "Potential Radioactive Leakage to Tank Vented to Atmosphere," and may be subject to leakage testing (reference NRC SE dated January 9, 1995, on this issue). As recommended in the April 1995 NRC SE, the licensee has added a leakage rate monitoring test for these valves, though they continue to be listed as Category C in the valve table. If the valves have a leak-tight function, they should be Category A/C for IST. The licensee should determine if the valves should be listed as Category A/C and revise the valve table accordingly within 1 year from the date of this SE. (Action Item 3.1.a)

Item 3.1.4 of the NRC's Safety Evaluation (SE) identifies Action Item 3.1.b, as follows:

The alternative testing, which includes disassembly and inspection of the subject valves when the core is offloaded, is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) based on the hardship or unusual difficulty without a compensating increase in the level of quality and safety that would result from compliance with the Code. Within 1 year from the date of this SE, the licensee must incorporate a performance review into the testing procedure so that adjustments in the inspection (or testing) frequency can be made as needed. (Action Item 3.1.b)

CONSUMERS ENERGY COMPANY RESPONSE

Action Item No. 3.1.a

Valves CK-ES3239 and CK-ES3240 have been determined to be Category A/C. The Valve Test Table and valve relief request (VRR) number 7 have been revised to specify the correct category.

Action Item No. 3.1.b

During the 1995 refueling outage the reactor was fully offloaded and CK-ES3239 and CK-ES3240 were disassembled and inspected. Both CK-ES3239 and CK-ES3240 were found to be in good condition and were demonstrated to have free disc movement to both the open and closed positions. CK-ES3240 was reassembled, requiring only new gaskets. Some hinge pin bushing wear was noted on CK-ES3239. The bushings were replaced and the valve reassembled. These inspections were the first recorded since initial installation of the valves. Since both CK-ES3239 and CK-ES3240 were in good condition after greater than 20 years of service, a 10-year inspection interval is considered acceptable. This information was included as part of the "Basis for Relief" section of VRR No. 7.

Performance reviews were included in Technical Specifications Surveillance Procedures QO-10, QO-16, QO-19, QO-20, RT-71L, and RT-122. These performance reviews require the IST Engineer to evaluate the test results in accordance with Engineering Manual Procedure EM-09-02, "Inservice Testing of Plant Valves". These evaluations include trending to predict valve degradation so that valves can be repaired prior to failure.

Additional Information

VRR No. 7 was previously approved by the NRC SE dated August 30, 1996. VRR No. 7 has been revised to more clearly specify that valves CK-ES3239 and CK-ES3240 shall be disassembled and inspected during each full core offload.

Valves CK-ES3239 and CK-ES3240 will remain in the disassembly plan at least until the 1998 refueling outage. During the 1998 refueling outage, Palisades will attempt to verify full-stroke exercise of these valves using nonintrusive testing techniques. However, it is not certain that test conditions can be created to stroke CK-ES3239 and CK-ES3240 to the full open position. If nonintrusive testing cannot positively identify full-stroke exercise, these valves will continue to be disassembled at each full core offload as stated in VRR No. 7. If the nonintrusive testing can verify the full-stroke exercise, VRR No. 7 will be deleted and a cold shutdown testing basis will be submitted.

Copies of the revised VRR No. 7 and the affected page of the Valve Test Table (EGAD-EP-01) are included in this attachment.

PALISADES NUCLEAR PLANT
INSERVICE TESTING PROGRAM - VALVE TEST TABLE

P&ID: 204-1B
SYSTEM: Safety Injection, Containment Spray & Shutdown Cooling

VALVE NUMBER	DRWG CORD	ASME CLS	VLV CAT	TYPE	ACT TYPE	SIZE	NORM POS	SAFE POS	FUNC A/P	TEST TYPE	TEST FREQ	TEST PROC	REL REQ
CK-ES3168	C7	2	C	CK	SA	8.0	C	O	A	PS	RO	RO-65	
										CT-O	SAM	QO-19	
FUNCTION: High Pressure Pump P-66B Intake Check.													
CK-ES3239	D6	2	A/C	CK	SA	18.0	C	O/C	A	CT-O	SAM	RT-122	RR-7
										CT-C	SAM	RT-122	RR-7
										PS	CS	QO-10	
										PS	QO	QO-19	
										LT	2Y	RT-71L	
FUNCTION: Provide Flowpath From SIRW Tank to ESS Pump/Prevent Backflow of Containment Sump Water.													
CK-ES3240	D6	2	A/C	CK	SA	18.0	O	O/C	A	CT-O	SAM	RT-122	RR-7
										CT-C	SAM	RT-122	RR-7
										PS	CS	QO-10	
										PS	QO	QO-19	
										LT	2Y	RT-71L	
FUNCTION: Provide Flowpath From SIRW Tank to ESS Pump/Prevent Backflow of Containment Sump Water.													

VALVE RELIEF REQUEST BASIS
NUMBER 7

SYSTEM: Engineering Safeguards (M204-1B)

VALVES: CK-ES3239, CK-ES3240

CATEGORY: A/C **CLASS:** 2

FUNCTION:

1. Prevent back flow of possibly contaminated containment sump water into the SIRW tank when SIS is in the recirculation mode (containment pressurized).

2. Provide a flow path from the SIRW tank to the ESS pump suctions for safety injection flow.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

BASIS FOR RELIEF:

Relief is requested in accordance with 10 CFR 50.55a(f)(5)(iii) on the basis that compliance with the code requirements is impractical. Exercising these valves with full flow is not possible during any Plant condition, other than during a full core offload and when fuel pool cooling loads are low, for the following reasons.

1. The original Plant design did not include flow paths which will pass the flow required to achieve a full-stroke test.

2. It is not prudent to disassemble these valves at times other than at a full core offload when fuel pool cooling loads are low and shutdown cooling can be secured, because appropriate isolation does not exist between these valves and the shutdown cooling system.

VALVE RELIEF REQUEST BASIS
NUMBER 7

A performance review of testing and inspection of check valves CK-ES3239 and CK-ES3240 was performed by researching work order history. It was found that during the 1995 Refueling Outage the reactor was fully offloaded, and both check valves were disassembled in accordance with Palisades procedure RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program". These inspections were the first recorded since initial installation of the valves. The results of the inspection for CK-ES3239 found the valve was in good condition and demonstrated free disc movement to both the open and closed positions, however; some wear at the hinge pin bushing was noted and the bushings were replaced. Inspection results for CK-ES3240 found it in good condition and demonstrated free disc movement to both the open and closed positions. No adverse internal conditions were noted and CK-ES3240 was reassembled without replacing any components other than gaskets. Since both CK-ES3239, and CK-ES3240 were in good condition after greater than twenty years of service, it can be postulated that a ten year inspection interval is acceptable.

ALTERNATIVE TESTING:

1. These check valves will be part-stroke tested on a quarterly basis. If the scheduled test occurs during Power operation, part-stroke testing will be accomplished by Test Procedure QO-16, "Inservice Test Procedure Containment Spray Pumps." If the scheduled test occurs during cold shutdown, part-stroke testing will be accomplished by Test Procedure QO-10, "Containment Spray Check Valve Test." Additionally, part-stroking of these valves is accomplished during the performance of Test Procedures QO-19 and QO-20.

2. CK-ES3239 and CK-ES3240 both will be disassembled and inspected (including a manual full-stroke exercise) in accordance with Surveillance Procedure RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program." This method is not in full compliance with the frequency requirements of Generic Letter 89-04 for the reasons stated in the basis above. Disassembly will occur at each full core offload and when fuel pool cooling loads are acceptable, nominally once per ten years. Inspection and acceptance criteria will comply with the Generic Letter.

3. CK-ES3239 and CK-ES3240 will be tested using nonintrusive techniques during the performance of QO-10. It is possible that full-stroke exercise could be achieved during this test. If full-stroke exercise of CK-ES3239 and CK-ES3240 can be verified using nonintrusive techniques, then this relief request will be deleted, and a cold shutdown testing basis will be submitted.

VALVE RELIEF REQUEST BASIS
NUMBER 7

If nonintrusive techniques cannot positively identify full-stroke exercise, then these valves will be disassembled as specified in the above paragraph.

QUALIFICATION PROGRAM:

None

INSTRUMENTATION DESCRIPTION:

The instruments used are identified in the test document. Each instrument used to verify adherence to acceptance criteria is maintained in accordance with Palisades Administrative Procedures. Each instrument is further identified on the Equipment Data Base as "Q" or "B" in the "X" field of the Q-List Interpretation.

BASELINE DATA:

These valves were initially exercised at 4800 gpm via Preoperational Test Procedure Number 12 (Section D.6). Additionally, part-stroke tests were performed using Preop #12 at conditions ranging from 300 gpm to 2800 gpm. These test values were obtained when the valves were in new condition.

ACCEPTANCE CRITERIA:

Observed test flow rates in the acceptable range in QO-10, QO-16, QO-19, and QO-20 constitutes an acceptable part-stroke test for the SIRW Tank discharge check valves.

At each disassembly, the valves are manually exercised to verify full-stroke capability. Also, the disassembled valve is inspected to ensure the internals are structurally sound (no loose, damaged, or corroded parts).

STATUS:

This request has been approved per TAC No. M94952 dated August 30, 1996, Paragraph 3.1.4.

ATTACHMENT 2

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 3.3

4 Pages

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 3.3

NRC SAFETY EVALUATION, RELIEF REQUEST NUMBER 12

3.3 Relief Request Number 12

For Class 3 power-operated valves CV-0944/977B, which isolate component cooling water from the radioactive waste evaporators upon a safety injection signal, relief from the stroke timing requirements is requested.

Item 3.3.4 of the NRC's Safety Evaluation (SE) identifies Action Item 3.3, as follows:

Based on the hardship or unusual difficulty in performing stroke-time testing in accordance with the code and considering that imposition of the code requirements would not provide a compensating increase in the level of quality and safety, the alternative testing is authorized pursuant to 10 CFR 50.55a(a)(3)(ii). The inclusion in a preventative maintenance program for monitoring degrading conditions should be discussed in a response by the licensee within 1 year from the date of this SE. (Action Item 3.3)

CONSUMERS ENERGY COMPANY RESPONSE

VRR No. 12 was previously approved by the NRC SE dated August 30, 1996. A discussion of the preventive maintenance program for valves CV-0944 and CV-0977B was added to VRR No. 12. This includes periodic maintenance requirements for the actuators on valves CV-0944 and CV-0977B. A copy of the revised relief request is included in this attachment.

VALVE RELIEF REQUEST BASIS
NUMBER 12

SYSTEM: Component Cooling (M209-3)

VALVES: CV-0944, CV-0977B

CATEGORY: B **CLASS:** 3

FUNCTION:

These valves Isolate Component Cooling Water to the Radioactive Waste Evaporators (RWE) on a Safety Injection Signal (SIS).

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.2.1.4; Power Operated Valve Stroke Testing

2. OMa-1988, Part 10, Paragraph 4.2.1.8; Stroke Time Acceptance Criteria

BASIS FOR RELIEF:

In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from the stroke timing requirements of OMa-1988, Part 10, Paragraph 4.2.1.4 since compliance with the code requirements is impractical.

CV-0944 and CV-0977B are normally open valves which close on an SIS. These valves can only be actuated via an SIS, since there is no means of manually positioning these valves. There is no position indication in the Control Room which is the location from where the SIS activation test is initiated. The SIS is tested once each quarter during performance of Technical Specification Surveillance Procedure QO-1, "Safety Injection System." Stroke time coordination of these valves would impose a hardship during QO-1 for the following reasons:

1. QO-1 is manpower intensive and involves blocking or bypassing several automatic actuations and must, therefore, be performed in as little time as possible because it places the Plant in an abnormal operating condition.

2. The SIS signal is initiated from the Control Room; however, position indication for CV-0944 and CV-0977B is located at remote panel C-105. Coordination between Control Room activities and C-105 would be difficult since a dedicated operator would need to be positioned at C-105 with a stopwatch. Starting the stopwatch would be manual based on a verbal

signal from the Control Room, resulting in an additional reaction time error over and above that introduced by the Control Room Operator. As a result, obtaining a consistent stroke time basis suitable for meaningful trending would be near impossible. The information obtained would be of limited use, due to the anticipated wide range of scatter of the data.

The portion of the component cooling water system isolated by these two valves is a closed loop. If both valves fail to close, water cannot be isolated to the RWEs. If either valve closes, flow to the RWEs is isolated. Since a double active failure is not required to be considered in the Plant's safety analysis, it can be assumed that flow will be isolated to the RWEs.

ALTERNATIVE TESTING:

CV-0944 and CV-0977B will be stroke tested each quarter during performance of QO-1. QO-1 will verify that CV-0944 and CV-0977B have traveled to their safety position without measuring stroke time. QO-1 will also verify the fail safe capability of CV-0944 and CV-0977B on a quarterly basis.

QUALIFICATION PROGRAM:

None

INSTRUMENTATION DESCRIPTION:

The instruments used are identified in the test document. Each instrument used to verify adherence to acceptance criteria is maintained in accordance with Palisades Administrative Procedures. Each instrument is further identified on the Equipment Data Base as "Q" or "B" in the "X" field of the Q-List Interpretation.

BASELINE DATA:

Testing per QO-1 verifies the subject valves will travel to the close position. This is considered adequate for the following reasons:

1. The valves are tested in the mode in which they would be called upon to mitigate an accident.

2. If both valves fail to close, water cannot be isolated to the RWEs. If either valve closes, flow to the RWEs is isolated. Since a double active failure is not required to be considered in the Plant's safety analysis, it can be assumed that flow will be isolated to the RWEs.

Based on statements 1 and 2 above, testing per QO-1 is sufficient to assure the ability of these valves to close.

PREVENTATIVE MAINTENANCE:

The air actuator of CV-0944 will be rebuilt every ten years per PPAC CCS059. The CV-0977B actuator will be rebuilt every ten years per PPAC CCS037.

ACCEPTANCE CRITERIA:

Verification of closure during the performance of QO-1 for valves CV-0944 and CV-0977B constitutes an acceptable test.

STATUS:

This request has been approved per TAC No. M94952 dated August 30, 1996, Paragraph 3.3.4.

ATTACHMENT 3

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 3.7

3 Pages

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 3.7

NRC SAFETY EVALUATION, RELIEF REQUEST NUMBER 23

Item 3.7 of the NRC's Safety Evaluation (SE) identifies Action Item 3.7, as follows:

3.7 Relief Request Number 23

Relief from the test frequency requirements for categories A and B valves exercising every quarter and leakage testing (category A only) every 2 years is requested for all valves in the IST program. However, because all valves in the IST program are not category A and B valves, the request should more properly state the applicability as "All Category A and B Valves." Alternatively, the licensee intended the request to apply to all valves, but failed to state the requirements for Category C valves. The request should be revised. (Action Item 3.7)

CONSUMERS ENERGY COMPANY RESPONSE

VRR No. 23 was previously approved by the NRC SE dated August 30, 1996. VRR No. 23 has been revised to reflect the additional applicability to Category C check valves. A copy of the revised VRR No. 23 is included in this attachment.

VALVE RELIEF REQUEST BASIS
NUMBER 23

SYSTEM: All

VALVES: All Except Relief Valves

CATEGORY: A, B and C **CLASS:** All

FUNCTION: As Applicable

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.2.1.1; "Category A and B valves shall be tested nominally every 3 months,..."

2. OMa-1988, Part 10, Paragraph 4.2.2.3(a); Category A valve leakage "tests shall be conducted at least once every 2 years"

3. OMa-1988, Part 10, Paragraph 4.3.2.1; "Check valves shall be exercised nominally every 3 months, ..."

BASIS FOR RELIEF:

Technical Specification 4.0.2 establishes the conditions under which the specified time interval for Surveillance Requirements may be extended. (See Alternative Testing below). Technical Specification 4.0.2 permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of Plant operating conditions that may not be suitable for conducting the surveillance; eg, transient conditions or other ongoing surveillance or maintenance activities. The limits of Technical Specification 4.0.2 are based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with Surveillance Requirements.

Note: Technical Specification 4.0.2 will become SR 3.0.2 upon issue of the Improved Technical Specifications.

ALTERNATIVE TESTING:

Each Surveillance Requirement shall be performed within the allowed surveillance interval with a maximum allowable extension not to exceed 25 percent of the surveillance interval.

VALVE RELIEF REQUEST BASIS
NUMBER 23

QUALIFICATION PROGRAM:

None

INSTRUMENTATION DESCRIPTION:

None

BASELINE DATA:

None

ACCEPTANCE CRITERIA:

None

STATUS:

This request has been approved per TAC No. M94952 dated August 30, 1996, Paragraph 3.7.4.

ATTACHMENT 4

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 3.9

3 Pages

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 3.9

NRC SAFETY EVALUATION, RELIEF REQUEST NUMBER 29

3.9 Relief Request Number 29

Relief from the stroke timing and acceptance criteria requirements for main steam atmospheric dump valves is requested. These valves (1) open to provide a means of removing decay heat from the primary system in order to cool down following a steam generator tube rupture, and (2) close following cooldown to isolate a steam generator with a ruptured tube to preclude release of radioactive material.

Item 3.9.4 of the NRC's Safety Evaluation (SE) identifies Action Item 3.9, as follows:

The licensee should continue testing in the manner discussed in the "Alternative Testing" section above and as stated in the proposed request. Within 1 year from the date of this SE, the licensee should determine whether these valves are within the required scope of the IST program. If the valves are within the scope, the licensee should determine what commitments were made related to inservice testing when the system and valves were upgraded and revise the request to discuss the status of the valves. (Action Item 3.9)

CONSUMERS ENERGY COMPANY RESPONSE

VRR No. 29 was previously approved by the NRC SE dated August 30, 1996. Atmospheric Steam Dump Valves CV-0779, CV-0780, CV-0781, and CV-0782 have a significant safety function and therefore have been determined to belong in the Palisades Inservice Testing Program. VRR No. 29 has been revised to more fully describe the safety function of these valves. It was also determined that no specific testing commitments were made when these valves were upgraded to safety related valves. This data was also included in the revised relief request. A copy of the revised relief request is included in this attachment.

VALVE RELIEF REQUEST BASIS
NUMBER 29

SYSTEM: MAIN STEAM (M207-1)

VALVES: CV-0779, CV-0780, CV-0781, CV-0782

CATEGORY: B **CLASS:** 2

FUNCTION:

The four steam generator atmospheric dump valves have an active safety function in the open position to remove decay heat from the primary system by discharging steam from the steam generators in order to bring the plant to shutdown cooling entry conditions following a steam generator tube rupture.

These valves have an active safety function in the closed position to isolate the affected steam generator during a steam generator tube rupture event. The affected steam generator is isolated after the associated hot leg temperature falls below 525°F in order to prevent re-opening the secondary side safety valves.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.2.1.4; Power Operated Valve Stroke Testing

2. OMa-1988, Part 10, Paragraph 4.2.1.8; Stroke Time Acceptance Criteria

BASIS FOR RELIEF:

Relief is requested in accordance with 10 CFR 50.55a(f)(5)(iii) on the basis that stroke timing the Atmospheric Steam Dump Valves is impractical. These valves were not originally designed to be a safety related method of decay heat removal and, therefore, were not equipped with a control system that is suitable for performing stroke time testing in accordance with OMa-1988, Part 10. These valves have a position indicating light in the closed position only, therefore stroke time testing in the open position is not practical. Subsequent to the original Plant design, it was determined that these valves play an important role in the removal of PCS decay heat following a steam generator tube rupture accident. Therefore CV-0779, CV-0780, CV-0781, and CV-0782 have been included in the scope of the IST program. However, at the time these valves were upgraded, no specific testing commitments were made to the NRC. There is no specific requirement for stroke time in either the open or closed position.

VALVE RELIEF REQUEST BASIS
NUMBER 29

ALTERNATIVE TESTING:

These valves will be full-stroke exercised in both the open and closed direction each cold shutdown per Surveillance Procedure QO-6. Stroke time will not be measured.

QUALIFICATION PROGRAM:

None

INSTRUMENTATION DESCRIPTION:

Not Applicable

BASELINE DATA:

Not Applicable

PREVENTATIVE MAINTENANCE:

The preventative maintenance program includes three PPACs. The backup nitrogen supply instruments are calibrated bi-annually per PPAC MSS006. The valves and valve operators are inspected, repaired and tested at an eight-year interval per PPAC MSS078. The atmospheric dump valve instrument is calibrated during T-207 per PPAC MSS096.

ACCEPTANCE CRITERIA:

The valves will be observed locally during stroke testing to ensure the valves stroke promptly and do not exhibit any abnormal or erratic behavior.

STATUS:

This request has been approved per TAC No. M94952 dated August 30, 1996, Paragraph 3.9.4.

ATTACHMENT 5

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 4.2

3 Pages

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 4.2

NRC SAFETY EVALUATION, RELIEF REQUEST NUMBER 7

4.2 Relief Request 7

Relief Request 7 concerns the skid-mounted EDGs' diesel jacket water pumps which provide cooling water from the Class 3 service water system.

Item 4.2.3 of the NRC's Safety Evaluation (SE) identifies Action Item 4.2, which states, in part:

These subcomponents were not designed to enable IST (i.e., IST is impractical) and are considered part of the diesel assembly rather than separate major components. It would be a burden on the licensee to redesign the system to enable IST of the individual pumps (i.e., flowrate and pressure measurement devices would have to be installed in the lines). The NRC indicated in NUREG-1482, Section 3.4, that the testing of a major component is an acceptable means of monitoring the operational readiness of skid-mounted components if the licensee documents this approach in the IST program. The relief request is adequate documentation for using this recommendation; however, the relief request references the draft of NUREG-1482. The licensee should review final NUREG-1482 and revise the relief request accordingly. (Action Item 4.2) ...

CONSUMERS ENERGY COMPANY RESPONSE

Pump relief request (PRR) number 7 was previously approved by the NRC SE dated August 30, 1996. Consumers Energy has reviewed NUREG-1482, issued in April 1995. The requirements of Recommendation 3.4 has been determined to be appropriate for the Diesel Jacket Water Cooling Pumps. This recommendation was therefore incorporated into PRR No. 7, as suggested by the NRC SE. A copy of the revised PRR No. 7 is included in this attachment.

PUMP RELIEF REQUEST BASIS
NUMBER 7

SYSTEM: Diesel Jacket Water Cooling System

PUMP: P-211 A & B (Diesel Jacket Water Cooling Pumps)

CLASS: Class 3

FUNCTION:

The diesel jacket water pumps provide cooling water to the emergency diesel generators. Without this cooling water, the diesel generators would not be able to function in order to shut down the reactor or to mitigate the consequences of an accident as defined in the Palisades Nuclear Plant UFSAR.

TEST REQUIREMENT:

OMa-1988, Part 6, Table 3 requires the following parameters to be measured or observed:

*Differential pressure
*Flow rate
*Vibration amplitude

BASIS FOR RELIEF:

Relief is requested from the requirements of OMa-1988, Part 6, Table 3a parameters, while testing the above mentioned pumps. These pumps are mounted on the diesel generator's skid. These pumps only have discharge pressure and system temperature instrumentation installed. It is our interpretation that the NRC does not require skid mounted components to be tested per Subsection IWP. This is supported by the "Minutes of the Public Meeting on Generic Letter 89*04" published 10/25/89 by the NRC. Question 110 is applicable.

This response was reaffirmed by Recommendation 3.4 of NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants." The position stated in NUREG-1482, in part, is as follows: "Pending endorsement of OM codes and standards which specifically address skid-mounted components which are subject to IST, the staff has determined that the testing of the major component is an acceptable means for verifying the operational readiness of the skid-mounted and component subassemblies if the licensee documents this approach in the IST Program."

PUMP RELIEF REQUEST BASIS
NUMBER 7

ALTERNATE TESTING:

The diesel jacket water cooling pumps operability will be determined by the performance of the monthly diesel surveillances, Technical Specification Surveillance Procedures MO-7A-1, "Emergency Diesel Generator 1-1 (K-6A)," and MO-7A-2, "Emergency Diesel Generator 1-2 (K-6B)." During these surveillances, the jacket water temperature and pressure will be measured and compared to acceptance criteria to determine system operability. This is sufficient to determine the operability of the jacket water cooling system.

NOTE: This relief request is considered approved in accordance with Generic Letter 89-04, Question 110.

ATTACHMENT 6

CONSUMERS ENERGY COMPANY
PALISADES PLANT
DOCKET 50-255

ACTIONS TAKEN IN RESPONSE TO NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 5.0

ACTIONS TAKEN IN RESPONSE TO
NRC SAFETY EVALUATION OF PALISADES IST PROGRAM

ACTION ITEM 5.0

NRC SAFETY EVALUATION, COLD SHUTDOWN JUSTIFICATIONS AND REFUELING OUTAGE JUSTIFICATIONS

5.0 COLD SHUTDOWN JUSTIFICATIONS AND REFUELING OUTAGE JUSTIFICATIONS

OM-10 includes provisions for licensees to defer testing to cold shutdowns or refueling outages when testing at certain plant conditions is impractical. The comments below should be reviewed by the licensee and, where appropriate, changes made to the justifications as documented in the IST program. (Action Item 5.0)

Cold Shutdown Justifications (CS):

General: Where the verification of position indication is discussed as "once each refueling outage," it should also be noted that the verification is required "at least once every two years."

CS-2 For valves CV-2083/2099, the leakage rate test procedure referenced in CS-2 (RO-3236) is not consistent with the one listed on the valve table (RO-3244).

CS-3 It is not clear that the testing conforms to GL 89-04, Position 1, for the full-flow rate. A value of 2513 gpm is given as an acceptable full-flow test, but CS-3 also states that testing has been performed at 300 gpm and 1000 gpm. Which value represents a full-flow test, and is the testing performed at this value?

CS-4 For valve CV-2009, relief requests RR-11 and RR-12 are referenced in CS-4. RR-11 does not appear in the program and RR-12 does not apply to this valve. Neither are listed in the valve test table.

CS-10 Valves CV-3027/3056 are listed in the valve table as having both an open and a closed safety function. CS-10 discusses only the reverse-flow closure function and states that the stroke time is monitored from the open to the closed position. Is the stroke time monitored in both directions during the testing at cold shutdown conditions? If not, is the open stroke time monitored quarterly? Paragraph 4.2.1.2 requires that a valve be exercised to the position(s) required to fulfill its safety function(s).

CS-11 For valves CK-ES-3201/3192, is the exercise test for closure (performed per QO-8B) conducted quarterly as stated in the valve table or during cold shutdown conditions as stated in CS-11? The exercise test for opening (performed per QO-8B) is stated as being performed during cold shutdown.

CS-13 The valve table does not list CS-13 for valves CV-3031/3057. The valve table indicates that these valves have a safety position of both open and closed. CS-13 states that the performance of these valves shall be determined from a stroke-time test from the open to the closed position. If the valves have a safety function in the open position, they should also be stroke time tested from the closed position to the open position. Paragraph 4.2.1.2 requires that a valve be exercised to the position(s) required to fulfill its safety function(s).

CS-14 The valve table indicates that valves CV-3029/3030 have a safety position of both open and closed. CS-14 states that the performance of these valves shall be determined from a stroke-time test from the closed to the open position. If the valves have a safety function in the closed position, they should also be stroke-time tested from the open position to the closed position. Paragraph 4.2.1.2 requires that a valve be exercised to the position(s) required to fulfill its safety function(s).

CS-17 For valves CV-0910/0911/0940 and CK-CC-0910, RO-32 is listed as the leakage rate test procedure in CS-17. The valve table lists RO-3214.

CS-20 The valve table indicates that valves CV-0824/0847 have a safety position of both open and closed. CS-20 states that the performance of these valves shall be determined from a stroke-time test from the open to the closed position. If the valves have a safety function in the open position, they should also be stroke-time tested from the closed position to the open position. Paragraph 4.2.1.2 requires that a valve be exercised to the position(s) required to fulfill its safety function(s). The Code does not make exceptions to these requirements for valves electrically locked in one position which have a safety function in both directions. Also note that the valve table lists CS-20 for valve CV-0824, but the columns are offset.

CS-22 PORVs PRV-1042B/1043B have a safety function in both the open and closed positions listed in the valve table. CS-22 is unclear as to whether stroke timing of these valves is performed in both directions. The "Alternative Testing" section states that the valves will be exercised to the open position each cold shutdown. The "Verification Method" section indicates that the stroke time values in the open and closed direction will be trended.

CS-24 PORV block valves PRV-1042A/1043A have a safety function in both the open and closed positions listed in the valve table. CS-24 is unclear as to whether stroke timing of these valves is performed in both directions. The "Alternative Testing" section states that the valves will be exercised to the open position each cold shutdown. The "Verification Method" section indicates that the stroke time values in the open and closed direction will be trended.

CS-30 For the ECCS motor-operated valves that reposition when transferring suction from the safety injection/refueling water tank to the primary coolant system (for shutdown cooling), the alternative testing discusses only the exercise to the open position. However, the valve table shows these valves as having a safety function in both the open and closed position. If the valves have a safety function to close, they should also be stroke-time tested from the open position to the closed position. Paragraph 4.2.1.2 requires that a valve be exercised to the position(s) required to fulfill its safety function(s). The Code does not make exceptions to these requirements for valves electrically locked in one position which have a safety function in both directions.

CS-34 For volume control tank T-54 discharge check valve CK-CVC2088, the valve table lists the valve as normally open with a safety position of "N/A." It is also listed as a passive valve, but tested closed during cold shutdowns. The corrective action stated in CS-34 discusses failure to meet "stroke time or closure rate requirements." Generally, the exercising of check valves does not include measuring the time or the rate of valve closure.

CONSUMERS ENERGY COMPANY RESPONSE

The Cold Shutdown Testing Bases were previously reviewed by the NRC SE dated August 30, 1996.

General: The following is a brief summary of the changes made to the Cold Shutdown Testing Bases in response to the comments made by the NRC in their SE dated August 20, 1996. The revised Cold Shutdown Testing Bases and the affected pages of the Valve Test Table are included in this attachment.

Where the verification of position indication is discussed as "once each refueling outage," the Cold Shutdown Testing Basis has been changed to include a statement the verification is also required "at least once every two years". The Cold Shutdown Testing Bases affected by this change include CS-1, CS-2, CS-4, CS-5, CS-6, CS-8, CS-10, CS-13, CS-14, CS-15, CS-17, CS-18, CS-19, CS-20, CS-22, CS-23, CS-24, CS-31, CS-32, CS-33, CS-35, and CS-36. CS-38 is a new Cold Shutdown Testing Basis.

CS-2 The leakage rate test procedure has been changed to RO-3244 from RO-3236 which now matches the Valve Test Table.

CS-3 All references to flow rates were deleted. The Containment Spray Pump Discharge Check Valves are full-stroked exercised per QO-10. Nonintrusive testing techniques are used to verify full-stroke. Therefore, flow rates no longer apply.

CS-4 The references to valve relief requests (VRR) 11 and 12 have been deleted in CS-4.

CS-10 Valves CV-3027 and CV-3056 have a passive safety function in the open position. Stroke testing is not required for a passive function in accordance with OMa-1988, Part 10, Paragraph 3.6 and Table 1. The functional description of CS-10 has been revised to clearly state the active/passive safety function of these valves. CS-10 provides an explanation why the valves cannot be tested during operation.

CS-11 Surveillance test QO-8B is only performed during cold shutdown. The Valve Test Table has been revised to correctly state this period.

CS-13 Valves CV-3031 and CV-3057 have a passive safety function in the open position. Stroke testing is not required for a passive function in accordance with OMa-1988, Part 10, Paragraph 3.6 and Table 1. The function description of CS-13 has been revised to clearly state the active/passive safety function of these valves.

CS-14 Valves CV-3029 and CV-3030 have a passive safety function in the closed position. Stroke testing is not required for a passive function in accordance with OMa-1988, Part 10, Paragraph 3.6 and Table 1. The function description of CS-14 has been revised to clearly state the active/passive safety function of these valves.

CS-17 Valves CV-0910 and CK-CC910 are leak tested per RO-32-14. Valves CV-0911 and CV-0940 are leak tested per RO-32-15. CS-17 has been revised to correctly identify the applicable tests.

CS-20 Valves CV-0824 and CV-0847 have a passive safety function in the open position. Stroke testing is not required for a passive function in accordance with OMa-1988, Part 10, Paragraph 3.6 and Table 1. The functional description of CS-20 has been revised to clearly state the active/passive safety function of these valves. The Valve Test Table has been revised to correct the column discrepancy.

CS-22 The "Alternative Testing" section of CS-22 has been corrected to require testing to both the open and closed positions.

CS-24 The "Alternative Testing" section of CS-24 has been corrected to require testing to both the open and closed positions.

CS-30 Valves MO-3189, MO-3190, MO-3198, and MO-3199 are currently being tested quarterly during normal power operations per QO-5. Therefore, CS-30 has been deleted. However, these valves are being tested to both the open and to the closed positions during those tests.

CS-34 Valve CK-CVC2088 has no active safety function in either the open or closed positions. Therefore, this valve will no longer be tested per QO-27, and CS-34 has been deleted. Valve CK-CVC2088 will be tested periodically in accordance with Palisades Engineering Manual Procedure EM-28-02, "Check Valve Program".

5.0 COLD SHUTDOWN JUSTIFICATIONS AND REFUELING OUTAGE JUSTIFICATIONS

OM-10 includes provisions for licensees to defer testing to cold shutdowns or refueling outages when testing at certain plant conditions is impractical. The comments below should be reviewed by the licensee and, where appropriate, changes made to the justifications as documented in the IST program. (Action Item 5.0)

Refueling Outage Justifications (ROJ):

General:

- *In several ROJs, it is unclear whether closure verification is being performed during the refueling outage test, whereas in others it is clear.*

- *In several ROJs, the licensee discusses hardships. However, the criteria for test deferral should be related to impracticalities in the design of the component, subsystem, or system. The results will generally be the same, but the basis would be somewhat different. For example, ROJ-10 states that "[p]rocessing of [30,000 gallons of radioactive] waste would constitute an unusual hardship." To state this in terms of the design of the system would be as follows (for example):*

  > *The design of the system does not enable IST of the check valves at the required flow rate because of the dilution that results from testing; therefore, performing IST at conditions other than refueling is impractical.*

ROJ-6 is written as a request for an alternative; however, it appears to be a refueling outage justification. If it is a relief request, it should not be included in the ROJs, but should be given a number and identified specifically as a relief request. If it is an ROJ, then the first sentence of the basis should be changed.

ROJ-7 includes wording similar to ROJ-6.

ROJ-9 is applicable for a single valve, CK-CA400. The "Alternative Testing" section refers to "these check valves" as if there are multiple valves. The text should be corrected.

CONSUMERS ENERGY COMPANY RESPONSE

The Refueling Outage Testing Bases, herein referred to as the Refueling Outage Justifications (ROJ), were previously reviewed by the NRC SE dated August 30, 1996. All of the referenced ROJs are included in this attachment.

General:

- ROJs 1 and 5 have been revised to specifically describe closure verification.
- ROJs 2, 5, 7, 10, 12, and 15 have been revised to specifically describe impracticality.

ROJ-6 and ROJ-7 have been reworded to clarify the application of a refueling outage justification rather than a relief request.

ROJ-9 has been clarified as only applying to one valve.

In addition, ROJs 4, 8, and 14 have been deleted. They are no longer needed as the valves are being tested nonintrusively during power operation. ROJ-16 has also been deleted since a relief request (VRR No. 32) was submitted on June 3, 1997, for the containment spray header check valves requesting that they be tested only during a refueling outage. This relief request was submitted as it is impractical to test the affected valves except during a full core offload.

PALISADES NUCLEAR PLANT
INSERVICE TESTING PROGRAM - VALVE TEST TABLE

P&ID: 204-1
SYSTEM: Safety Injection, Containment Spray & Shutdown Cooling

VALVE NUMBER	DRWG CORD	ASME CLS	VLV CAT	TYPE	ACT TYPE	SIZE	NORM POS	SAFE POS	FUNC A/P	TEST TYPE	TEST FREQ	TEST PROC	REL REQ
CK-ES3177	G4	2	C	CK	SA	3.0	C	O	A	PS CT-O	RO SAM	RO-65 QO-19	
FUNCTION: Provide HPSI Flowpath. Valve is Not Safety-Related to Close Due to Train Separation.													
CK-ES3192	E4	2	C	CK	SA	10.0	C	O/C	A	CT-O CT-C CV-C	CS CS QO	QO-8B QO-8B QO-20	CS-11
FUNCTION: Provide Flowpath for LPSI-SDC/Prevent Backflow Through P-67B.													
CK-ES3208	D4	2	C	CK	SA	8.0	C	O/C	A	CT-O CT-C	CS CS	QO-10 QO-10	CS-3 CS-3
FUNCTION: Provide Containment Spray and SDC Flowpath/Prevent Backflow Through P-54C.													
CK-ES3220	B4	2	C	CK	SA	8.0	C	O/C	A	CT-O CT-C	CS CS	QO-10 QO-10	CS-3 CS-3
FUNCTION: Provide Containment Spray and SDC Flowpath/Prevent Backflow Through P-54B.													

PALISADES NUCLEAR PLANT
INSERVICE TESTING PROGRAM - VALVE TEST TABLE

P&ID: 204-1A
SYSTEM: Safety Injection, Containment Spray & Shutdown Cooling

VALVE NUMBER	DRWG CORD	ASME CLS	VLV CAT	TYPE	ACT TYPE	SIZE	NORM POS	SAFE POS	FUNC A/P	TEST TYPE	TEST FREQ	TEST PROC	REL REQ
CK-ES3166	D3	2	C	CK	SA	24.0	C	O/C	A	CT-O CT-C	CS CS	QO-38 QO-38	CS-37
FUNCTION: Containment Sump Discharge Check Valve - Provide Flowpath for ES Pumps/Prevent Backflow.													
CK-ES3181	E3	2	C	CK	SA	24.0	C	O/C	A	CT-O CT-C	QO QO	QO-38 QO-38	CS-37
FUNCTION: Containment Sump Discharge Check Valve - Provide Flowpath for ES Pumps/Prevent Backflow.													
CK-ES3183	C4	2	C	CK	SA	6.0	C	O	A	PS CT-O	RO SAM	RO-65 QO-19	
FUNCTION: HPSI Pump P-66A Suction Check Valve - Provide Flowpath for HPSI.													
CK-ES3186	C6	2	C	CK	SA	3.0	C	O	A	CT-O PS	RO QO	RO-65 QO-19	
FUNCTION: Provide HPSI Flowpath. Valve is Not Safety-Related to Close Due to Train Separation.													
CK-ES3201	E6	2	C	CK	SA	10.0	C	O/C	A	CT-O CT-C CV-C	CS CS QO	QO-8B QO-8B QO-20	CS-11
FUNCTION: Provide Flowpath for LPSI Pump P-67A/Prevent Backflow.													

PALISADES NUCLEAR PLANT
INSERVICE TESTING PROGRAM - VALVE TEST TABLE

P&ID: 204-1B
SYSTEM: Safety Injection, Containment Spray & Shutdown Cooling

VALVE NUMBER	DRWG CORD	ASME CLS	VLV CAT	TYPE	ACT TYPE	SIZE	NORM POS	SAFE POS	FUNC A/P	TEST TYPE	TEST FREQ	TEST PROC	REL REQ
CV-3027	G7	2	A	GA	AO	6.0	O	O/C	A	LT BT PIT	2Y CS 18MO	RO-119 QO-02 QO-02	 CS-10
FUNCTION: SIRW Tank Minimum Recirculation Isolation Valve (E-PAL-90-035E).													
CV-3031	D6	2	B	GA	AO	18.0	O	O/C	A	BT PIT	CS 18MO	QO-02 QO-02	CS-13
FUNCTION: SIRW Tank Outlet Isolation Valve.													
CV-3056	G7	2	A	GA	AO	6.0	O	O/C	A	LT BT PIT	2Y CS 18MO	RO-119 QO-02 QO-02	 CS-10
FUNCTION: SIRW Tank Minimum Recirculation Isolation Valve (E-PAL-90-035E).													
CV-3057	C6	2	B	GA	AO	18.0	O	O/C	A	BT PIT	CS 18MO	QO-02 QO-02	CS-13
FUNCTION: SIRW Tank Outlet Isolation Valve.													

PALISADES NUCLEAR PLANT
INSERVICE TESTING PROGRAM - VALVE TEST TABLE

P&ID: 208-1B
SYSTEM: Service Water System

VALVE NUMBER	DRWG CORD	ASME CLS	VLV CAT	TYPE	ACT TYPE	SIZE	NORM POS	SAFE POS	FUNC A/P	TEST TYPE	TEST FREQ	TEST PROC	REL REQ
CV-0824	D4	2	B	BF	AO	16.0	ELO	O/C	A	BT	CS	QO-06	CS-20
										PIT	18MO	QO-06	
										FST	CS	QO-06	CS-20
FUNCTION: Service Water Return Header Isolation Valve.													
CV-0843	F7	3	B	GL	AO	4.0	O	N/A	P				
FUNCTION: Containment Air Cooler VHX-4 Outlet Temperature Control Isolation Valve.													
CV-0847	C2	2	B	BF	AO	16.0	ELO	O/C	A	BT	CS	QO-06	CS-20
										PIT	18MO	QO-06	
										FST	CS	QO-06	CS-20
FUNCTION: Service Water Header B Supply Isolation Valve.													
CV-0861	F5	3	B	BF	AO	8.0	C	O	A	BT	QO	QO-05	
										PIT	18MO	QO-06	
										FST	QO	QO-05	
FUNCTION: Containment Air Cooler VHX-1 Outlet Isolation Valve.													

COLD SHUTDOWN INDEX
(Revised Bases Identified)

COLD SHUTDOWN INDEX
(Revised Bases Identified)

COLD SHUTDOWN TESTING BASIS
NUMBER 1

SYSTEM: Primary Coolant System (M201-2)

VALVES: PRV-1067, PRV-1068, PRV-1069, PRV-1070, PRV-1071, and PRV-1072

CATEGORY: B **CLASS:** 1

FUNCTION:

1. Reactor Coolant Pressure Boundary Isolation Valves.

2. Reactor Vessel vent valves, Primary Coolant System high point vent valves (from Pressurizer), added per NUREG 0737.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

These valves are Reactor Coolant Pressure Boundary (RCPB) valves per the requirements of 10 CFR 50.2. Testing these valves during reactor operation would violate the two valve RCPB isolation provision of 10 CFR 50.2. Additionally, testing these valves during operation with the PCS at normal operating temperature and pressure would result in discharge of small amounts of radioactive steam to the containment atmosphere.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter.

Remote Position Indication verification is performed per RO-112 each refueling outage and at least once every two years.

COLD SHUTDOWN TESTING BASIS
NUMBER 1

VERIFICATION METHOD:

The performance of these valves will be determined by recording and trending stroke time values in the open and close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room.

Remote Position Indication verification consists of opening and closing the vent valves, and verifying the vent line pressure increases and decreases to indicate flow through the valves. Correct Remote Indication Light is verified with pressure increase or decrease.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or position indication acceptance criteria, corrective action per Procedure EM-09-02 Section 5.4 will be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 2

SYSTEM: Chemical and Volume Control (M202-1)

VALVES: CV-2083, CV-2099

CATEGORY: A **CLASS:** 2

FUNCTION:

Containment isolation valve for primary coolant pump seal controlled bleedoff line to volume control tank.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Shutting this valve during primary coolant pump operation (ie, any hot Plant condition) stops pump seal leakoff flow and, subsequently, a loss of seal lubrication and cooling. This scenario could lead to a seal failure resulting in significant pump damage, and relief valve lift, resulting in the unnecessary loss of primary coolant as radioactive waste.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter. Position Indication Test at least once every two years per QO-6. Leak testing per RO-32-44 is performed once each refueling outage.

COLD SHUTDOWN TESTING BASIS NUMBER 2

VERIFICATION METHOD:

Operability of these valves will be determined by observing and recording the stroke time from the open to closed position. Valve position is determined by observing the valve position and indicating lights located on control panel EC-11. Leak tightness shall meet the acceptance criteria of RO-32-44.

CORRECTIVE ACTION:

Should either of these valves fail to meet the stroke time or leak rate requirements, corrective action as outlined in Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 3

SYSTEM: Engineering Safeguards (Containment Spray/M204)

VALVES: CK-ES3208, CK-ES3220, and CK-ES3230

CATEGORY: C **CLASS:** 2

FUNCTION:

1. Prevent back flow of water through the Containment Spray Pumps.

2. Pass flow from the Containment Spray Pumps to the Containment Spray Headers.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.3.2.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Full-stroke exercising the Containment Spray Pump discharge check valves requires initiation of the Containment Spray System and spraying down the containment. Large spray flow into containment would potentially result in equipment damage. The only practical flow path for valve testing is via the recirculation line to the SIRW tank. Use of this line requires installation of the open end of a spectacle flange.

ALTERNATIVE TESTING:

Each valve will be full-stroke exercised per Inservice Test Procedure QO-10, "Containment Spray Check Valve Test," during cold shutdowns. Nonintrusive testing techniques per Permanent Maintenance Procedure MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure," shall be used to determine full obturator movement.

COLD SHUTDOWN TESTING BASIS NUMBER 3

VERIFICATION METHOD:

Positive indication in accordance with Permanent Maintenance Procedure MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure," shall be acceptable as verification of full-stroke to OPEN. Nonintrusive methods are considered "other positive means" as stated in Procedure EM-09-02, Step 5.2.3l(4).

The absence of pump reverse rotation, when the pump is shut off and parallel pump is in operation, shall indicate an acceptable closure test per QO-10.

CORRECTIVE ACTION:

Should the valves fail to meet acceptance criteria, corrective action shall be completed in accordance with Procedure EM-09-02, Section 5.4.

COLD SHUTDOWN TESTING BASIS
NUMBER 4

SYSTEM: Chemical and Volume Control (M202-1)

VALVES: CV-2009

CATEGORY: A **CLASS:** 2

FUNCTION:

Containment isolation valve for letdown flow.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Interrupting letdown flow at normal operating temperature is undesirable because subsequent reinitiation of flow may cause thermal shock to the regenerative heat exchanger. Disruption of normal letdown flow may result in pressurizer pressure and level transients. In addition, closing this valve at PCS pressures greater than 600 psia will cause relief valve RV-2006 to lift, unless the letdown line is isolated prior to exercising this valve. The isolation function can only be verified safely at lower PCS pressures and temperatures.

ALTERNATIVE TESTING:

Exercise during cold shutdown, but not necessarily more often than once each quarter, as allowed by Procedure EM-09-02, Step 5.2.1 and a Position Indication Test at least once every two years. Exercising shall be performed according to Procedure QO-6, "Cold Shutdown Valve Test Procedure (Includes Containment Isolation Valves)."

COLD SHUTDOWN TESTING BASIS
NUMBER 4

Leak testing shall be performed in accordance with RO-32-36 as stated in Procedure EM-09-02, Step 5.2.4.

VERIFICATION METHOD:

Operability of this valve shall be determined by observing/recording stroke time from open to closed position. Valve position is determined by observing the valve position indicating lights located on EC-12. Leak testing shall meet acceptance criteria of RO-32-36.

CORRECTIVE ACTION:

Should this valve fail to meet the stroke time or leak rate requirements, corrective action as outlined in Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 5

SYSTEM: Chemical and Volume Control (M202-1A)

VALVES: MO-2087

CATEGORY: B **CLASS:** 2

FUNCTION:

Volume Control Tank outlet isolation valve. Valve closes on safety injection signal so that full charging pump flow comes from the concentrated Boric Acid Tanks or SIRW tank.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Exercising this valve requires interruption of charging and letdown flow. Disruption of normal letdown flow will result in pressurizer pressure and level transients. Restoration of charging/letdown flow when the Primary Coolant System is hot may lead to thermal shock of the regenerative heat exchanger.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-27, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-27.

COLD SHUTDOWN TESTING BASIS
NUMBER 5

VERIFICATION METHOD:

Operability of this valve will be determined by observing/recording stroke time from open to closed position. Valve position is determined by observing valve position indicating lights located on EC-12.

CORRECTIVE ACTION:

Should this valve fail to meet the stroke time or closure rate requirements, corrective action as outlined in Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 6

SYSTEM: Chemical and Volume Control (M202-1A)

VALVES: MO-2160, MO-2169, and MO-2170

CATEGORY: B **CLASS:** 2

FUNCTION:

Valves open on safety injection signal (MO-2169 and MO-2170) or by operator action (MO-2160) to provide the concentrated boric acid feed path to the charging pump suctions.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Opening these valves during normal Plant operation would result in a significant power transients caused by the reactivity change associated with concentrated boric acid injection into the PCS. The resulting reactor power/PCS temperature excursion could cause a reactor trip. In addition, exercising these valves during hot shutdown can result in the unnecessary generation of large quantities of radioactive waste, especially late in core life.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-27, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-27.

COLD SHUTDOWN TESTING BASIS
NUMBER 6

VERIFICATION METHOD:

Operability of these valves will be determined by observing/recording stroke time from close to open position. Valve position is determined by observing valve position indicating lights on panel EC-12.

CORRECTIVE ACTION:

Should these valves fail to meet the stroke time or closure requirements, corrective action as outlined in Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 8

SYSTEM: Engineered Safeguards (M203-2)

VALVES: CV-3001, CV-3002

CATEGORY: B **CLASS:** 2

FUNCTION:

Serve as system isolation valves which open during accident conditions to initiate containment spray.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Exercising these valves during normal operation may result in draining the containment spray headers. The spray headers must be maintained full to a level of 735 ft per CPCo Internal Correspondence DJV2600-80 dated May 5, 1980 and E-PAL-80-012 (0619/1497), to mitigate the pressure transient associated with a MSLB. Restoration of spray header water level would require a containment entry with the Plant at power. Entering Containment with the Plant at power would expose personnel to excessive radiation levels.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-6.

COLD SHUTDOWN TESTING BASIS
NUMBER 8

VERIFICATION METHOD:

Performance of these valves will be determined by measuring and trending stroke times from the closed to open position. An acceptance criteria limit of 10 seconds has been placed on these valves. This criteria is based on system response time since it is more limiting than component response time.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time acceptance criteria, corrective action as outlined in Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 10

SYSTEM: Engineered Safeguards (M204-1B)

VALVES: CV-3027, CV-3056

CATEGORY: A **CLASS:** 2

FUNCTION:

These normally open air operated gate valves have a PASSIVE safety function in the OPEN position to admit ECCS pump minimum flow to the SIRW tank. This flow is required following a Safety Injection Signal (SIS) to prevent pump damage.

CV-3027, and CV-3056 have an ACTIVE safety function in the CLOSED position to prevent pumping the Containment Sump to the SIRW tank following a Recirculation Actuation Signal (RAS). This valve closes automatically upon receipt of a RAS. These valves also prevent leakage back to the SIRW tank that could lead to releases of radionuclides in excess of allowable limits.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

2. OMa-1988, Part 10, Paragraph 4.2.2.3; Leakage Rate for Other Than Containment Isolation Valves

COLD SHUTDOWN BASIS:

These normally open valves isolate the minimum flow recirculation lines for all ECCS pumps. For the period of time either of these valves are closed, both ECCS trains are inoperable, which is a situation not covered by any individual technical specification. As such, an immediate Plant shutdown would be required if either valve failed closed during testing.

COLD SHUTDOWN TESTING BASIS
NUMBER 10

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-2, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-2.

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending stroke time values from the open to the closed position per the requirements of QO-2. Valve position is determined by observing the valve position indicating lights located in the Control Room.

Leak testing is performed during surveillance Procedure RO-119 during refueling outages.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 11

SYSTEM: Engineered Safeguards (M204-1 and 1A)

VALVES: CK-ES3201, CK-ES3192

CATEGORY: C **CLASS:** 2

FUNCTION:

1. LPSI Pump discharge check valves open to provide a flow path for LPSI and Shutdown Cooling Flow.

2. Prevent backflow (diversion) of LPSI flow through an idle LPSI pump with the parallel pump in operation.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.3.2.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

To verify full-stroke exercise of the above check valves requires full flow testing with the LPSI Pumps in service. This test is not possible during power operation, since the necessary flow path would require the LPSI pumps to inject into the PCS. The LPSI pumps cannot develop sufficient head to overcome seating pressure on valves CK-ES3103, CK-ES3118, CK-ES3133, and CK-ES3148 provided by the safety injection tanks. Therefore, a full or partial stroke test cannot be performed quarterly.

Use of the 6-inch SIRW tank fill line while operating is not possible because it presents an unmonitored leak path should an accident occur during pump/valve testing that requires recirculation of contaminated fluid from the containment sump. This line is isolated by installation of a blind-flange during normal Plant operation.

Use of the 1-inch shutdown cooling recirculation line is not practical. Flow indication of the proper range is not available for this flow path.

COLD SHUTDOWN TESTING BASIS
NUMBER 11

ALTERNATIVE TESTING:

1. Full-stroke exercise each cold shutdown per Surveillance Procedure QO-8B, unless the valve has been full-stroke tested within the previous three months.

2. Closure is verified quarterly by Surveillance Procedure QO-20, "Inservice Test Procedure - Low Pressure Safety Injection Pumps."

VERIFICATION METHOD:

1. The performance of these valves shall be determined by observing and recording shutdown cooling flow rates equal to or greater than 3202 gpm per QO-8B.

2. Acceptable differential pressure indicated adequate valve closure per QO-20.

CORRECTIVE ACTION:

Should either valve fail to meet flow rate requirements, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 13

SYSTEM: Engineered Safeguards (M-204-1B)

VALVES: CV-3031, CV-3057

CATEGORY: B **CLASS:** 2

FUNCTION:

CV-3031 and CV-3057 are normally OPEN air operated gate valves. They have a PASSIVE safety function in the OPEN position to admit SIRW Tank flow to the ECCS pumps. ECCS pumps are required following a Safety Injection Signal (SIS).

These valves have an ACTIVE safety function in the CLOSED position to prevent leakage back to the SIRW Tank during a Recirculation Actuation Signal (RAS) that could lead to releases of radionuclides. CV-3031 and CV-3057 automatically CLOSE in response to a RAS.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdown.

COLD SHUTDOWN BASIS:

Exercising CV-3031 and CV-3057 eliminates the suction source of more than one high and low pressure safety injection pump. During normal power operations this testing places the Plant in an immediate action statement per Technical Specification 3.3.2, which permits only one low pressure safety injection pump or one high pressure safety injection pump to be out of service at any one time. Therefore, these valves will be exercised at cold shutdowns.

COLD SHUTDOWN TESTING BASIS
NUMBER 13

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-2, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-2.

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending the stroke time values from the open to the close position per the instructions of QO-2. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 14

SYSTEM: Engineered Safeguards (M-204-1A)

VALVES: CV-3029, CV-3030

CATEGORY: B **CLASS:** 2

FUNCTION:

Valves CV-3029 and CV-3030 have an active safety function in the OPEN position to provide a suction flow path to the ECCS pumps during a Recirculation Actuation Signal (RAS). These valves have a passive safety function in the CLOSED position to ensure ECCS pump suction from the SIRW Tank during initial LOCA conditions.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdown.

BASIS:

Exercising CV-3029 and CV-3030 eliminates the suction source of more than one high and low pressures safety injection pumps. During normal Power Operations, this testing places the Plant in an action statement per Technical Specification 3.3.2, thus reducing the operational readiness of these systems. Therefore, these valves will be exercised at cold shutdowns.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-2, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-2.

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending the stroke time values from the close to the open position per the instructions of QO-2. Valve position is determined by observing the valve position indicating lights located in the Control Room.

COLD SHUTDOWN TESTING BASIS
NUMBER 14

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 15

SYSTEM: Main Steam (M205-1)

VALVES: CV-0501, CV-0510

CATEGORY: B **CLASS:** 2

FUNCTION:

These are the Main Steam Isolation Valves. They shut on steam generator low pressure from a MSLB to limit the PCS cooldown rate and the resultant reactivity insertion. Technical Specifications specify a maximum closing time of five seconds.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

These valves cannot be exercised during normal Plant operation, since a full-stroke exercise results in loss of steam flow to the turbine creating adverse transients and a resulting reactor trip. A partial stroke exercise is not practical during power operations, since these valves fully stroke on initiation of a close signal. These valves can be exercised during hot or cold shutdown periods.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-37, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-37.

COLD SHUTDOWN TESTING BASIS
NUMBER 15

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending stroke time values from the open to the close position per the instructions of QO-37. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 17

SYSTEM: Component Cooling (M209-1)

VALVES: CV-0910, CV-0911, CV-0940, CK-CC910

CATEGORY: A **CLASS:** 2

FUNCTION:

Isolation valves for component cooling supply and return from containment.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Exercising the above valves during normal operation results in loss of cooling water flow to the primary coolant pump seals. The interruption of flow would cause failure of the pump seals and eventual pump bearing failure. This test is impractical to perform while the primary coolant pumps are in service. This testing can be performed during cold shutdowns when the primary coolant pumps are not in service.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-6. Leak test CK-CC910 and CV-0910 each refueling outage per Surveillance Procedure RO-32-14. Leak test CV-0911 and CV-0940 each refueling outage per Surveillance Procedure RO-32-15.

COLD SHUTDOWN TESTING BASIS
NUMBER 17

VERIFICATION METHOD:

The performance of control valves shall be determined by recording and trending stroke time values in the close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room.

For CK-CC910, closure capability is verified by applying reverse pressure across the seat. This is accomplished by injecting pressurized water from the water test tank rig (used in LLRT testing) into the penetration between CV-0910 and CK-CC910. If water level stabilization is achieved at the test rig, it can be concluded CK-CC910 has moved to the closed position.

CORRECTIVE ACTION:

Should any valve fail to meet the stroke time acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 18

SYSTEM: Instrument Air (M212-4)

VALVES: CV-1211

CATEGORY: A **CLASS:** 2

FUNCTION:

Instrument Air Containment Isolation Valve

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdown.

COLD SHUTDOWN BASIS:

Exercising the above valve during power operation is not practical, since it would isolate all instrument air to the instruments and other components inside containment, resulting in the temporary loss of many of the instruments relied upon for Plant operation.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-6.

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending stroke time values in the close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 19

SYSTEM: HVAC (M218-2)

VALVES: CV-1805, CV-1806, CV-1807, CV-1808

CATEGORY: A **CLASS:** 2

FUNCTION:

Containment Purge Air Exhaust Isolation Valves

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdown.

COLD SHUTDOWN BASIS:

Exercising the above valves during power operation is not practical, since these valves are normally closed to provide containment integrity. These valves may be open during refueling and required to close to maintain containment integrity (ie refueling accident). These valves will be exercised during cold shutdowns when containment integrity is not required.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-6. Leak test per RO-32-01A each refueling outage.

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending stroke time values in the close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room. Leak tightness shall be determined in accordance with the instructions of RO-32.

COLD SHUTDOWN TESTING BASIS
NUMBER 19

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 20

SYSTEM: Service Water (M208-1B)

VALVES: CV-0824 and CV-0847

CATEGORY: B **CLASS:** 2

FUNCTION:

CV-0824 and CV-0847 are normally OPEN air operated butterfly valves. They have an ACTIVE safety function in the CLOSED position to provide isolation of the Containment Air Coolers (CAC) from the SW return header in the event of a pipe failure in the CAC piping. The CACs provide a redundant safety function to that of Containment Spray system and therefore may be isolated along with the remainder of the B SW header during a leak isolation evolution. No containment isolation function is performed because flow through this line would be required to mitigate any accident where containment isolation would be required.

These valves have a PASSIVE safety function in the OPEN position to allow CAC SW return flow to pass.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Exercising CV-0824 and CV-0847 during normal power operations isolates cooling water flow to all four of the containment air coolers. This will disable the containment coolers in both trains of containment cooling as defined in Technical Specification 3.4.1. Loss of both trains would place the Plant in an immediate action statement per the Technical Specifications. These valves can be exercised during cold shutdowns when the containment air coolers are not in service.

ALTERNATIVE TESTING:

Exercise during cold shutdowns per Surveillance Procedure QO-6, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-6.

COLD SHUTDOWN TESTING BASIS
NUMBER 20

VERIFICATION METHOD:

The performance of these valves will be determined by recording and trending stroke time values in the close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 22

SYSTEM: Primary Coolant System (M201-2)

VALVES: PRV-1042B and PRV-1043B

CATEGORY: B **CLASS:** 1

FUNCTION:

The power operated relief valves (PORVs) provide primary system overpressure protection from (1) a charging/letdown imbalance, (2) the start of a high pressure safety injection (HPSI) pump, and (3) initiation of forced circulation in the PCS when the steam generator temperature is higher than the PCS temperature.

Analysis shows that when three charging pumps are operating and letdown is isolated and a spurious HPSI pump start occurs, the PORV setpoints ensure that 10 CFR 50, Appendix G pressure limits will not be exceeded. Above 430° F, the pressurizer safety valves prevent 10 CFR 50, Appendix G limits from being exceeded by a charging/letdown imbalance.

The requirement that steam generator temperature be less than or equal to PCS temperature when forced circulation is initiated in the PCS ensures that an energy addition caused by heat transferred from a secondary system to the PCS will not occur. This requirement applies only to the initiation of forced circulation (the start of the first primary coolant pump) with one or more of the PCS cold leg temperatures less than 450° F.

Requiring the PORVs to be operable when the shutdown cooling system is not isolated (MO-3015 and MO-3016 open) from the PCS ensures that the shutdown cooling system will not be pressurized above its design limits.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN TESTING BASIS
NUMBER 22

COLD SHUTDOWN BASIS:

Opening these valves during power operations creates the possibility of the PCS loss of coolant accident (LOCA) with a single failure of the associated PORV block valve.

ALTERNATIVE TESTING:

Exercise to the open and closed positions per Surveillance Procedure QO-6 each cold shutdown, but not necessarily more frequently than once each quarter. Acceptable cold shutdown testing shall be performed by stroke timing the valve to the open and closed positions within 2 seconds using the solenoid actuator. Remote Position Indication Test is performed each refueling outage and at least once every two years per RO-115.

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending stroke time values in the open and close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room. Acceptable operation shall be indicated when the valve successfully moves from the closed to the open position within 2 seconds. Position Indication Test acceptance criteria are contained in RO-115.

CORRECTIVE ACTION:

Should either valve fail stroke testing, corrective action per Procedure EM-09-02, Section 5.4 shall be taken, and an alternative vent path established per the requirements of Technical Specification 3.1.8.2.

COLD SHUTDOWN TESTING BASIS
NUMBER 23

SYSTEM: Main Feedwater System (M207-1A)

VALVES: CV-0701, CV-0703, CV-0734, and CV-0735

CATEGORY: B **CLASS:** 2

FUNCTION:

The steam generators are operated in parallel on the feedwater and on the steam sides. Each generator has a three-element controller with inputs of feedwater flow, steam flow (corrected for pressure), and downcomer level. The output of each controller when in automatic control is used to provide pneumatic signals to position the respective feedwater regulating control valve. The larger value of the two signals provides a speed control signal to the main feedwater, turbine driven pumps. When Plant power is between 5% and 25%, feedwater is automatically controlled by a single element controller monitoring steam generator downcomer level and positioning the feedwater regulating bypass valves. Four overrides are provided:

1. When contacts in the steam dump permissive switch are actuated on a main turbine trip, feedwater regulating control valves are maintained in the position which existed prior to the switch activation. The feedwater pumps are then ramped down in speed to obtain a linear ramp flow decrease to 5% flow in 60 seconds following the trip.

2. When an abnormally high steam generator level is sensed by an independent downcomer level sensor, a signal is sent to close the associated feedwater regulating control valve and a Control Room alarm is annunciated.

3. During low steam generator pressure < 500 psia, the main feedwater control valves and the bypass valves are closed automatically. The operator can manually take control of the bypass valves by isolating the low steam generator pressure signal using a key switch on the control panel.

4. In order to limit Containment Pressure during the Main Steam Line Break to less than 55 psig, the MFW regulating valves (CV-0701 and CV-0703) and bypass valves (CV-0734 and CV-0735) also close on containment high pressure (CHP) > 4 psig. A preliminary peak pressure calculation gives acceptable results (pressure $\leq$ 55 psig). The operator can manually take control of the bypass valves by isolating the Containment High Pressure signal.

   Manual control of the feedwater flow may be assumed at any time to circumvent malfunction of components within the system. When in manual control, the operator in the Control Room can:

   a. Position manually each feedwater regulating control valve,

   b. Control speed of the two main feedwater pumps,

   c. Open or close each feedwater stop valve, and

   d. Position manually each feedwater bypass regulating valve.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Testing on a quarterly interval during power operations would result in a portion of the feedwater system being out of service for a minimum period of time in the range of 12 to 32 seconds. The actual time would be longer due to personnel reaction time and time required to perform procedure recordings. Results would be the following:

1. Decrease in steam generator level possibly resulting in an Auxiliary Feedwater Actuation Signal.

2. Thermal shock to the steam generator caused by the loss of feedwater and subsequent reinitiation.

3. Variation in reactor power caused by T_{ave} changes as a result of steam generator level and temperature variations.

COLD SHUTDOWN TESTING BASIS
NUMBER 23

Industry responses to NOMIS Report Request 90-04-081 and Network Message #3850 indicate all respondents which test their feedwater regulating and bypass valves do not test them during power operations.

ALTERNATIVE TESTING:

Exercise CV-0734 and CV-0735 to the closed position per Surveillance Procedure QO-06 each cold shutdown, but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-06. Cold shutdown testing will be performed by cycling the valve using the normal actuation circuit.

Exercise CV-0701 and CV-0703 each cold shutdown, but not necessarily more frequently than once each quarter to the closed position per Surveillance Procedure QO-41. Perform a Position Indication Test at least once every two years per Surveillance Procedure QO-41. Cold shutdown testing will be performed by simulating Steam Generator High Level Alarm signals to initiate valve closure.

VERIFICATION METHOD:

Full-stroke testing (open to close) shall be performed on the MFW regulating valves. The performance of CV-0701 and CV-0703 valves will be determined by recording and trending stroke time values in the close direction per the instructions of QO-41. Acceptable operation will be when the valve successfully moves to the closed position within the specified stroke time limits. The design limit stroke time value is 20.5 seconds.

Full-stroke testing (open to close) shall be performed on the MFW bypass valves. The performance of CV-0734 and CV-0735 valves will be determined by recording and trending stroke time values in the close direction per the instructions of QO-6. Acceptable operation will be when the valve successfully moves to the closed position within the specified stroke time limits.

CV-0701, CV-0703, CV-0734, and CV-0735 valve position is determined by observing the valve position indicating lights located in the Control Room and comparing the indicated position to the actual valve position.

COLD SHUTDOWN TESTING BASIS
NUMBER 23

CORRECTIVE ACTION:

Should any valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 24

SYSTEM: Primary Coolant System (M201-2)

VALVES: MO-1042A and MO-1043A

CATEGORY: A **CLASS:** 1

FUNCTION:

Power Operated Relief Valve (PORV) Block Valves MO-1042A and MO-1043A provide isolation capability for the PORV system. The block valves provide a flow path for feed and bleed of the pressurizer.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Exercising MO-1042A or MO-1043A while the Primary Coolant System (PCS) is not depressurized will result in the respective PORV being opened by the increased inlet pressure to the PORV. This will cause depressurization of the PCS and possible damage to downstream equipment from the excessive steam flow past the PORV and Block Valves.

This test is impractical to perform during normal operations. These valves will be exercised during cold shutdowns when the PCS is depressurized.

ALTERNATIVE TESTING:

Full-stroke exercise to the open and closed positions each cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-6. Test position indication at least once every two years per Surveillance Procedure QO-6.

COLD SHUTDOWN TESTING BASIS
NUMBER 24

VERIFICATION METHOD:

The performance of these valves will be determined by recording and trending stroke time values in the open and close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room. Acceptable operation shall be indicated when the valve successfully moves from the closed to the open position and from the open to the closed position.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken, and an alternative vent path established per the requirements of Technical Specification 3.1.8.2.

COLD SHUTDOWN TESTING BASIS
NUMBER 30

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COLD SHUTDOWN TESTING BASIS
NUMBER 31

SYSTEM: Engineered Safeguards System (Shutdown Cooling System M204-1)

VALVES: CV-3006, CV-3025, and CV-3055

CATEGORY: B **CLASS:** 2

FUNCTION:

Engineered Safeguards System Valve CV-3025 and CV-3055 provide the Shutdown Cooling System flow path to and from the Shutdown Cooling Heat Exchangers when the Plant is on Shutdown Cooling. CV-3006 is in the Low Pressure Safety Injection flow path and is electrically locked open during Plant operation. This valve is repositioned to the closed position when lining up for shutdown cooling. The above valves are not required to change position until the Plant is in the process of being aligned for shutdown cooling.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

These valves are normally electrically locked in the safety position required for normal Plant operation. Their safety function is to reposition in order to place the Plant in the shutdown cooling mode of operation. Testing of these valves during normal operation would not provide any additional assurance of quality and safety. Therefore, these valves will be tested while placing the Plant in the shutdown cooling mode at the beginning of each cold shutdown.

ALTERNATIVE TESTING:

Full-stroke exercise to the open and closed positions each cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-10. Test position indication at least once every two years per Surveillance Procedure QO-10.

COLD SHUTDOWN TESTING BASIS
NUMBER 31

VERIFICATION METHOD:

The performance of these valves will be determined by recording and trending stroke time values in the open and close direction per the instruction of QO-10. Valve position is determined by observing the valve position indicating lights located in the Control Room. Acceptable operation will be indicated when the valve successfully moves from the closed to the open position and from the open to the closed position.

CORRECTION ACTION:

Should either valves fail to stroke, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 32

SYSTEM: Engineered Safeguards System (Shutdown Cooling System M204-1)

VALVES: MO-3015 and MO-3016

CATEGORY: B **CLASS:** 1

FUNCTION:

These valves have an active safety function to open in order to place the Plant in the shutdown cooling mode in the latter phases of a Plant cooldown, usually at 300°F and 270 psia. At Plant conditions above 300°F and 270 psia these valves provide the Reactor Coolant Pressure Boundary.

COLD SHUTDOWN BASIS:

These valves provide the Reactor Coolant Pressure Boundary. Opening these valves at pressures above 300 psia would damage the shutdown cooling system components and risk a loss of cooling accident. These valves are normally electrically locked in the safety position required for normal Plant operation. Their safety function is to reposition in order to place the Plant in the shutdown cooling mode of operation. Testing of these valves during normal operation would not provide any additional assurance of quality and safety. Therefore, these valves will be tested while placing the Plant in the shutdown cooling mode at the beginning of each cold shutdown.

ALTERNATIVE TESTING:

Full-stroke exercise to the open and closed positions each cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-10. Test Position Indication at least once every two years per Surveillance Procedure QO-10.

COLD SHUTDOWN TESTING BASIS
NUMBER 32

VERIFICATION METHOD:

The performance of these valves will be determined by recording and trending stroke time values in the open and close direction. The valve position is determined by observing the valve position indicating lights located in the Control Room. Acceptable operation will be indicated when the valve successfully moves from the closed to the open position and from the open to the closed position.

CORRECTIVE ACTION:

Should either valve fail to stroke, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 33

SYSTEM: Service Water System (M213)

VALVES: CV-1359

CATEGORY: B **CLASS:** 3

FUNCTION:

This valve isolates the non-essential service water header on receipt of an Safety Injection Signal or Containment High Pressure signal. This will ensure that sufficient service water cooling capacity will be available to mitigate the consequences of an accident.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Shutting of this valve during Plant operation will isolate cooling water to components that are essential for the operation of the non-nuclear portion of the Plant. The components served include the condensate pumps, the generator cooler, the exciter cooler, and the feedwater pump turbine heat exchanger. This valve will be full-stroke exercised during cold shutdowns when these components are out of service.

ALTERNATIVE TESTING:

Full-stroke exercise to the closed position each cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-6. Test position indication at least once every two years per Surveillance Procedure QO-6.

COLD SHUTDOWN TESTING BASIS
NUMBER 33

VERIFICATION METHOD:

The performance of this valve will be determined by recording and trending stroke time values in the close direction per the instruction of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room. Acceptable operation will be indicated when the valve successfully moves from the open to the closed position.

CORRECTIVE ACTION:

Should either valves fail to stroke, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 34

Deleted

COLD SHUTDOWN TESTING BASIS
NUMBER 35

SYSTEM: Main Steam (M205-1)

VALVES: MO-0501, MO-0510

CATEGORY: B **CLASS:** 2

FUNCTION:

These are the Main Steam Isolation Valve Bypass Valves. Although they are normally closed during power operation, they are open during Plant start-up at low power levels to warm the main steam lines before opening the Main Steam Isolation Valves. During this time, they are manually controlled by Plant operators. In the event of a MSLB, the operators would be required to manually close them to isolate the affected steam generator and limit the PCS cooldown rate.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

These valves are used only during startup from hot shutdown and are closed and passive during normal operation at power. Testing of these valves each time the Plant is taken to hot or cold shutdown will provide an equivalent level of quality and safety as normal quarterly testing.

ALTERNATIVE TESTING:

Full-stroke exercise to the closed position each hot or cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-37. Test position indication at least once every two years per Surveillance Procedure QO-37.

COLD SHUTDOWN TESTING BASIS
NUMBER 35

VERIFICATION METHOD:

The performance of these valves shall be determined by recording and trending stroke time values from the open to the close position per the instructions of QO-37. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 36

SYSTEM: Chemical and Volume Control; Charging (M-202-1B)

VALVES: CV-2117

CATEGORY: B **CLASS:** 1

FUNCTION:

Auxiliary Pressurizer Spray Valve has a safety function to allow diversion of charging flow to the Pressurizer. Auxiliary Spray controls PCS pressure during a Steam Generator Tube Rupture Accident.

Auxiliary Pressurizer Spray Valve has a safety function to provide Reactor Coolant Pressure Boundary integrity.

This valve is not a pressure isolation valve. The design pressure of the attached charging system piping is the same as the reactor coolant system design pressure.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.1; Active Category B valves shall be tested nominally every 3 months, except as provided by Paragraph 4.2.1.2c.

BASIS:

Exercising Auxiliary Pressurizer Spray Valve CV-2117 when the Primary Coolant System is at nominal operating temperature would subject system piping and the spray nozzle to thermal stresses beyond design limitations. During normal operation, Auxiliary Pressurizer Spray is not in service. Water temperature inside system piping is ambient at approximately 110°F. The Pressurizer vapor phase temperature is approximately 635°F. Resulting differential temperatures near 520 degrees would damage Auxiliary Pressurizer Spray System components if they were subjected to a quarterly test interval.

ALTERNATIVE TESTING:

Full-stroke exercise to the open and closed positions each cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-6. Test position indication at least once every two years per Surveillance Procedure QO-6.

COLD SHUTDOWN TESTING BASIS
NUMBER 36

VERIFICATION METHOD:

The performance of Auxiliary Pressurizer Spray Valve CV-2117 shall be determined by recording and trending the stroke time values for both open and closed directions in accordance with the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should the Auxiliary Pressurizer Spray Valve CV-2117 fail to meet the stroke time acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

COLD SHUTDOWN TESTING BASIS
NUMBER 38

SYSTEM: Main Steam, Main & Auxiliary Turbine System (M205-2)

VALVES: CV-0522A and CV-0522B

CATEGORY: B **CLASS:** 2

FUNCTION:

CV-0522A and CV-0522B are normally closed air operated globe valves. They have an ACTIVE safety function in the OPEN position to provide steam to the Auxiliary Feedwater (AFW) Pump P-8B. AFW Pump P-8B is required to operate during a loss of feedwater accident, and a loss of offsite power. These valves must be manually actuated.

CV-0522A and CV-0522B have a PASSIVE safety function in the CLOSED position to isolate steam from the AFW Pump turbine during a S/G tube leak due to the turbines atmospheric exhaust.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.2.1.2(c); If exercising is not practical during Plant operation, it may be limited to full-stroke exercising during cold shutdowns.

COLD SHUTDOWN BASIS:

Full-stroke exercising of CV-0522A and CV-0522B is not possible during normal power operations due to system controls preventing the valves from stroking to the full open positions. During Surveillance Test QO-21, CV-0522B is stroked to a throttled position during testing of P-8B. CV-0522A is stroked to a throttled position during MO-38. Therefore, accurate full-stroke timing of these valves can only be achieved during Cold Shutdown.

ALTERNATIVE TESTING:

Full-stroke exercise to the open position each cold shutdown, but not necessarily more frequently than once each quarter per Surveillance Procedure QO-6. Test position indication at least once every two years per Surveillance Procedure QO-6.

COLD SHUTDOWN TESTING BASIS
NUMBER 38

VERIFICATION METHOD:

The performance of these valves will be determined by recording and trending stroke time values in the close direction per the instructions of QO-6. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per Procedure EM-09-02, Section 5.4 shall be taken.

REFUELING OUTAGE TESTING BASIS INDEX
(Revised Bases Identified)

RO1:	Hot Leg HPSI Check Valves
RO2:	HPSI Train 1 System Check Valves
RO3:	HPSI Train 2 System Check Valves
RO4:	Deleted
RO5:	Check Valves Providing HPSI Flow to Loop #1 Hot Leg Injection Flow Path
RO6:	Containment Air Cooler Discharge Check Valves
RO7:	Condensate Demineralizer Check Valve
RO8:	Deleted
RO9:	Instrument Air Containment Isolation Check Valve
RO10:	Safety Injection Tank Discharge Check Valves
RO11:	Auxiliary Feedwater Check Valves
RO12:	Primary Coolant System Loop Check Valves
RO13:	Charging System Injection Check Valves
RO14:	Deleted
RO15:	Main Steam System to Auxiliary Feedpump Turbine Check Valves
RO16:	Deleted

REFUELING OUTAGE TESTING BASIS
NUMBER 1

SYSTEM: Engineering Safeguards (M-201-1)

VALVES: CK-ES3410

CATEGORY: C **CLASS:** 1

FUNCTION:

1. Prevent PCS back leakage into the Hot Leg High Pressure Safety Injection (HPSI) lines.

2. To pass flow from the HPSI system to the Hot Leg Injection.

TEST REQUIREMENT:

OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Full-stroke testing during hot Plant conditions is not practical for the following reasons:

1. A full flow test path is not available during Plant conditions other than at cold shutdown due to nozzle thermal shock considerations.

2. Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI Pumps is prohibited by Technical Specification 3.3.2(g) with the PCS temperature <260°F and the Reactor Vessel Head in place.

Closure verification for this valve is performed quarterly during Surveillance Test QO-19.

REFUELING OUTAGE TESTING BASIS
NUMBER 1

ALTERNATIVE TESTING:

Check Valve CK-ES3410 will be tested as follows:

1. CK-ES3410 will be full-stroke exercised during each refueling outage according to Inservice Test Procedure RO-65, "High Pressure Safety Injection (HPSI) Trains 1 and 2, and Hot Leg Injection Check Valve Test."

   System flow and pressure is recorded and trended to monitor the valve for degradation.

2. CK-ES3410 is additionally partial stroke exercised during each cold shutdown in accordance with Surveillance Procedure QO-8B. This test partially strokes CK-ES3410 open using the charging pumps to pass flow to the Primary System Drain tank.

ACCEPTANCE CRITERIA:

Inservice Testing will be performed during refueling outages with the Reactor Vessel Head removed. A test shall be considered acceptable when observed Hot Leg Injection flow for each path is equal to or greater than 227 gpm.

REFUELING OUTAGE TESTING BASIS
NUMBER 2

SYSTEM: Engineering Safeguards (HPSI/M203-2)

VALVES: CK-ES3104, CK-ES3119, CK-ES3134, CK-ES3149

CATEGORY: A/C **CLASS:** 1

FUNCTION:

1. Prevent back leakage of Primary Coolant System (PCS)/Safety Injection (SI) tank water into the HPSI Train 1 System.

2. Provide a flow path for HPSI into the PCS.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.2.2.3; Leakage Rate for Other Than Containment Isolation Valves.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Performance of full-stroke exercising during normal power operation is impractical because a flow path is not available during normal operations, since the PCS is at a greater pressure than the HPSI pump discharge.

Full-stroke exercising these valves would require injecting highly borated water into the Primary Coolant System (PCS). This would rapidly reduce reactivity resulting in a power transient (reduction) and possibly a pressure/temperature transient.

Additionally, testing at temperatures above cold shutdown may result in thermal shock to the injection nozzles.

Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI pumps is prohibited by Technical Specification 3.3.5 with the PCS temperature <300°F and the reactor vessel head in place.

Closure of these valves is verified quarterly during the performance of Surveillance Test QO-32.

ALTERNATIVE TESTING:

The HPSI Train 1 check valves will be tested as follows:

1. During cold shutdowns each valve will be part-stroke tested per Inservice Test Procedure QO-8B, "ESS Check Valve Operability Test (Cold Shutdown)."

2. During refueling outages (reactor vessel head removed), these check valves will be full-stroke tested per Inservice Test Procedure RO-65, "High Pressure Safety Injection (HPSI) Trains 1 and 2, and Hot Leg Injection (HLI) Check Valve Test."

3. Valve closure is verified on a quarterly basis during the performance of surveillance test QO-32, "Closure Verification of HPSI Trains 1 and 2 and LPSI Injection Check Valves."

4. If leak testing has not been performed within the previous nine months, these check valves will be leak tested during a hot shutdown in accordance with Surveillance Procedure SO-9, "Primary Coolant System Pressure Isolation Check Valves".

ACCEPTANCE CRITERIA:

When testing per RO-65, recorded flow rates greater than 167 gpm constitutes an acceptable full-stroke test.

When testing per QO-8B, recorded flow rates greater than 35 gpm constitute an acceptable part-stroke test.

When testing per QO-32, recorded differential pressures greater than 100 psid constitute an acceptable closure verification test.

REFUELING OUTAGE TESTING BASIS
NUMBER 4

Deleted

REFUELING OUTAGE TESTING BASIS
NUMBER 5

SYSTEM: Engineering Safeguards (HLI/M203-2)

VALVES: CK-ES3408 and CK-ES3409

CATEGORY: C **CLASS:** 1

FUNCTION:

1. Provide HPSI to loop #1 Hot Leg injection flow path.

2. Prevent back flow of Primary Coolant System (PCS).

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Full-stroke exercise testing of these valves during normal operation, including cold shutdowns is impractical. Exercising these valves requires injecting SIRW tank water into the PCS. This test path cannot be used during normal power operations, since the PCS is at a greater pressure than the HPSI pump discharge. Also, the injection of the highly borated SIRW tank water into the PCS would result in a reactivity change power transient (reduction) and possibly a pressure/temperature transient. Testing at any Plant condition greater than cold shutdown may result in thermal shock to the injection nozzles.

Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI pumps is prohibited by Technical Specification 3.3.5 with the PCS temperature <300°F and the reactor vessel head in place.

REFUELING OUTAGE TESTING BASIS
NUMBER 5

ALTERNATIVE TESTING:

These valves will be tested as follows:

1. During normal Plant operations, partial stroke testing will be performed on a quarterly basis per Inservice Testing Procedure QO-19.

2. During refueling outages with the vessel head removed, full-stroke testing per Inservice Testing Procedure RO-65 will be performed.

During refueling outages with the vessel head removed, closure testing per Inservice Testing Procedure RO-65 will be performed.

ACCEPTANCE CRITERIA:

1. Record of positive flow constitutes an acceptable part-stroke test per QO-19.

2. Recorded flow rates greater than 227 gpm constitute an acceptable full-stroke test per RO-65.

3. Recorded reverse differential pressure of $\geq$ 50 psi constitutes an acceptable closure test per RO-65.

REFUELING OUTAGE TESTING BASIS
NUMBER 6

SYSTEM: Service Water (M208-1B)

VALVES: CK-SW407, CK-SW408, and CK-SW409

CATEGORY: C **CLASS:** 3

FUNCTION:

Valves must open to provide a flow path for service water discharge from the Containment Air Coolers (CAC).

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

During Plant operations, including normal cold shutdowns, it is not possible to align the service water system in an accident configuration and verify the maximum accident required flow rate is achieved through each CAC discharge check valve. Such alignment would require isolating critical loads that would be isolated automatically during certain accident conditions. Isolation of these loads requires extensive changes in Plant configuration to ensure that critical loads required to maintain Plant safety and protect critical equipment are supplied with adequate cooling. Such realignment would require prolonging normal cold shutdowns, which is not the intent of OMa-1988, Part 10, as stated in Section 4.3.2.2(g).

REFUELING OUTAGE TESTING BASIS
NUMBER 6

ALTERNATIVE TESTING:

These check valves are in continuous service during normal operations which satisfies the requirement to part-stroke them on a quarterly basis.

Full-stroke exercise testing shall be performed once per refueling outage in accordance with Special Test Procedure T-216. Verification of full open and closure will be verified using nonintrusive techniques per Permanent Maintenance Procedure MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure."

ACCEPTANCE CRITERIA:

During normal Plant operations and cold shutdown, these valves shall function as necessary to support service water system requirements.

Testing in accordance with MSI-I-14 shall indicate each check valve travels to the full open position.

REFUELING OUTAGE TESTING BASIS
NUMBER 7

SYSTEM: Condensate Demineralizer System (M-220-1)

VALVES: CK-CD407

CATEGORY: C **CLASS:** 2

FUNCTION:

Prevent inadvertent drainage of the Condensate Storage Tank T-2.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Full-stroke exercise testing of these valves during normal operation, including cold shutdowns is impractical, due to system configuration. The system configuration is such that non-safety related valves are required to accomplish the test configuration. These non-safety related valves are not leak-tight and therefore the necessary configuration cannot be accomplished.

There is no method available to positively verify closure of the subject valve. System configuration does not allow closure testing in accordance with the Code.

ALTERNATIVE TESTING:

This check valve is disassembled and inspected each outage in accordance with Technical Specification Surveillance Procedure RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program," in lieu of exercise testing. Disassembly is allowed as an alternative by OMa-1988, Part 10, Paragraph 4.3.2.4(c).

REFUELING OUTAGE TESTING BASIS
NUMBER 7

ACCEPTANCE CRITERIA:

At each disassembly, the valve is manually exercised to verify full-stroke capability. The valve is also inspected to ensure the internals are structurally sound (no loose, damaged, or corroded parts).

REFUELING OUTAGE TESTING BASIS
NUMBER 8

Deleted

REFUELING OUTAGE TESTING BASIS
NUMBER 9

SYSTEM: Instrument Air System (M212-4)

VALVES: CK-CA400

CATEGORY: C **CLASS:** 2

FUNCTION:

Provides Containment Isolation

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Exercising the above valve during power operation is not practical, since it would require isolation of all instrument air to the instruments and other components inside containment, resulting in the temporary loss of many of the instruments relied upon for Plant operation. The only way to provide a seating force to the valve and to verify closure is to provide pressurization between CK-CA400 and the other containment isolation valve CV-1211. This test is performed on a refueling outage basis as part of the Appendix J LLRT Program.

ALTERNATIVE TESTING:

This check valve will be verified closed at each refueling outage by performance of a local leak rate test (LLRT) in accordance with Surveillance Test Procedure RO-32-65.

REFUELING OUTAGE TESTING BASIS
NUMBER 9

ACCEPTANCE CRITERIA:

Acceptable check valve closure capability will be verified by satisfaction of the acceptance criteria of Procedure RO-32-65.

REFUELING OUTAGE TESTING BASIS
NUMBER 10

SYSTEM: Safety Injection (M203-1)

VALVES: CK-ES3102, CK-ES3117, CK-ES3132, CK-ES3147

CATEGORY: C **CLASS:** 1

FUNCTION:

1. Open to provide flow path for Safety Injection (SI) Tank (T-82A, T-82B, T-82C, and T-82D) contents to PCS cold legs.

2. Close to prevent backflow of PCS water to SI Tanks.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Full-stroke exercise testing of these valves during normal operation, including cold shutdowns is impractical. The subject valves cannot be full-stroke tested open during power operations or hot shutdown when PCS operating conditions are at 2060 psia and 532°F. The SI Tanks provide an available driving head of 258 psia which is not sufficient to overcome a PCS pressure of 2060 psia. Therefore, it is necessary to cool down and depressurize the PCS to conduct a stroke test of these valves.

Stroke testing these valves at a normal cold shutdown is also impractical due to the fact that the SI Tanks contain highly borated water. Injection of the SI Tanks to the PCS at a time other than refueling is impractical due to excessive dilution required to restart the plant from cold shutdown.

REFUELING OUTAGE TESTING BASIS
NUMBER 10

ALTERNATIVE TESTING:

These valves will be full-stroke tested each refueling outage when the reactor vessel closure head is removed. Valve full-stroke capability will be verified during the performance RO-105 by using nonintrusive techniques.

ACCEPTANCE CRITERIA

Acceptable check valve full-stroke capability will be verified by observation that the disc travels to the full open and full closed positions during testing.

These valves are verified closed on a quarterly basis in accordance with Procedure SHO-1.

REFUELING OUTAGE TESTING BASIS
NUMBER 12

SYSTEM: Primary Coolant System (M203-1)

VALVES: CK-ES3101, CK-ES3116, CK-ES3131, CK-ES3146

CATEGORY: C **CLASS:** 1

FUNCTION:

1. These valves have an active safety function in the open position to provide a flow path from the Safety Injection(SI) Tanks and pumps to the reactor coolant loops.

2. These check valves have an inactive safety function in the closed position to provide reactor coolant system pressure boundary isolation.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS:

Full-stroke exercise testing of these valves during normal operation, including cold shutdowns is impractical. The subject valves cannot be full-stroke tested during power operations or hot shutdown when PCS operating conditions are at 2060 psia and 532°F. The SI Tanks provide an available driving head of 258 psia which is not sufficient to overcome a PCS pressure of 2060 psia. Additionally, none of the Safety Injection or Charging Pumps provide sufficient head and flow to perform an acceptable test. Therefore, it is necessary to cool down and depressurize the PCS to conduct a stroke test of these valves.

Due to the available pressure differentials during a refueling outage, it will not be possible to achieve full accident flow in order to meet the full-stroke criteria of Generic Letter 89-04.

REFUELING OUTAGE TESTING BASIS
NUMBER 12

ALTERNATIVE TESTING:

1. Consumers Energy will full-stroke exercise CK-ES3101, CK-ES3116, CK-ES3131, and CK-ES3146 on a sampling basis, once per refueling outage per RO-105. Full-stroke capability will be verified in accordance with Permanent Maintenance Procedure MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure." Testing will be performed on a sample basis as outlined in NUREG 1482, Section 4.1.2. Nonintrusive methods are considered "...other positive means," as stated in Procedure EM-09-02, Step 5.2.3l(4).

2. Each check valve will be partial stroke tested on a cold shutdown test frequency in accordance with Technical Specification Surveillance Procedure QO-8B.

3. Verification of valve closure capability occurs via the PCS leak rate calculation of GOP-13. Verification of valve leakage shall occur via the performance of SO-9 at least once every two years.

BASELINE DATA

Each valve was successfully tested using nonintrusive acoustic monitoring during the 1995 and 1996 refueling outages. Analysis of test results indicated each valve traveled to the full open and close position.

ACCEPTANCE CRITERIA

1. At each refueling outage, nonintrusive acoustic monitoring shall indicate the tested check valves travel to the full open and closed position.

2. During performance of QO-8B, positive indication of flow shall constitute an acceptable part-stroke test.

3. Leak rates shall be less than 1 gpm per SO-9.

REFUELING OUTAGE TESTING BASIS
NUMBER 14

Deleted

REFUELING OUTAGE TESTING BASIS
NUMBER 15

SYSTEM: Main Steam System (M205-2)

VALVES: CK-MS401 and CK-MS402

CATEGORY: C **CLASS:** 3

FUNCTION:

1. Valves must close to avoid diversion of steam supply from the other steam generator.

2. Valves must open to provide main steam to Auxiliary Feedwater Pump P-8B Turbine Driver K-8.

TEST REQUIREMENT:

1. OMa-1988, Part 10, Paragraph 4.3.2.2(a); During Plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partially open position required to fulfill its function.

2. OMa-1988, Part 10, Paragraph 4.3.2.2(e); If exercising is not practical during Plant operation or cold shutdown, it may be limited to full-stroke during refueling outages.

REFUELING OUTAGE BASIS

There is no practical method to regulate steam pressure to 38 psig in order to demonstrate that the subject valves will open under accident conditions as outlined in the FSAR. Therefore, it is not possible to perform a full flow test in accordance with Code requirements.

Due to system noise associated with steam flowing through CK-MS401 and CK-MS402, nonintrusive techniques have been unsuccessful in demonstrating full open of these valves.

REFUELING OUTAGE TESTING BASIS
NUMBER 15

ALTERNATIVE TESTING:

CK-MS401 and CK-MS402 will be disassembled in accordance with RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program" to verify freedom of valve disc movement through its entire range, and the acceptable condition of internal components. This is an approved alternative in accordance with OMa-1988, Part 10, Paragraph 4.3.2.4(c).

Each check valve will be partial stroke tested on a monthly and quarterly basis in accordance with Technical Specification Surveillance Procedures MO-38 and QO-21.

ACCEPTANCE CRITERIA:

Disassembly acceptance criteria shall be in accordance with RT-122.

Partial flow exercising is verified per Technical Specification Surveillance Procedures MO-38 and QO-21.

REFUELING OUTAGE TESTING BASIS
NUMBER 16

Deleted